

# **FINAL SUBMITTAL**

## **OCONEE EXAM**

**50-269, 270, 287/2002-301**

**February 11 - 15, 2002**

# **FINAL JPMS AND OUTLINES**

**OCONEE**

**02/11/2002**

**OPERATING EXAM  
(ADMINISTRATIVE)**

Facility: <b>Oconee</b>		Date of Examination: <b>February 11, 2002</b>
Examination Level (circle one): <b>RO</b> / SRO		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	GEN 2.1.7 (3.7/4.4)	<b>NRC Admin JPM CRO-43, Perform Manual RCS Leakage Calculation; PT/0600/010 (bank)</b>
	GEN <sup>2.1.25</sup> 2.1.33 (3.4/4.0)	<b>NRC Admin JPM- 006 – Reactor Power Imbalance Verification - Improved Tech Specs/COLR; PT/600/01, COLR (last exam, modified) (RO only)</b>
A.2	GEN 2.2.12 (3.0/3.4)	<b>Admin A2 question 1, Analyze plant conditions for LTOP for MODE 5; PT/600/01</b>
		<b>Admin A2 question 2, Analyze plant conditions for LTOP for MODE 5 with dropped RCS loops; PT/600/01</b>
A.3	GEN 2.3.4 (2.5/3.1)	<b>NRC Admin JPM – 005, Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits</b>
A.4	GEN 2.4.39 (3.3/3.1)	<b>NRC Admin JPM – 004, Perform Actions for Medical Emergency, RP/1000/016, Encl. 4.1(RO only)</b>

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**CRO-43/Admin**

**PERFORM MANUAL RCS LEAKAGE CALCULATION**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

PERFORM MANUAL RCS LEAKAGE CALCULATION

**Alternate Path:**

No

**Facility JPM #:**

CRO-43

**K/A Rating(s):**

System: SF2-002 Reactor Coolant System

K/A: A2.01

Rating: 4.3/4.4

**Task Standard:**

RCS Leakage is correctly calculated within .2 gpm of attached key.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

PT/O/A/0600/001A, Loss Of Computer

PT/1/A/600/10, Reactor Coolant Leakage

**Validation Time: 18 minutes**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

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**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 13.2 of PT/1(2)(3)/A/600/10

Enclosure 13.3 of PT/1(2)(3)/A/600/10

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit \_\_\_\_ (Specify Unit) computer repairs are expected to be extended through turnover for hardware replacement. The Loss of Computer procedure PT/O/A/0600/001A, Loss Of Computer, is in progress, however an RCS Leakage Calculation has not been performed during this shift.

**INITIATING CUES:**

The Control Room SRO directs you to perform a manual RCS leakage per PT/1,2,3/A/600/10 (Reactor Coolant Leakage). The initial data given was collected one hour previously. Collect the final set of leakage data and manually calculate the RCS leakage rate. Enclosure 13.3 of PT/1,2,3/A/600/10 (Reactor Coolant Leakage) is complete up to step 2.2.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Record final set of data required.</p> <p><b>STANDARD:</b> Student enters final set of data into Steps 1 through 7 of Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b>CUE: Present student with attachment of final data readings.</b></p> <p style="text-align: center;"><b>OR</b></p> <p>Student locates Pzr level gauge on UB1 and enters value on data sheet. <b>CUE: Pzr Level 219.0 inches</b></p> <p>Student locates Quench Tank level on AB1 and enters value on data sheet. <b>CUE: Quench Tank Level 84.9 inches</b></p> <p>Student locates LDST level gauge on UB1 and enters value on data sheet. <b>CUE: LDST Level 74.0 inches</b></p> <p>Student locates Tave meter on UB1 and enters value on data sheet. <b>CUE: Tave Indication 579.0°F</b></p> <p>Student locates Power meters on UB1 and enters value on data sheet. <b>CUE: Power Range NI indicates 100.1%</b></p> <p>Student locates RCS NR Pressure chart on UB1 and enters value on data sheet. <b>CUE: RCS NR Pressure chart 2150 psig</b></p> <p>Student locates Group 7 Control Rod Position on the Computer and enters value on data sheet. <b>CUE: Group 7 Control Rod Position is 93.6%</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><b>STEP 2:</b> PERFORM calculation for steps 1 through 7 on Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b>STANDARD:</b> Student performs calculation for steps 1 through 7 on Enclosure 13.3 to determine the following:</p> <table border="0"> <tr> <td>Rx Power change</td> <td>&lt;2%</td> </tr> <tr> <td>Tave change</td> <td>&lt;2°F</td> </tr> <tr> <td>RCS Pressure change</td> <td>&lt;20 psig</td> </tr> </table> <p><b>CUE:</b> <i>Inform the student when asked that:</i></p> <ul style="list-style-type: none"> <li>• <i>No RCS samples were taken.</i></li> <li>• <i>No RCS makeup was performed.</i></li> <li>• <i>The RCS was not drained.</i></li> <li>• <i>No Quench Tank makeup occurred.</i></li> <li>• <i>The Quench tank was not drained.</i></li> </ul> <p><b>COMMENTS:</b></p>	Rx Power change	<2%	Tave change	<2°F	RCS Pressure change	<20 psig	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
Rx Power change	<2%						
Tave change	<2°F						
RCS Pressure change	<20 psig						
<p><b>STEP 3:</b> PERFORM remaining leakage calculation per Enclosure 13.2 (Manual RCS Leakage Calculation) to determine if procedure acceptance criteria is met.</p> <p><b>STANDARD:</b> Student performs remaining calculation per procedure to determine that the RCS leakage rate from Enclosure 13.3 (Manual Leakage Calculation Data Sheet) is &lt; 1 gpm.</p> <p><b>NOTE:</b> Task standard for this JPM is a total leakage within <math>\pm 0.1</math> gpm of the value determined on the answer key.</p> <p><b>CUE:</b> <i>Inform student that for this task, Enclosure 13.4 (Total Combined RCS Leakage Data Sheet) is not required.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>						

STOP TIME: \_\_\_\_\_

### Manual RCS Leakage Final Data

Parameter	Final
Time	0115
Pzr level	219.0 inches
Quench Tank Level	84.9 inches
LDST Level	74.0 inches
Tave Indication	579.0°F
Power Range NI	100.1%
RCS NR Pressure	2150 psig
Group 7 Control Rod Position	93.6%

**CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Necessary data calculation to properly determine manual RCS leakage rate.
3	Necessary data and calculation to properly determine manual RCS leakage rate.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit \_\_\_\_ (Specify Unit) computer repairs are expected to be extended through turnover for hardware replacement. The Loss of Computer procedure PT/O/A/0600/001A, Loss Of Computer, is in progress, however an RCS Leakage Calculation has not been performed during this shift.

**INITIATING CUES:**

The Control Room SRO directs you to perform a manual RCS leakage per PT/1,2,3/A/600/10 (Reactor Coolant Leakage). The initial data given was collected one hour previously. Collect the final set of leakage data and manually calculate the RCS leakage rate. Enclosure 13.3 of PT/1,2,3/A/600/10 (Reactor Coolant Leakage) is complete up to step 2.2.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC-006/ADMIN**

**REACTOR POWER IMBALANCE VERIFICATION  
(Technical Specifications/COLR)**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

**Power Imbalance verification**

**Alternate Path:**

**NO**

**Facility JPM #:**

**NO**

**K/A Rating(s):**

Gen 2.1.33      3.4/4.0

**Task Standard:**

Student calculates imbalance and determines it is not within the COLR limits for 3 RCP operation.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

PT/2/A/0600/001, Periodic Instrument Surveillance, Enclosures 13.1 and Section 12.3  
Core Operating Limits Report

**Validation Time: 10 min.**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT        UNSAT       

Performance Time       

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

PT/1/A/0600/001, Periodic Instrument Surveillance, Enclosures 13.1 and Section 12.3  
Core Operating Limits Report

**READ TO OPERATOR**

**DIRECTIONS TO STUDENT:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 1 has been operating at 100% power for 2 weeks.
2. 1B1 RCP has high vibration
3. A rapid power reduction is made and the 1B1 RCP is secured
4. Reactor power is now at 68% and stable
5. The Reactor calculation package is NOT running.
6. Backup Incore Chart "B" OOS
7. All other equipment operable
8. PT/1/A/0600/001, Periodic Instrument Surveillance, Enclosures 13.1 has been completed up to page 6, through RCS Pressure, Temperature, and Flow DNB Limits.

**INITIATING CUE:**

1. The SRO directs you to perform the Axial Power Imbalance Operating Limits verification.
2. Only Imbalance Surveillance is required for this JPM.
3. Do NOT perform Quadrant Power Tilt check.



START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      Verify power imbalance within operational alarm limit in COLR when &gt; 40% RTP.</p> <p>                      <b>IF</b> Reactor calculation package is <b>NOT</b> running on computer, refer to Section 12.3.</p> <p><b><u>STANDARD:</u></b>    Determine Reactor calculation package is <b>NOT</b> running per Initial Conditions and refer to Section 12.3.</p> <p><b><u>COMMENTS:</u></b></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Review step 12.3.1, which states: Axial Imbalance shall <b><u>NOT</u></b> exceed appropriate limit curve in COLR.</p> <p>                      <b>IF</b> axial imbalance limit is exceeded, take immediate corrective action to achieve an acceptable imbalance.</p> <p>                      <b>IF</b> an acceptable imbalance is <b>NOT</b> achieved within 2 hours, reactor power shall be reduced until imbalance limits are met.                           Refer to TS 3.2.2.</p> <p><b><u>STANDARD:</u></b>    Candidate obtains the correct limit in COLR. This limit can be located the curve on page 13 of 31 or in a table on page 10 of 31. (Oconee 1 Cycle 20)</p> <p><b><u>COMMENTS:</u></b></p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p><b><u>STEP 3</u></b>      Review step 12.3.2, which states: Quadrant Power Tilt (QPT) shall NOT exceed appropriate positive (+) limit in COLR.</p> <p><b><u>STANDARD:</u></b>    Determine step does not apply due to initiating cue.</p> <p><b><i>Cue: If candidate attempts to perform step, indicate that Quadrant Power Tilt NOT required for this JPM.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 4</u></b>      Review step 12.3.3: Order of preference of measurement systems to determine axial imbalance is as follows:</p> <ul style="list-style-type: none"> <li>A. Incore Detectors (Computer Reactor Calculation Package).</li> <li>B. Outcore Detectors (Power Range Outcore Detectors).</li> <li>C. Backup Incore Detectors. Refer to PT/1/A/1103/019 (Backup Incore Detector System).</li> </ul> <p><b><u>STANDARD:</u></b>    Candidate refers to step 12.3.6.</p> <p><b><i>Cue: If candidate indicates he will use the Backup Incore Detectors to determine imbalance, give him Backup Incore Chart Data sheet.</i></b></p> <p><b>Note: If candidate indicates he will use the Backup Incore Detectors to determine imbalance refer to step 5 below.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 5:</b> Refer to PT/1/A/1103/019 (Backup Incore Detector System).</p> <p><b>STANDARD:</b> Candidate refers to PT/1/A/1103/019 (Backup Incore Detector System) and determines that the Minimum Incore Detectors are not available and that out of cores should be used.</p> <p><b>Note:</b> This step will not be completed if candidate uses out of cores to begin with.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b> IF Outcore Detectors (Power Range Outcore Detectors) are needed for imbalance calculations, refer to the alternate method for determining%) Reactor Power Axial Imbalance:</p> $\frac{NI-5^* + NI6^* + NI7^* + NI8^*}{4} = \% \text{ Imbalance (Avg.)}$ <p>* Use Imbalance CR gauges readings for each NI</p> <p><b>STANDARD:</b> Determine that the use of Outcore Detectors (Power Range Outcore Detectors) is required.</p> <p>Locate NI imbalance indications on UB1 and calculate the % Imbalance (Avg.)</p> $\frac{(-27.6) + (-27.6) + (-25.7) + (-27.1)}{4} = - 27.0\%$ <p><b>Cue:</b> After the candidate indicates where to read NI imbalance, indicate that they read the following:</p> <p>NI-5 ----- - 27.6</p> <p>NI-6 ----- - 27.6</p> <p>NI-7 ----- - 25.7</p> <p>NI-8 ----- - 27.1</p> <p>OR</p> <p>Give candidate NI imbalance handout.</p> <p><b>Note:</b> If JPM conducted as a group NI imbalance handout should be provided to candidates when requested.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b>      Verify the calculated axial imbalance does not exceed the incore limits per the COLR.</p> <p><b><u>STANDARD:</u></b>    The candidate verifies the calculated axial imbalance (- 27.0) exceeds the "Out of Core Alarm" limits for the current Core Operating Limits Report (COLR) for 3 RCPs at 68%. (-26.53 / +26.53) This places imbalance above the 3 RCP alarm limit and the required condition of the surveillance is not met. Notify the SRO.</p> <p><b>Note: If candidate goes to step 12.3.7 to verify minimum incore detector operability, stop the JPM.</b></p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: right;"><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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**TIME STOP:** \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
4	Step is necessary, because must determine the proper step to use to use the Outcore detectors to determine imbalance.
5	Step is necessary if candidate incorrectly decides to use out of core detectors to determine imbalance.
6	Step is necessary, because calculation is needed to determine imbalance.
7	Step is necessary, because imbalance must be compared to COLR and verified it exceeds the limit.

<b>BACKUP INCORE CHART "A"</b>		
<b>Point #</b>	<b>%</b>	<b>Location</b>
1	132.7	G09-L2
2	138.0	G09-L4
3	133.3	G09-L6
4	145.6	E09-L2
5	154.1	E09-L4
6	142.5	E09-L6
7	128.8	L06-L4
8	133.8	L06-L6
9	126.3	M09-L2
10	122.9	K05-L2
11	127.5	G11-L2
12	122.2	E07-L2
13	144.4	F13-L2
14	145.0	D05-L2
15	143.1	F13-L4
16	142.5	F03-L6
17	144.5	N04-L2
18	*Off scale high	F13-L6
19	133.8	N04-L6
20	135.5	O06-L2
21	136.1	O06-L4
22	135.6	O06-L6
23	133.8	D05-L6
24	*Off scale high	D05-L4

\* Work Request written

## OUTCORE NI IMBALANCE READINGS

OUTCORE NI	POWER (%)	IMBALANCE (%)
5	68.1	- 27.6
6	68.1	- 27.6
7	67.7	- 25.7
8	67.9	- 27.1

**CANDIDATE CUE SHEET  
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Unit 1 has been operating at 100% power for 2 weeks.
2. 1B1 RCP has high vibration
3. A rapid power reduction is made and the 1B1 RCP is secured
4. Reactor power is now at 68% and stable
5. The Reactor calculation package is NOT running.
6. Backup Incore Chart "B" OOS
7. All other equipment operable
8. PT/1/A/0600/001, Periodic Instrument Surveillance, Enclosures 13.1 has been completed up to page 6, through RCS Pressure, Temperature, and Flow DNB Limits.

**INITIATING CUE:**

1. The SRO directs you to perform the Axial Power Imbalance Operating Limits verification.
2. Only Imbalance Surveillance is required for this JPM.
3. Do NOT perform Quadrant Power Tilt check.



A.2 SRO/RO G2.2.12, Knowledge of surveillance procedures [CFR: 41.10/45.13] (3.0/3.4)

**REFERENCE ALLOWED**

**QUESTION 1:**

Unit 1 shutdown and cooldown in progress  
Performing PT/1/A/600/01, Enclosure 13.4, page 7  
RCS Pressure = 125 psig  
RCS Temperature = 175° F  
Pressurizer level = 260 inches  
All RCPs secured

**Is the Pzr level within LTOP limits? Explain your answer.**

**QUESTION 2:**

RCS Pressure = 30 psig  
RCS Temperature = 150° F  
All HPI pumps secured  
Pressurizer level is increasing because the RCS loops are being dropped

**What is the maximum allowed Pzr level that will meet LTOP requirements?**

**ANSWER:**

Q1: No, pressurizer level must be less than 220 inches.

Q2: Pressurizer level of 380 inches

**REFERENCE:**

PT1/A/600/01 (Periodic Instrument Surveillance) Encl. 13.4, MODE 5  
OP/1102/049 (Low Temperature Overpressure Protection)  
OP/0/A/1108/001 (Curves and General Information) Encl. 3.41, Unit 1 Converted Narrow Range Heatup Curve

**COMMENTS:**

**QUESTION 1:**

Unit 1 shutdown and cooldown in progress  
Performing PT/1/A/600/01, Enclosure 13.4, page 6  
RCS Pressure = 125 psig  
RCS Temperature = 175° F  
Pressurizer level = 260 inches  
All RCPs secured

**Is the Pressurizer level within LTOP limits? Explain your answer.**

**QUESTION 2:**

RCS Pressure = 30 psig

RCS Temperature = 150° F

All HPI pumps secured

Pressurizer level is increasing because the RCS loops are being dropped

**What is the maximum allowed Pzr level that will meet LTOP requirements?**

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC-005/ADMIN**

**Calculate the Maximum Permissible Stay Time  
Within Duke Power Basic Administrative Limits**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits

**Alternate Path:**

N/A

**Facility JPM #:**

N/A

**K/A Rating(s):**

Gen 2.3.4      2.5/3.1

**Task Standard:**

Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

NSD-507, Radiation Protection

**Validation Time:** 5 min.

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

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**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Room 217 (Seal Supply Filter) Plan View

**READ TO OPERATOR**

**DIRECTIONS TO STUDENT:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Today's date: 08-14-01
2. 2B Seal Supply Filter is required to be isolated. The NEO selected to perform the isolation has the following dose history:
  - 880 mrem TEDE received this year
  - 620 mrem TEDE received this quarter

**INITIATING CUE:**

Refer to the plan view for Unit 2 Seal Supply Filter Room and determine how long the NEO can stay in the room performing this isolation without exceeding the Duke Power Administrative limit.

START TIME: \_\_\_\_\_

**Note: Candidate may perform these steps in a different order however the calculated stay time should be correct.**

<p><b><u>STEP 1:</u></b> Determine general area dose rate in room 217 (Seal Supply Filter) from Plan View.</p> <p><b><u>STANDARD:</u></b> Plan View is referenced and the general area dose rate is determined to be 160 mr/hr at the "2B" Seal Supply Filter.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b> Determine dose remaining for the NEO this year from his administrative limit.</p> <p><b><u>STANDARD:</u></b> Determines remaining dose to be 1120 mrem Administrative limit - (dose this year) = remaining dose 2,000 mrem/year - (880 mrem) = 1120 mrem</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b> Calculate maximum stay time</p> <p><b><u>STANDARD:</u></b> Stay time is calculated to be:</p> $\frac{\text{Available Dose}}{\text{Dose Rate}} = \frac{1120 \text{ mrem}}{160 \text{ mrem/hr}} = 7 \text{ hours}$ <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: \_\_\_\_\_



### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	The plan view must be referenced to determine the dose rate in the room.
2	Required to calculate how much dose the NEO has available.
3	Required to calculate stay time.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Today's date: 08-14-01
2. 2B Seal Supply Filter is required to be isolated. The NEO selected to perform the isolation has the following dose history:
  - 880 mrem TEDE received this year
  - 620 mrem TEDE received this quarter

**INITIATING CUE:**

Refer to the plan view for Unit 2 Seal Supply Filter Room and determine how long the NEO can stay in the room performing this isolation without exceeding the Duke Power Administrative limit.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC Admin JPM-004**

**Perform Actions for Medical Emergency**

<b>CANDIDATE</b>	<hr/>
<b>EXAMINER</b>	<hr/>

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Perform Actions for Medical Emergency

**Alternate Path:**

No

**Facility JPM #:**

NEW

**K/A Rating(s):**

System: GEN  
K/A: 2.4.39  
Rating: 3.3/3.1

**Task Standard:**

Complete RP/1000/016, Encl. 4.1 (Medical Response) as required

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant  X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate  X

**References:**

RP/1000/016, Encl. 4.1 (Medical Response)

**Validation Time: 15 minutes**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

RP/1000/016, Encl. 4.1 (Medical Emergency Action – Routine Operations)

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. You have answered a call on 4911 (emergency line) reporting a medical emergency.
2. The caller is still on the line.

**INITIATING CUES:**

The SRO in the control room instructs you perform the required actions for a medical emergency.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Determine the appropriate procedure to use.</p> <p><b>STANDARD:</b> RP/0/B/1000/016 (Medical Response) is referenced and Enclosure 4.1 (Medical Emergency Actions - Routine Operations) is determined to be the appropriate procedure to use. Enclosure 4.1 is obtained from notebook located in the front of the control room desk or from the cart in the TSC.</p> <p><b>Cue:</b> <i>When procedure is located give candidate a copy of Enclosure 4.1.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Complete the following accident information:</p> <ul style="list-style-type: none"> <li>• Name of person reporting injury</li> <li>• Call back number</li> <li>• Name of person injured</li> <li>• Supervisor of injured person</li> <li>• Location injury occurred</li> <li>• Brief description of injury</li> <li>• Time</li> </ul> <p><b>Note:</b> The evaluator will play the role of the person reporting the injury. Answer questions by referring to the "Medical Emergency Phone Call Information Sheet".</p> <p><b>STANDARD:</b> The candidate obtains the above information from the evaluator by asking the appropriate questions and completes step 1.2 correctly.</p> <p><b>Note:</b> Refer to the completed procedure as an answer key.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 3:</u></b>      <b>IF</b> There is a Security Event in progress,                          <b>THEN</b> Continue with...</p> <p><b><u>STANDARD:</u></b>    Determine a Security Event is not in progress and N/A step 1.3.</p> <p><b><i>Cue: If asked, inform candidate a Security Event is not in progress.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 4:</u></b>      Use Plant Page to request all MERT members to respond to the incident.</p> <p><b><u>STANDARD:</u></b>    The phone is used to access the Plant Page and request all MERT members to respond to the incident.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b>      Use the radio paging system to request MERT members to respond to the incident.</p> <ul style="list-style-type: none"> <li>• Transmit "Standby for Emergency Message"</li> <li>• Press the "instant Call" button labeled "MERT"</li> <li>• Wait for the red "Transmit" light on the radio to turn off</li> <li>• Transmit message</li> </ul> <p><b><u>STANDARD:</u></b>    The radio paging system is used to request MERT members to respond to the incident by:</p> <ul style="list-style-type: none"> <li>• Transmit "Standby for Emergency Message"</li> <li>• Press the "instant Call" button labeled "MERT"</li> <li>• Wait for the red "Transmit" light on the radio to turn off</li> <li>• Transmit message "MERT members respond to a medical emergency in the Unit 3 clean side of the change room."</li> </ul> <p><b>Note: The red "Transmit" light is normally green and is located next to the "MERT" button on the radio.</b></p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>



<p><b><u>STEP 6:</u></b> Repeat steps 1.4.1 and 1.4.2</p> <p><b><u>STANDARD:</u></b> The Plant Page and the radio paging system are used a second time to request MERT members to respond to the incident.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 7:</u></b> Call Security at one of the following extensions and request they have security MERT members respond to the emergency.</p> <ul style="list-style-type: none"> <li>• SAS (Secondary Alarm Station) 2205 or 2767</li> <li>• CAS (Central Alarm Station) 2222 or 2958</li> </ul> <p><b><u>STANDARD:</u></b> Security is notified at one of the above extensions and are requested to have security MERT members respond to the emergency.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> IF The incident location is away from the main plant (WOE, Complex, Keowee Hydro, etc.) and incident occurs during normal working hours, THEN Notify shuttle Bus...</p> <p><b><u>STANDARD:</u></b> Determine that this step does not apply and N/A step 1.4.5</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b>      <b>IF</b> A mass casualty event has occurred or is suspected, and a centralized treatment area is needed, and plant conditions allow, <b>THEN</b> Make a PA Announcement...</p> <p><b><u>STANDARD:</u></b>    Determine that this step does not apply and N/A step 1.5</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b>      <b>IF</b> Hospital evacuation is needed as determined by MERT Command or as indicated by Step 1.6.1, <b>THEN</b> Arrange transport of patient to the hospital by one of the following means:</p> <ul style="list-style-type: none"> <li>• EMS (ambulance) Dial 9-911 from the Operations Shift Manager's phone or Unit 1 Control Room SRO's phone or dial 911 from the bell South line – Unit 1, 2, and 3 Control Rooms. Refer to Step 1.6.2, prior to requesting EMS.</li> <li>• Company vehicle (less serious injury)</li> <li>• Personal vehicle (less serious injury)</li> </ul> <p><b><u>STANDARD:</u></b>    Ambulance is requested by calling 9-911. Ambulance is requested to come to Oconee Nuclear Station.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      <b>IF</b> Any of the following illnesses or injuries are reported on the emergency line (4911) <b>THEN</b> Immediately request EMS (ambulance) to respond to the site:</p> <ul style="list-style-type: none"> <li>• Unconsciousness</li> </ul> <p><b><u>STANDARD:</u></b>    Determine that the injured is unconscious and perform step 1.6.1. (Step 10 above)</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> IF The patient is known or suspected to be radiologically contaminated,  <b>THEN</b> Have the EMS dispatcher inform the EMS personnel to expect a contaminated person.</p> <p><b><u>STANDARD:</u></b> Determine that this step does not apply and N/A step 1.6.2</p> <p><b><i>Cue: If asked, inform candidate that the patient is NOT contaminated.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 13:</u></b> Notify Security at 2222 that the ambulance is enroute.</p> <p><b><u>STANDARD:</u></b> Security is notified that the ambulance is enroute</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 14:</u></b> Notify MERT Command that the ambulance is enroute.</p> <p><b><u>STANDARD:</u></b> MERT Command is notified via radio that the ambulance is enroute.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 15:</u></b> Notify World of Energy Duty Person (Ext. 4602 or Pager #777-9414).</p> <p><b><u>STANDARD:</u></b> World of Energy Duty Person is notified by phone.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 16:</u></b> Notify the Occupational Health Unit at ONS during normal working hours (4652).</p> <p><b><u>STANDARD:</u></b> Occupational Health Unit at ONS is notified by phone.</p> <p><b><i>Cue: Inform candidate to simulate only.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 17:</u></b> IF Radiological contamination is involved and the person is being sent to a hospital. THEN Complete...</p> <p><b><u>STANDARD:</u></b> Determine that this step does not apply and N/A step 1.8.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 18:</u></b> Remind MERT Command that a Patient Treatment Form needs to be completed for all patients and that the completed form is to be sent to the Medical Unit for inclusion in the patients medical file.</p> <p><b><u>STANDARD:</u></b> MERT Command is informed that a Patient Treatment Form needs to be completed and sent to the Medical Unit.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 19:</u></b> After normal working hours the Operations Shift Manager or designee shall report the following incidents to ONS Safety Duty Person who will determine if additional people need to be notified.</p> <p><b><u>STANDARD:</u></b> Determine that this step does not apply and N/A step 1.10.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 20:</u></b>      Verify the following notification in the event of a fatality or injuries to 3 or more people:</p> <p><b><u>STANDARD:</u></b>    Determine that this step does not apply and N/A step 1.11.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 21:</u></b>      The Operations Shift Manager (OSM) or designee shall ensure notification of next of kin, if applicable.</p> <ul style="list-style-type: none"> <li>• Fatality – Appropriate Division Manager performs notifications</li> <li>• Injury requiring hospitalization – Employee's Supervisor or Manager perform notification</li> </ul> <p><b><u>STANDARD:</u></b>    Inform the OSM to perform this step as required.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 22:</u></b>      Submit completed Enclosure 4.1, (Medical Emergency Action –Routine Operations) to the Emergency Planning Section.</p> <p><b><u>STANDARD:</u></b>    Indicate that form would be submitted to the Emergency Planning Section.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

## Medical Emergency Phone Call Information Sheet

1. Name person calling  
**John Adams**
2. Call back number  
**2322**
3. Name of injured person  
**David Smith**
4. Supervisor of injured person  
**Allan Jones**
5. Location injury occurred  
**Unit 3 HPI Pump Room**  
**The injured is currently located in the clean side of Unit 3's change room (3<sup>rd</sup> floor Aux Building).**  
**Injured is NOT contaminated**
6. Description of injury  
**The injured stood up to put on his hard hat and hit his head on a cable tray resulting in a laceration to top of head. The wound is continuing to bleed. The injured is unconscious.**
7. Time  
**Current time**

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	Need to select the correct procedure.
2	Need the correct information to ensure proper actions are taken.
3	Need to determine a security event is not in progress so that MERT can be called.
4	Need to activate MERT.
10	Ambulance has to be requested.
14	MERT command should be notified so that the injured can be taken to the pickup point.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. You have answered a call on 4911 (emergency line) reporting a medical emergency.
2. The caller is still on the line.

**INITIATING CUES:**

The SRO in the control room instructs you perform the required actions for a medical emergency.



Facility: <b>Oconee</b>		Date of Examination: <b>February 11, 2002</b>
Examination Level (circle one): RO / <b>SRO</b>		Operating Test Number: _____
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	GEN 2.1.7 (3.7/4.4)	<b>NRC Admin JPM CRO-43, Perform Manual RCS Leakage Calculation; PT/0600/010 (bank)</b>
	GEN 2.1.3 (3.0/3.4)	<b>NRC Admin JPM – 003, Evaluate Overtime Eligibility</b> OMP 2-01 Attachment "C", NSD 200 (SRO only)
A.2	GEN 2.2.12 (3.0/3.4)	<b>Admin A2 question 1, Analyze plant conditions for LTOP for MODE 5; PT/600/01</b>
		<b>Admin A2 question 2, Analyze plant conditions for LTOP for MODE 5 with dropped RCS loops; PT/600/01</b>
A.3	GEN 2.3.4 (2.5/3.1)	<b>NRC Admin JPM – 005, Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits</b>
A.4	GEN 2.4.38 (2.2/4.0)	<b>Admin JPM SR0-007A, Determine Emergency Classification and Protective Action Recommendations (SRO only) (Modified Bank JPM) (group activity)</b>

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**CRO-43/Admin**

**PERFORM MANUAL RCS LEAKAGE CALCULATION**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

**PERFORM MANUAL RCS LEAKAGE CALCULATION**

**Alternate Path:**

No Alternate Path

**Facility JPM #:**

CRO-43

**K/A Rating(s):**

System: SF2-002 Reactor Coolant System

K/A: A2.01

Rating: 4.3/4.4

**Task Standard:**

RCS Leakage is correctly calculated within .2 gpm of attached key.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

PT/O/A/0600/001A, Loss Of Computer

PT/1/A/600/10, Reactor Coolant Leakage

**Validation Time:** 18 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 13.2 of PT/1(2)(3)/A/600/10

Enclosure 13.3 of PT/1(2)(3)/A/600/10

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit \_\_\_\_ (Specify Unit) computer repairs are expected to be extended through turnover for hardware replacement. The Loss of Computer procedure PT/O/A/0600/001A, Loss Of Computer, is in progress, however an RCS Leakage Calculation has not been performed during this shift.

**INITIATING CUES:**

The Control Room SRO directs you to perform a manual RCS leakage per PT/1,2,3/A/600/10 (Reactor Coolant Leakage). The initial data given was collected one hour previously. Collect the final set of leakage data and manually calculate the RCS leakage rate. Enclosure 13.3 of PT/1,2,3/A/600/10 (Reactor Coolant Leakage) is complete up to step 2.2.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Record final set of data required.</p> <p><b>STANDARD:</b> Student enters final set of data into Steps 1 through 7 of Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b>CUE: Present student with attachment of final data readings.</b></p> <p style="text-align: center;"><b>OR</b></p> <p>Student locates Pzr level gauge on UB1 and enters value on data sheet. <b>CUE: Pzr Level 219.0 inches</b></p> <p>Student locates Quench Tank level on AB1 and enters value on data sheet. <b>CUE: Quench Tank Level 84.9 inches</b></p> <p>Student locates LDST level gauge on UB1 and enters value on data sheet. <b>CUE: LDST Level 74.0 inches</b></p> <p>Student locates Tave meter on UB1 and enters value on data sheet. <b>CUE: Tave Indication 579.0°F</b></p> <p>Student locates Power meters on UB1 and enters value on data sheet. <b>CUE: Power Range NI indicates 100.1%</b></p> <p>Student locates RCS NR Pressure chart on UB1 and enters value on data sheet. <b>CUE: RCS NR Pressure chart 2150 psig</b></p> <p>Student locates Group 7 Control Rod Position on the Computer and enters value on data sheet. <b>CUE: Group 7 Control Rod Position is 93.6%</b></p> <p><b>COMMENTS:</b></p>	<p>____ SAT</p> <p>____ UNSAT</p>
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<p><b><u>STEP 2:</u></b> PERFORM calculation for steps 1 through 7 on Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b><u>STANDARD:</u></b> Student performs calculation for steps 1 through 7 on Enclosure 13.3 to determine the following:</p> <table border="0"> <tr> <td>Rx Power change</td> <td>&lt;2%</td> </tr> <tr> <td>Tave change</td> <td>&lt;2°F</td> </tr> <tr> <td>RCS Pressure change</td> <td>&lt;20 psig</td> </tr> </table> <p><b><u>CUE:</u></b> <i>Inform the student when asked that:</i></p> <ul style="list-style-type: none"> <li>• <i>No RCS samples were taken.</i></li> <li>• <i>No RCS makeup was performed.</i></li> <li>• <i>The RCS was not drained.</i></li> <li>• <i>No Quench Tank makeup occurred.</i></li> <li>• <i>The Quench tank was not drained.</i></li> </ul> <p><b><u>COMMENTS:</u></b></p>	Rx Power change	<2%	Tave change	<2°F	RCS Pressure change	<20 psig	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
Rx Power change	<2%						
Tave change	<2°F						
RCS Pressure change	<20 psig						
<p><b><u>STEP 3:</u></b> PERFORM remaining leakage calculation per Enclosure 13.2 (Manual RCS Leakage Calculation) to determine if procedure acceptance criteria is met.</p> <p><b><u>STANDARD:</u></b> Student performs remaining calculation per procedure to determine that the RCS leakage rate from Enclosure 13.3 (Manual Leakage Calculation Data Sheet) is &lt; 1 gpm.</p> <p><b>NOTE:</b> Task standard for this JPM is a total leakage within <math>\pm 0.1</math> gpm of the value determined on the answer key.</p> <p><b><u>CUE:</u></b> <i>Inform student that for this task, Enclosure 13.4 (Total Combined RCS Leakage Data Sheet) is not required.</i></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>						

STOP TIME: \_\_\_\_\_

### Manual RCS Leakage Final Data

Parameter	Final
Time	0115
Pzr level	219.0 inches
Quench Tank Level	84.9 inches
LDST Level	74.0 inches
Tave Indication	579.0°F
Power Range NI	100.1%
RCS NR Pressure	2150 psig
Group 7 Control Rod Position	93.6%



**CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Necessary data calculation to properly determine manual RCS leakage rate.
3	Necessary data and calculation to properly determine manual RCS leakage rate.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit \_\_\_\_\_ (Specify Unit) computer repairs are expected to be extended through turnover for hardware replacement. The Loss of Computer procedure PT/O/A/0600/001A, Loss Of Computer, is in progress, however an RCS Leakage Calculation has not been performed during this shift.

**INITIATING CUES:**

The Control Room SRO directs you to perform a manual RCS leakage per PT/1,2,3/A/600/10 (Reactor Coolant Leakage). The initial data given was collected one hour previously. Collect the final set of leakage data and manually calculate the RCS leakage rate. Enclosure 13.3 of PT/1,2,3/A/600/10 (Reactor Coolant Leakage) is complete up to step 2.2.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC-003/Admin**

**Evaluate Overtime Eligibility**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Evaluate Overtime Eligibility

**Alternate Path:**

NO

**Facility JPM #:**

NEW

**K/A Rating(s):**

Gen 2.1.3 3.0/3.4

**Task Standard:**

Evaluate overtime eligibility and determine at least 6 out of 8 violations.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

OMP 2-01 Attachment "C", Work Schedules  
NSD 200, Overtime Control

**Validation Time: 20 min.**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

**Comments**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

OMP 2-01 Attachment "C", Work Schedules  
NSD 200, Overtime Control

**READ TO OPERATOR**

**DIRECTIONS TO STUDENT:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

The following is the schedule of two (2) operators for a seven-day period.

**INITIATING CUE:**

Using the information in the following table, determine whether overtime guidelines have been violated, listing **ALL** of the violations (if any). Consider each case separately.

**NOTE: For the purposes of this JPM shift turnover time should not be considered in determining overtime guideline violations.**

	<b>Operator #1</b>	<b>Operator #2</b>
<b>Monday</b>	0700 - 1900	0800 – 2000 (Came in late, stayed to makeup time)
<b>Tuesday</b>	0700 - 1900	0300 – 2000
<b>Wednesday</b>	0700 – 2200 (Held over; relief called in sick)	0700 - 1900
<b>Thursday</b>	OFF	0700 - 1900
<b>Friday</b>	1900 – 0100 (Went home sick)	OFF
<b>Saturday</b>	1900 - 0700	0700 – 1900
<b>Sunday</b>	1900 - 0700	0700 - 1900

START TIME: \_\_\_\_\_

<p><u>STEP 1:</u> Obtain a copy of OMP 2-01 Attachment "C" and NSD-200 (Overtime Control).</p> <p><u>STANDARD:</u> A copy of OMP 2-01 Attachment "C" and NSD-200 (Overtime Control) is obtained.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Evaluate Operator 1</p> <p><u>STANDARD:</u> Determine Operator #1 has NOT violated any overtime guidelines.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Evaluate Operator 2</p> <p><u>STANDARD:</u> Determine Operator #2 overtime guidelines exceeded:</p> <ol style="list-style-type: none"> <li>1. &gt; 16 in 24 hrs (Mon – Tues)</li> <li>2. &lt; 8 hr break (Mon – Tues)</li> <li>3. &gt; 16 straight (Tues)</li> <li>4. &gt; 28 in 48 hrs (Mon – Tues)</li> <li>5. &gt; 72 in 7 day</li> </ol> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><b>END OF TASK</b></p>	<p><b>*CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: \_\_\_\_\_

\* 4 out of 5 violations must be identified to be satisfactory.

## CRITICAL STEP EXPLANATIONS:

STEP #	Explanation
NC 2	<del>Operator # 1 must be evaluated and a total of six out of eight violations for both operators must be identified to be satisfactory.</del> <i>No violations</i>
3	Operator # 2 must be evaluated and a total of six out of eight violations for both operators must be identified to be satisfactory.



**CANDIDATE CUE SHEET  
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

The following is the schedule of two (2) operators for a seven-day period.

**INITIATING CUE:**

Using the information in the following table, determine whether overtime guidelines have been violated, listing **ALL** of the violations (if any). Consider each case separately.

**NOTE: For the purposes of this JPM shift turnover time should not be considered in determining overtime guideline violations.**

	<b>Operator #1</b>	<b>Operator #2</b>
<b>Monday</b>	0700 - 1900	0800 – 2000 (Came in late, stayed to makeup time)
<b>Tuesday</b>	0700 - 1900	0300 – 2000
<b>Wednesday</b>	0700 – 2200 (Held over; relief called in sick)	0700 - 1900
<b>Thursday</b>	OFF	0700 - 1900
<b>Friday</b>	1900 – 0100 (Went home sick)	OFF
<b>Saturday</b>	1900 - 0700	0700 – 1900
<b>Sunday</b>	1900 - 0700	0700 - 1900

A.2 SRO/RO G2.2.12, Knowledge of surveillance procedures [CFR: 41.10/45.13] (3.0/3.4)

**REFERENCE ALLOWED**

**QUESTION 1:**

Unit 1 shutdown and cooldown in progress  
Performing PT/1/A/600/01, Enclosure 13.4, page 7  
RCS Pressure = 125 psig  
RCS Temperature = 175° F  
Pressurizer level = 260 inches  
All RCPs secured

**Is the Pzr level within LTOP limits? Explain your answer.**

**QUESTION 2:**

RCS Pressure = 30 psig  
RCS Temperature = 150° F  
All HPI pumps secured  
Pressurizer level is increasing because the RCS loops are being dropped

**What is the maximum allowed Pzr level that will meet LTOP requirements?**

**ANSWER:**

Q1: No, pressurizer level must be less than 220 inches.

Q2: Pressurizer level of 380 inches

**REFERENCE:**

PT1/A/600/01 (Periodic Instrument Surveillance) Encl. 13.4, MODE 5  
OP/1102/049 (Low Temperature Overpressure Protection)  
OP/0/A/1108/001 (Curves and General Information) Encl. 3.41, Unit 1 Converted Narrow Range Heatup Curve

**COMMENTS:**

**QUESTION 1:**

Unit 1 shutdown and cooldown in progress  
Performing PT/1/A/600/01, Enclosure 13.4, page 6  
RCS Pressure = 125 psig  
RCS Temperature = 175° F  
Pressurizer level = 260 inches  
All RCPs secured

**Is the Pressurizer level within LTOP limits? Explain your answer.**

**QUESTION 2:**

RCS Pressure = 30 psig

RCS Temperature = 150° F

All HPI pumps secured

Pressurizer level is increasing because the RCS loops are being dropped

**What is the maximum allowed Pzr level that will meet LTOP requirements?**

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC-005/ADMIN**

**Calculate the Maximum Permissible Stay Time  
Within Duke Power Basic Administrative Limits**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits

**Alternate Path:**

N/A

**Facility JPM #:**

N/A

**K/A Rating(s):**

Gen 2.3.4      2.5/3.1

**Task Standard:**

Calculate the Maximum Permissible Stay Time Within Duke Power Basic Administrative Limits

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

NSD-507, Radiation Protection

**Validation Time:** 5 min.

**Time Critical:** NO

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Room 217 (Seal Supply Filter) Plan View

**READ TO OPERATOR**

**DIRECTIONS TO STUDENT:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Today's date: 08-14-01
2. 2B Seal Supply Filter is required to be isolated. The NEO selected to perform the isolation has the following dose history:
  - 880 mrem TEDE received this year
  - 620 mrem TEDE received this quarter

**INITIATING CUE:**

Refer to the plan view for Unit 2 Seal Supply Filter Room and determine how long the NEO can stay in the room performing this isolation without exceeding the Duke Power Administrative limit.



START TIME: \_\_\_\_\_

**Note: Candidate may perform these steps in a different order however the calculated stay time should be correct.**

<p><b><u>STEP 1:</u></b> Determine general area dose rate in room 217 (Seal Supply Filter) from Plan View.</p> <p><b><u>STANDARD:</u></b> Plan View is referenced and the general area dose rate is determined to be 160 mr/hr at the "2B" Seal Supply Filter.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b> Determine dose remaining for the NEO this year from his administrative limit.</p> <p><b><u>STANDARD:</u></b> Determines remaining dose to be 1120 mrem Administrative limit - (dose this year) = remaining dose 2,000 mrem/year - (880 mrem) = 1120 mrem</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b> Calculate maximum stay time</p> <p><b><u>STANDARD:</u></b> Stay time is calculated to be:</p> $\frac{\text{Available Dose}}{\text{Dose Rate}} = \frac{1120 \text{ mrem}}{160 \text{ mrem/hr}} = 7 \text{ hours}$ <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	The plan view must be referenced to determine the dose rate in the room.
2	Required to calculate how much dose the NEO has available.
3	Required to calculate stay time.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Today's date: 08-14-01
2. 2B Seal Supply Filter is required to be isolated. The NEO selected to perform the isolation has the following dose history:
  - 880 mrem TEDE received this year
  - 620 mrem TEDE received this quarter

**INITIATING CUE:**

Refer to the plan view for Unit 2 Seal Supply Filter Room and determine how long the NEO can stay in the room performing this isolation without exceeding the Duke Power Administrative limit.

**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM-007A/Admin**

**Determine Emergency Classification and Protective  
Action Recommendations**

**CANDIDATE** \_\_\_\_\_

**EXAMINER** \_\_\_\_\_

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Determine Emergency Classification and Protective Action Recommendations

**Alternate Path:**

NO

**Facility JPM #:**

SRO-007A

**K/A Rating(s):**

Gen 2.4.38      2.2/4.0

**Task Standard:**

Appropriate classification is determined and associated Protective Action Recommendations are made

**Preferred Evaluation Location:**

Simulator   X   In-Plant   X  

**Preferred Evaluation Method:**

Perform        Simulate   X  

**References:**

RP/0/B/1000/01  
RP/0/B/1000/02  
BASIS Document (Volume "A", Section "D" of the Emergency Plan)

**Validation Time:** 20 min.

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT        UNSAT        Question Grade        Performance Time       

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

**Comments**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

RP/0/B/1000/01

RP/0/B/1000/02

BASIS Document (Volume "A", Section "D" of the Emergency Plan)

**READ TO OPERATOR**

**DIRECTIONS TO STUDENT:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

0800: Civil demonstration occurring at the World of Energy by anti-nuke activists.

0900: Security reports to the OSM that, one or more persons has been observed cutting their way through the double security fences. RP/0/B/1000/007 (Security Event) is being used in conjunction with the Emergency Plan.

0905: Intruders have been seen entering the SSF. Security has isolated the area around the SSF.

0910: Security reports that an explosion has occurred on the Keowee Dam and that water is beginning to leak through the dam in several places.

0930: Security reports that no additional bombs were found and that no additional intruders have been located.

**NOTE: All three Oconee Units remain in MODE 1 at 100% power during this event.**

**INITIATING CUE:**

You are to perform the required actions of the Emergency Coordinator by referring to RP/0/B/1000/01, Emergency Classification and determining the emergency classification and any Protective Action Recommendations.

START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      Classify the Event</p> <p><b><u>STANDARD:</u></b>    Refer to RP/0/B/1000/01 (Emergency Classification) Enclosure 4.6 (Fires/Explosions and Security Actions. Classify the event as a "<b>Site Area Emergency</b>" due to following:</p> <p style="padding-left: 40px;">Bomb detonated in Keowee Dam</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Determine Protective Action Recommendations</p> <p><b><u>STANDARD:</u></b>    Refer to RP/0/B/1000/002 (Control Room Emergency Coordinator Procedure) and GO TO Enclosure 4.2 (Site Emergency)</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b>      <b>IF</b> It has been determined that an Emergency Action Level for an Initiating Conditions has been met, <b>THEN</b> Declare a Site Area Emergency Time of Declaration: _____</p> <p><b><u>STANDARD:</u></b>    Determine Initiating Conditions have been met and Declare a Site Area Emergency due to:</p> <ul style="list-style-type: none"> <li>• Bomb detonated in Keowee Dam</li> <li style="padding-left: 20px;"><b>OR</b></li> <li>• Imminent /actual failure of the Keowee Hydro dam</li> </ul> <p>Determine Time of Declaration is present time.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>



<p><b>STEP 4:</b> Appoint a person to maintain the Emergency Coordinator Log OR maintain the log yourself.</p> <p><b>STANDARD:</b> A person is appointed to maintain the Emergency Coordinator Log or indicate that you will maintain the log.</p> <p><b>Cue: If asked, indicate someone is maintaining the Emergency Coordinator Log.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b> Appoint Control Room Offsite Communicator(s).</p> <p><b>STANDARD:</b> A Control Room Offsite Communicator is appointed.</p> <p><b>Cue: If asked, indicate a Control Room Offsite Communicator has been appointed.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b> Provide the Protective Action Recommendations from Enclosure 4.7, (Condition A / Condition B Response Action), Step 1.0, for use by the Offsite Communicator if a Condition A, Imminent or Actual Dam Failure, exists.</p> <p><b>STANDARD:</b> Enclosure 4.7, (Condition A / Condition B Response Action) is used to determine that the following protective action recommendations are given to Oconee and Pickens County:</p> <ol style="list-style-type: none"> <li>1. Provide the following recommendation for Emergency Notification Form Section 15 (B) Evacuate: <ul style="list-style-type: none"> <li>• Move residents living downstream of the Keowee Hydro Project dams to higher ground.</li> </ul> </li> <li>2. Provide the following recommendation for Emergency Notification Form Section 15 (D) Other: <ul style="list-style-type: none"> <li>• Prohibit traffic flow across bridges identified on your inundation maps until the danger has passed.</li> </ul> </li> </ol> <p><b>Cue: If asked, inform the candidate that Keowee Dam failure is imminent.</b></p> <p><b>COMMENTS:</b></p> <p style="text-align: center;"><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

TIME STOP: \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	The candidate needs to be able to utilize the procedure and determine that a Site Area Emergency needs to be declared.
6	The candidate must be able to make recommendations to the local agencies as to what actions are necessary to protect the health and safety of the public.

**CANDIDATE CUE SHEET  
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**I INITIAL CONDITIONS:**

0800: Civil demonstration occurring at the World of Energy by anti-nuke activists.

0900: Security reports to the OSM that, one or more persons has been observed cutting their way through the double security fences. RP/0/B/1000/007 (Security Event) is being used in conjunction with the Emergency Plan.

0905: Intruders have been seen entering the SSF. Security has isolated the area around the SSF.

0910: Security reports that an explosion has occurred on the Keowee Dam and that water is beginning to leak through the dam in several places.

0930: Security reports that no additional bombs were found and that no additional intruders have been located.

**NOTE: All three Oconee Units remain in MODE 1 at 100% power during this event.**

**INITIATING CUE:**

You are to perform the required actions of the Emergency Coordinator by referring to RP/0/B/1000/01, Emergency Classification and determining the emergency classification and any Protective Action Recommendations.

**OCONEE**

**02/11/2002**

**OPERATING EXAM**  
**(JPMs)**

Facility: <b>Oconee</b>		Date of Examination: <b>February 11, 2002</b>
Exam Level: <b>RO / SRO-I</b>		Operating Test No.: _____
<b>B.1 Control Room Systems</b>		
System / JPM Title	Type Code*	Safety Function
a. <b>JPM NRC- 002, RCS Boration</b> EOP Encl. 5.11 [KA: 004 A4.12 (3.8/3.3)]	N, S, L	1
b. <b>JPM NRC-001, Re-establish RCP Seal Injection and Normal RCS Makeup following loss of operating HPI Pump, AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection</b> [KA: 004 A4.11 (3.4/3.3)]	N, S	2
c. <b>JPM CRO-075, Initiate Automatic Pressurizer Spray (spray valve fails open with closed indication)</b> OP/1103/05, Pressurizer Operation, Encl. 4.1 [KA: 010 A2.02 (3.9/3.9)]	M, A, S	3
d. <b>JPM CRO-96, Align ECCS Suction from Emergency Sump (LP-20 Failed Closed)</b> EOP, Encl. 5.12 [KA:BW/E08 EA1.1 (4.0/3.7)] (PRA) (last exam)	D, A, S, L	4P
e. <b>JPM CRO-014, Depressurize the S/Gs and Feed With CBPs</b> EOP RULE 3 [KA: APE 054 AA1.01 (4.5/4.4)] (RO only)	D, S	4S
f. <b>JPM NRC-004, Recover from Switchyard Isolation</b> AP/11 Encl. 5.3 [KA: BW/A05 AA1.1 (4.3/4.2)]	N, S, L	6
g. <b>JPM CRO-100A, PLACE THE REACTOR BUILDING PURGE IN OPERATION (PR-3 Fails Open)</b> OP/0/A/1102/14, Encl. 3.2 [KA: 029 A2.03 (2.7/3.1)]	D, A, S	8

## B.2 Facility Walk-Through

a. <b>JPM NLO-10, Place the RB Hydrogen Analyzer in Service</b> EOP Encl. 5.2 [KA: 028 A4.03 (3.1/3.3)]	D, R, L	5
b. <b>JPM NLO-022, Station ASW Pump Alignment</b> EOP Encl. 5.10 (Station ASW Pump Alignment) [KA: APE054 AA1.01 (4.5/4.4)]	D, R, L	4S
c. <b>JPM NLO-041, Restart the Primary Instrument Air Compressor following a Compressor trip; (10 min.)</b> OP/0/1106/27, Encl. 4.9; APO/1/A/1700/22 [KA: 078 G2.1.30 (3.9/3.4)] (last exam)	D, A	8
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA		

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NRC-002/B1  
RCS Boration**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Borate the RCS

**Alternate Path:**

NO

**Facility JPM #:**

NEW

**K/A Rating(s):**

System: 004  
K/A: A4.4.12  
Rating: 3.8/3.3

**Task Standard:**

Per EOP Encl 5.11, 60 gallons of highly borated water is added to the RCS from the CBAST.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EOP Enclosure 5.11, RCS Boration

**Validation Time:** 11 min.

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

=====

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall SNAP 217
2. IMPORT NRC-002
3. Go to RUN.

**Tools/Equipment/Procedures Needed:**

EOP Enclosure 5.11, RCS Boration

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A turbine trip has occurred.
2. Two MSRVs have failed open on the 1A Main Steam line.
3. IMAs and RULE 5 (Main Steam Line Break) have been completed.
4. The CRSRO is in the Forced Cooldown tab of the EOP at step 49.
5. Step 1 of EOP Enclosure 5.11, RCS Boration, has been completed.
6. 60 gallons of CBAST needs to be added to the RCS.

**INITIATING CUES:**

The SRO in the Control Room directs you to perform EOP Enclosure 5.11, RCS Boration starting at step 2.

START TIME: \_\_\_\_\_

<p><u>STEP 1:</u>      <b>GO TO</b> applicable step based on desired pump to be used with CBAST:</p> <p><i>Cue: It is desired to use the CBAST pump for this addition.</i></p> <p><u>STANDARD:</u>    Transfer is made to step 3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      Locally open 1CS-72 (CBAST Header to Letdown Filter Inlet) (A-2, LDST hatch area).</p> <p><u>STANDARD:</u>    An NLO is dispatched to open 1CS-72.</p> <p><i>Cue: 1CS-72 is open.</i></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      Ensure the following are open:</p> <ul style="list-style-type: none"> <li>• 1CS-64 (CBAST Outlet)</li> <li>• 1HP-16 (LDST Makeup Isolation)</li> </ul> <p><u>STANDARD:</u>    Locate switch and verify 1CS-64 is OPEN. RED OPEN light is used to determine 1CS-64 is open.</p> <p>Locate switch 1HP-16 and select OPEN. RED OPEN light is used to determine 1HP-16 is open.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u>        Verify using CBAST pump in AUTO is desired.</p> <p><b><i>Cue: It is desired to use the CBAST pump in AUTO.</i></b></p> <p><u>STANDARD:</u>    Determined to use CBAST pump in AUTO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u>        On 1HP-15 (LDST Makeup Control) controller, perform the following:</p> <ul style="list-style-type: none"> <li>▪ Select auto.</li> <li>▪ Enter batch size.</li> <li>▪ Select P.</li> </ul> <p><u>STANDARD:</u>    On 1HP-15 controller:</p> <ul style="list-style-type: none"> <li>• Auto is selected.</li> <li>• A batch size of 260 gallons is entered.</li> <li>• P (process) is selected.</li> </ul> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u>        Select 1A CBAST pump to AUTO.</p> <p><u>STANDARD:</u>    The 1A CBAST pump is selected to AUTO by placing the auto/manual switch in the auto position. (Located on 1AB1)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> Place 1A CBAST pump in ON.</p> <p><u>STANDARD:</u> The 1A CBAST pump switch is placed in ON.</p> <p>The following plant indications should be monitored to ensure addition is taking place:</p> <ul style="list-style-type: none"> <li>• Flow though 1HP-15 (LDST Makeup Control)</li> <li>• LDST level increase.</li> </ul> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> <b>WHEN</b> desired volume is added, <b>THEN</b> ensure 1A CBAST pump is off.</p> <p><u>STANDARD:</u> Verify CBAST pump has stopped by observing green "off" light on and red "run" light off,</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u> Select 1A CBAST pump to MAN.</p> <p><u>STANDARD:</u> 1A CBAST pump is selected to MAN with the auto/man switch.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Reset 1HP-15 (LDST Makeup Control) controller for normal operations.</p> <p><u>STANDARD:</u> Mode selector selected to "MANUAL" Display selector selected to "P" Valve position is 100% Start-stop is selected to "START"</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Required to align the CBAST to LDST flow path.
3	Required to align the CBAST to LDST flow path.
5	Required to allow a batch addition to the LDST
7	Required to start the CBAST pump.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. A turbine trip has occurred.
2. Two MSRVs have failed open on the 1A Main Steam line.
3. IMAs and RULE 5 (Main Steam Line Break) have been completed.
4. The CRSRO is in the Forced Cooldown tab of the EOP at step 49.
5. Step 1 of EOP Enclosure 5.11, RCS Boration, has been completed.
6. 260 gallons of CBAST needs to be added to the RCS.

**INITIATING CUES:**

The SRO in the Control Room directs you to perform EOP Enclosure 5.11, RCS Boration starting at step 2.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NRC-001/B.1**

**Re-establish RCP Seal Injection and Normal RCS  
Makeup following loss of operating HPI Pump**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Re-establish RCP Seal Injection and Normal RCS Makeup following loss of operating HPI Pump

**Alternate Path:**

NO

**Facility JPM #:**

NEW

**K/A Rating(s):**

System: 004

K/A: A4.11

Rating: 3.4/3.3

**Task Standard:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection, is used to Re-establish RCP Seal Injection and Normal RCS Makeup.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection

**Validation Time:** 12 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME SIGNATURE DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-41
2. Import files for JPM NRC-001
3. Go to run
4. When directed by examiner Fire timer 1

**Tools/Equipment/Procedures Needed:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 in MODE 1 at 100% power  
No equipment OOS

**INITIATING CUES:**

Respond to plant conditions.

**NOTE: Ensure that the candidate is at the back of the control room when the JPM begins.**

**START TIME: \_\_\_\_\_**

<p><b><u>STEP 1:</u></b> Refer to ARG for Statalarms 1SA-2/B-2 (RCP Seal Inlet Header Flow Hi/Low) and 1SA-2/C-2 (Injection Pump Discharge Header Pressure Low) and then refer to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection.</p> <p><b><u>STANDARD:</u></b> Candidate refers to ARG for Statalarms 1SA-2/B-2 (RCP Seal Inlet Header Flow Hi/Low) and/or 1SA-2/C-2 (Injection Pump Discharge Header Pressure Low) and then refers to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection.</p> <p><b><i>Cue: If candidate informs the SRO that the 1A HPI has a sheared shaft and would like to secure the 1A HPI pump, inform him to "secure the 1A HPI pump".</i></b></p> <p><b><i>Cue: If candidate informs the SRO that a loss of HPI has occurred and would like to refer to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection, inform him to refer to AP/14.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b> <b>IAAT RCP seal injection flow is lost, AND Component Cooling is lost, THEN perform the following:</b></p> <ul style="list-style-type: none"> <li>• Ensure Rx tripped.</li> <li>• Stop <u>all</u> RCPs.</li> <li>• Initiate AP/25 (SSF EOP).</li> </ul> <p><b><u>STANDARD:</u></b> Determine that this IAAT step does not apply because Component Cooling is available by observing 1A CC pump operating, about 900 gpm total CC flow. Go to next step.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 3:</b>      <b>IAAT</b> loss of suction to operating HPI pumps is indicated:</p> <ul style="list-style-type: none"> <li>• Motor amps low or cycling</li> <li>• Discharge pressure low or cycling</li> <li>• Abnormal LDST level trend</li> </ul> <p><b>THEN GO TO</b> Step 3.3.</p> <p><b>Cue:</b> <i>If asked, indicate that none of the above conditions existed when the HPI pumps failed.</i></p> <p><b>STANDARD:</b>    Determine that a loss of suction to the HPI pumps has not occurred observing LDST level, pressure and HPI pump suction flow path. Use the RNO step to GO TO Step 4.6.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b>      Verify <u>any</u> HPI pump operating.</p> <p><b>STANDARD:</b>    Determine that NO HPI pumps are operating. The 1A HPI pump is in "off" and the 1B HPI pump has not auto started. Perform the RNO steps.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b>      Close 1HP-5 (Letdown Isolation).</p> <p><b>STANDARD:</b>    1HP-5 located on 1UB1 is closed.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b>      Ensure 1HP-120 (RC Volume Control) in HAND and closed.</p> <p><b>STANDARD:</b>    1HP-120, located on 1UB1 is placed in HAND by depressing the white button and using the toggle switch to close 1HP-120 (Green position indicating light and "0" demand).</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b> Place 1HP-31 (RCP Seal Flow Control) in HAND and close.</p> <p><b><u>STANDARD:</u></b> 1HP-31, located on 1UB1 is placed in HAND by depressing the white button and using the toggle switch to close 1HP-31 (Green position indicating light and "0" demand)..</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> Start standby HPI pump.</p> <p><b><u>STANDARD:</u></b> "1B" HPI pump, located on 1UB1 is started by taking the switch to the START position. Pump verified to be operating by red "on" light and pump amps.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b> IF standby HPI pump started, <b>THEN GO TO</b> Step 4.111.</p> <p><b><u>STANDARD:</u></b> Determine that the 1B HPI pump started by observing pump amps and discharge pressure &gt; 3000 psig on 1UB1. <b>GO TO</b> Step 4.111.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b> Ensure 1HP-31 (RCP Seal Flow Control) in HAND.</p> <p><b><u>STANDARD:</u></b> Verify 1HP-31, located on 1UB1, in HAND by observing the white HAND light lit.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b> <u>Slowly</u> open 1HP-31 (RCP Seal Flow Control) in small increments until <math>\approx</math> 8 gpm/RCP is achieved.</p> <p><b><u>STANDARD:</u></b> Use the toggle switch to slowly open 1HP-31 until <math>\approx</math> 8 gpm/RCP is achieved. RCP Seal flow to each RCP is monitored on VB3.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> Re-establish normal makeup through 1HP-120 (RC Volume Control).</p> <p><b><u>STANDARD:</u></b> 1HP-120 is returned to normal by:</p> <ul style="list-style-type: none"> <li>• Slowly opening 1HP-120 with the toggle switch to establish makeup flow. Monitor RC Makeup Flow gauge located on 1UB1 to determine makeup rate.</li> <li>• *When PZR level is near setpoint (220") 1HP-120 may be placed in auto.</li> </ul> <p><b>*Step not critical.</b></p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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STOP TIME: \_\_\_\_\_

**CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
7	1HP-31 should be closed prior to restarting an HPI pump to prevent RCP seal damage from hydraulic shock.
8	An HPI pump must be started to reestablished RCP seals and normal makeup.
11	1HP-31 must be opened to establish RCP seal flow.
12	1HP-120 must be opened to establish normal makeup.



**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit 1 in MODE 1 at 100% power  
No equipment OOS

**INITIATING CUES:**

Respond to plant conditions.

**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM CRO-075/B.1**  
**INITIATE AUTOMATIC PRESSURIZER SPRAY**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Initiate Automatic Pressurizer spray

**Alternate Path:**

Yes

**Facility JPM #:**

CRO-075

**K/A Rating(s):**

010 A2.02 (3.9 / 3.9)

**Task Standard:**

Automatic pressurizer spray is properly initiated by procedure. 1RC-3 is closed to terminate the depressurization.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

OP/0/A/1103/05, Pressurizer Operation, Enclosure 4.1

**Validation Time: 12 min.**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT        UNSAT        Question Grade       

Performance Time       

**Examiner:** \_\_\_\_\_  
NAME

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

=====

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-41
2. Import CRO-075
3. Go to RUN
4. After spray valve cycles open and then closes Activate Timer #1.

**Tools/Equipment/Procedures Needed:**

OP/0/A/1103/05 (Pressurizer Operation).

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 1 at 100% Rx Power
2. Greater than 100 ppm Boron difference exists between the RCS and Pressurizer.

**INITIATING CUES:**

SRO in Control Room instructs you to initiate automatic pressurizer spray to equalize boron concentration per OP/0/A/1103/05 (Pressurizer Operation) Enclosure 4.1 (Establishing Auto PZR Spray) using heater banks 2, 3, and 4.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Review Limits and Precautions</p> <p><b>STANDARD:</b> Operator obtains OP/0/A/1103/05, Pressurizer Operation, and reviews Limits and Precautions.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Verify 1RC-1 (PZR SPRAY) in AUTO.</p> <p><b>STANDARD:</b> 1RC-1 (PZR SPRAY) controller is located by the student on 1UB1 and verified to be in AUTO, by observing the blue "AUTO" indication illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Verify 1RC-3 (SPRAY BLOCK) OPEN.</p> <p><b>STANDARD:</b> 1RC-3 (SPRAY BLOCK) controller is located by the student on 1UB1 and verified to be full open, by observing the red "OPEN" indication illuminated and the green "CLOSED" indication extinguished</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b> Place PZR Heaters to ON.</p> <p><b>STANDARD:</b> Pressurizer Heater banks 2, 3, and/or 4 are located by the student on 1UB1. The student energizes Pressurizer Heater banks 2, 3, and 4 by depressing the red ON pushbutton on each heater bank, and the red ON indication illuminated.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 5:</u></b>      Verify 1RC-1 (PZR SPRAY) cycles to control RCS pressure &lt;2205 psig.</p> <p><b><u>STANDARD:</u></b>   The student monitors RCS pressure by observing:</p> <p style="padding-left: 40px;">RCS PRESSURE WR or NR chart recorders on 1UB1,</p> <p style="padding-left: 80px;">OR</p> <p style="padding-left: 40px;">RCS WR PRESS LOOP A or LOOP B meters on 1UB1,</p> <p style="padding-left: 80px;">OR</p> <p style="padding-left: 40px;">By use of the Operator Aid Computer.</p> <p style="padding-left: 40px;">The student observes 1RC-1 (Pzr Spray) on 1UB1 to ensure it opens automatically, at approximately 2205 psi.</p> <p style="padding-left: 40px;">The student observes 1RC-1 (Pzr Spray) valve to ensure it closes at approximately 2155 psi.</p> <p><b>NOTE: After 1RC-1 opens and cycles closed, it will fail open but indicate that it is closed. The student must recognize and stop the depressurization.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b>      TERMINATE the depressurization.</p> <p><b><u>STANDARD:</u></b>   The student recognizes that the spray valve is still open with closed indication by RCS pressure trend.</p> <p style="padding-left: 40px;">The student may attempt to close 1RC-1 (Pzr Spray) manually by depressing the green CLOSE pushbutton on 1UB1 (1RC-1 will not close).</p> <p style="padding-left: 40px;">The student will close 1RC-3 (Spray Block) by depressing and holding the green CLOSE pushbutton until the green "CLOSE" indication is illuminated and the red "OPEN" indication is extinguished on 1UB1.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u>        STABILIZE RCS pressure</p> <p><u>STANDARD:</u>   The student SHOULD monitor RCS pressure and recognize that the Pressurizer Heaters are still in manual and "ON".</p> <p>                      The student will place Pressurizer Heater Banks 2, 3, and 4 in AUTO, as required, by depressing the blue AUTO pushbuttons on Pressurizer Heater Banks 2, 3, and/or 4 controllers, and verify the blue back light comes on, on 1UB1.</p> <p><u>COMMENTS:</u></p> <p><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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STOP TIME: \_\_\_\_\_



## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
4	Step 4 is necessary to increase the RCS pressure and make the spray valve cycle to equalize boron concentration between the RCS and the Pressurizer.
6	Step 6 is necessary because the student must realize that the spray valve has not closed even though it indicates closed and close 1RC-3 to terminate the depressurization. If not a reactor trip could occur.
7	Step 7 is necessary because the heaters will not cycle in manual. The student needs to realize this and place the heaters in AUTO so that pressure control can be reestablished.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Unit 1 at 100% Rx Power
2. Greater than 100 ppm Boron difference exists between the RCS and Pressurizer.

**INITIATING CUES:**

SRO in Control Room instructs you to initiate automatic pressurizer spray to equalize boron concentration per OP/0/A/1103/05 (Pressurizer Operation) Enclosure 4.1 (Establishing Auto PZR Spray) using heater banks 2, 3, and 4.

**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM CRO-096/B.1**

**Align ECCS Suction from Emergency Sump  
(LP-20 Failed Closed)**

**CANDIDATE** \_\_\_\_\_

**EXAMINER** \_\_\_\_\_

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Align ECCS Suction from Emergency Sump

**Alternate Path:**

YES: ☒ NO: ☐

**Facility JPM #:**

CRO-096

**K/A Rating(s):**

System: BW/E08

K/A: EA1.1

Rating: 4.0/3.7

**Task Standard:**

Enclosure 5.12, ECCS Suction Swap to RBES is properly completed to align ECCS from the Emergency sump.

**Preferred Evaluation Location:**

Simulator ☒ In-Plant ☐

**Preferred Evaluation Method:**

Perform ☒ Simulate ☐

**References:**

EP/1/A/1800/01, LOCA CD

Enclosure 5.12 (ECCS Suction Swap to RBES) of the EOP

**Validation Time:** 15 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 220
2. Import files for CRO-096
3. Go to run
4. Timer 3 will lower BWST Level to < 9' if needed at step 5
5. Timer 4 will lower BWST Level to < 6' if needed at step 6

**Tools/Equipment/Procedures Needed:**

Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A large break LOCA has occurred which is depleting the BWST.
2. EOP is being followed, currently in LOCA CD tab.

**INITIATING CUES:**

The Control Room SRO directs you to Align ECCS Suction from Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      Ensure both of the following are operating:</p> <ul style="list-style-type: none"> <li>• 1A LPI Pump</li> <li>• 1B LPI Pump</li> </ul> <p><b><u>STANDARD:</u></b>    Locates control switches for 1A and 1B LPI Pumps on 1UB2 and verifies red ON lights are illuminated and pump amps indicated.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Verify flow in <u>any</u> LPI header is &lt; 1000 gpm RNO is to go to Step 58.</p> <p><b><u>STANDARD:</u></b>    Verifies LPI HDR FLOW indicates ≥ 1000 gpm per header on 1UB2. <b>GO TO</b> Step 58</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b>      <b>WHEN</b> BWST level is ≤ 13', <b>THEN</b> stop <u>all</u> HPI pumps.</p> <p><b><u>STANDARD:</u></b>    Locates the BWST level gauges on 1UB2. The student determines level to be ≤ 13'.                                  or                                  May obtain BWST level from the OAC (Operator Aid Computer), at 1UB1, 1UB2, or STA monitor.                                  or                                  ICCM monitors on 1UB1.                                  Places control switch for any operating HPI pump in the TRIP or PTL position and verifies <u>all</u> HPI pumps are not operating by the red ON lights not illuminated.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b> Throttle RBS in all headers with an operating pump to 900-1000 gpm:</p> <ul style="list-style-type: none"> <li>• 1BS-1 (1A Hdr)</li> <li>• 1BS-2 (1B Hdr)</li> </ul> <p><b><u>STANDARD:</u></b> Depresses the MANUAL pushbuttons for 1BS-1 and 1BS-2 on the ES RZ module on 1VB2; then depresses the CLOSE pushbuttons until 900-1000 gpm flow is indicated in each RB Spray header.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> <b>WHEN</b> BWST level <math>\leq</math> 9', <b>AND</b> RB level is rising, <b>THEN</b> simultaneously open the following:</p> <ul style="list-style-type: none"> <li>• 1LP-19 (1A RB Suction)</li> <li>• 1LP-20 (1B RB Suction)</li> </ul> <p><b><i>Cue: If needed, inform candidate that using time compression BWST level will be lowered to &lt; 9' and RB level will be increased.</i></b></p> <p><b><u>STANDARD:</u></b> Verifies BWST level &lt; 9 feet on gauges on 1UB2 or from the OAC (1UB1, 1UB2, or STA monitor) or the ICCM monitors on 1UB1. Candidate locates the control switch for 1LP-19 ('1A' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction. Verifies red OPEN light comes on, and green CLOSED light goes off. Then locates the control switch for 1LP-20 ('1B' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction.</p> <p><b>Note: 1LP-20 will not open. There is not an RNO step here; valve failure will be mitigated later in the procedure.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>



<p><b>STEP 6:</b>        <b>IAAT BWST level is <math>\leq 6'</math>, THEN perform Steps 62 through 67.</b></p> <p><b>Cue: If needed, inform candidate that using time compression BWST level will be lowered to <math>&lt; 6'</math> and RB level will be increased.</b></p> <p><b>STANDARD:</b>    Candidate verifies BWST level <math>\leq 6'</math>: BWST level gauges on 1UB2. BWST level from the OAC, at 1UB1, 1UB2, or STA monitor. ICCM monitors on 1UB1.</p> <p>When BWST level is <math>\leq 6'</math> go to the IAAT step and then perform Steps 62 through 67</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 7:</b>        Verify 1LP-19 (1A RB Suction) open.</p> <p><b>STANDARD:</b>    Locates the control switch for 1LP-19 on 1UB2 and verifies red OPEN light is illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b>        Verify 1LP-20 (1B RB Suction) open.</p> <p><b>STANDARD:</b>    Locates the control switch for 1LP-20 ('1B' RB SUCTION) on 1UB2 and rotates the switch in the OPEN direction green CLOSED light remains illuminated and red OPEN light remains off. Continue to RNO for Step 63</p> <p><b>NOTE: 1LP-20 will NOT respond. Student may attempt to dispatch operators to either manually open 1LP-20 or RESET the breaker.</b></p> <p><b>Cue: Inform student all attempts to open 1LP-20 are unsuccessful.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b> Immediately perform the following:</p> <ul style="list-style-type: none"> <li>• Close 1LP-21 (1A LPI BWST Suction)</li> <li>• Open 1LP-9 (1C LPI Pump Discharge to 1A LPI Header)</li> <li>• Open 1LP-10 (1C LPI Pump Discharge to 1B LPI Header)</li> </ul> <p><b><u>STANDARD:</u></b> Locates the controls for 1LP-21 on the RZ module and depresses the MANUAL pushbuttons for ES channels 3 and 7, on 1VB2. The student then locates the control switch for 1LP-21 on 1UB2 and rotates it in the CLOSE direction.</p> <p>Locates the control switches for 1LP-9 and 1LP-10 on 1UB2 and rotates switches in the OPEN direction, red OPEN lights come on and green CLOSED lights go off.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b> Stop the following:</p> <ul style="list-style-type: none"> <li>• 1B LPI Pump</li> <li>• 1B RBS Pump</li> </ul> <p><b><u>STANDARD:</u></b> Locates RB Spray Pump B control on ES RZ module on 1VB2. MANUAL pushbutton for ES channel 8 is depressed. Green OFF pushbutton is depressed and verified lit, while white RUN light is off.</p> <p>Locates LPI Pump B control on 1UB2 and turns pump switch to "off". Red light is verified off and white light verified on.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b> Maximize flow <math>\leq 1100</math> gpm in each LPI header that has <b>NOT</b> been locally throttled.</p> <p><b><i>Cue: No LPI valves have been locally throttled.</i></b></p> <p><b><u>STANDARD:</u></b> Flow in the "B" LPI header is maximized to <math>\leq 1100</math> gpm by using 1LP-17 (1A LPI Injection) and 1LP-18 (1B LPI Injection) located on UB2.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).</p> <p><b><i>Cue: An operator has been dispatched to close 1LP-28.</i></b></p> <p><b><u>STANDARD:</u></b> An operator is Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 13:</u></b> GO TO Step 69.</p> <p><b><u>STANDARD:</u></b> Transfer is made to Step 69.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 14:</u></b> Throttle RBS in all headers with an operating pump to 900-1000 gpm:</p> <ul style="list-style-type: none"> <li>• 1BS-1 (1A Hdr)</li> <li>• 1BS-2 (1B Hdr)</li> </ul> <p><b><u>STANDARD:</u></b> On the ES RZ module on 1VB2; presses the 1BS-1 CLOSE pushbutton until 900-1000 gpm flow is indicated in the 1A RB Spray header.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
5	Aligns LPI Pump suction to Reactor Building Emergency Sump.
9	Secures LPI Pump suction from the BWST.
10	Secures 1B LPI pump – prevents pump damage. Secure 1B RBS pump – Limits flow in suction line to maintain adequate flow for the LPI pump.
11	Throttle flow < 1000 gpm – prevents pump damage.
12	Close 1LP-28 (BWST Isolation) - Isolates suction from the BWST.
14	Throttle RBS pump flow 900-1000 gpm – Limits flow in suction line to maintain adequate flow for the LPI pump.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. A large break LOCA has occurred which is depleting the BWST.
2. EOP is being followed, currently in LOCA CD tab.

**INITIATING CUES:**

The Control Room SRO directs you to Align ECCS Suction from Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM CRO-014/B.1**

**DEPRESSURIZE S/G's AND FEED WITH CBPs**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Depressurize SGs and Feed with CBPS

**Alternate Path:**

No \_\_\_\_\_

**Facility JPM #:**

CRO-014 \_\_\_\_\_

**K/A Rating(s):**

System: APE 054

K/A: AA1.01

Rating: 4.5/4.4

**Task Standard:**

Both OTSG's are depressurized and fed with the CBP's until RCS temperature is stabilized, while maintaining RCS pressure between 2300 psig and 1600 psig.

**Preferred Evaluation Location:**

Simulator   X   In-Plant \_\_\_\_\_

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

RULE 3, Loss of Main or Emergency FDW, of the EOP  
RULE 4, Initiation of HPI Forced Cooling

**Validation Time:** 10 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 218
2. Import files for CRO-014
3. Go to RUN



**Tools/Equipment/Procedures Needed:**

RULE 3, Loss of Main or Emergency FDW, of the EOP

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

The reactor has tripped. While performing a Symptom Check, you recognize that Main FDW is lost and Emergency FDW failed to actuate. EFW cannot be actuated manually.

**INITIATING CUES:**

You are to respond to the plant conditions found during the Symptom Check.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Determine what RULE is required to be run based on the Symptoms Check.</p> <p><b>Cue:</b> <i>If asked, indicate that the CRSRO concurs that performing RULE 3 is required.</i></p> <p><b>STANDARD:</b> Rule #3 is determined to needed and is obtained, and the student begins performing the steps.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> <b>IAAT NO</b> SGs can be fed with FDW (Main/Emergency) <b>AND</b> any of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• RCS pressure reaches 2300 psig or NDT limits</li> <li>• Pzr level reaches 375"</li> </ul> <p><b>THEN PERFORM</b> Rule 4 (Initiation of HPI Forced Cooling)</p> <p><b>STANDARD:</b> If during this evolution the above IAAT step is met then perform Rule 4 (Initiation of HPI Forced Cooling).</p> <p><b>Note:</b> <b>RULE 4 is attached to the back of this JPM.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Ensure <u>any</u> EFDWP operating.</p> <p><b>STANDARD:</b> The student should determine <b>NO</b> EFDWPs are operating. The student should determine <b>NO</b> EFDWPs will start and GO TO Step 4.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u>      Verify Main FDW NOT operating</p> <p><u>STANDARD:</u>    Determine Main FDW NOT operating by observing Main FDW pump tripped light lit.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u>      Place the following in MANUAL and close:</p> <ul style="list-style-type: none"> <li>• 1FDW-315 (1A EFDW Control)</li> <li>• 1FDW-316 (1B EFDW Control)</li> </ul> <p><u>STANDARD:</u>    1FDW-315 and 1FDW-316 are placed in MANUAL by depressing MANUAL on the associated switch rotating the manual-loading knob in the closed direction (Green position indicating light and 0% demand).</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u>      Verify <u>all</u> the following available:</p> <ul style="list-style-type: none"> <li>• <u>Any</u> CBP</li> <li>• TBVs</li> </ul> <p><u>STANDARD:</u>    The candidate should observe that 1A and 1C CBPs are available and that TBVs are operable and available.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u>      Disable both trains of MSLB isolation circuit:</p> <ul style="list-style-type: none"> <li>• Train 1A</li> <li>• Train 1B</li> </ul> <p><u>STANDARD:</u>    The student will locate the 1A and 1B MSLB disable switches located on 1UB1 and rotate the switches to the disable position</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 8:</b> Place Startup Block valve for all available SGs in OPEN:</p> <table border="1" data-bbox="359 215 842 286"> <tr> <td><input checked="" type="checkbox"/></td> <td>1A SG</td> <td><input checked="" type="checkbox"/></td> <td>1B SG</td> </tr> <tr> <td></td> <td>1FDW-33</td> <td></td> <td>1FDW-42</td> </tr> </table> <p><b>STANDARD:</b> The student will locate the Startup Block valve switches for 1FDW-33 and 1FDW-42 on 1UB1 and rotate the switches to the OPEN position (Red indicating lights lit).</p> <p><b>COMMENTS:</b></p>	<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG		1FDW-33		1FDW-42	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG						
	1FDW-33		1FDW-42						
<p><b>STEP 9:</b> Open Startup Control valves 10 –20% on <u>all available</u> SGs:</p> <table border="1" data-bbox="359 696 842 770"> <tr> <td><input checked="" type="checkbox"/></td> <td>1A SG</td> <td><input checked="" type="checkbox"/></td> <td>1B SG</td> </tr> <tr> <td></td> <td>1FDW-35</td> <td></td> <td>1FDW-44</td> </tr> </table> <p><b>STANDARD:</b> The student will locate Bailey Station for 1FDW-35 and 1FDW-44 on 1UB1, depress the manual pushbutton and then use the toggle switches and toggle OPEN 1FDW-35 and 1FDW-44 until valve position indicates 10 – 20% OPEN.</p> <p><b>COMMENTS:</b></p>	<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG		1FDW-35		1FDW-44	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG						
	1FDW-35		1FDW-44						
<p><b>STEP 10:</b> Close the following:</p> <ul style="list-style-type: none"> <li>• 1FDW-32 (1A Main FDW Control)</li> <li>• 1FDW-41 (1B Main FDW Control)</li> <li>• 1FDW-31 (1A Main FDW Block)</li> <li>• 1FDW-40 (1B Main FDW Block)</li> </ul> <p><b>STANDARD:</b> The student will locate Bailey Station for 1FDW-32 and 1FDW-41 on 1UB1, depress the manual pushbutton and then use the toggle switches and toggle CLOSED 1FDW-32 and 1FDW-41 (Green indicating lights lit).</p> <p>The student will locate the control switches for 1FDW-31 and 1FDW-40 on 1UB-1 and place the valve switches in the CLOSE position (Green indicating lights lit).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>								

<p><b><u>STEP 11:</u></b> Lower SG pressure in <u>available</u> SGs to <math>\approx</math> 500 psig.</p> <p><b><u>STANDARD:</u></b> Bailey Controllers for TURB BY-PASS LOOP A and TURB BY-PASS LOOP B, located on 1UB1, are placed in HAND by depressing the white HAND pushbuttons.</p> <p>Verify Red Auto light goes OFF; White HAND light comes ON.</p> <p>The toggle switches are manipulated to increase the position demand to the bypass valves.</p> <p>As the bypass valves open, SG pressure is monitored by the Main Steam Pressure gauge located on 1UB1.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 12:</u></b> Control FDW flow to stabilize RCS P/T by throttling the following as necessary:</p> <ul style="list-style-type: none"> <li>• Startup Control valves</li> <li>• TBVs</li> </ul> <p><b><u>STANDARD:</u></b> The FDW Startup Control Valves, 1FDW-35 (1A Startup FDW Control) and 1FDW-44 (1B Startup FDW Control), in conjunction with the Turbine Bypass Valves Loop A and Loop B, are manipulated from their Bailey Control stations located on 1UB1 to stabilize RCS temperature and pressure.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
7	Prevents actuation of MSLB circuit which would block feed from the CBPs.
8	Aligns flow path to the startup feedwater valves.
9	Decreases startup feedwater valve position to prevent excessive flow while allowing feed to enter the SG.
10	Prevents flow through the main feedwater control valves.
11	Decreases SG pressure to below shutoff head of the CBPs.
12	Verifies that feed from CBPs is not excessive or inadequate.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

The reactor has tripped. While performing a Symptom Check, you recognize that Main FDW is lost and Emergency FDW failed to actuate. EFW cannot be actuated manually.

**INITIATING CUES:**

You are to respond to the plant conditions found during the Symptom Check.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NRC-004/B.1**

**RECOVER FROM SWITCHYARD ISOLATION**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Recover from Switchyard Isolation

**Alternate Path:**

No

**Facility JPM #:**

NEW

**K/A Rating(s):**

System: BW/A05

K/A: AA1.1

Rating: 4.3/4.2

**Task Standard:**

Recovery from Switchyard Isolation is performed correctly including manually synchronizing the overhead Keowee Unit onto the 230 KV Red Bus.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

Enclosure 5.3 of AP/011 (Recovery From Loss of Power)

**Validation Time: 15 minutes**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 221
2. Import files for JPM NRC-004
3. Go to RUN
4. Use the Speed Change Motor on Keowee Unit 1 to ensure the unit is out of sync.
5. Timer 2 will reset the SWYD Isolation
6. Timer 3 will give remote control of Keowee

**Tools/Equipment/Procedures Needed:**

Enclosure 5.3 of AP/011 (Recovery From Loss of Power)

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A switchyard Isolation has occurred
2. Unit 1 and Unit 2 reactors have tripped
3. Unit 3 remains online at 100% power
4. Power has been restored to Unit 1 and Unit 2's Main Feeder Buses from Keowee Unit 1 via the overhead power path
5. The TCC has notified Oconee that the 230 KV transmission system voltage and frequency has returned to normal and recovery from switchyard isolation may be initiated.

**INITIATING CUES:**

1. The SRO in the control room instructs you utilize Enclosure 5.3 of AP/011 (Recovery From Loss of Power) to recover from the Switchyard Isolation.
2. Procedure steps 1 and 2 have been completed. Begin on step 3.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Verify <b>NO</b> ES 1 or 2 actuation on <u>any</u> Oconee unit:</p> <ul style="list-style-type: none"> <li>• Unit 1</li> <li>• Unit 2</li> <li>• Unit 3</li> </ul> <p><b>STANDARD:</b> Verify ES 1 or 2 has NOT actuated on Unit 1 by observing the RZ modules and/or statalarms. Contact Unit 2 and 3 to determine if ES 1 or 2 has actuated.</p> <p><b>Cue:</b> <i>Unit 2 and 3 have not had an ES actuation.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>												
<p><b>STEP 2:</b> Ensure <u>all</u> of the following AUTO/MAN transfer switches in MAN:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 30px;">✓ <b>U1</b></td> <td style="width: 30px;">✓ <b>U2</b></td> <td style="width: 30px;">✓ <b>U3</b></td> <td style="width: 100px;">Transfer Switch</td> </tr> <tr> <td></td> <td></td> <td></td> <td>TA AUTO/MAN</td> </tr> <tr> <td></td> <td></td> <td></td> <td>TB AUTO/MAN</td> </tr> </table> <p><b>STANDARD:</b> Place the Unit 1 TA and TB AUTO/MAN transfer switches in MAN. Contact Unit 2 and 3 by phone and have them ensure TA and TB AUTO/MAN transfer switches in MAN.</p> <p><b>Cue:</b> <i>Unit 2 and 3 TA and TB AUTO/MAN transfer switches are in MANUAL.</i></p> <p><b>COMMENTS:</b></p>	✓ <b>U1</b>	✓ <b>U2</b>	✓ <b>U3</b>	Transfer Switch				TA AUTO/MAN				TB AUTO/MAN	<p>___ SAT</p> <p>___ UNSAT</p>
✓ <b>U1</b>	✓ <b>U2</b>	✓ <b>U3</b>	Transfer Switch										
			TA AUTO/MAN										
			TB AUTO/MAN										

<p><b><u>STEP 3:</u></b> Depress all of the following RESET pushbuttons:</p> <ul style="list-style-type: none"> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 1 RESET</li> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 2 RESET</li> <li>• *GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 1 RESET</li> <li>• *GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 2 RESET</li> </ul> <p><b><u>STANDARD:</u></b> The following RESET pushbuttons are depressed:</p> <ul style="list-style-type: none"> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 1 RESET</li> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 2 RESET</li> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 1 RESET</li> <li>• GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 2 RESET</li> </ul> <p>Buttons are located electrical mimic board.</p> <p><b>* Not critical</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 4:</u></b> Verify the following statalarms are off:</p> <ul style="list-style-type: none"> <li>• SA-15/A-2 (CHANNEL #1 UNDERFREQUENCY)</li> <li>• SA-15/A-4 (CHANNEL #2 UNDERFREQUENCY)</li> <li>• SA-15/C-1 (CHANNEL #1 UNDERVOLTAGE)</li> <li>• SA-15/C-3 (CHANNEL #2 UNDERVOLTAGE)</li> </ul> <p><b><u>STANDARD:</u></b> The above Statalarms are verified to be off. Statalarms are located on SA-15.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> Notify Keowee Operator to transfer control of <u>both</u> Keowee units to Oconee.</p> <p><b><u>STANDARD:</u></b> Contact Keowee Operator, by phone, to transfer control of <u>both</u> Keowee units to Oconee.</p> <p><b>NOTE: Simulator instructor will transfer control of <u>both</u> Keowee units to Oconee.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 6:</b>      Verify both channels of all Oconee units Main Feeder Bus Monitor Relay Panels reset as indicated by the following statalarms off:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 10%;">✓ U1</th> <th style="width: 10%;">✓ U2</th> <th style="width: 10%;">✓ U3</th> <th style="width: 80%;">Statalarms</th> </tr> </thead> <tbody> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td>1(2)(3)SA-15/D-4 (LOAD SHED CHNL A LOGIC INITIATE)</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td>1(2)(3)SA-14/D-4 (LOAD SHED CHNL B LOGIC INITIATE)</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td>1(2)(3)SA-15/D-6 (TRANS TO SB CHNL A LOGIC INITIATE)</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> <td>1(2)(3)SA-14/D-6 (TRANS TO SB CHNL B LOGIC INITIATE)</td> </tr> </tbody> </table> <p><b>STANDARD:</b>    Both channels of Oconee unit 1 Main Feeder Bus Monitor Relay Panel is verified reset as indicated by observing the above statalarms off. Contact Unit 2 and 3 and have them verify their Main Feeder Buses are reset.</p> <p><b>Cue:</b> <i>Unit 2 and 3 Main Feeder Bus Monitor Panels are reset as indicated by the above alarms are off.</i></p> <p><b>Note:</b> Unit 1's Main Feeder Bus Monitor Panel has not actuated.</p> <p><u>COMMENTS:</u></p>	✓ U1	✓ U2	✓ U3	Statalarms				1(2)(3)SA-15/D-4 (LOAD SHED CHNL A LOGIC INITIATE)				1(2)(3)SA-14/D-4 (LOAD SHED CHNL B LOGIC INITIATE)				1(2)(3)SA-15/D-6 (TRANS TO SB CHNL A LOGIC INITIATE)				1(2)(3)SA-14/D-6 (TRANS TO SB CHNL B LOGIC INITIATE)	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
✓ U1	✓ U2	✓ U3	Statalarms																		
			1(2)(3)SA-15/D-4 (LOAD SHED CHNL A LOGIC INITIATE)																		
			1(2)(3)SA-14/D-4 (LOAD SHED CHNL B LOGIC INITIATE)																		
			1(2)(3)SA-15/D-6 (TRANS TO SB CHNL A LOGIC INITIATE)																		
			1(2)(3)SA-14/D-6 (TRANS TO SB CHNL B LOGIC INITIATE)																		
<p><b>STEP 7:</b>      Verify overhead Keowee unit NOT energizing <u>any</u> Oconee unit MFB</p> <p><b>STANDARD:</b>    Determine that Keowee Unit 1 is energizing Oconee Unit 1 MFBs via the overhead path, by observing Keowee Unit 1 has emergency started and ACB-1 is closed energizing unit 1's MFBs. RNO step is used to transfer to step 20.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>																				
<p><b>STEP 8:</b>      Verify Keowee overhead unit is energizing <u>any</u> Oconee unit MFB.</p> <p><b>STANDARD:</b>    Determine that Keowee Unit 1 is energizing Oconee Unit 1 MFBs via the overhead path, by observing Keowee Unit 1 has emergency started and ACB-1 is closed energizing unit 1's MFBs.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>																				

<p><b><u>STEP 9:</u></b> Notify Emergency Coordinator to determine which of the following is desired:</p> <ul style="list-style-type: none"> <li>• Manually synchronize overhead Keowee unit onto the 230 KV Red Bus</li> <li>• Disconnect overhead Keowee unit from the 230 KV Yellow Bus and reconnect (dead bus transfer) 230 KV Yellow Bus to the System Grid</li> </ul> <p><b><u>STANDARD:</u></b> Call Emergency Coordinator and ask which of the above methods is desired.</p> <p><b><i>Cue: The Emergency Coordinator determines that manually synchronizing the overhead Keowee unit onto the 230 KV Red Bus is desired.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b> Verify manual synchronization of the overhead Keowee Unit onto the System Grid via the 230 KV Red Bus is desired.</p> <p><b><u>STANDARD:</u></b> Determine from previous discussion with the Emergency Coordinator that manual synchronization of the overhead Keowee Unit onto the System Grid via the 230 KV Red Bus is desired.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b> Obtain permission from TCC to connect overhead Keowee unit (230 KV Yellow Bus Supply) to the System Grid.</p> <p><b><i>Cue: The TCC gives permission to connect overhead Keowee unit (230 KV Yellow Bus Supply) to the System Grid.</i></b></p> <p><b><u>STANDARD:</u></b> Call the permission from TCC to connect overhead Keowee unit (230 KV Yellow Bus Supply) to the System Grid.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> Perform the following to sync and tie overhead Keowee unit (Yellow Bus Supply) to 230 KV Red Bus:</p> <ul style="list-style-type: none"> <li>• Establish communications with Keowee Operations.</li> <li>• Depress and hold PCB-8 SYNC push button.</li> <li>• Adjust overhead Keowee unit SPEED CHANGER MOTOR to synchronize overhead Keowee unit to 230 KV Red Bus.</li> <li>• WHEN synchronization is achieved, THEN perform the following: <ul style="list-style-type: none"> <li>➤ Close PCB-8.</li> <li>➤ Release PCB-8 SYNC push button.</li> </ul> </li> </ul> <p><b><u>STANDARD:</u></b> The overhead Keowee unit (Yellow Bus Supply) is synced and tied to the 230 KV Red Bus by:</p> <ul style="list-style-type: none"> <li>• Establishing communications with Keowee Operations.</li> <li>• Depressing and holding the PCB-8 SYNC push button.</li> </ul> <p><b><i>Cue: The simulator operator will act as a second operator and operate the PCB-8 SYNC button. After synchronization is achieved (slow in the fast direction), inform the candidate to close the PCB.</i></b></p> <ul style="list-style-type: none"> <li>• Adjusting the overhead Keowee unit SPEED CHANGER MOTOR to synchronize overhead Keowee unit to 230 KV Red Bus.</li> <li>• WHEN synchronization is achieved, THEN perform the following: <ul style="list-style-type: none"> <li>➤ Close PCB-8 (Red closed light illuminated).</li> <li>➤ Release PCB-8 SYNC push button.</li> </ul> </li> </ul> <p><b>Note: The SYNC CHECK provides only indication, NOT protection against out of phase closure.</b></p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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STOP TIME: \_\_\_\_\_



## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
3	Reset buttons must be pushed to reset the Switchyard Isolation circuit to allow PCBs to be repositioned.
5	Oconee must have Keowee control to operate any Keowee Unit.
7	Must recognize power is coming from a Keowee Unit via the overhead path in order to transfer power back to the switchyard.
9	Live bus transfer is preferred in that another loss of power does not occur.
12	Manually syncing of the Keowee Unit is required to put the Oconee axillaries on the switchyard.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. A switchyard Isolation has occurred
2. Unit 1 and Unit 2 reactors have tripped
3. Unit 3 remains online at 100% power
4. Power has been restored to Unit 1 and Unit 2's Main Feeder Buses from Keowee Unit 1 via the overhead power path
5. The TCC has notified Oconee that the 230 KV transmission system voltage and frequency has returned to normal and recovery from switchyard isolation may be initiated.

**INITIATING CUES:**

1. The SRO in the control room instructs you utilize Enclosure 5.3 of AP/011 (Recovery From Loss of Power) to recover from the Switchyard Isolation.
2. Procedure steps 1 and 2 have been completed. Begin on step 3.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM CRO-100a/B.1**

**Place the Reactor Building Purge in Operation**

**CANDIDATE** \_\_\_\_\_

**EXAMINER** \_\_\_\_\_

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Place the Reactor Building Purge in Operation

**Alternate Path:**

Yes

**Facility JPM #:**

CRO-100a

**K/A Rating(s):**

System: 029

K/A: A2.03

Rating: 2.7/3.1

**Task Standard:**

RB Purge is placed in operation and secured when 1PR-3 fails open.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

OP/0/A/1102/14

**Validation Time: 15 min**

**Time Critical: No**

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT        UNSAT        Question Grade       

Performance Time       

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-57
2. Import files for CRO-100a
3. Place simulator in RUN
4. As the student opens 1PR-3, fire event 1

**Tools/Equipment/Procedures Needed:**

OP/0/A/1102/14, Enclosure 4.1 (RB Purge Release)

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

When I tell you to begin, you are to **PLACE THE REACTOR BUILDING PURGE IN OPERATION**. Before you start, I will describe the general plant conditions, state the initiating cues, and answer any questions. Perform procedure steps and make notifications as if you were actually performing the task.

**INITIAL CONDITIONS:**

1. Unit 1 is at 158° F and 270 psig with 1A1 RCP in operation and in the process of shutting down for repair work on 1A2 RCP
2. No GWRs or LWRs are in progress.
3. OP/0/A/1102/14, Enclosure 4.1 (RB Purge Release) has been completed through steps 2.9.
4. Purge will be at 1/3 station release limit and 10,000 cfm.

**INITIATING CUES:**

The Control Room SRO directs you to place the RB Purge in operation using OP/0/A/1102/14, Encl. 4.1 starting at step 2.10.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Review Limits and Precautions.</p> <p><b>STANDARD:</b> Limits and Precautions reviewed.</p> <p><b>COMMENTS:</b></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><b>STEP 2:</b> Vent Reactor Building pressure to Unit Vent:</p> <ul style="list-style-type: none"> <li>• Open 1PR-1 (RB PURGE OUTLET (RB))</li> <li>• Open 1PR-2 RB PURGE OUTLER (PR))</li> <li>• Throttle 1PR-3 (RB PURGE CONTROL) &gt; 25% open.</li> <li>• Check 1PR-3 (RB PURGE CONTROL) indication on ES Channel 2</li> </ul> <p><b>Note:</b> Opening PR-3 &gt; 60% may be required but in this case it will require resetting on the RZ module.</p> <p><b>STANDARD:</b> The following valves, located on 1AB3, are OPENED by rotating the control switch to the open position:</p> <p>1PR-1 (RB PURGE OUTLET (RB))</p> <p>1PR-2 (RB PURGE OUTLET (PR))</p> <p>Verify Red OPEN light comes ON and Green CLOSED light goes OFF.</p> <p>1PR-3 (RB PURGE CONTROL) bailey is THROTTLED OPEN approximately 25% by rotating the manual loader knob clockwise. (<b>Not Critical</b>)</p> <p>Unit vent RIAs (RIA-43, 44,45,46), on 1VB3 are MONITORED to prevent exceeding alarm limits.</p> <p><b>NOTE:</b> 1PR-3 (RB PURGE CONTROL) RZ module indication will be indicating closed at this time.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>

<p><b>STEP 3:</b>     <b>IF</b> 1PR-3 (RB PURGE CONTROL) will <b>NOT</b> open, refer to Section 3, "Compensatory Actions."</p> <ul style="list-style-type: none"> <li>• Close 1PR-3 (RB PURGE CONTROL) bailey control.</li> <li>• Push "OPEN" for 1PR-3 (RB PURGE CONTROL) on RZ Module (ES Channel 2).</li> <li>• Throttle 1PR-3 (RB PURGE CONTROL) &gt; 25% open.</li> </ul> <p><b>STANDARD:</b> Determine 1PR-3 (RB PURGE CONTROL) is not open and take actions in Section 3, "Compensatory Actions."</p> <ul style="list-style-type: none"> <li>• The control knob on the bailey for 1PR-3 on 1AB3 is rotated in the counterclockwise direction until the demand indicates 0%.</li> <li>• The Red OPEN button for 1PR-3 on the ES Channel 2 RZ Module on 1VB2 is located by the student and depressed.</li> </ul> <p><b>NOTE: The Red OPEN button will illuminate when depressed, indicating that the valve OPEN permissive for 1PR-3 is TRUE.</b></p> <ul style="list-style-type: none"> <li>• The student locates the controller on 1AB3 for 1PR-3 and rotates the control knob in the clockwise direction to an indicated valve position demand of &gt; 25%.</li> </ul> <p><b>NOTE: The White CLOSED light for 1PR-3 on ES Channel 2 RZ Module will go OFF. The Red OPEN light will be ON</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><b>STEP 4:</b>     Ensure:</p> <ul style="list-style-type: none"> <li>• Open 1PR-4 (RB PURGE INLET)</li> <li>• Open 1PR-5 (RB PURGE INLET)</li> <li>• Open 1PR-6 (RB PURGE INLET)</li> <li>• Steam is aligned to RB Purge heating coils.</li> </ul> <p><b>STANDARD:</b> The following valves, located on 1AB3, are OPENED by rotating each control switch to the "OPEN" position:</p> <ul style="list-style-type: none"> <li>• 1PR-4 (RB PURGE INLET)</li> <li>• 1PR-5 (RB PURGE INLET)</li> <li>• 1PR-6 (RB PURGE INLET)</li> </ul> <p>Verify Red OPEN lights ON and Green CLOSED lights OFF.</p> <ul style="list-style-type: none"> <li>• Determine steam is aligned to the RB Purge heating coils.</li> </ul> <p><b>Cue: Steam is aligned to RB Purge heating coils.</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>



<p><b><u>STEP 5:</u></b> Start RB Purge Fan.</p> <p><b><u>STANDARD:</u></b> The RB Purge Fan is STARTED by rotating the control switch, located on 1AB3, to the START position. The Red ON light comes ON and the green OFF light goes OFF.</p> <p><b>NOTE:</b> There is a time delay of 20 seconds between the switch operation and the actual fan start.</p> <p><b>NOTE:</b> After 20 seconds the purge flow rate is verified and is &lt; 10,000 CFM</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><b><u>STEP 6:</u></b> Adjust 1PR-3 (RB PURGE CONTROL) to desired purge rate.</p> <p><b><u>STANDARD:</u></b> Attempts to adjust 1PR-3 (RB PURGE CONTROL) to desired purge rate.</p> <p><b>Note:</b> As the candidate adjusts the controller for 1PR-3 clockwise the valve position increases slowly at first then fails to 100%.</p> <p><b>Note:</b> When the operator observes the purge flow strip chart recorder the chart will indicate &gt; 10,000 CFM flow. Actual flow indicates ≈ 20,000 CFM, which is full purge flow.</p> <p><b>Cue:</b> If candidate informs the SRO of the failure, direct him to secure the purge by procedure.</p> <p><b><u>COMMENTS:</u></b></p>	<p>____ SAT</p> <p>____ UNSAT</p>

<p><b><u>STEP 7:</u></b>      Secure the RB Purge.</p> <p><b><u>STANDARD:</u></b>    The student should stop the RB Purge Fan by rotating the control switch on 1AB3 to the STOP position (Green light illuminated).</p> <p>                         OR</p> <p>                         If directed by the SRO to secure the purge by procedure the candidate should go to section 4 (RB Purge Termination) and secure the purge by:</p> <ul style="list-style-type: none"><li>▪    Stopping the RB Main Purge Fan</li><li>▪    Closing 1PR-1 – 1PR-6</li></ul> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: right;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>
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**TIME STOP:** \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Step 2 is necessary to prevent damage to the purge fan and/or the purge ducting when the fan is started.
3	Step 3 is necessary to ensure that 1PR-3 will work properly to allow the operator to control the flow of the RB purge release to within limits.
4	Step 4 is necessary to ensure that the purge exhaust fan has a supply of air on the inlet side to prevent drawing a vacuum in containment causing damage to the fan and components.
5	Step 5 is necessary to place the RB purge in operation.
7	Step 7 is necessary to prevent exceeding release rates allowed by the sample request and because the operator has no control over Purge Flow to prevent exceeding limits.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Unit 1 is at 158° F and 270 psig with 1A1 RCP in operation and in the process of shutting down for repair work on 1A2 RCP
2. No GWRs or LWRs are in progress.
3. OP/0/A/1102/14, Enclosure 4.1 (RB Purge Release) has been completed through steps 2.9.
4. Purge will be at 1/3 station release limit and 10,000 cfm.

**INITIATING CUES:**

The Control Room SRO directs you to place the RB Purge in operation using OP/0/A/1102/14, Encl. 4.1 starting at step 2.10.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NLO-010/B.2**

**PLACE THE REACTOR BUILDING HYDROGEN  
ANALYZER IN SERVICE**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

PLACE THE REACTOR BUILDING HYDROGEN ANALYZER IN SERVICE

**Alternate Path:**

No. \_\_\_\_\_

**Facility JPM #:**

NLO-010 \_\_\_\_\_

**K/A Rating(s):**

System: 028

K/A: A4.03

Rating: 3.1/3.3

**Task Standard:**

Reactor Building Hydrogen Analyzer is placed in service

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate   X  

**References:**

Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service" Enclosure of EOP

**Validation Time: 10 minutes**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service" Enclosure of EP/1,2,3/A/1800/001

**NOTE: Student is expected to know that this procedure is pre-staged at the Hydrogen Analyzer and be able to locate the procedure. (Not Critical)**

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

A LOCA has occurred on Unit \_\_\_\_ (specify unit). Engineered Safeguards Channels #1 and #2 have actuated. Enclosure 5.1 (ES Actuation) of the EOP is being completed. The RB Hydrogen Analyzer is aligned in the standby mode.

"B" Train of RB Hydrogen Analyzer is out of service.

**INITIATING CUES:**

Enclosure 5.1 (ES Actuation) of EP/\_\_\_/A/1800/01 directs the operator to place the RB Hydrogen Analyzer in service. The Control Room SRO directs you to place Train "A" of the RB Hydrogen Analyzer in service on Unit \_\_\_\_ (specify unit) per "Placing RB Hydrogen Analyzers in Service" Enclosure of EOP.

**Note: Only "A" train will be placed in service.**



START TIME: \_\_\_\_\_

<p><u>STEP 1:</u>      Verify 'Power On' light is ON.</p> <p><u>STANDARD:</u>    Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "A").</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      ENSURE 'H2 Dual Range Sw.' positioned to 0-10% Scale.</p> <p><u>STANDARD:</u>    H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      ENSURE Function Selector switch selected to Sample position.</p> <p><u>STANDARD:</u>    FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b> ENSURE Post Accident Sample Panel is isolated from the Reactor Building Hydrogen Analyzer by pushing OFF button for the following:</p> <p><b>Train A</b></p> <ul style="list-style-type: none"> <li>• PR-83 (Bypass to Post Accident Sample Panel)</li> <li>• PR-86 (Bypass from Post Accident Sample Panel)</li> </ul> <p><b><u>STANDARD:</u></b> At the remote panel, the "OFF" button is pushed for the following valves:</p> <p><b>Train A</b></p> <ul style="list-style-type: none"> <li>• PR-83 (Bypass to Post Accident Sample Panel)</li> <li>• PR-86 (Bypass from Post Accident Sample Panel)</li> </ul> <p><b><i>Cue: After the above actions are taken indicate that the valve ON buttons/lights will be off.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> NOTIFY Control Room perform the following:</p> <ul style="list-style-type: none"> <li>• Open 1PR-81 and 1PR-84 (1A RB Hydrogen Analyzer)</li> </ul> <p><b><u>STANDARD:</u></b> Control Room personnel of affected unit are notified to open PR-81 and PR-84 (Train A) to align appropriate train of Reactor Building Hydrogen Analyzer to the Reactor Building.</p> <p><b><i>Cue: After notification has been made, indicate to student that the red OPEN indication lights for the appropriate Reactor Building Hydrogen Analyzer Isolation Valves, located at the Remote Panel, are ON.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 6:</u></b> At Unit #1 RB Containment Atmosphere Hydrogen Analyzer Remote Control Panel, perform the following:</p> <p><b>Train "A"</b></p> <ul style="list-style-type: none"> <li>Position SAMPLE VALVE SEL SW to 1PR-71 (TOP OF CONTAINMENT SAMPLE).</li> </ul> <p><b><u>STANDARD:</u></b> SAMPLE VALVE SEL. Sw. is positioned to appropriate sample valve:</p> <ul style="list-style-type: none"> <li>PR-71 (Top of Containment Sample) for Train 'A'</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 7:</u></b> Position OFF / STANDBY /ANALYZE switch to ANALYZE.</p> <p><b><u>STANDARD:</u></b> OFF/STANDBY/ANALYZE switch is positioned to the "ANALYZE" Mode.</p> <p><b><i>CUE: After student selects "ANALYZE", indicate to him/her, using a pointing device, that the Hydrogen Concentration Meter reads approximately 3% hydrogen and that the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Light are ON.</i></b></p> <p><b><i>Next, inform student that approximately three minutes has elapsed and indicate to him/her, using a pointing device, that the Hydrogen Concentration Meter has returned to 0% hydrogen.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> Push REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel.</p> <p><b><u>STANDARD:</u></b> REMOTE SELECTOR Pushbutton is depressed.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b>      <b>IAAT</b> either RB Hydrogen Analyzer Train indicates &lt; 2.25% Hydrogen, <b>AND</b> the meter reading stabilizes, <b>THEN</b> push the ALARM RESET pushbutton to reset the COMMON ALARM on 1A RB Hydrogen Analyzer train.</p> <p><b>Cue:</b> <i>Indicate the Hydrogen reading is <math>\approx 0</math> percent.</i></p> <p><b>Cue:</b> <i>Indicate to student that the Yellow Alarm Lights are out.</i></p> <p><b><u>STANDARD:</u></b>    ALARM RESET Pushbutton is depressed.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b>      <b>WHEN</b> HIGH HYDROGEN alarm has been reset on 1A Hydrogen Analyzer Train, <b>THEN</b> notify Unit 1 Control Room that both 1A Hydrogen Analyzer Train is in service.</p> <p><b><u>STANDARD:</u></b>    Phone/radio is located and control room personnel are notified that the RB Hydrogen Analyzer is in service.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      <b>EXIT</b> this enclosure.</p> <p><b><u>STANDARD:</u></b>    Procedure is exited.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
3	The 3-position switch must be selected to sample. Span/Zero is for calibration and is used by I&E.
4	Isolating the Post Accident Sampling System positions a 3-way valve to direct flow to the Hydrogen Analyzer.
5	Open the block valves to the hydrogen analyzer.
7	Start the Analyzer pump and the sampling process

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

A LOCA has occurred on Unit \_\_\_\_ (specify unit). Engineered Safeguards Channels #1 and #2 have actuated. Enclosure 5.1 (ES Actuation) of the EOP is being completed. The RB Hydrogen Analyzer is aligned in the standby mode.

“B” Train of RB Hydrogen Analyzer is out of service.

**INITIATING CUES:**

Enclosure 5.1 (ES Actuation) of EP/\_\_\_/A/1800/01 directs the operator to place the RB Hydrogen Analyzer in service. The Control Room SRO directs you to place Train “A” of the RB Hydrogen Analyzer in service on Unit\_\_\_\_\_ (specify unit) per “Placing RB Hydrogen Analyzers in Service” Enclosure of EOP.

**Note: Only “A” train will be placed in service.**

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NLO-022/B.2**

**ALIGN AND START THE STATION AUXILIARY  
SERVICE WATER PUMP**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

**ALIGN AND START THE STATION AUXILIARY SERVICE WATER PUMP**

**Alternate Path:**

No

**Facility JPM #:**

NLO-022

**K/A Rating(s):**

System: APE-054

K/A: AA1.01

Rating: 4.5/4.4

**Task Standard:**

Station Auxiliary Service Water Pump is aligned and started correctly

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

Enclosure 5.10, Station ASW Pump Alignment, of the EOP

**Validation Time:** 12 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

.

**Tools/Equipment/Procedures Needed:**

1. Nomex Protective Suit
2. 600 Volt Breaker rack out tool
3. Enclosure 5.10, Station ASW Pump Alignment, of the EOP
4. "Removal and Restoration of 6900/4160/600 Volt Breakers" Enclosure of OP/0/A/1107/011

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A station blackout has occurred.
2. No EFDW pumps are available.
3. HPI forced cooling is not adequate.
4. The SSF D/G failed to start rendering the SSF ASWP inoperable.
5. Power has been restored to the standby buses.
6. SG pressure is  $\approx$  atmospheric.

**INITIATING CUES:**

The BOP directs you perform Enclosure 5.10 (Station ASW Pump Alignment).

START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      Open CCW-99 (Aux. Service Water Pump Suction)</p> <p><b><i>Cue: Indicate CCW-99 valve position indicator indicates, "open".</i></b></p> <p><b><u>STANDARD:</u></b>    Student locates and opens CCW-99 (Aux. Service Water Pump Suction) by turning the hand wheel counter-clockwise until the valve indicator indicates "open".</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Open CCW-247 (Aux. Service Water Pump Recirc.).</p> <p><b><i>Cue: Indicate CCW-247 open and at the hard stop..</i></b></p> <p><b><u>STANDARD:</u></b>    Student locates and opens CCW-247 (Aux. Service Water Pump Discharge) by turning the valve hand wheel counter-clockwise until it reaches a hard stop.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b>      Open CCW-308 (Aux. Service Water Pump Vent.).</p> <p><b><i>Cue: Indicate CCW-308 open with air and water coming out of the vent.</i></b></p> <p><b><u>STANDARD:</u></b>    Student locates and opens CCW-308 (Aux. Service Water Pump Vent).</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b>      <b>WHEN</b> <u>all</u> air is vented from Station ASW Pump, <b>THEN</b> close CCW-308.</p> <p><b>Cue:</b> <i>Indicate that a solid stream of water is issuing out of the vent.</i></p> <p><b><u>STANDARD:</u></b>      Student locates and closes CCW-308 (Aux. Service Water Pump Vent).</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b>      Don protective equipment</p> <p><b><u>STANDARD:</u></b>      Student obtains and dons the appropriate personal protective equipment prior to operation of any electrical breaker rated 400 VAC and above:</p> <ul style="list-style-type: none"> <li>• Safety glasses</li> <li>• Face shield</li> <li>• Hard hat</li> <li>• Rubber gloves with leather protectors</li> <li>• Flame-resistant clothing</li> </ul> <p><b>Note:</b> This step may be simulated and discussed, at the discretion of the examiner.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b>      Rack in AUX SERVICE WATER PUMP breaker (ASW SWGR 600V LOAD CENTER Unit 6, Bkr 6B).</p> <p><b><u>STANDARD:</u></b>      Student opens shutter door, inserts 600V rack out tool, and rotates tool clockwise to rack breaker in.</p> <p><b>Note:</b> Student may simulate performing this step.</p> <p><b>Cue:</b> <i>After breaker is racked in, indicate to student that the AUX SERVICE WATER PUMP MOTOR breaker green "open" indicating light is ON and when the "racking" tool is removed the shutter drops.</i></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b>      Ensure the following are closed (ASW SWGR 600V LOAD CENTER):</p> <ul style="list-style-type: none"> <li>• AUX SERV. WTR. SWGR. 4160-VOLT FDR. B1T - Unit 10</li> <li>• Feeder Breaker For ASW SWGR Transformer</li> </ul> <p><b><u>STANDARD:</u></b>    Student locates the AUX. SER. WTR. SWGR. TRANSFORMER Feeder Breaker control switch and rotates it to the CLOSE direction.</p> <p>RED Closed lamp is observed to be illuminated</p> <p>OR</p> <p>Breaker position flag is observed to indicate Closed.</p> <p><b><i>CUE: Indicate to student that the 4160V Feeder Breaker for the "AUX SER WTR SWGR TRANSFORMER" red light is lit.</i></b></p> <p>Student locates the AUX SERV. WTR. SWGR 4160-VOLT FDR. B1T – UNIT 10 Breaker control switch and rotates it to the CLOSE direction.</p> <p>RED Closed lamp is observed to be illuminated</p> <p>OR</p> <p>Breaker position flag is observed to indicate Closed.</p> <p><b><i>CUE: Indicate to student that the 4160V Feeder Breaker for the " AUX SERV. WTR. SWGR 4160-VOLT FDR. B1T – UNIT 10" is closed in.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b>      Notify CRO that Station ASW Pump is vented and ready to start.</p> <p><b><u>STANDARD:</u></b>    Using either the phone or a radio inform the CRO that the ASW Pump is vented and ready to start by phone or radio.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 9:</b>      <b>WHEN</b> one of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• CRO directs starting Station ASW Pump</li> <li>• Station ASW Pump No longer needed in Unit 1</li> </ul> <p><b>THEN</b> continue in this enclosure.</p> <p><b>Cue: CRO directs starting Station ASW Pump</b></p> <p><b>STANDARD:</b>    Procedure is continued.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 10:</b>      Verify CRO directed starting Station ASW Pump.</p> <p><b>Cue: CRO directs starting Station ASW Pump</b></p> <p><b>STANDARD:</b>    Procedure is continued.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 11:</b>      Close CCW-309 (Aux Service Water Pump Disch Drain) (12' West of ASW Pump).</p> <p><b>Cue: Indicate CCW-309 closed and at the hard stop.</b></p> <p><b>STANDARD:</b>    Student locates and closes CCW-309 (Aux. Service Water Pump Disch Drn) is manually closed by turning the valve clockwise until it reaches a hard stop.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 12:</b> Open CCW-101 (Aux Service Water Pump Discharge).</p> <p><b>Cue:</b> <i>Indicate CCW-101 open (rising stem valve) and at a hard stop.</i></p> <p><b>STANDARD:</b> Student locates and opens CCW-101 (Aux. Service Water Pump Discharge) by turning the valve hand wheel counter-clockwise until it reaches a hard stop.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 13:</b> Start Station ASW Pump using the control switch (ASW SWGR 600V LOAD CENTER Unit 5).</p> <p><b>STANDARD:</b> Student locates AUX SERVICE WATER PUMP MOTOR control switch and rotates switch to the CLOSE position.</p> <p><b>CUE:</b> <i>After control switch is rotated, indicate to student that the AUX SERVICE WATER PUMP MOTOR breaker red "closed" indicating light is ON and you can hear the pump.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 14:</b> Notify CRO that Station ASW Pump is operating.</p> <p><b>STANDARD:</b> Using either the phone or a radio inform the CRO is that Station ASW Pump is operating.</p> <p><b>COMMENTS:</b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	Step 1 necessary to align pump suction
2	Step 2 is necessary so that the pump can have the minimum flow that is necessary for pump protection until flow to the steam generators is established.
3	Step 3 is necessary to prevent damage to the pump due to air binding.
4	Step 4 is necessary to prevent flooding of the Aux. Bldg when the Aux. Service Water Pump is started.
6	Step 6 is necessary because if these breakers were not closed, there would be no power to the Aux. Service Water Pump and feed could not be established to the steam generators.
11	Step 11 is necessary to prevent flooding of the Aux. Bldg when the Aux. Service Water Pump is started.
12	Step 12 is necessary to provide a flow path of water to the necessary components, in this case the steam generators.
13	Step 13 is necessary because if the pump were not started, there would be no flow to the steam generators.



**CANDIDATE CUE SHEET  
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. A station blackout has occurred.
2. No EFDW pumps are available.
3. HPI forced cooling is not adequate.
4. The SSF D/G failed to start rendering the SSF ASWP inoperable.
5. Power has been restored to the standby buses.
6. SG pressure is  $\approx$  atmospheric.

**INITIATING CUES:**

The BOP directs you perform Enclosure 5.10 (Station ASW Pump Alignment).

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NLO-041/B.2**

**RESTART THE PRIMARY IA COMPRESSOR  
FOLLOWING A COMPRESSOR TRIP**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

RESTART THE PRIMARY IA COMPRESSOR FOLLOWING A COMPRESSOR TRIP  
TASK NUMBER: OO1333002

**Alternate Path:**

YES

**Facility JPM #:**

NLO-041

**K/A Rating(s):**

System: 078  
K/A: G2.1.30  
Rating: 3.9/3.4

**Task Standard:**

The Primary IA Compressor is restarted by procedure

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

Enclosure 4.9 of OP/0/A/1106/27

**Validation Time:** 11 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

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**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 4.11 of OP/0/A/1106/27

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 1 is at 100% power.
2. The Transmission Dept. was performing PM checks on B3T switchgear when the incoming feeder breaker tripped open.
3. When B3T de-energized, the automatic transfer to the backup source (B4T) did not occur and the Primary IA Compressor tripped.
4. The RO entered "Loss of IA" AP/1/A/1700/22 as IA header pressure decreased to  $\approx 85$  psig and has reached step 4.5, which directs an operator be dispatched to "Ensure Primary IA Compressor in operation."

**INITIATING CUES:**

The SRO in the control room instructs you ENSURE the Primary IA Compressor is in operation.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Ensure the Primary IA Compressor is operating.</p> <p><b>STANDARD:</b> Determine that the compressor has tripped and must be restarted. Enclosure 4.9 of OP/0/A/1106/27 should be located and used to restart the Primary IA Compressor.</p> <p><b>Note:</b> Enclosure 4.9 of OP/0/A/1106/27 is located at the compressor and when located give the candidate a copy of the procedure.</p> <p><b>Cue:</b> <i>Indicate that the compressor has tripped (red light "off", green light "on") and when step 1.2 of Initial Conditions is addressed inform the candidate that the reason for the loss of the compressor has been corrected.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Position the following valves:</p> <p>Close IA-2730 (Primary IA "A" Desiccant Air Filter Outlet). (TB5 L-39)</p> <p><b>Cue:</b> <i>Indicate that IA-2730 is CLOSED.</i></p> <p><b>STANDARD:</b> The student LOCATES and CLOSES IA-2730 (Primary IA "A" Desiccant Filter Outlet) by rotating the valve operator until the position-indicating arrow is perpendicular to the piping.</p> <p><b>Note:</b> The valve is located on the Turbine floor between the Primary IA Compressor Dryer Complexes.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 3:</u></b>      Position the following valves:                          Close IA-2731 (Primary IA "B" Desiccant Air Filter Outlet). (TB5 L-39)</p> <p><b><i>Cue: Indicate that IA-2731 is CLOSED.</i></b></p> <p><b><u>STANDARD:</u></b>    The student LOCATES and CLOSES IA-2731 (Primary IA "B" Desiccant Filter Outlet) by rotating the valve operator until the position-indicating arrow is perpendicular to the piping.</p> <p><b>Note: The valve is located on the Turbine floor between the Primary IA Compressor Dryer Complexes.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 4:</u></b>      At the Primary IA Dryer "A" Control Panel, position the (ON/OFF) switch to OFF.</p> <p><b><i>Cue: Indicate that the Primary IA Dryer "A" Control Panel, switch is positioned to OFF.</i></b></p> <p><b><u>STANDARD:</u></b>    On the "A" Dryer control panels the student REMOVES the Primary IA Dryers from service by rotating the following switch, to the "OFF" position:</p> <ul style="list-style-type: none"> <li>• Primary IA Dryer "A" On/Off selector.</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 5:</u></b> At the Primary IA Dryer "B" Control Panel, position the (ON/OFF) switch to OFF.</p> <p><b><i>Cue: Indicate that the Primary IA Dryer "B" Control Panel, switch is positioned to OFF.</i></b></p> <p><b><u>STANDARD:</u></b> On the "B" Dryer control panels the student REMOVES the Primary IA Dryers from service by rotating the following switch, to the "OFF" position:</p> <ul style="list-style-type: none"> <li>• Primary IA Dryer "B" On/Off selector.</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b> Position the following valves:</p> <ul style="list-style-type: none"> <li>• Close IA-2735 (Primary Air Filter "A" Outlet). (TB5 L-39)</li> </ul> <p><b><i>Cue: Indicate that IA-2735 is CLOSED.</i></b></p> <p><b><u>STANDARD:</u></b> The student LOCATES and CLOSES IA-2735 (Primary Air Filter "A" Outlet) by rotating the valve operator until the position-indicating arrow is perpendicular to the piping.</p> <p><b>Note: The valve is located on the Turbine floor between the Primary IA Compressor Dryer Complexes.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>



<p><b><u>STEP 7:</u></b>      Position the following valves:</p> <ul style="list-style-type: none"> <li>• Close IA-2736 (Primary Air Filter "B" Outlet). (TB5 L-39)</li> </ul> <p><b><i>Cue: Indicate that IA-2736 is CLOSED.</i></b></p> <p><b>STANDARD:</b> The student LOCATES and CLOSES IA-2736 (Primary Air Filter "B" Outlet) by rotating the valve operator until the position indicating arrow is perpendicular to the piping.</p> <p><b>Note: The valve is located on the Turbine floor between the Primary IA Compressor Dryer Complexes.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b>      Open HPSW-771 (Primary IA Comp. Disc. Block) (TB5 M-39)</p> <p><b><i>Cue: Indicate that HPSW-771 is OPEN, red light lit..</i></b></p> <p><b><u>STANDARD:</u></b> The student LOCATES and OPENS HPSW-771 (Primary IA Compressor Cooling Discharge Block) by rotating the switch to the "Open" position.</p> <p><b>Note: HPSW-771 control switch and the cooling water inlet pressure gauges are located north of the compressor next to the west Turbine floor wall.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 9:</b> Verify adequate cooling water flow as follows:  <b>IF</b> OHPS-PG-0823 (Primary IA Compressor Cooling Water Inlet Pressure) does <b>NOT</b> read between 61 and 67 psig. Backwash HPSW-764 (Primary IA Comp. Disch. Control) (TB5 M-39) per Backwash of Primary IA Compressor HPSW Pressure Regulator enclosure.</p> <p><b>Cue: Using a pointing device, indicate to the student the following readings:</b></p> <ul style="list-style-type: none"> <li>- <b>OHPS-PG-0823 = 64 psig.</b></li> </ul> <p><b>STANDARD:</b> The student VERIFIES adequate cooling water flow by monitoring the following gauges:</p> <ul style="list-style-type: none"> <li>- OHPS-PG-0823 (Primary IA Comp. Cooling Water Inlet Pressure).</li> </ul> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 10:</b> Verify HPSW-767 (Primary IA Comp. Disch. Control) (TB5 M-39) in Locked Open Position.</p> <p><b>Cue: Indicate that HPSW-767 (Primary IA Comp. Disch. Control) (TB5 M-39) in Locked Open Position</b></p> <p><b>STANDARD:</b> HPSW-767 (Primary IA Comp. Disch. Control) (TB5 M-39) is verified in the Locked Open Position.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 11:</b> Depress (RESET/LAMP TEST) pushbutton.</p> <ul style="list-style-type: none"> <li>• Verify all alarm indicators light.</li> </ul> <p><b>Cue: While RESET/LAMP TEST pushbutton is depressed, inform student that all alarm indicators are lit.</b></p> <ul style="list-style-type: none"> <li>• Release (RESET/LAMP TEST) pushbutton and verify all alarm indicator lamps extinguish.</li> </ul> <p><b>Cue: When RESET/LAMP TEST pushbutton is released, inform student that all alarm indicator lamps extinguish.</b></p> <p><b>STANDARD:</b> The candidate tests the alarm indicators by depressing the black RESET/LAMP TEST pushbutton on the compressor control panel located on the north side of the compressor housing.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 12:</b> Depress (START) Primary IA Compressor pushbutton.</p> <p><b>Cue: Indicate that the red "Machine Run" light has illuminated.</b></p> <p>Start the Primary Air Compressor by depressing the "Start" pushbutton on the control panel located on the north side housing of the compressor.</p> <p><b>STANDARD:</b> The student STARTS the Primary Air Compressor by depressing the "Start" pushbutton on the control panel located on the north side housing of the compressor.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 13:</u></b>      Verify 0HPS-PG-0824 (Primary IA Compressor Cooling Water Outlet Pressure) is within the range specified (in procedure).</p> <p><b><i>Cue: Using a pointing device, indicate to the student the following readings:</i></b></p> <ul style="list-style-type: none"> <li>• <b><i>OHPS-PG-0823 = 64 psig.</i></b></li> <li>• <b><i>OHPS-PG-0824 = 9 psig.</i></b></li> </ul> <p>Student should simulate throttling HPSW-767 (Pri. IA Comp. Disch. Cont.) to achieve the proper flow/outlet pressure range.</p> <p><b><i>Cue: When HPSW-767 is throttled closed, indicate with the pointing device that inlet pressure is 64 psig and outlet pressure is 18 psig</i></b></p> <p><b><u>STANDARD:</u></b>      The student VERIFIES adequate cooling water flow by monitoring the following gauges:</p> <ul style="list-style-type: none"> <li>• OHPS-PG-0823 (Primary IA Comp. Cooling Water Inlet Pressure).</li> <li>• OHPS-PG-0824 (Primary IA Compressor Cooling Water Outlet Pressure).</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 14:</u></b>      If Compressor fails to start, notify WCC SRO for aid in resolving problem.</p> <p><b><i>Cue: The green "ON" light is lit.</i></b></p> <p><b><u>STANDARD:</u></b>      The student determines that compressor is operating.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 15:</b>      VERIFY selected Enclosure fan is running.</p> <p><b>Cue: Inform the student that the selected Enclosure Fan is running properly.</b></p> <p>Verify all door panels are installed on the Primary IA Compressor Enclosure.</p> <p><b>Cue: Inform student that all door panels are installed on enclosure.</b></p> <p><b>STANDARD:</b>    The student determines that selected enclosure fan is operating and all door panels located on the compressor enclosure are installed.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 16:</b>      Throttle open IA-2735 (Primary Air Filter "A" Outlet) or IA-2736 (Primary Air Filter "B" Outlet) (TB5 L-39) and SLOWLY pressurize the Dryer tanks to system pressure (100-110 psig).</p> <p><b>Cue: Once the student has demonstrated his/her ability to properly throttle the valve, indicate to the student with a pointing device that the Desiccant Dryers have reached 104 psig.</b></p> <p><b>STANDARD:</b>    The student throttles open one of the following valves to SLOWLY PRESSURIZE the Desiccant Dryers:</p> <ul style="list-style-type: none"> <li>•    IA-2735      (Primary Air Filter "A" Outlet)</li> </ul> <p style="text-align: center;"><b><u>OR</u></b></p> <ul style="list-style-type: none"> <li>•    IA-2736      (Primary Air Filter "B" Outlet)</li> </ul> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 17:</b> At the Primary IA Dryer A panel, position the (ON/OFF) switch to ON.</p> <p><b>Cue: Indicate that Primary IA Dryer A panel is positioned to ON</b></p> <p><b>STANDARD:</b> The student PLACES the Primary IA Dryers in service by positioning the following switches to the "ON" position:</p> <ul style="list-style-type: none"> <li>Primary IA Dryer "A" On/Off Selector</li> </ul> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 18:</b> At the Primary IA Dryer B panel, position the (ON/OFF) switch to ON.</p> <p><b>Cue: Indicate that Primary IA Dryer B panel is positioned to ON</b></p> <p><b>STANDARD:</b> The student PLACES the Primary IA Dryers in service by positioning the following switches to the "ON" position:</p> <ul style="list-style-type: none"> <li>Primary IA Dryer "B" On/Off Selector</li> </ul> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 19:</b> CONNECT the Primary IA Compressor to the IA Header.</p> <ul style="list-style-type: none"> <li>Open IA-2735 (Primary Air Filter A Outlet). (TB5 L-39)</li> </ul> <p><b>Cue: Indicate that IA-2735 is OPEN</b></p> <p><b>STANDARD:</b> The student CONNECTS the Primary Air compressor to the IA header by slowly opening the following valves:</p> <ul style="list-style-type: none"> <li>IA-2735 (Primary Air Filter "A" Outlet)</li> </ul> <p><b>Note: The valve is fully open when the position indicator arrows are parallel to the piping.</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 20:</u></b> CONNECT the Primary IA Compressor to the IA Header.</p> <ul style="list-style-type: none"> <li>• Open IA-2736 (Primary Air Filter B Outlet). (TB5 L-39)</li> </ul> <p><b><i>Cue: Indicate that IA-2736 is OPEN</i></b></p> <p><b><u>STANDARD:</u></b> The student CONNECTS the Primary Air compressor to the IA header by slowly opening the following valves:</p> <ul style="list-style-type: none"> <li>• IA-2736 (Primary Air Filter "B" Outlet)</li> </ul> <p><b>Note: The valve is fully open when the position indicator arrows are parallel to the piping.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 21:</u></b> CONNECT the Primary IA Compressor to the IA Header.</p> <p><b><i>Cue: Indicate that the valves are fully open.</i></b></p> <p><b><u>STANDARD:</u></b> The student CONNECTS the Primary Air compressor to the IA header by slowly opening the following valves:</p> <ul style="list-style-type: none"> <li>• IA-2730 (Primary Desiccant Air Filter "A" Outlet)</li> </ul> <p><b>Note: The valve is fully open when the position indicator arrows are parallel to the piping.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 22:</u></b> CONNECT the Primary IA Compressor to the IA Header.</p> <ul style="list-style-type: none"> <li>Slowly open IA 2731 (Primary Desiccant Air Filter B Outlet). (TB5 L-39)</li> </ul> <p><b><i>Cue: Indicate that the valves are fully open.</i></b></p> <p><b><u>STANDARD:</u></b> The student CONNECTS the Primary Air compressor to the IA header by slowly opening the following valves:</p> <ul style="list-style-type: none"> <li>IA-2731 (Primary Desiccant Air Filter "B" Outlet)</li> </ul> <p><b>Note: The valve is fully open when the position indicator arrows are parallel to the piping.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 23:</u></b> As system pressure increases check for air leaks on the Primary IA Compressor, Air Dryers, and Air Filters.</p> <p><b><i>Cue: No air leaks are found.</i></b></p> <p><b>NOTE: Enclosure "Startup Of The Primary IA Compressor" contains a detailed list of expected Primary Air Compressor normal operating parameters.</b></p> <p><b><u>STANDARD:</u></b> The student checks for air leaks on the Primary IA Compressor, Air Dryers, and Air Filters as system pressure increases.</p> <ul style="list-style-type: none"> <li>Primary Air Compressor monitored for normal operation.</li> </ul> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_



## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
8	Open HPSW-771 (Primary IA Comp. Disc. Block) aligns cooling water to the compressor
12	Starts the compressor
13	Establishes proper cooling water flow to the compressor
16	Pressurizes and places in service the primary air filter
17	Places the "A" Air Dryer in service
18	Places the "B" Air Dryer in service
19-22	Establishes an air flow path from the compressor to the IA Header

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Unit 1 is at 100% power.
2. The Transmission Dept. was performing PM checks on B3T switchgear when the incoming feeder breaker tripped open.
3. When B3T de-energized, the automatic transfer to the backup source (B4T) did not occur and the Primary IA Compressor tripped.
4. The RO entered "Loss of IA" AP/1/A/1700/22 as IA header pressure decreased to  $\approx 85$  psig and has reached step 4.5, which directs an operator be dispatched to "Ensure Primary IA Compressor in operation."

**INITIATING CUES:**

The SRO in the control room instructs you ENSURE the Primary IA Compressor is in operation.

Facility: **Oconee**Date of Examination: **February 11, 2002**Exam Level: **SRO-U**

Operating Test No.: \_\_\_\_\_

## B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. <b>JPM NRC-001, Re-establish RCP Seal Injection and Normal RCS Makeup following loss of operating HPI Pump, AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection [KA: 004 A4.11 (3.4/3.3)]</b>	N, S	2
b. <b>JPM CRO-075, Initiate Automatic Pressurizer Spray (spray valve fails open with closed indication)</b> OP/1103/05, Pressurizer Operation, Encl. 4.1 [KA: 010 A2.02 (3.9/3.9)]	M, A, S	3
c. <b>JPM CRO-96, Align ECCS Suction from Emergency Sump (LP-20 Failed Closed)</b> EOP, Encl. 5.12 [KA:BW/E08 EA1.1 (4.0/3.7)] (PRA) (last exam)	D, A, S, L	4P

## B.2 Facility Walk-Through

a. <b>JPM NLO-10, Place the RB Hydrogen Analyzer in Service</b> EOP Encl. 5.2 [KA: 028 A4.03 (3.1/3.3)]	D, R, L	5
b. <b>JPM NLO-022, Station ASW Pump Alignment</b> EOP Encl. 5.10 (Station ASW Pump Alignment) [KA: APE054 AA1.01 (4.5/4.4)]	D, R, L	4S

\* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NRC-001/B.1**

**Re-establish RCP Seal Injection and Normal RCS  
Makeup following loss of operating HPI Pump**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Re-establish RCP Seal Injection and Normal RCS Makeup following loss of operating HPI Pump

**Alternate Path:**

NO

**Facility JPM #:**

NEW

**K/A Rating(s):**

System: 004

K/A: A4.11

Rating: 3.4/3.3

**Task Standard:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection, is used to Re-establish RCP Seal Injection and Normal RCS Makeup.

**Preferred Evaluation Location:**

Simulator  X  In-Plant

**Preferred Evaluation Method:**

Perform  X  Simulate

**References:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection

**Validation Time:** 12 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

=====

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-41
2. Import files for JPM NRC-001
3. Go to run
4. When directed by examiner Fire timer 1

**Tools/Equipment/Procedures Needed:**

AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 in MODE 1 at 100% power  
No equipment OOS

**INITIATING CUES:**

Respond to plant conditions.

**NOTE: Ensure that the candidate is at the back of the control room when the JPM begins.**

**START TIME:** \_\_\_\_\_

<p><b><u>STEP 1:</u></b> Refer to ARG for Statalarms 1SA-2/B-2 (RCP Seal Inlet Header Flow Hi/Low) and 1SA-2/C-2 (Injection Pump Discharge Header Pressure Low) and then refer to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection.</p> <p><b><u>STANDARD:</u></b> Candidate refers to ARG for Statalarms 1SA-2/B-2 (RCP Seal Inlet Header Flow Hi/Low) and/or 1SA-2/C-2 (Injection Pump Discharge Header Pressure Low) and then refers to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection.</p> <p><b><i>Cue: If candidate informs the SRO that the 1A HPI has a sheared shaft and would like to secure the 1A HPI pump, inform him to "secure the 1A HPI pump".</i></b></p> <p><b><i>Cue: If candidate informs the SRO that a loss of HPI has occurred and would like to refer to AP/14, Loss of Normal HPI Makeup and/or RCP Seal Injection, inform him to refer to AP/14.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b> <b>IAAT</b> RCP seal injection flow is lost, <b>AND</b> Component Cooling is lost, <b>THEN</b> perform the following:</p> <ul style="list-style-type: none"> <li>• Ensure Rx tripped.</li> <li>• Stop <u>all</u> RCPs.</li> <li>• Initiate AP/25 (SSF EOP).</li> </ul> <p><b><u>STANDARD:</u></b> Determine that this IAAT step does not apply because Component Cooling is available by observing 1A CC pump operating, about 900 gpm total CC flow. Go to next step.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>



<p><b>STEP 3:</b>      <b>IAAT</b> loss of suction to operating HPI pumps is indicated:</p> <ul style="list-style-type: none"> <li>• Motor amps low or cycling</li> <li>• Discharge pressure low or cycling</li> <li>• Abnormal LDST level trend</li> </ul> <p><b>THEN GO TO</b> Step 3.3.</p> <p><b>Cue: If asked, indicate that none of the above conditions existed when the HPI pumps failed.</b></p> <p><b>STANDARD:</b>    Determine that a loss of suction to the HPI pumps has not occurred observing LDST level, pressure and HPI pump suction flow path. Use the RNO step to GO TO Step 4.6.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b>      Verify <u>any</u> HPI pump operating.</p> <p><b>STANDARD:</b>    Determine that NO HPI pumps are operating. The 1A HPI pump is in "off" and the 1B HPI pump has not auto started. Perform the RNO steps.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b>      Close 1HP-5 (Letdown Isolation).</p> <p><b>STANDARD:</b>    1HP-5 located on 1UB1 is closed.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b>      Ensure 1HP-120 (RC Volume Control) in HAND and closed.</p> <p><b>STANDARD:</b>    1HP-120, located on 1UB1 is placed in HAND by depressing the white button and using the toggle switch to close 1HP-120 (Green position indicating light and "0" demand).</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b> Place 1HP-31 (RCP Seal Flow Control) in HAND and close.</p> <p><b><u>STANDARD:</u></b> 1HP-31, located on 1UB1 is placed in HAND by depressing the white button and using the toggle switch to close 1HP-31 (Green position indicating light and "0" demand)..</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> Start standby HPI pump.</p> <p><b><u>STANDARD:</u></b> "1B" HPI pump, located on 1UB1 is started by taking the switch to the START position. Pump verified to be operating by red "on" light and pump amps.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b> IF standby HPI pump started, <b>THEN GO TO</b> Step 4.111.</p> <p><b><u>STANDARD:</u></b> Determine that the 1B HPI pump started by observing pump amps and discharge pressure &gt; 3000 psig on 1UB1. <b>GO TO</b> Step 4.111.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b> Ensure 1HP-31 (RCP Seal Flow Control) in HAND.</p> <p><b><u>STANDARD:</u></b> Verify 1HP-31, located on 1UB1, in HAND by observing the white HAND light lit.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b> <u>Slowly</u> open 1HP-31 (RCP Seal Flow Control) in small increments until <math>\approx</math> 8 gpm/RCP is achieved.</p> <p><b><u>STANDARD:</u></b> Use the toggle switch to slowly open 1HP-31 until <math>\approx</math> 8 gpm/RCP is achieved. RCP Seal flow to each RCP is monitored on VB3.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> Re-establish normal makeup through 1HP-120 (RC Volume Control).</p> <p><b><u>STANDARD:</u></b> 1HP-120 is returned to normal by:</p> <ul style="list-style-type: none"> <li>• Slowly opening 1HP-120 with the toggle switch to establish makeup flow. Monitor RC Makeup Flow gauge located on 1UB1 to determine makeup rate.</li> <li>• *When PZR level is near setpoint (220") 1HP-120 may be placed in auto.</li> </ul> <p><b>*Step not critical.</b></p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
7	1HP-31 should be closed prior to restarting an HPI pump to prevent RCP seal damage from hydraulic shock.
8	An HPI pump must be started to reestablished RCP seals and normal makeup.
11	1HP-31 must be opened to establish RCP seal flow.
12	1HP-120 must be opened to establish normal makeup.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit 1 in MODE 1 at 100% power  
No equipment OOS

**INITIATING CUES:**

Respond to plant conditions.

**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM CRO-075/B.1**  
**INITIATE AUTOMATIC PRESSURIZER SPRAY**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Initiate Automatic Pressurizer spray

**Alternate Path:**

Yes \_\_\_\_\_

**Facility JPM #:**

CRO-075

**K/A Rating(s):**

010 A2.02 (3.9 / 3.9)

**Task Standard:**

Automatic pressurizer spray is properly initiated by procedure. 1RC-3 is closed to terminate the depressurization.

**Preferred Evaluation Location:**

Simulator   X   In-Plant \_\_\_\_\_

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

OP/0/A/1103/05, Pressurizer Operation, Enclosure 4.1

**Validation Time: 12 min.**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_

Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-41
2. Import CRO-075
3. Go to RUN
4. After spray valve cycles open and then closes Activate Timer #1.



**Tools/Equipment/Procedures Needed:**

OP/0/A/1103/05 (Pressurizer Operation).

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. Unit 1 at 100% Rx Power
2. Greater than 100 ppm Boron difference exists between the RCS and Pressurizer.

**INITIATING CUES:**

SRO in Control Room instructs you to initiate automatic pressurizer spray to equalize boron concentration per OP/0/A/1103/05 (Pressurizer Operation) Enclosure 4.1 (Establishing Auto PZR Spray) using heater banks 2, 3, and 4.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Review Limits and Precautions</p> <p><b>STANDARD:</b> Operator obtains OP/0/A/1103/05, Pressurizer Operation, and reviews Limits and Precautions.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Verify 1RC-1 (PZR SPRAY) in AUTO.</p> <p><b>STANDARD:</b> 1RC-1 (PZR SPRAY) controller is located by the student on 1UB1 and verified to be in AUTO, by observing the blue "AUTO" indication illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Verify 1RC-3 (SPRAY BLOCK) OPEN.</p> <p><b>STANDARD:</b> 1RC-3 (SPRAY BLOCK) controller is located by the student on 1UB1 and verified to be full open, by observing the red "OPEN" indication illuminated and the green "CLOSED" indication extinguished</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b> Place PZR Heaters to ON.</p> <p><b>STANDARD:</b> Pressurizer Heater banks 2, 3, and/or 4 are located by the student on 1UB1. The student energizes Pressurizer Heater banks 2, 3, and 4 by depressing the red ON pushbutton on each heater bank, and the red ON indication illuminated.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 5:</u></b>      Verify 1RC-1 (PZR SPRAY) cycles to control RCS pressure &lt;2205 psig.</p> <p><b><u>STANDARD:</u></b> The student monitors RCS pressure by observing:</p> <p style="padding-left: 40px;">RCS PRESSURE WR or NR chart recorders on 1UB1,</p> <p style="padding-left: 80px;">OR</p> <p style="padding-left: 40px;">RCS WR PRESS LOOP A or LOOP B meters on 1UB1,</p> <p style="padding-left: 80px;">OR</p> <p style="padding-left: 40px;">By use of the Operator Aid Computer.</p> <p style="padding-left: 40px;">The student observes 1RC-1 (Pzr Spray) on 1UB1 to ensure it opens automatically, at approximately 2205 psi.</p> <p style="padding-left: 40px;">The student observes 1RC-1 (Pzr Spray) valve to ensure it closes at approximately 2155 psi.</p> <p><b>NOTE: After 1RC-1 opens and cycles closed, it will fail open but indicate that it is closed. The student must recognize and stop the depressurization.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b>      TERMINATE the depressurization.</p> <p><b><u>STANDARD:</u></b> The student recognizes that the spray valve is still open with closed indication by RCS pressure trend.</p> <p style="padding-left: 40px;">The student may attempt to close 1RC-1 (Pzr Spray) manually by depressing the green CLOSE pushbutton on 1UB1 (1RC-1 will not close).</p> <p style="padding-left: 40px;">The student will close 1RC-3 (Spray Block) by depressing and holding the green CLOSE pushbutton until the green "CLOSE" indication is illuminated and the red "OPEN" indication is extinguished on 1UB1.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b>      STABILIZE RCS pressure</p> <p><b><u>STANDARD:</u></b>   The student SHOULD monitor RCS pressure and recognize that the Pressurizer Heaters are still in manual and "ON".</p> <p>                         The student will place Pressurizer Heater Banks 2, 3, and 4 in AUTO, as required, by depressing the blue AUTO pushbuttons on Pressurizer Heater Banks 2, 3, and/or 4 controllers, and verify the blue back light comes on, on 1UB1.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: right;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
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**STOP TIME:** \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
4	Step 4 is necessary to increase the RCS pressure and make the spray valve cycle to equalize boron concentration between the RCS and the Pressurizer.
6	Step 6 is necessary because the student must realize that the spray valve has not closed even though it indicates closed and close 1RC-3 to terminate the depressurization. If not a reactor trip could occur.
7	Step 7 is necessary because the heaters will not cycle in manual. The student needs to realize this and place the heaters in AUTO so that pressure control can be reestablished.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. Unit 1 at 100% Rx Power
2. Greater than 100 ppm Boron difference exists between the RCS and Pressurizer.

**INITIATING CUES:**

SRO in Control Room instructs you to initiate automatic pressurizer spray to equalize boron concentration per OP/0/A/1103/05 (Pressurizer Operation) Enclosure 4.1 (Establishing Auto PZR Spray) using heater banks 2, 3, and 4.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM CRO-096/B.1**

**Align ECCS Suction from Emergency Sump  
(LP-20 Failed Closed)**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Align ECCS Suction from Emergency Sump

**Alternate Path:**

YES \_\_\_\_\_

**Facility JPM #:**

CRO-096 \_\_\_\_\_

**K/A Rating(s):**

System: BW/E08  
K/A: EA1.1  
Rating: 4.0/3.7

**Task Standard:**

Enclosure 5.12, ECCS Suction Swap to RBES is properly completed to align ECCS from the Emergency sump.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EP/1/A/1800/01, LOCA CD  
Enclosure 5.12 (ECCS Suction Swap to RBES) of the EOP

**Validation Time: 15 minutes**

**Time Critical: NO**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME SIGNATURE DATE

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 220
2. Import files for CRO-096
3. Go to run
4. Timer 3 will lower BWST Level to < 9' if needed at step 5
5. Timer 4 will lower BWST Level to < 6' if needed at step 6

**Tools/Equipment/Procedures Needed:**

Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A large break LOCA has occurred which is depleting the BWST.
2. EOP is being followed, currently in LOCA CD tab.

**INITIATING CUES:**

The Control Room SRO directs you to Align ECCS Suction from Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

START TIME: \_\_\_\_\_

<p><u>STEP 1:</u>      Ensure both of the following are operating:</p> <ul style="list-style-type: none"> <li>• 1A LPI Pump</li> <li>• 1B LPI Pump</li> </ul> <p><u>STANDARD:</u>    Locates control switches for 1A and 1B LPI Pumps on 1UB2 and verifies red ON lights are illuminated and pump amps indicated.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      Verify flow in <u>any</u> LPI header is &lt; 1000 gpm RNO is to go to Step 58.</p> <p><u>STANDARD:</u>    Verifies LPI HDR FLOW indicates ≥ 1000 gpm per header on 1UB2. <b>GO TO</b> Step 58</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      <b>WHEN</b> BWST level is ≤ 13', <b>THEN</b> stop <u>all</u> HPI pumps.</p> <p><u>STANDARD:</u>    Locates the BWST level gauges on 1UB2. The student determines level to be ≤ 13'.                           or                           May obtain BWST level from the OAC (Operator Aid Computer), at 1UB1, 1UB2, or STA monitor.                           or                           ICCM monitors on 1UB1.                           Places control switch for any operating HPI pump in the TRIP or PTL position and verifies <u>all</u> HPI pumps are not operating by the red ON lights not illuminated.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u> Throttle RBS in all headers with an operating pump to 900-1000 gpm:</p> <ul style="list-style-type: none"> <li>• 1BS-1 (1A Hdr)</li> <li>• 1BS-2 (1B Hdr)</li> </ul> <p><u>STANDARD:</u> Depresses the MANUAL pushbuttons for 1BS-1 and 1BS-2 on the ES RZ module on 1VB2; then depresses the CLOSE pushbuttons until 900-1000 gpm flow is indicated in each RB Spray header.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> <b>WHEN</b> BWST level <math>\leq</math> 9', <b>AND</b> RB level is rising, <b>THEN</b> simultaneously open the following:</p> <ul style="list-style-type: none"> <li>• 1LP-19 (1A RB Suction)</li> <li>• 1LP-20 (1B RB Suction)</li> </ul> <p><b><i>Cue: If needed, inform candidate that using time compression BWST level will be lowered to &lt; 9' and RB level will be increased.</i></b></p> <p><u>STANDARD:</u> Verifies BWST level &lt; 9 feet on gauges on 1UB2 or from the OAC (1UB1, 1UB2, or STA monitor) or the ICCM monitors on 1UB1. Candidate locates the control switch for 1LP-19 ('1A' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction. Verifies red OPEN light comes on, and green CLOSED light goes off. Then locates the control switch for 1LP-20 ('1B' RX. BLDG. SUCTION) on 1UB2 and rotates the switch in the OPEN direction.</p> <p><b>Note: 1LP-20 will not open. There is not an RNO step here; valve failure will be mitigated later in the procedure.</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 6:</b>        <b>IAAT BWST level is <math>\leq 6'</math>, THEN perform Steps 62 through 67.</b></p> <p><b>Cue: If needed, inform candidate that using time compression BWST level will be lowered to <math>&lt; 6'</math> and RB level will be increased.</b></p> <p><b>STANDARD:</b>    Candidate verifies BWST level <math>\leq 6'</math>: BWST level gauges on 1UB2. BWST level from the OAC, at 1UB1, 1UB2, or STA monitor. ICCM monitors on 1UB1.</p> <p>When BWST level is <math>\leq 6'</math> go to the IAAT step and then perform Steps 62 through 67</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 7:</b>        Verify 1LP-19 (1A RB Suction) open.</p> <p><b>STANDARD:</b>    Locates the control switch for 1LP-19 on 1UB2 and verifies red OPEN light is illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b>        Verify 1LP-20 (1B RB Suction) open.</p> <p><b>STANDARD:</b>    Locates the control switch for 1LP-20 ('1B' RB SUCTION) on 1UB2 and rotates the switch in the OPEN direction green CLOSED light remains illuminated and red OPEN light remains off. Continue to RNO for Step 63</p> <p><b>NOTE: 1LP-20 will NOT respond. Student may attempt to dispatch operators to either manually open 1LP-20 or RESET the breaker.</b></p> <p><b>Cue: Inform student all attempts to open 1LP-20 are unsuccessful.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b> Immediately perform the following:</p> <ul style="list-style-type: none"> <li>• Close 1LP-21 (1A LPI BWST Suction)</li> <li>• Open 1LP-9 (1C LPI Pump Discharge to 1A LPI Header)</li> <li>• Open 1LP-10 (1C LPI Pump Discharge to 1B LPI Header)</li> </ul> <p><b><u>STANDARD:</u></b> Locates the controls for 1LP-21 on the RZ module and depresses the MANUAL pushbuttons for ES channels 3 and 7, on 1VB2. The student then locates the control switch for 1LP-21 on 1UB2 and rotates it in the CLOSE direction.</p> <p>Locates the control switches for 1LP-9 and 1LP-10 on 1UB2 and rotates switches in the OPEN direction, red OPEN lights come on and green CLOSED lights go off.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b> Stop the following:</p> <ul style="list-style-type: none"> <li>• 1B LPI Pump</li> <li>• 1B RBS Pump</li> </ul> <p><b><u>STANDARD:</u></b> Locates RB Spray Pump B control on ES RZ module on 1VB2. MANUAL pushbutton for ES channel 8 is depressed. Green OFF pushbutton is depressed and verified lit, while white RUN light is off.</p> <p>Locates LPI Pump B control on 1UB2 and turns pump switch to "off". Red light is verified off and white light verified on.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b> Maximize flow <math>\leq 1100</math> gpm in each LPI header that has <b>NOT</b> been locally throttled.</p> <p><b><i>Cue: No LPI valves have been locally throttled.</i></b></p> <p><b><u>STANDARD:</u></b> Flow in the "B" LPI header is maximized to <math>\leq 1100</math> gpm by using 1LP-17 (1A LPI Injection) and 1LP-18 (1B LPI Injection) located on UB2.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 12:</u></b> Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).</p> <p><b><i>Cue: An operator has been dispatched to close 1LP-28.</i></b></p> <p><b><u>STANDARD:</u></b> An operator is Dispatch an operator to close 1LP-28 (BWST Outlet) (East of Unit 1 BWST).</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 13:</u></b> <b>GO TO</b> Step 69.</p> <p><b><u>STANDARD:</u></b> Transfer is made to Step 69.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 14:</u></b> Throttle RBS in all headers with an operating pump to 900-1000 gpm:</p> <ul style="list-style-type: none"> <li>• 1BS-1 (1A Hdr)</li> <li>• 1BS-2 (1B Hdr)</li> </ul> <p><b><u>STANDARD:</u></b> On the ES RZ module on 1VB2; presses the 1BS-1 CLOSE pushbutton until 900-1000 gpm flow is indicated in the 1A RB Spray header.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
5	Aligns LPI Pump suction to Reactor Building Emergency Sump.
9	Secures LPI Pump suction from the BWST.
10	Secures 1B LPI pump – prevents pump damage. Secure 1B RBS pump – Limits flow in suction line to maintain adequate flow for the LPI pump.
11	Throttle flow < 1000 gpm – prevents pump damage.
12	Close 1LP-28 (BWST Isolation) - Isolates suction from the BWST.
14	Throttle RBS pump flow 900-1000 gpm – Limits flow in suction line to maintain adequate flow for the LPI pump.



**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

1. A large break LOCA has occurred which is depleting the BWST.
2. EOP is being followed, currently in LOCA CD tab.

**INITIATING CUES:**

The Control Room SRO directs you to Align ECCS Suction from Emergency Sump per Enclosure 5.12, ECCS Suction Swap to RBES, of the EOP.

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NLO-010/B.2**

**PLACE THE REACTOR BUILDING HYDROGEN  
ANALYZER IN SERVICE**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

PLACE THE REACTOR BUILDING HYDROGEN ANALYZER IN SERVICE

**Alternate Path:**

No

**Facility JPM #:**

NLO-010

**K/A Rating(s):**

System: 028

K/A: A4.03

Rating: 3.1/3.3

**Task Standard:**

Reactor Building Hydrogen Analyzer is placed in service

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service" Enclosure of EOP

**Validation Time:** 10 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

=====

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 5.2, "Placing RB Hydrogen Analyzers in Service" Enclosure of EP/1,2,3/A/1800/001

**NOTE: Student is expected to know that this procedure is pre-staged at the Hydrogen Analyzer and be able to locate the procedure. (Not Critical)**

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

A LOCA has occurred on Unit \_\_\_\_ (specify unit). Engineered Safeguards Channels #1 and #2 have actuated. Enclosure 5.1 (ES Actuation) of the EOP is being completed. The RB Hydrogen Analyzer is aligned in the standby mode.

"B" Train of RB Hydrogen Analyzer is out of service.

**INITIATING CUES:**

Enclosure 5.1 (ES Actuation) of EP/\_\_\_/A/1800/01 directs the operator to place the RB Hydrogen Analyzer in service. The Control Room SRO directs you to place Train "A" of the RB Hydrogen Analyzer in service on Unit\_\_\_\_\_ (specify unit) per "Placing RB Hydrogen Analyzers in Service" Enclosure of EOP.

**Note: Only "A" train will be placed in service.**

START TIME: \_\_\_\_\_

<p><u>STEP 1:</u>      Verify 'Power On' light is ON.</p> <p><u>STANDARD:</u>    Red "Power On" light on remote panel is verified to be ON at the Remote RB Hydrogen Analyzer Panel (Train "A").</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 2:</u>      ENSURE 'H2 Dual Range Sw.' positioned to 0-10% Scale.</p> <p><u>STANDARD:</u>    H2 DUAL RANGE Sw. on the Remote Panel is verified to be positioned to the "0-10%" scale.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 3:</u>      ENSURE Function Selector switch selected to Sample position.</p> <p><u>STANDARD:</u>    FUNCTION SELECTOR SWITCH on the Remote Panel is verified to be positioned in the "SAMPLE" position.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>____ SAT</p> <p>____ UNSAT</p>

<p><b><u>STEP 4:</u></b> ENSURE Post Accident Sample Panel is isolated from the Reactor Building Hydrogen Analyzer by pushing OFF button for the following:</p> <p><b>Train A</b></p> <ul style="list-style-type: none"> <li>• PR-83 (Bypass to Post Accident Sample Panel)</li> <li>• PR-86 (Bypass from Post Accident Sample Panel)</li> </ul> <p><b><u>STANDARD:</u></b> At the remote panel, the "OFF" button is pushed for the following valves:</p> <p><b>Train A</b></p> <ul style="list-style-type: none"> <li>• PR-83 (Bypass to Post Accident Sample Panel)</li> <li>• PR-86 (Bypass from Post Accident Sample Panel)</li> </ul> <p><b><i>Cue: After the above actions are taken indicate that the valve ON buttons/lights will be off.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> NOTIFY Control Room perform the following:</p> <ul style="list-style-type: none"> <li>• Open 1PR-81 and 1PR-84 (1A RB Hydrogen Analyzer)</li> </ul> <p><b><u>STANDARD:</u></b> Control Room personnel of affected unit are notified to open PR-81 and PR-84 (Train A) to align appropriate train of Reactor Building Hydrogen Analyzer to the Reactor Building.</p> <p><b><i>Cue: After notification has been made, indicate to student that the red OPEN indication lights for the appropriate Reactor Building Hydrogen Analyzer Isolation Valves, located at the Remote Panel, are ON.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 6:</u></b> At Unit #1 RB Containment Atmosphere Hydrogen Analyzer Remote Control Panel, perform the following:</p> <p><b>Train "A"</b></p> <ul style="list-style-type: none"> <li>Position SAMPLE VALVE SEL SW to 1PR-71 (TOP OF CONTAINMENT SAMPLE).</li> </ul> <p><b><u>STANDARD:</u></b> SAMPLE VALVE SEL. Sw. is positioned to appropriate sample valve:</p> <ul style="list-style-type: none"> <li>PR-71 (Top of Containment Sample) for Train 'A'</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 7:</u></b> Position OFF / STANDBY /ANALYZE switch to ANALYZE.</p> <p><b><u>STANDARD:</u></b> OFF/STANDBY/ANALYZE switch is positioned to the "ANALYZE" Mode.</p> <p><b><i>CUE: After student selects "ANALYZE", indicate to him/her, using a pointing device, that the Hydrogen Concentration Meter reads approximately 3% hydrogen and that the Yellow COMMON ALARM Light and Yellow HIGH HYDROGEN ALARM Light are ON.</i></b></p> <p><b><i>Next, inform student that approximately three minutes has elapsed and indicate to him/her, using a pointing device, that the Hydrogen Concentration Meter has returned to 0% hydrogen.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> Push REMOTE SELECTOR pushbutton to ensure control is from the Remote Panel.</p> <p><b><u>STANDARD:</u></b> REMOTE SELECTOR Pushbutton is depressed.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>



<p><b><u>STEP 9:</u></b>      <b>IAAT</b> either RB Hydrogen Analyzer Train indicates &lt; 2.25% Hydrogen, <b>AND</b> the meter reading stabilizes, <b>THEN</b> push the ALARM RESET pushbutton to reset the COMMON ALARM on 1A RB Hydrogen Analyzer train.</p> <p><i><b>Cue: Indicate the Hydrogen reading is ≈ 0 percent.</b></i></p> <p><i><b>Cue: Indicate to student that the Yellow Alarm Lights are out.</b></i></p> <p><b><u>STANDARD:</u></b>    ALARM RESET Pushbutton is depressed.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b>      <b>WHEN</b> HIGH HYDROGEN alarm has been reset on 1A Hydrogen Analyzer Train, <b>THEN</b> notify Unit 1 Control Room that both 1A Hydrogen Analyzer Train is in service.</p> <p><b><u>STANDARD:</u></b>    Phone/radio is located and control room personnel are notified that the RB Hydrogen Analyzer is in service.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      <b>EXIT</b> this enclosure.</p> <p><b><u>STANDARD:</u></b>    Procedure is exited.</p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
3	The 3-position switch must be selected to sample. Span/Zero is for calibration and is used by I&E.
4	Isolating the Post Accident Sampling System positions a 3-way valve to direct flow to the Hydrogen Analyzer.
5	Open the block valves to the hydrogen analyzer.
7	Start the Analyzer pump and the sampling process

**CANDIDATE CUE SHEET  
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

A LOCA has occurred on Unit \_\_\_\_ (specify unit). Engineered Safeguards Channels #1 and #2 have actuated. Enclosure 5.1 (ES Actuation) of the EOP is being completed. The RB Hydrogen Analyzer is aligned in the standby mode.

"B" Train of RB Hydrogen Analyzer is out of service.

**INITIATING CUES:**

Enclosure 5.1 (ES Actuation) of EP/\_\_\_/A/1800/01 directs the operator to place the RB Hydrogen Analyzer in service. The Control Room SRO directs you to place Train "A" of the RB Hydrogen Analyzer in service on Unit \_\_\_\_ (specify unit) per "Placing RB Hydrogen Analyzers in Service" Enclosure of EOP.

**Note: Only "A" train will be placed in service.**

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM NLO-022/B.2**

**ALIGN AND START THE STATION AUXILIARY  
SERVICE WATER PUMP**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

**ALIGN AND START THE STATION AUXILIARY SERVICE WATER PUMP**

**Alternate Path:**

No. \_\_\_\_\_

**Facility JPM #:**

NLO-022 \_\_\_\_\_

**K/A Rating(s):**

System: APE-054

K/A: AA1.01

Rating: 4.5/4.4

**Task Standard:**

Station Auxiliary Service Water Pump is aligned and started correctly

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant X

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate X

**References:**

Enclosure 5.10, Station ASW Pump Alignment, of the EOP

**Validation Time:** 12 minutes

**Time Critical:** NO

**Candidate:** \_\_\_\_\_

NAME

Time Start: \_\_\_\_\_

Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_

NAME

SIGNATURE

DATE

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

1. Nomex Protective Suit
2. 600 Volt Breaker rack out tool
3. Enclosure 5.10, Station ASW Pump Alignment, of the EOP
4. "Removal and Restoration of 6900/4160/600 Volt Breakers" Enclosure of OP/0/A/1107/011

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

1. A station blackout has occurred.
2. No EFDW pumps are available.
3. HPI forced cooling is not adequate.
4. The SSF D/G failed to start rendering the SSF ASWP inoperable.
5. Power has been restored to the standby buses.
6. SG pressure is  $\approx$  atmospheric.

**INITIATING CUES:**

The BOP directs you perform Enclosure 5.10 (Station ASW Pump Alignment).

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b> Open CCW-99 (Aux. Service Water Pump Suction)</p> <p><b>Cue:</b> <i>Indicate CCW-99 valve position indicator indicates, "open".</i></p> <p><b>STANDARD:</b> Student locates and opens CCW-99 (Aux. Service Water Pump Suction) by turning the hand wheel counter-clockwise until the valve indicator indicates "open".</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Open CCW-247 (Aux. Service Water Pump Recirc.).</p> <p><b>Cue:</b> <i>Indicate CCW-247 open and at the hard stop..</i></p> <p><b>STANDARD:</b> Student locates and opens CCW-247 (Aux. Service Water Pump Discharge) by turning the valve hand wheel counter-clockwise until it reaches a hard stop.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Open CCW-308 (Aux. Service Water Pump Vent.).</p> <p><b>Cue:</b> <i>Indicate CCW-308 open with air and water coming out of the vent.</i></p> <p><b>STANDARD:</b> Student locates and opens CCW-308 (Aux. Service Water Pump Vent).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>



<p><b>STEP 4:</b>      <b>WHEN</b> <u>all</u> air is vented from Station ASW Pump, <b>THEN</b> close CCW-308.</p> <p><b>Cue:</b> <i>Indicate that a solid stream of water is issuing out of the vent.</i></p> <p><b>STANDARD:</b>    Student locates and closes CCW-308 (Aux. Service Water Pump Vent).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b>      Don protective equipment</p> <p><b>STANDARD:</b>    Student obtains and dons the appropriate personal protective equipment prior to operation of any electrical breaker rated 400 VAC and above:</p> <ul style="list-style-type: none"> <li>• Safety glasses</li> <li>• Face shield</li> <li>• Hard hat</li> <li>• Rubber gloves with leather protectors</li> <li>• Flame-resistant clothing</li> </ul> <p><b>Note:</b> This step may be simulated and discussed, at the discretion of the examiner.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b>      Rack in AUX SERVICE WATER PUMP breaker (ASW SWGR 600V LOAD CENTER Unit 6, Bkr 6B).</p> <p><b>STANDARD:</b>    Student opens shutter door, inserts 600V rack out tool, and rotates tool clockwise to rack breaker in.</p> <p><b>Note:</b> Student may simulate performing this step.</p> <p><b>Cue:</b> <i>After breaker is racked in, indicate to student that the AUX SERVICE WATER PUMP MOTOR breaker green "open" indicating light is ON and when the "racking" tool is removed the shutter drops.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b>      Ensure the following are closed (ASW SWGR 600V LOAD CENTER):</p> <ul style="list-style-type: none"> <li>•    AUX SERV. WTR. SWGR. 4160-VOLT FDR. B1T - Unit 10</li> <li>•    Feeder Breaker For ASW SWGR Transformer</li> </ul> <p><b><u>STANDARD:</u></b>    Student locates the AUX. SER. WTR. SWGR. TRANSFORMER Feeder Breaker control switch and rotates it to the CLOSE direction.</p> <p>                     RED Closed lamp is observed to be illuminated</p> <p>                     OR</p> <p>                     Breaker position flag is observed to indicate Closed.</p> <p><b><i>CUE: Indicate to student that the 4160V Feeder Breaker for the "AUX SER WTR SWGR TRANSFORMER" red light is lit.</i></b></p> <p>                     Student locates the AUX SERV. WTR. SWGR 4160-VOLT FDR. B1T – UNIT 10 Breaker control switch and rotates it to the CLOSE direction.</p> <p>                     RED Closed lamp is observed to be illuminated</p> <p>                     OR</p> <p>                     Breaker position flag is observed to indicate Closed.</p> <p><b><i>CUE: Indicate to student that the 4160V Feeder Breaker for the " AUX SERV. WTR. SWGR 4160-VOLT FDR. B1T – UNIT 10" is closed in.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b>      Notify CRO that Station ASW Pump is vented and ready to start.</p> <p><b><u>STANDARD:</u></b>    Using either the phone or a radio inform the CRO that the ASW Pump is vented and ready to start by phone or radio.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b>      <b>WHEN</b> one of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• CRO directs starting Station ASW Pump</li> <li>• Station ASW Pump No longer needed in Unit 1</li> </ul> <p><b>THEN</b> continue in this enclosure.</p> <p><b><i>Cue: CRO directs starting Station ASW Pump</i></b></p> <p><b><u>STANDARD:</u></b>    Procedure is continued.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b>      Verify CRO directed starting Station ASW Pump.</p> <p><b><i>Cue: CRO directs starting Station ASW Pump</i></b></p> <p><b><u>STANDARD:</u></b>    Procedure is continued.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      Close CCW-309 (Aux Service Water Pump Disch Drain) (12' West of ASW Pump).</p> <p><b><i>Cue: Indicate CCW-309 closed and at the hard stop.</i></b></p> <p><b><u>STANDARD:</u></b>    Student locates and closes CCW-309 (Aux. Service Water Pump Disch Drn) is manually closed by turning the valve clockwise until it reaches a hard stop.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 12:</b> Open CCW-101 (Aux Service Water Pump Discharge).</p> <p><b>Cue:</b> <i>Indicate CCW-101 open (rising stem valve) and at a hard stop.</i></p> <p><b>STANDARD:</b> Student locates and opens CCW-101 (Aux. Service Water Pump Discharge) by turning the valve hand wheel counter-clockwise until it reaches a hard stop.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 13:</b> Start Station ASW Pump using the control switch (ASW SWGR 600V LOAD CENTER Unit 5).</p> <p><b>STANDARD:</b> Student locates AUX SERVICE WATER PUMP MOTOR control switch and rotates switch to the CLOSE position.</p> <p><b>CUE:</b> <i>After control switch is rotated, indicate to student that the AUX SERVICE WATER PUMP MOTOR breaker red "closed" indicating light is ON and you can hear the pump.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 14:</b> Notify CRO that Station ASW Pump is operating.</p> <p><b>STANDARD:</b> Using either the phone or a radio inform the CRO is that Station ASW Pump is operating.</p> <p><b>COMMENTS:</b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	Step 1 necessary to align pump suction
2	Step 2 is necessary so that the pump can have the minimum flow that is necessary for pump protection until flow to the steam generators is established.
3	Step 3 is necessary to prevent damage to the pump due to air binding.
4	Step 4 is necessary to prevent flooding of the Aux. Bldg when the Aux. Service Water Pump is started.
6	Step 6 is necessary because if these breakers were not closed, there would be no power to the Aux. Service Water Pump and feed could not be established to the steam generators.
11	Step 11 is necessary to prevent flooding of the Aux. Bldg when the Aux. Service Water Pump is started.
12	Step 12 is necessary to provide a flow path of water to the necessary components, in this case the steam generators.
13	Step 13 is necessary because if the pump were not started, there would be no flow to the steam generators.

Facility: <b>Oconee</b>		Date of Examination: <b>March 21, 2002</b>
Exam Level: <b>RO</b>		Operating Test No.: <b>Billy Henderson</b>
B.1 Control Room Systems		
System / JPM Title	Type Code*	Safety Function
a. <b>JPM CRO-083, Re-establish RCS letdown flow</b> AP/32 [004 A2.07 (3.4/3.7)]	D, S	2
b. <b>*JPM CRO-075, Initiate Automatic Pressurizer Spray (spray valve fails open with closed indication)</b> OP/1103/05, Pressurizer Operation, Encl. 4.1 [KA: 010 A2.02 (3.9/3.9)]	M, A, S	3
c. <b>*JPM CRO-96, Align ECCS Suction from Emergency Sump (LP-20 Failed Closed)</b> EOP, Encl. 5.12 [KA:BW/E08 EA1.1 (4.0/3.7)] (PRA) (last exam)	D, A, S, L	4P
d. <b>JPM CRO-59, Establish Condensate Recirc flow following a loss of power</b> EOP Encl. 5.23 [056 A2.04 (2.6/2.8*)]	D, S	4S
e. <b>NRC JPM-005, Synchronization with the grid following a load rejection</b> AP/01 [062 A4.07 (3.1*/3.1*)]	N, S, L	6
f. <b>NRC JPM-006, Adjust 1RIA-40 setpoint for increased SG tube leakage</b> AP/31, PT 230/01 [073 A4.02 (3.7/3.7)]	N, S	7
g. <b>*JPM CRO-100A, PLACE THE REACTOR BUILDING PURGE IN OPERATION (PR-3 Fails Open)</b> OP/0/A/1102/14, Encl. 3.2 [KA: 029 A2.03 (2.7/3.1)]	D, A, S	8

\* JPMs already completed

B.2 Facility Walk-Through		
a. <b>*JPM NLO-10, Place the RB Hydrogen Analyzer in Service</b> EOP Encl. 5.2 [KA: 028 A4.03 (3.1/3.3)]	D, R, L	5
b. <b>*JPM NLO-022, Station ASW Pump Alignment</b> EOP Encl. 5.10 (Station ASW Pump Alignment) [KA: APE054 AA1.01 (4.5/4.4)]	D, R, L	4S
c. <b>*JPM NLO-041, Restart the Primary Instrument Air Compressor following a Compressor trip; (10 min.)</b> OP/0/1106/27, Encl. 4.9; APO/1/A/1700/22 [KA: 078 G2.1.30 (3.9/3.4)] (last exam)	D, A	8
* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA		

\* JPMs already completed

**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC JPM-005**

**Synchronization With the Grid Following a Load  
Rejection**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Synchronization With the Grid Following a Load Rejection

**Alternate Path:**

No

**Facility JPM #:**

New

**K/A Rating(s):**

System: 062  
K/A: A4.07  
Rating: 3.1\*/3.1\*

**Task Standard:**

The main generator is synchronized to the electrical grid using AP/001 (Load Rejection)

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

AP/001 (Load Rejection)

**Validation Time:** 10 minutes

**Time Critical:** No

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

=====

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 203
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

AP/001 (Load Rejection)

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 initially operating at 40% power when PCB-20 (GENERATOR BREAKER) and PCB-21 (GENERATOR BREAKER) trip open due to a faulty relay

Unit is currently at  $\approx$  15% power

The faulty relay that initiated the load rejection has been repaired

AP/001 (Load Rejection) in progress up to step 4.5

**INITIATING CUES:**

The SRO directs you to synchronize the main generator to the grid by using Enclosure 5.2 (Restoration of Unit Load) of AP/001 (Load Rejection).

START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      <b>IAAT</b> it is determined that unit synchronization CANNOT be performed, <b>THEN</b> perform the following:</p> <ul style="list-style-type: none"> <li>• Trip RX</li> <li>• EXIT this procedure</li> </ul> <p><b><u>STANDARD:</u></b>    Candidate determines that unit synchronization can be performed and continues with procedure.</p> <p><b><i>Cue: If asked as the SRO, inform candidate that synchronization can be performed.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Notify SOC of pending unit synchronization.</p> <p><b><u>STANDARD:</u></b>    The CR phone is used to notify the SOC of pending unit synchronization.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b>      Place PCB-20 (GENERATOR BREAKER) synchronizing switch in ON.</p> <p><b><u>STANDARD:</u></b>    PCB-20 (GENERATOR BREAKER) synchronizing switch located on 1UB2 is placed in ON.</p> <p><b>Note: There is only one synchronizing switch handle for PCB-20 and PCB-21. The candidate must ensure the handle is in the PCB-20 synchronizing switch location prior to operating the synchronizing switch.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b> Using Load Selector INCREASE/DECREASE pushbuttons, adjust speed until synchroscope is rotating slowly in the FAST direction.</p> <p><b><u>STANDARD:</u></b> Load Selector INCREASE/DECREASE pushbuttons are located on 1UB2 and are used to adjust generator speed until synchroscope located on 1UB2 is rotating slowly in the FAST direction.</p> <p><b>Note: The Turbine Master will swap to MANUAL when the Load Selector INCREASE/DECREASE pushbutton is depressed.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> Using Voltage Adjuster AUTO, adjust T1 OUTPUT VOLTS to match SWITCHYARD VOLTS when the synchroscope pointer is vertical.</p> <p><b><u>STANDARD:</u></b> The AUTO Voltage Adjuster is located on 1UB2 and is used to adjust T1 (Main Transformer) OUTPUT VOLTS to match SWITCHYARD VOLTS when the synchroscope pointer is vertical.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b> <b>WHEN</b> synchroscope pointer is <math>\approx 5^\circ</math> before vertical, <b>THEN</b> close PCB-20 (GENERATOR BREAKER).</p> <p><b><u>STANDARD:</u></b> The synchroscope located on 1UB2 is monitored and when the pointer is <math>\approx 5^\circ</math> before vertical, PCB-20 (GENERATOR BREAKER) is closed by rotating the switch to the close position. The red CLOSED light illuminates and the white OPEN light extinguishes.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u> Place PCB-20 (GENERATOR BREAKER) synchronizing switch in OFF.</p> <p><u>STANDARD:</u> PCB-20 (GENERATOR BREAKER) synchronizing switch located on 1UB2 is placed in OFF.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Using Load Selector INCREASE/DECREASE pushbuttons, establish <math>\approx 35 \text{ MW}_e</math> load.</p> <p><u>STANDARD:</u> The Load Selector INCREASE/DECREASE pushbuttons located on 1UB2 are used to establish <math>\approx 35 \text{ MW}_e</math> load.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u> Place PCB-21 (GENERATOR BREAKER) synchronizing switch in ON.</p> <p><u>STANDARD:</u> PCB-21 (GENERATOR BREAKER) synchronizing switch located on 1UB2 is placed in ON.</p> <p><b>Note: The synchronizing switch handle must be removed from PCB-20 synchronizing switch location and placed into the PCB-21 synchronizing switch location.</b></p> <p><b>Note: The PCB-21 synchronizing switch ON position is labeled SYNC. The candidate may ask for a soft match from the SRO.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Close PCB-21 (GENERATOR BREAKER).</p> <p><u>STANDARD:</u> PCB-21 (GENERATOR BREAKER) located on 1UB2 is closed by rotating the switch to the close position. The red CLOSED light illuminates and the white OPEN light extinguishes.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 11:</u> Place PCB-21 (GENERATOR BREAKER) synchronizing switch in OFF.</p> <p><u>STANDARD:</u> PCB-21 (GENERATOR BREAKER) synchronizing switch located on 1UB2 is placed in OFF.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u> Ensure TURBINE MASTER in AUTO.</p> <p><u>STANDARD:</u> TURBINE MASTER is placed in AUTO by depressing the AUTO pushbutton on the TURBINE MASTER Bailly.</p> <p><b>Note: The candidate may select MEAS. VAR. and verify pointer on the “caret” or verify that Turbine Header Pressure is at setpoint prior to selecting AUTO on the TURBINE MASTER.</b></p> <p><u>COMMENTS:</u></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
3	Sync switch must be ON to satisfy the interlock close the PCB (generator output breaker)
4	This ensures that the generator picks up electrical load (MWs) when the generator output breaker is closed and prevents motoring the generator.
6	Required to tie generator to grid.



**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit 1 initially operating at 40% power when PCB-20 (GENERATOR BREAKER) and PCB-21 (GENERATOR BREAKER) trip open due to a faulty relay

Unit is currently at  $\approx$  15% power

The faulty relay that initiated the load rejection has been repaired

AP/001 (Load Rejection) in progress up to step 4.5

**INITIATING CUES:**

The SRO directs you to synchronize the main generator to the grid by using Enclosure 5.2 (Restoration of Unit Load) of AP/001 (Load Rejection).

## **1. Entry Conditions**

Main Generator loss of output load with Rx Power > 15%.

## **2. Automatic Systems Actions**

- Core Thermal Power Demand Setpoint goes to  $\approx 20\%$ .
- TBVs control steam pressure at setpoint.
- Main Steam relief valves open.
- Pzr spray valve may open.
- ICS may revert to TRACK.
- TURBINE MASTER may revert to manual.

## **3. Immediate Manual Actions**

None

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<p>Duke Power Company Oconee Nuclear Station</p> <p><b>Load Rejection</b></p>	<p>Procedure No.</p> <p>AP/1/A/1700/001</p>
	<p>Revision No.</p> <p>005</p>
	<p>Electronic Reference No.</p> <p>OX002RGE</p>

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#### 4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b>NOTE</b></p> <p>If auxiliary loads are being supplied by Auxiliary Transformer 1T and the AUTO/MAN transfer switches are in AUTO, a Rx/Turbine trip will result in a <u>slow transfer</u> (<math>\approx</math> 1 second delay) of 4160V auxiliaries to CT-1.</p>	
<p>4.1 Ensure the following notifications have been made:</p> <p>___ OSM to reference OMP 1-14 (Notifications)</p> <p>___ STA</p>	
<p>4.2 ___ IAAT Main Turbine approaches operating limits per Encl 5.1 (Main Turbine Operating Limits), THEN perform the following:</p> <p>A. ___ Trip Rx.</p> <p>B. ___ EXIT this procedure.</p>	
<p>4.3 ___ Verify Rx Power <math>\approx</math> 15%.</p>	<p>1. ___ Reduce CTPD SET window to 15% CTP on LCP.</p> <p>2. ___ Ensure Rx Power lowers to <math>\approx</math> 15%.</p>
<p>4.4 ___ IAAT it is determined that unit synchronization CANNOT be performed, (2) THEN perform the following:</p> <p>A. ___ Trip Rx.</p> <p>B. ___ EXIT this procedure.</p>	
<p>4.5 ___ WHEN plant conditions allow, AND cause of load rejection has been determined, THEN GO TO Encl 5.2 (Restoration of Unit Load).</p>	

...END...

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## Main Turbine Operating Limits {3}

1. Turbine should NOT be operated above 1200 rpm with back pressure > 5" Hg. absolute.
2. Low Load Operation Limits:
  - Exhaust hood temperatures should be maintained  $\leq 175^{\circ}\text{F}$  during low load operation. With  $> 125^{\circ}\text{F}$  exhaust hood temperatures, load should be increased slowly until temperature is below  $125^{\circ}\text{F}$ .
  - When exhaust hood temperature is  $\leq 125^{\circ}\text{F}$ , turbine is available for normal load increase.
  - Operation below 5% load (45 MW<sub>e</sub>) should be minimized to prevent moisture erosion.
3. At 1800 rpm, minimum turbine oil cooler outlet temperature is  $100^{\circ}\text{F}$ . Normal operating oil cooler outlet temperature is  $110^{\circ}\text{F}$  to  $120^{\circ}\text{F}$ .
4. Maximum oil temperature rise across journal bearings is  $50^{\circ}\text{F}$ . Any oil drain temperature  $> 150^{\circ}\text{F}$  is abnormal and should be reported to Unit Operations Manager or Operations Duty Engineer.
5. Maximum oil temperature rise across thrust bearing is  $45^{\circ}\text{F}$ . Maximum metal temperature is  $190^{\circ}\text{F}$ . Normal operating metal temperatures are  $140^{\circ}\text{F}$  to  $175^{\circ}\text{F}$  for active plate and  $125^{\circ}\text{F}$  to  $150^{\circ}\text{F}$  for inactive plate.
6. Minimum allowed cold gas temperature is  $30^{\circ}\text{C}$  when generator is on line.
7. If turbine bearing vibration exceeds 6 mils with turbine operating at rated speed, the Component Engineering turbine engineer should be notified to ensure Nuclear Mutual Limited is notified of adverse condition.
8. If turbine bearing vibration exceeds 7 mils with turbine operating at rated speed, Mechanical Maintenance should be notified to analyze vibration data:
  - If turbine bearing vibration (bearings 1-10) exceeds 10 mils for greater than 15 minutes while operating at rated speed, the turbine should be tripped.
  - If turbine bearing vibration (bearings 1-10) exceeds 12 mils while operating at rated speed, the turbine should be tripped immediately.

•••END•••



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## Restoration of Unit Load

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1. <input type="checkbox"/> IAAT it is determined that unit synchronization <b>CANNOT</b> be performed, {2} <b>THEN</b> perform the following: A. <input type="checkbox"/> Trip Rx. B. <input type="checkbox"/> <b>EXIT</b> this procedure.	
2. <input type="checkbox"/> Notify SOC of pending unit synchronization.	
3. <input type="checkbox"/> Place PCB-20 synchronizing switch in ON.	
4. <input type="checkbox"/> Using Load Selector INCREASE/DECREASE pushbuttons, adjust speed until synchroscope is rotating slowly in the FAST direction.	
5. <input type="checkbox"/> Using Voltage Adjuster AUTO, adjust T1 OUTPUT VOLTS to match SWITCHYARD VOLTS when the synchroscope pointer is vertical.	
6. <input type="checkbox"/> <b>WHEN</b> synchroscope pointer is $\approx 5^\circ$ before vertical, <b>THEN</b> close PCB-20.	
7. <input type="checkbox"/> Place PCB-20 synchronizing switch in OFF.	
8. <input type="checkbox"/> Using Load Selector INCREASE/DECREASE pushbuttons, establish $\approx 35 \text{ MW}_e$ load.	
9. <input type="checkbox"/> Place PCB-21 synchronizing switch in ON.	
10. <input type="checkbox"/> Close PCB-21.	
11. <input type="checkbox"/> Place PCB-21 synchronizing switch in OFF.	
12. <input type="checkbox"/> Ensure TURBINE MASTER in AUTO.	
13. <input type="checkbox"/> Press TURBINE LOAD pushbutton.	

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**Enclosure 5.2**  
**Restoration of Unit Load**

AP/1/A/1700/001  
Page 3 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>14. Verify the following:</p> <p>A. <input type="checkbox"/> TBVs close</p> <p>B. <input type="checkbox"/> MW<sub>e</sub> increases to <math>\approx</math> 135 MW<sub>e</sub></p> <p>C. <input type="checkbox"/> TURBINE LOAD pushbutton lamp extinguished</p>	<p><input type="checkbox"/> Notify SPOC to investigate and repair.</p>
<p>15. <input type="checkbox"/> Verify Auxiliary Transformer 1T supplying unit loads.</p>	<p><input type="checkbox"/> GO TO Step 17.</p>
<p>16. Restore normal breaker transfer logic as follows:</p> <p>A. Place the following Unit 1 AUTO/MAN transfer switches in MAN:</p> <p><input type="checkbox"/> MFB1 AUTO/MAN</p> <p><input type="checkbox"/> MFB2 AUTO/MAN</p> <p><input type="checkbox"/> 1TA AUTO/MAN</p> <p><input type="checkbox"/> 1TB AUTO/MAN</p> <p>B. Place the following Unit 1 AUTO/MAN transfer switches in AUTO:</p> <p><input type="checkbox"/> MFB1 AUTO/MAN</p> <p><input type="checkbox"/> MFB2 AUTO/MAN</p> <p><input type="checkbox"/> 1TA AUTO/MAN</p> <p><input type="checkbox"/> 1TB AUTO/MAN</p>	
<p>17. Verify the following open:</p> <p><input type="checkbox"/> Turbine Stop Valves</p> <p><input type="checkbox"/> Reheat/Intercept Valves</p> <p><input type="checkbox"/> Turbine Control Valves (as required)</p>	<p><input type="checkbox"/> Notify SPOC to investigate and repair.</p>
<p>18. <input type="checkbox"/> Verify restoration to unit power operation is desired.</p>	<p><input type="checkbox"/> GO TO OP/1/A/1102/004 (Operation at Power) enclosure for power reduction.</p>
<p>19. <input type="checkbox"/> Ensure MSRs in service per the section for Turbine Online Operation in the enclosure for Startup of Moisture Separators of OP/1/A/1106/014 (Moisture Separator Reheaters).</p>	
<p>20. <input type="checkbox"/> Verify OP/1/A/1102/001 (Controlling Procedure for Unit Startup) was NOT in progress prior to load rejection.</p>	<p><input type="checkbox"/> Ensure <u>all</u> remaining applicable steps of OP/1/A/1102/001 (Controlling Procedure for Unit Startup) have been completed to support power increase.</p>

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Enclosure 5.2  
Restoration of Unit Load

AP/1/A/1700/001  
Page 5 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21. <input type="checkbox"/> Verify a Maneuvering Plan available for power increase.	<input type="checkbox"/> Obtain/develop a Maneuvering Plan per PT/0/A/1103/020 (Power Maneuvering Predictions).
22. Select desired rate per the Maneuvering Plan as follows: A. Select Rate Set option: <input type="checkbox"/> %MIN <input type="checkbox"/> %HR B. <input type="checkbox"/> Adjust thumbwheel for desired rate.	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Operation with CRDs in restricted region is limited to 2 hours.</li> <li>• Rx power may be increased while performing corrective actions to ensure CRDs within limits.</li> </ul>	
23. <input type="checkbox"/> Verify CRD Groups within limits.	<input type="checkbox"/> Initiate actions as necessary to ensure CRD Groups in limits within 2 hours.
24. <input type="checkbox"/> Notify SOC of pending load increase.	
25. <input type="checkbox"/> Set desired setpoint in CTPD SET.	
26. <input type="checkbox"/> Ensure HIGH alarm on NI recorder at $\approx 2\%$ above highest expected operating power.	
27. <input type="checkbox"/> WHEN Rx power is $\approx 25\%$ , <b>THEN GO TO OP/1/A/1102/004</b> (Operation at Power) enclosure for Power Escalation.	

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1. This procedure is considered Reactivity Management Related.
2. PIP 00-2889, recommendation from Trip and Transient Reduction Report.
3. These limits were obtained from OP/1/A/1106/001 (Turbine Generator).



**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**JPM CRO-059**

**Establish Condensate Recirc Flow  
Following a Loss of Power**

**CANDIDATE**

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**EXAMINER**

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**Task:**

Establish Condensate Recirc Flow Following a Loss of Power

**Alternate Path:**

No

**Facility JPM #:**

CRO-059

**K/A Rating(s):**

System: 056

K/A: A2.04

Rating: 2.6/2.8\*

**Task Standard:**

Establish Condensate Recirc Flow Following a Loss of Power correctly

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EOP Enclosure 5.23, Alignment of Condensate Recirc

**Validation Time: 12 minutes**

**Time Critical: No**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

**COMMENTS**

## SIMULATOR OPERATOR INSTRUCTIONS:

1. Recall Snap 22, PW: abc123
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

EOP Enclosure 5.23, Alignment of Condensate Recirc

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit 1 tripped following switchyard isolation. The Main Feeder Buses are being powered from a Keowee Hydro Unit through PCB-9 and CT1 transformer. Condenser Circulating Water Flow has been reestablished.

AP/1/A/1700/11 has been completed up to step 4.78.

**INITIATING CUES:**

The SRO directs you to place the Condensate system in recirc per EOP Enclosure 5.23, Alignment of Condensate Recirc.

START TIME: \_\_\_\_\_

<p><b>STEP 1:</b></p> <p>Verify any Hotwell pump operating</p> <p><b>STANDARD:</b></p> <p>Candidate observes the Hotwell Pump light indications.</p> <p>The white "OFF" light is ON for each Hotwell Pump and the red "ON" lights are OFF.</p> <p>Perform RNO and transfer to Step 5</p> <p><b>NOTE: The candidate may operate the HWP switches in the "TRIP" direction to clear the red "TRIP" flags. This will cause the white "OFF" light to go from ON "DIM" to ON "BRIGHT". While this is encouraged behavior, it is <u>not required</u>.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b></p> <div data-bbox="125 1030 1218 1169" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><b>NOTE</b></p> <p>If <math>\geq 25</math> minutes has elapsed since a loss of all condensate flow, a steam-induced water hammer may occur when a HWP is started. Unless immediately needed to restore feed to a SG, a HWP should NOT be started until an engineering evaluation is performed.</p> </div> <p>Verify all condensate flow has NOT been lost for &gt; 25 minutes</p> <p><b>CUE: Condensate flow has been lost for 15 minutes</b></p> <p><b>STANDARD:</b></p> <p>After the cue is given, determine that an engineering evaluation is not required and proceed with the enclosure to restore condensate flow.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u></p> <p>Place <u>all</u> CBPs control switches in "OFF"</p> <p><u>STANDARD:</u></p> <p>The candidate places 1A, 1B and 1C CBP control switches to the "OFF" position</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u></p> <p>Ensure 1C-10 (HWP's DISCH CONTROL) is closed</p> <p><u>STANDARD:</u></p> <p>Candidate locates the Moore controller for 1C-10 (HWP's DISCH CONTROL) located on 1VB1, closes 1C-10 by rotating the pulser knob in the closed direction, and verify the valve position indicates closed.</p> <p><b>NOTE: Valve must be <math>\leq 10\%</math> open to satisfy the HWP start interlock</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u></p> <p>Start one HWP</p> <p><u>STANDARD:</u></p> <p>Candidate starts <u>any</u> one of the hotwell pumps by placing the control switch to START position and verifies red lights "ON", white light "OFF" and amp indication initially increasing then decreases to normal operating current.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 6:</u></p> <p>Slowly open 1C-10 (HWP's DISCH CONTROL).</p> <p><u>STANDARD:</u></p> <p>Candidate slowly rotates the Moore controller pulser knob (1VB1) until the valve demand increases to 100% open indication on the controller meter.</p> <p><b>NOTE: Candidate may use the OAC to verify valve position.</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u></p> <p>Ensure control switch for one idle HWP is in AUTO</p> <p><u>STANDARD:</u></p> <p>Rotate one of the non-operating HWPs control switch to the AUTO position on 1AB1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u></p> <div data-bbox="127 1211 1219 1279" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>NOTE</b> It is preferred to have the 1C CBP in operation</p> </div> <p>ENSURE <u>one</u> CBP in operation.</p> <p><u>STANDARD:</u></p> <p>Candidate starts one of the Condensate Booster pumps (preferably the 1C) by placing the control switch to START position and verifies red lights "ON", white light "OFF" and amp indication initially increasing then decreases to normal operating current.</p> <p><b>NOTE: CBP may start as switch passes through the AUTO position. If this occurs, going to START is not required.</b></p> <p><b>NOTE: The 1C Condensate Booster pump is classified as a severe duty pump.</b></p> <p><b>NOTE: Selecting the 1C Condensate Booster pump to be started is not critical.</b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 9:</u></p> <p>Ensure control switch for <u>one</u> idle CBP in "AUTO"</p> <p><u>STANDARD:</u></p> <p>Control switch for one of the non-operating CBP is placed in the "AUTO" position on 1AB1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u></p> <p>Place at least one of the following in MANUAL, and establish <math>\geq 2300</math> gpm total recirc flow</p> <ul style="list-style-type: none"> <li>• 1FDW-53 (1A FDWP RECIRC CONTROL)</li> <li>• 1FDW-65 (1B FDWP RECIRC CONTROL)</li> </ul> <p><u>STANDARD:</u></p> <p>The candidate places at least one of the MFDWP Recirc Control Valves (1FDW-53 or 1FDW-65) Moore controller in MANUAL (1VB3) and throttles OPEN to establish <math>\geq 2300</math> gpm total flow (&gt;2000 gpm required)</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

**END OF TASK**

STOP TIME: \_\_\_\_\_



## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
4	1C-10 must be <10% open to satisfy the HWP starting interlock (downstream component and water hammer protection)
5	Starting a HWP initiates flow to establish condensate recirc and provides NPSH for CBP operation
6	Opening 1C-10 aligns the HWP discharge to the condensate system to establish a flow path for recirc operation. (CSAE flow for condenser vacuum)
8	Starting a CBP is necessary to increase motive force to drive the water to the UST for recirculation.
10	Throttling 1FDW-53 or 1FDW-65 (MFDWP Recirc Control Valves) to $\geq 2300$ gpm total flow (>2000 gpm for minimum HWP flow requirements) completes the flow path alignment from the hotwell to the upper surge tank for condensate recirc and establishes proper recirc flow rates. NOTE: No upper flow rate limit (runout limit) is set due to the standby HWP and CBP operating in auto and would auto start on low system pressure.

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit 1 tripped following switchyard isolation. The Main Feeder Buses are being powered from a Keowee Hydro Unit through PCB-9 and CT1 transformer. Condenser Circulating Water Flow has been reestablished.

AP/1/A/1700/11 has been completed up to step 4.78.

**INITIATING CUES:**

The SRO directs you to place the Condensate system in recirc per EOP Enclosure 5.23, Alignment of Condensate Recirc.

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1. <input type="checkbox"/> Verify <u>any</u> HWP operating.	<input type="checkbox"/> GO TO Step 5.

<b>NOTE</b> It is preferred to leave 1C CBP in operation. (12)	
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2. <input type="checkbox"/> Ensure $\leq 1$ CBP is operating.	
3. <input type="checkbox"/> Ensure <u>only one</u> HWP is operating.	
4. <input type="checkbox"/> GO TO Step 10.	

<b>NOTE</b> If > 25 minutes has elapsed since a loss of <u>all</u> condensate flow, a steam-induced water hammer may occur when an HWP is started. Unless immediately needed to restore feed to a SG, a HWP should NOT be started until an engineering evaluation is performed. (17)	
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5. <input type="checkbox"/> Verify <u>all</u> condensate flow has NOT been lost for > 25 minutes.	1. <input type="checkbox"/> IF TSC approves starting a HWP, THEN GO TO Step 6. 2. <input type="checkbox"/> EXIT this enclosure.
6. <input type="checkbox"/> Place <u>all</u> CBP control switches in OFF.	
7. <input type="checkbox"/> Ensure 1C-10 is closed.	
8. <input type="checkbox"/> Start one HWP.	
9. <input type="checkbox"/> Slowly open 1C-10.	
10. <input type="checkbox"/> Ensure control switch for one idle HWP is in AUTO.	

<b>NOTE</b> It is preferred to have 1C CBP in operation.	
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11. <input type="checkbox"/> Ensure one CBP is operating.	
12. <input type="checkbox"/> Ensure control switch for one idle CBP is in AUTO.	
13. Place at least one of the following in MANUAL and establish $\geq 2300$ gpm total recirc flow: <input type="checkbox"/> 1FDW-53 <input type="checkbox"/> 1FDW-65	

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Enclosure 5.23  
Alignment of Condensate Recirc

EP/1/A/1800/001  
Page 3 of 3

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>14. <u>    </u> WHEN <u>any</u> of the following computer points indicate condensate temperature &lt; 125°F:</p> <p style="padding-left: 40px;"><u>    </u> O1A0138 (HTR 1C1 OUTLET TEMP)</p> <p style="padding-left: 40px;"><u>    </u> O1A0139 (HTR 1C2 OUTLET TEMP)</p> <p>OR <u>all</u> of the following conditions exist:</p> <p style="padding-left: 40px;"><u>    </u> Condensate temperature &lt; 145°F</p> <p style="padding-left: 40px;"><u>    </u> 2 hours since Rx trip OR shutdown from ≥ 30% Rx power</p> <p style="padding-left: 40px;"><u>    </u> UST level &lt; 6'</p> <p>THEN continue in this enclosure.</p>	
<p>15. <u>    </u> Locally open 1C-125 (CONDENSATE RECIRC TO UST BYP) (T-3, W of J-15).</p>	
<p>16. <u>    </u> Open 1C-124.</p>	
<p>17. <u>    </u> Locally close 1C-125 (CONDENSATE RECIRC TO UST BYP).</p>	
<p>18. <u>    </u> Throttle 1C-128 to maintain UST level &gt; 8'.</p>	<p><u>    </u> Locally throttle 1C-129 (CONDENSATE RECIRC CONTROL BYPASS) to maintain UST level &gt; 8' (T-5, E of M-22).</p>
<p>19. <u>    </u> EXIT this enclosure.</p>	

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**REGION II**  
**INITIAL LICENSE EXAMINATION**  
**JOB PERFORMANCE MEASURE**

**JPM CRO-083**

**Reestablish RCS Letdown Flow**

**CANDIDATE**

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**EXAMINER**

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REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Reestablish RCS letdown flow

**Alternate Path:**

No

**Facility JPM #:**

CRO-083

**K/A Rating(s):**

System: 004

K/A: A2.07

Rating: 3.4/3.7

**Task Standard:**

RCS Letdown flow is restored correctly using AP/32 (Loss of Letdown)

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

AP/32 (Loss of Letdown)

**Validation Time: 8 minutes**

**Time Critical: No**

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_ / \_\_\_\_\_  
NAME SIGNATURE DATE

=====

COMMENTS



**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 201
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

AP/32 (Loss of Letdown)

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

Unit #1 is at 100% power.

1CC-8 (CC RETURN OUTSIDE BLOCK) was inadvertently closed during ES testing, resulting in a loss of component cooling.

1HP-5 (LETDOWN ISOLATION) is subsequently closed on high letdown temperature.

Component cooling flow has been restored.

AP/32 (Loss of Letdown) is in progress and has been complete up to step 4.23.

**INITIATING CUES:**

The SRO directs you to restore letdown flow using AP/32 (Loss of Letdown) beginning at step 4.23.

START TIME: \_\_\_\_\_

<p><b><u>STEP 1:</u></b>      <b>WHEN</b> letdown can be re-established,  <b>THEN</b> ensure proper operation of the CC system.</p> <p><b><u>STANDARD:</u></b>    Verify proper operation of the CC system by observing 1A CC pump operating with normal CC system flows and pressures.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 2:</u></b>      Close 1HP-6 (LETDOWN ORIFICE STOP)</p> <p><b><u>STANDARD:</u></b>    1HP-6 (LETDOWN ORIFICE STOP) switch on 1UB1 is placed in the CLOSE position.</p> <p>                      The green CLOSED light illuminates and the red OPEN light extinguishes.</p> <p><b>Note: Candidate may use OAC indication to verify valve position.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 3:</u></b>      Close 1HP-7 (LETDOWN CONTROL).</p> <p><b><u>STANDARD:</u></b>    1HP-7 (LETDOWN CONTROL) is located on 1UB1 and the manual controller is rotated counter-clockwise until the position demand needle indicates 0%.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b> Ensure the following are open:</p> <ul style="list-style-type: none"> <li>• 1HP-1 (1A LETDOWN COOLER INLET)</li> <li>• 1HP-2 (1B LETDOWN COOLER INLET)</li> <li>• 1HP-3 (1A LETDOWN COOLER OUTLET)</li> <li>• 1HP-4 (1B LETDOWN COOLER OUTLET)</li> </ul> <p><b><u>STANDARD:</u></b> The above valves are located on 1UB1 and verified open by observing the red OPEN light lit and green CLOSED light off.</p> <p><b>Note: Candidate may use OAC indication to verify valve position.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 5:</u></b> Verify letdown temperature &lt; 135°F.</p> <p><b><u>STANDARD:</u></b> Locate LETDOWN TEMP meter on 1UB1 and determine that letdown temperature is greater than 135°F.</p> <p>Perform RNO steps.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b> Open 1HP-13 (PURIFICATION IX BYPASS)</p> <p><b><u>STANDARD:</u></b> 1HP-13 (PURIFICATION IX BYPASS) control switch is located on 1UB1, and the switch is rotated to the OPEN position. Red OPEN light illuminates, and green CLOSE light extinguishes.</p> <p><b>Note: Candidate may use OAC indication to verify valve position.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 7:</u></b> Ensure the following are closed:</p> <ul style="list-style-type: none"> <li>• 1HP-8 (PURIFICATION IX INLET)</li> <li>• 1HP-9&amp;11 (SPARE PURIF IX INLET AND OUTLET)</li> </ul> <p><b><u>STANDARD:</u></b> 1HP-8 (PURIFICATION IX INLET) control switch is located on 1UB1 and the switch is rotated to the CLOSED position. Green CLOSE light illuminates. Red OPEN light extinguishes.</p> <p>1HP-9&amp;11 on 1UB1 verified closed by Green CLOSE light lit.</p> <p><b>Note: Candidate may use OAC indication to verify valve position.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b> <b>IF</b> any deborating IX in service, <b>THEN</b> perform the following...</p> <p><b><u>STANDARD:</u></b> Determine that no deborating IXs are in service by verifying 1CS-27 (Debor IX Inlet) (1AB1) and 1CS-32 &amp; 37 (Spare Debor IX Inlet &amp; Outlet) (1AB1) are closed. Continue with restoring letdown.</p> <p><b><i>Cue: If asked as the SRO, inform candidate that no deborating IXs are in service.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b> Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.</p> <p><b><u>STANDARD:</u></b> LETDOWN HI TEMP INTLK BYPASS control switch is located on 1UB1, switch is rotated to the BYPASS position.</p> <p>The switch will backlight amber, and statalarm 1SA-2/E-4 HP letdown flow interlock, bypassed, is actuated.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 10:</u></b>      Ensure 1HP-5 (LETDOWN ISOLATION) is open.</p> <p><b><u>STANDARD:</u></b>    1HP-5 (LETDOWN ISOLATION) control switch is located on 1UB1 and the switch is rotated to the OPEN position.</p> <p>Red OPEN light illuminates, and green CLOSE light extinguishes.</p> <p><b>Note: Candidate may use OAC indication to verify valve position.</b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      Throttle open 1HP-7 (LETDOWN CONTROL) to establish ≈ 20 gpm.</p> <p><b><u>STANDARD:</u></b>    1HP-7 (LETDOWN CONTROL) is throttled Open to establish ≈ 20 gpm letdown flow as indicated on LETDOWN FLOW meter on 1UB1.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 12:</u></b>      <b>WHEN</b> letdown temperature is &lt; 130°F, <b>THEN</b> ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.</p> <p><b><u>STANDARD:</u></b>    Statalarm 1SA-2/C-1, HP-LETDOWN TEMP HI, is located by the student, and verified to be clear, and/or LETDOWN TEMP meter is used to verify letdown temperature is &lt;130°F.</p> <p>LETDOWN HI TEMP INTLK BYPASS control switch is located on 1UB1 and switch is rotated to the NORM position.</p> <p>Amber backlight goes out, and statalarm 1SA-2/E-4, HP Letdown Flow Interlock Bypass, clears.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 13:</u></b>      Open 1HP-6 (LETDOWN ORIFICE STOP).</p> <p><b><u>STANDARD:</u></b>    1HP-6 (LETDOWN ORIFICE STOP) is placed in the OPEN position. Red OPEN light illuminates, and green CLOSED light extinguishes.</p> <p><b>Note:</b> Candidate may use OAC indication to verify valve position.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 14:</u></b>      Adjust 1HP-7 (LETDOWN CONTROL) to control desired letdown flow.</p> <p><b><u>STANDARD:</u></b>    1HP-7, (LETDOWN CONTROL) station is located by student and the manual controller is slowly rotated clockwise, until <math>\approx</math> 70 GPM is indicated on the LETDOWN FLOW meter.</p> <p><b><i>Cue: SRO desires 70-gpm letdown flow.</i></b></p> <p><b><u>COMMENTS:</u></b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STOP TIME: \_\_\_\_\_

## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
9	Bypassing interlock required to re-open 1HP-5 to reestablish letdown flow.
10	Aligns flow path to reestablish letdown flow.
11	Aligns flow path to reestablish letdown flow.



**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

Unit 1 is at 100% power.

1CC-8 (CC RETURN OUTSIDE BLOCK) was inadvertently closed during ES testing, resulting in a loss of component cooling.

1HP-5 (LETDOWN ISOLATION) is subsequently closed on high letdown temperature.

Component cooling flow has been restored.

AP/32 (Loss of Letdown) is in progress and has been complete up to step 4.23.

**INITIATING CUES:**

The SRO directs you to restore letdown flow using AP/32 (Loss of Letdown) beginning at step 4.23.

Duke Power Company  
**PROCEDURE PROCESS RECORD**

(1) ID No AP/1/A/1700/032Revision No 000**PREPARATION**(2) Station OCONEE NUCLEAR STATION(3) Procedure Title Loss of Letdown(4) Prepared By S M Pryor (Signature) *S M Pryor* Date 7/23/01

(5) Requires NSD 228 Applicability Determination?

☒ Yes (New procedure or revision with major changes)☐ No (Revision with minor changes)☐ No (To incorporate previously approved changes)(6) Reviewed By *Greg Baunfarn* (QR) Date 10/29/01Cross-Disciplinary Review By *NA* (QR) NA Date 10/29/01Reactivity Mgmt Review By *Greg Baunfarn* (QR) NA Date 10/29/01Mgmt Involvement Review By *NA* (Ops Supt) NA Date 10/29/01

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM/QR) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By *David B. Gale* Date 12-20-01**PERFORMANCE** (Compare with control copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

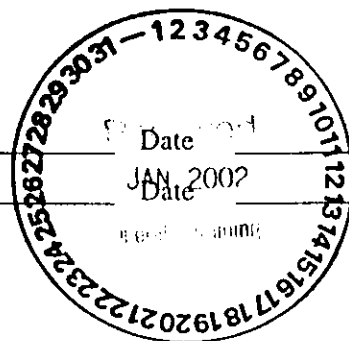
(12) Procedure Completion Verification:

☐ Unit 0 ☐ Unit 1 ☐ Unit 2 ☐ Unit 3 Procedure performed on what unit?☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?☐ Yes ☐ NA Required enclosures attached?☐ Yes ☐ NA Data sheets attached, completed, dated, and signed?☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_

(14) Remarks (Attach additional pages)



Duke Power Company  
Oconee Nuclear Station

Loss of Letdown

Procedure No.

AP/1/A/1700/032

Revision No.

000

Electronic Reference No.

OP009606

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## **1. Entry Conditions**

Loss of letdown flow

## **2. Automatic Systems Actions**

- Possible ES Channel 1 and 2 actuation
- IHP-24 and IHP-25 will open at 40" LDST level decreasing
- IHP-14 swaps from BLEED to NORMAL at 40" LDST level decreasing

## **3. Immediate Manual Actions**

None

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#### 4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.1 <input type="checkbox"/> Ensure IHP-120 in HAND and closed.	
4.2 <input type="checkbox"/> Initiate makeup to LDST with boron concentration $\geq$ RCS boron concentration as required.	
4.3 <input type="checkbox"/> IAAT additional makeup flow is desired, AND 1A Bleed Transfer Pump is operating, THEN dispatch an operator to close ICS-48 (1A BHUT Recirc) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm).	
4.4 Notify Chemistry of the following: <input type="checkbox"/> Current RCS boron sample is needed for possible unit shutdown. <input type="checkbox"/> Normal letdown line is isolated.	

#### NOTE

Tech Spec 3.4.9 applies when indicated Pzr level  $\geq 260''$  (corrected value for 285").

4.5 <input type="checkbox"/> IAAT Pzr level $\geq 260''$ , AND letdown CANNOT be established, THEN initiate unit shutdown at $\approx 20\%/min$ per AP/29 (Rapid Unit Shutdown).	
4.6 <input type="checkbox"/> IAAT Pzr level $\geq 375''$ , THEN trip Rx.	
4.7 <input type="checkbox"/> Verify letdown valve failure has occurred.	<input type="checkbox"/> GO TO Step 4.23.
4.8 <input type="checkbox"/> Verify IHP-5 has failed closed.	1. <input type="checkbox"/> Notify SPOC to initiate repairs on failed valve. 2. <input type="checkbox"/> GO TO Step 4.23.
4.9 <input type="checkbox"/> Close IHP-6.	
4.10 <input type="checkbox"/> Close IHP-7.	

**IF AT ANY TIME:**

- (4.3) additional makeup flow is desired AND 1A Bleed Transfer Pump is operating...  
(dispatch an operator to close 1CS-48)
- (4.5) Pzr level  $\geq 260''$  and letdown CANNOT be established... (initiate unit shutdown)
- (4.6) Pzr level  $\geq 375''$ ... (trip Rx)



ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.11 ___ Dispatch an operator in continuous communication with Control Room to manually open IHP-5 (Letdown Isolation) (East Pen Rm). (Tech Spec 3.6.3)	
4.12 ___ WHEN IHP-5 is open, THEN ensure CC System in operation.	
4.13 ___ Verify letdown temperature < 135°F.	1. ___ Open IHP-13. 2. Ensure the following are closed: ___ IHP-8 ___ IHP-9&11 3. ___ IF any deborating IX in service, THEN perform the following: A. ___ Select IHP-14 to NORMAL. B. ___ Close IHP-16. 4. ___ Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.
4.14 ___ Throttle open IHP-7 to establish ≈ 20 gpm.	
4.15 ___ WHEN letdown temperature < 130°F, THEN ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.	
4.16 ___ Open IHP-6.	
4.17 ___ Adjust IHP-7 to control desired letdown flow.	
4.18 ___ Re-establish normal makeup through IHP-120.	
4.19 ___ Verify <u>any</u> purification IX in service.	___ IF purification IX operation is desired, THEN initiate OP/1/A/1103/004 (Soluble Poison Control) to establish desired IX operation.

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.20 __ Notify SPOC to initiate repairs on IHP-5.	
4.21 __ WHEN repairs are complete on IHP-5 (Letdown Isolation) (East Pen Rm), THEN locally turn IHP-5 handwheel fully clockwise.	
4.22 __ EXIT this procedure.	

oooENDooo

**IF AT ANY TIME:**

- (4.3) additional makeup flow is desired AND 1A Bleed Transfer Pump is operating...  
(dispatch an operator to close 1CS-48)
- (4.5) Pzr level  $\geq 260''$  and letdown CANNOT be established... (initiate unit shutdown)
- (4.6) Pzr level  $\geq 375''$ ... (trip Rx)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.23 <input type="checkbox"/> WHEN letdown can be re-established, THEN ensure proper operation of the CC System.	
4.24 <input type="checkbox"/> Close IHP-6.	
4.25 <input type="checkbox"/> Close IHP-7.	
4.26 Ensure the following are open: <input type="checkbox"/> IHP-1 <input type="checkbox"/> IHP-2 <input type="checkbox"/> IHP-3 <input type="checkbox"/> IHP-4	
4.27 <input type="checkbox"/> Verify letdown temperature < 135°F.	1. <input type="checkbox"/> Open IHP-13. 2. Ensure the following are closed: <input type="checkbox"/> IHP-8 <input type="checkbox"/> IHP-9&11 3. <input type="checkbox"/> IF any deborating IX in service, THEN perform the following: A. <input type="checkbox"/> Select IHP-14 to NORMAL. B. <input type="checkbox"/> Close IHP-16. 4. <input type="checkbox"/> Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.
4.28 <input type="checkbox"/> Ensure IHP-5 is open.	
4.29 <input type="checkbox"/> Throttle open IHP-7 to establish ≈ 20 gpm.	
4.30 <input type="checkbox"/> WHEN letdown temperature < 130°F, THEN ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.	
4.31 <input type="checkbox"/> Open IHP-6.	
4.32 <input type="checkbox"/> Adjust IHP-7 to control desired letdown flow.	
4.33 <input type="checkbox"/> Re-establish normal makeup through IHP-120.	

**IF AT ANY TIME:**

- (4.3) additional makeup flow is desired AND 1A Bleed Transfer Pump is operating...  
(dispatch an operator to close 1CS-48)
- (4.5) Pzr level  $\geq 260''$  and letdown CANNOT be established... (initiate unit shutdown)
- (4.6) Pzr level  $\geq 375''$ ... (trip Rx)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.34 <input type="checkbox"/> Verify <u>any</u> purification IX in service.	<input type="checkbox"/> IF purification IX operation is desired, THEN initiate OP/1/A/1103/004 (Soluble Poison Control) to establish desired IX operation.
4.35 <input type="checkbox"/> EXIT this procedure.	

oooENDooo

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**REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE**

**NRC JPM-006**

**Adjust 1RIA-40 Setpoint for Increased SG Tube Leakage**

**CANDIDATE**

---

**EXAMINER**

---

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Adjust 1RIA-40 Setpoint for Increased SG Tube Leakage

**Alternate Path:**

No

**Facility JPM #:**

New

**K/A Rating(s):**

System: 073  
K/A: A4.02  
Rating: 3.7/3.7

**Task Standard:**

Correctly adjust 1RIA-40 elevated alarm setpoints for the RIA and OAC for increased SG tube leakage per AP/31, Primary to Secondary Leakage and PT/230/01, Radiation Monitor Check

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

AP/31, Primary to Secondary Leakage  
PT/230/01, Radiation Monitor Check

**Validation Time: 20 minutes**

**Time Critical: No**

=====

**Candidate:** \_\_\_\_\_  
NAME

Time Start: \_\_\_\_\_  
Time Finish: \_\_\_\_\_

**Performance Rating:** SAT \_\_\_\_\_ UNSAT \_\_\_\_\_ Question Grade \_\_\_\_\_ Performance Time \_\_\_\_\_

**Examiner:** \_\_\_\_\_  
NAME SIGNATURE DATE

=====

COMMENTS

## SIMULATOR OPERATOR INSTRUCTIONS:

1. Recall SNAP 202
2. Import NRC JPM-006 Files
3. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

AP/31, Primary to Secondary Leakage  
PT/230/01, Radiation Monitor Check  
Calculator

**READ TO OPERATOR**

**DIRECTION TO TRAINEE:**

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

**INITIAL CONDITIONS:**

The unit has been continuously operating at 100% for 9 months with a small SG tube leak in the 1B SG. SG tube leakage in the 1B SG has increased and new leakage calculated to equal 17 gpd. AP/31, Primary to Secondary is in progress and completed up to step 4.37.

**INITIATING CUES:**

The SRO directs you to complete step 4.37 of AP/31.

START TIME: \_\_\_\_\_

<p><u>STEP 1:</u></p> <p>Perform PT/0/A/0230/01(Radiation Monitor Check) to set the following 1RIA-40 alarm setpoints:</p> <p>1RIA-40 High – 75 gpd 1RIA-40 Alert – 30 gpd OAC 1RIA-40 HI – 30 gpd</p> <p><b>Note: These numbers will be used later in the JPM to calculate the new 1RIA-40 setpoints</b></p> <p><u>STANDARD:</u></p> <p>Obtain PT/0/A/0230/01(Radiation Monitor Check)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u></p> <p>Refer to PT/0/A/0230/01(Radiation Monitor Check), Enclosure 13.4, Process Monitor Setpoint Bases for 1RIA-40. (Page 7 of 29)</p> <p><u>STANDARD:</u></p> <p>Locate 1RIA-40 information in PT/0/A/0230/01(Radiation Monitor Check), Enclosure 13.4, Process Monitor Setpoint Bases</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 3:</u></p> <p>Determine RIA-40 setpoints as follows: If both of the following conditions exist, set the setpoint at the following values:</p> <ul style="list-style-type: none"> <li>• The reactor is subcritical</li> <li>• The current 1RIA-40 reading &lt; 100 cpm</li> </ul> <div style="border: 1px solid black; padding: 2px;"> <p>Alert = 115 cpm High = 115 cpm</p> </div> <p><u>STANDARD:</u></p> <p>Analyze data for step 1.1 and determine that plant conditions for adjusting 1RIA-40 setpoint does not apply. (Reactor is critical)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u></p> <p>Determine RIA-40 setpoints as follows: If both of the following conditions exist, then go to Step 2:</p> <ul style="list-style-type: none"> <li>• The reactor is subcritical</li> <li>• The current 1RIA-40 reading <math>\geq</math> 100 cpm</li> </ul> <p><u>STANDARD:</u></p> <p>Analyze data for step 1.2 and determine that plant conditions for adjusting 1RIA-40 setpoint does not apply. (Reactor is critical)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u></p> <p>Determine RIA-40 setpoints as follows: If all of the following conditions exist, then set the setpoints at the following values:</p> <ul style="list-style-type: none"> <li>• The reactor is critical</li> <li>• Reactor power &lt; 15%</li> <li>• AP/31 is NOT in effect</li> <li>• The current RIA-40 reading &lt; 55 cpm</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Alert = 115 cpm High = 115 cpm</p> </div> <p><u>STANDARD:</u> Analyze data for step 1.3 and determine that plant conditions for adjusting 1RIA-40 setpoint does not apply. (AP/31 is in effect)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u></p> <p>Determine RIA-40 setpoints as follows: If all of the following conditions exist, then go to Step 2.0:</p> <ul style="list-style-type: none"> <li>• The reactor is critical</li> <li>• Reactor power &lt; 15%</li> <li>• AP/31 is NOT in effect</li> <li>• The current RIA-40 reading ≥ 55 cpm</li> </ul> <p><u>STANDARD:</u> Analyze data for step 1.4 and determine that plant conditions for adjusting 1RIA-40 setpoint does not apply. (AP/31 is in effect)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 7:

Determine 1RIA-40 setpoints as follows:

IF both of the following conditions exist, then go to step 5 to reset the Alert/High setpoints given in AP/31:

- The reactor is critical
- AP/31 is in effect

STANDARD:

Analyze plant conditions and determine that Step 1.5 applies. Complete Step 1.5 by determining that the reactor is critical and AP/31 is in progress then, proceed to Step 5.

COMMENTS:

\_\_\_ SAT

\_\_\_ UNSAT



**STEP 8:**

**Note: JPM step 5 evaluates procedure steps 5.1 and 5.2**

Reset the Alert/High alarm setpoints in AP/31 as follows:

**NOTE:** Xe133 equivalent activity is required for this calculation.

**CUE: RCS Xe 133 eq activity = .288  $\mu\text{Ci/ml}$**

Obtain CSAE flow rate.

**CUE: CSAE flow rate = 6.5 scfm**

Perform the following equation:

$$\text{SETPOINT} = \frac{(\text{Elevated Alert/High stpt gpd}) (\text{RCS Xe133eq } \mu\text{Ci/ml}) (6.9\text{E-4 day/min})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3) (3.4 \mu\text{Ci/ml/cpm})}$$

**STANDARD:**

Perform calculation:

$$\begin{aligned} \text{ALERT} &= \frac{30 \text{ gpd} (.288 \mu\text{Ci/ml}) (6.9\text{E-4 day/min})}{7.48 \text{ gal/ft}^3 (6.5 \text{ ft}^3) (3.4 \text{ E-8 } \mu\text{Ci/ml/cpm})} \\ &= \frac{.0059616}{.000001653} \\ &= 3607 \text{ cpm (+/- 100 cpm)} \end{aligned}$$

$$\begin{aligned} \text{HIGH} &= \frac{75 \text{ gpd} (.288 \mu\text{Ci/ml}) (6.9\text{E-4 day/min})}{7.48 \text{ gal/ft}^3 (6.5 \text{ ft}^3) (3.4\text{E-8 } \mu\text{Ci/ml/cpm})} \\ &= \frac{.014904}{.000001653} \\ &= 9016 \text{ cpm (+/- 100 cpm)} \end{aligned}$$

**COMMENTS:**

**CRITICAL STEP**

\_\_\_ SAT

\_\_\_ UNSAT

<p><u>STEP 9:</u></p> <p><b>Note: JPM step 6 evaluates procedure steps 5.3</b></p> <p>Enter the new Alert and High setpoints in the RIA View Node</p> <p><u>STANDARD:</u></p> <p>Locate the RIA View Node on VB2, perform the following:</p> <ul style="list-style-type: none"><li>• From the U1 Radiation Monitor display page, select 1RIA-40 by placing the cursor on 1RIA-40 "hot link" then depress the left mouse key.</li><li>• From the Channel Summary display page, select Enable Controls by placing the cursor on the ENABLE CONTROLS "hot link" and depressing the left mouse key.</li><li>• From the ENABLE CONTROLS display page, type in the new ALERT setpoint (3607 +/- 100 cpm) in the ALERT window and depress enter (or left mouse key).</li><li>• From the ENABLE CONTROLS display page, type in the new HIGH setpoint (9016 +/- 100 cpm) in the HIGH window and depress enter (or left mouse key).</li><li>• *Verify the new ALERT (Yellow bar) and HIGH (Red bar) setpoints increase to the new elevated values on the Channel Summary display page.*</li></ul> <p><b>NOTE: * Not critical</b></p> <p><u>COMMENTS:</u></p> <p><b>END OF TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
--	---

STOP TIME: \_\_\_\_\_

**CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
8	Calculation for 1RIA-40 elevated setpoints. (Note: +/- 100 cpm acceptance band)
9	Setpoint adjustment for the RIA View Node 1RIA-40 High and Alert alarm setpoints

**CANDIDATE CUE SHEET**  
**(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

**INITIAL CONDITIONS:**

The unit has been continuously operating at 100% for 9 months with a small SG tube leak in the 1B SG. SG tube leakage in the 1B SG has increased and new leakage calculated to equal 17 gpd. AP/31, Primary to Secondary is in progress and completed up to step 4.37.

**INITIATING CUES:**

The SRO directs you to complete step 4.37 of AP/31.