

# Draft Submittal

(Pink Paper)

## **OCONEE JUNE 2003 EXAM 50-269/2003-301**

**JUNE 16 - 27, 2003**

- 1. Administrative Questions/JPMs
- 2. In-plant JPMs
- 3. Control Room JPMs (simulator JPMs)
- 4. Administrative Topics Outline ES-301-1
- 5. Control Room Systems and Facility Walk-Through  
Test Outline ES-301-2

ES-301  
Initial Submittal

Control Room/In-Plant Outline

Form ES-301-2

Facility: <b>Oconee</b>		Date of Examination: <u>06/16/03</u>
Exam Level (circle one): <b>RO</b> / SRO(I) / SRO(U) Operating Test No.: <u>1</u>		
Control Room Systems (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U)		
System / JPM Title	Type Code*	Safety Function
a. <b>CRO-200, Makeup to the LDST</b> OP/1103/004 (Soluble Poison Control) [KA: 004 A4.13 (3.3/2.9)] ( <b>new</b> ) (10 min)	N, S	1
b. <b>CRO-083, Re-establish RCS letdown flow</b> AP/32 (Loss of Letdown) [KA: 004 A2.07 (3.4/3.7)] ( <b>last exam</b> ) (10 min)	D, A, S	2
c. <b>CRO-066, Perform Required Actions for RCS Pressure ≤ 550 psig</b> EOP Encl. 5.1 (ES Actuation) [KA: EPE011 EA1.13 (4.1/4.2)] (15 min)	D, A, S	3
d. <b>CRO-013, Align MDEFDWP Suction to the Hotwell and Feed the SGs</b> EOP Encl. 5.9 [KA: APE054 AA1.01 (4.5/4.4)] (10 min)	D, L, S	4S
e. <b>CRO-201, Restart RCP</b> EOP, Encl. 5.6 [KA: 003 A4.06 (2.9*/2.9)] ( <b>new</b> ) (10 min)	N, S	4P
f. <b>CRO-009, Following a Keowee Emergency Start Transfer from CT-4 to CT-5</b> OP/0/A/1106/019 Encl. 4.12 [KA: 062 A4.01 (3.3/3.1)] (10 min)	D, L, S	6
g. <b>CRO-202, Reset RIA-40 setpoints and enter the OAC Pri to Sec Admin Limit</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) [KA: 073 A4.02 (3.7/3.7)] ( <b>new</b> ) (15 min)	N, S	7
h. <b>CRO-11A, Align Intake Canal For Recirc On Dam Failure</b> AP/13 (Dam Failure), [KA: 075 A2.01 (3.0/3.2)]	D, L, A, S	8
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
i. <b>NLO-022, Station ASW Pump Alignment</b> EOP Encl. 5.10 [KA: APE054 AA1.01 (4.5/4.4)] ( <b>last exam</b> ) (15 min)	D, R, L	4S
j. <b>CRO-47, Emergency start SSF Diesel Generator and supply power to the SSF ASW and SSF RCMU pumps</b> AP/25, [KA: 062 A2.11 (3.7/4.1)] (14 min)	M, A, L	6
k. <b>NLO-007, Start Diesel Air Compressor And Align To Service Air Header</b> AP/32, Encl. "Emergency Start of the Diesel Air Compressor", [KA: APE-065 AA1.04 (3.5*/3.4*)] (15 min)	D	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		

Facility: <b>Oconee</b>		Date of Examination: <u>06/16/03</u>
Exam Level (circle one): RO / <b>SRO(I)</b> / SRO(U) Operating Test No.: <u>1</u>		
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b. <b>CRO-083, Re-establish RCS letdown flow</b> AP/32 (Loss of Letdown) [KA: 004 A2.07 (3.4/3.7)] (last exam)	D, A, S	2
c. <b>CRO-066, Perform Required Actions for RCS Pressure ≤ 550 psig</b> EOP Encl. 5.1 (ES Actuation) [KA: EPE011 EA1.13 (4.1/4.2)]	D, A, S	3
d. <b>CRO-013, Align MDEFDWP Suction to the Hotwell and Feed the SGs</b> EOP Encl. 5.9 [KA: APE054 AA1.01 (4.5/4.4)]	D, L, S	4S
e. <b>CRO-201, Restart RCP</b> EOP, Encl. 5.6 [KA: 003 A4.06 (2.9*/2.9)] (new)	N, S	4P
f. <b>CRO-202, Reset RIA-40 setpoints and enter the OAC Pri to Sec Admin Limit</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) [KA: 073 A4.02 (3.7/3.7)] (new)	N, S	7
g. <b>CRO-11A, Align Intake Canal For Recirc On Dam Failure</b> AP/13 (Dam Failure), [KA: 075 A2.01 (3.0/3.2)]	D, L, A, S	8
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
h. <b>NLO-022, Station ASW Pump Alignment</b> EOP Encl. 5.10 [KA: APE054 AA1.01 (4.5/4.4)] (last exam)	D, R, L	4S
i. <b>CRO-47, Emergency start SSF Diesel Generator and supply power to the SSF ASW and SSF RCMU pumps</b> AP/25, [KA: 062 A2.11 (3.7/4.1)]	M, A, L	6
j. <b>NLO-007, Start Diesel Air Compressor And Align To Service Air Header</b> AP/32, Encl. "Emergency Start of the Diesel Air Compressor", [KA: APE-065 AA1.04 (3.5*/3.4*)]	D	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		

ES-301  
Initial Submittal

## Control Room/In-Plant Outline

Form ES-301-2

Facility: <b>Oconee</b>		Date of Examination: <u>06/1603</u>
Exam Level (circle one): RO / SRO(I) / <b>SRO(U)</b>		Operating Test No.: <u>1</u>
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b. <b>CRO-066, Perform Required Actions for RCS Pressure <math>\leq</math> 550 psig</b> EOP Encl. 5.1 (ES Actuation) [KA: EPE011 EA1.13 (4.1/4.2)]	D, A, S	3
c. <b>CRO-202, Reset RIA-40 setpoints and enter the OAC Pri to Sec Admin Limit</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) [KA: 073 A4.02 (3.7/3.7)] (new)	N, S	7
In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)		
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e. <b>NLO-007, Start Diesel Air Compressor And Align To Service Air Header</b> AP/32, Encl. "Emergency Start of the Diesel Air Compressor", [KA: APE-065 AA1.04 (3.5*/3.4*)]	D	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		



## Initial Submittal

Facility: **Oconee**Date of Examination: **June 16, 2003**Examination Level (circle one): RO / **SRO**Operating Test Number:   1  

Administrative Topic	Describe activity to be performed
Conduct of Operations GEN 2.1.23 (3.9/4.0)	<b>CRO-203, Calculate batch addition to LDST</b> OP/1103/004 (Soluble Poison Control) (group activity) (new) (10 min)
Conduct of Operations GEN 2.1.3 (3.0/3.4)	<b>JPM-003, Evaluate Overtime Eligibility</b> OMP 2-01 Attachment "C", NSD 200 (SRO only) (20 min)
Equipment Control GEN 2.2.12 (3.0/3.4)	<b>CRO-204, Perform weekly surveillance test to determine RIA-40 setpoint</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) (new) (15 min)
Radiation Control GEN 2.3.4 (2.5/3.1)	<b>CRO – 205, Calculate the Maximum Permissible Stay Time Within Emergency Dose Limits (new)</b> (15 min)
Emergency Plan GEN 2.4.38 (2.2/4.0)	<b>SRO-206, Determine Emergency Classification and Protective Action Recommendations (SRO only)</b> (group activity) (new) (20 min)
Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

## Initial Submittal

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Administrative Topic	Describe activity to be performed
Conduct of Operations GEN 2.1.23 (3.9/4.0)	<b>CRO-203, Calculate batch addition to LDST</b> OP/1103/004 (Soluble Poison Control) (group activity) (new) (10 min)
Conduct of Operations GEN 2.1.7 (3.7/4.4)	<b>CRO-043, Perform Manual RCS Leakage Calculation;</b> PT/0600/010 (RO Only) (group activity) (20 min)
Equipment Control GEN 2.2.12 (3.0/3.4)	<b>CRO-204, Perform weekly surveillance test to determine RIA-40 setpoint</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) (new) (15 min)
Radiation Control GEN 2.3.4 (2.5/3.1)	<b>CRO – 205, Calculate the Maximum Permissible Stay Time Within Emergency Dose Limits</b> (group activity) (new) (15 min)
Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

## Initial Submittal R1

Facility: **Oconee**Date of Examination: **June 16, 2003**Examination Level (circle one): **RO / SRO**

Operating Test Number: \_\_\_\_\_

Administrative Topic	Describe activity to be performed
Conduct of Operations GEN 2.1.23 (3.9/4.0)	<b>CRO-203, Calculate Final SFP Boron Concentration</b> OP/1&2/A/1104/006 C (SFP Makeup), Enclosure 4.9 (SFP Makeup With DW) (group activity) (new) (10 min)
Conduct of Operations GEN 2.1.7 (3.7/4.4)	<b>CRO-043, Perform Manual RCS Leakage Calculation;</b> PT/0600/010 (RO Only) (group activity) (18 min)
Equipment Control GEN 2.2.12 (3.0/3.4)	<b>CRO-204, Perform weekly surveillance test to determine RIA-40 setpoint</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) (new) (20 min)
Radiation Control GEN 2.3.4 (2.5/3.1)	<b>CRO – 205, Calculate the Maximum Permissible Stay Time Within Emergency Dose Limits</b> (group activity) (new) (20 min)
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Initial Submittal R1

Facility: **Oconee**Date of Examination: **June 16, 2003**Examination Level (circle one): **RO / SRO**

Operating Test Number: \_\_\_\_\_

Administrative Topic	Describe activity to be performed
Conduct of Operations GEN 2.1.23 (3.9/4.0)	<b>CRO-203, Calculate Final SFP Boron Concentration</b> OP/1&2/A/1104/006 C (SFP Makeup), Enclosure 4.9 (SFP Makeup With DW) (group activity) (new) (10 min)
Conduct of Operations GEN 2.1.3 (3.0/3.4)	<b>JPM-003, Evaluate Overtime Eligibility</b> OMP 2-01 Attachment "C", NSD 200 (SRO only) (25 min)
Equipment Control GEN 2.2.12 (3.0/3.4)	<b>CRO-204, Perform weekly surveillance test to determine RIA-40 setpoint</b> PT/230/001 Encl. 13.10 (Operation of RIA-40) (new) (20 min)
Radiation Control GEN 2.3.4 (2.5/3.1)	<b>CRO - 205, Calculate the Maximum Permissible Stay Time Within Emergency Dose Limits (new)</b> (20 min)
Emergency Plan GEN 2.4.38 (2.2/4.0)	<b>SRO-206, Determine Emergency Classification and Protective Action Recommendations (SRO only)</b> (group activity) (new) (20 min)
Note: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.	

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

**CRO-200**

**Makeup to LDST**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Makeup to the LDST

**Alternate Path:**

No

**Facility JPM #:**

New

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

System: 004

K/A: A4.13

Rating: 3.3/2.9

**Task Standard:**

Makeup to the LDST from 1A and 1B BHUT is performed correctly per procedure.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

OP/1/A/1103/004, Encl. 4.5 (RCS Inventory Control)

**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:**

1. Recall Snap 207
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

OP/1/A/1103/004, Encl. 4.5 (RCS Inventory Control)

**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.

LDST level = 80 inches

A batch addition to the LDST is desired

**INITIATING CUES:**

The SRO directs you to use OP/1/A/1103/004, Encl. 4.5 (RCS Inventory Control) to add the following to the LDST:

- 50 gallons from 1A BHUT
- 10 gallons from 1B BHUT



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

<p><b>STEP 1:</b> Step 2.1 <b>IF</b> required, makeup to RCS per Section 3 "RCS Normal Makeup".</p> <p><b>STANDARD:</b> Determine that makeup to the RCS is required and continue at Step 3.1.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Step 3.1 Determine amount and source RCS makeup.</p> <ul style="list-style-type: none"> <li>• <b>IF</b> two Letdown Filters are available review component boron log and make appropriate adjustments to makeup volumes.</li> </ul> <p><b>STANDARD:</b> Determine that 50 gallons from 1A BHUT and 10 gallons from 1B BHUT should be added to the LDST.</p> <p><b>Note: Information in initiating cue.</b></p> <p><b>Cue: If asked, inform candidate that two Letdown Filters are available and will be used for this addition.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Step 3.2 Ensure 1HP-15 Moore Controller reset for Normal Operation.</p> <p><b>STANDARD:</b> Locate 1HP-15 Moore Controller on 1UB1 and ensure the following:</p> <ul style="list-style-type: none"> <li>• Mode selector in "MANUAL"</li> <li>• Display selector to "P"</li> <li>• Valve position: 100% open</li> <li>• Start-stop to "START"</li> </ul> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 4:</b>      Step 3.3</p> <p>IF required, makeup with 1HP-15 in auto as follows:</p> <ul style="list-style-type: none"> <li>• Select "S" on 1HP-15 Moore Controller.</li> <li>• Enter batch size on 1HP-15 Moore Controller.</li> <li>• Place 1HP-15 Moore Controller in "AUTO".</li> <li>• Ensure "P" on 1HP-15 Moore Controller.</li> <li>• Ensure 1HP-14 (LDST BYPASS) to "NORMAL".</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Both filters may be used for RCS makeup and, as a result, may contain different boron concentrations.</li> <li>• Placing an idle Letdown Filter in service can affect reactivity management by adding different concentrations of boron to RCS.</li> <li>• One Letdown Filter holds <math>\approx</math> 60 gals</li> </ul> </div> <p><b>STANDARD:</b>    Locate 1HP-15 Moore Controller on 1UB1 and perform the following:</p> <ul style="list-style-type: none"> <li>• Select "S" on 1HP-15 Moore Controller.</li> <li>• Enter batch size of 50 gallons on 1HP-15 Moore Controller.</li> <li>• Place 1HP-15 Moore Controller in "AUTO".</li> <li>• Ensure "P" on 1HP-15 Moore Controller.</li> <li>• Ensure 1HP-14 (LDST BYPASS) to "NORMAL".</li> </ul> <p><b>Cue:</b> <i>Inform candidate that it is desired to perform the makeup with 1HP-15 in auto.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b>      Step 3.4</p> <p>IF available, place two Letdown Filters in service as follows:</p> <ul style="list-style-type: none"> <li>• Ensure open 1HP-17 (1A LETDOWN FILTER INLET)</li> <li>• Ensure open 1HP-18 (1B LETDOWN FILTER INLET)</li> </ul> <p><b>STANDARD:</b>    Place a second Letdown Filter in service by locating 1HP-18 (1B LETDOWN FILTER INLET) switch on 1UB1 and placing it in the OPEN position. Valve is verified open by red light illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 6:</b> Step 3.5 Open 1HP-16 (LDST MAKEUP ISOLATION)</p> <p><b>STANDARD:</b> Locate 1HP-16 on 1UB1 and open the valve by rotating the switch in the counter-clockwise direction. The red light will illuminate and the green light will go off.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 7:</b> Step 3.6 Start desired BLEED TRANSFER PUMP.</p> <div> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>Normal make-up flow rate should be &gt; 55 gpm.</li> </ul> </div> <p><b>STANDARD:</b> Locate the switch for 1A BLEED TRANSFER PUMP on 1AB1 and start the pump by rotating the switch to the START position. The red light will illuminate and the green light will go off.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b> Step 3.7 Open associated Bleed Transfer Pump discharge valve:</p> <ul style="list-style-type: none"> <li>1CS-46 (1A RC BLEED XFER PUMP DISCH)</li> <li>Or</li> <li>1CS-56 (1B RC BLEED XFER PUMP DISCH)</li> </ul> <div> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>1HP-15 may require throttling if only one Letdown Filter is in service and <math>\Delta P</math> is high.</li> </ul> </div> <p><b>STANDARD:</b> Locate 1CS-46 (1A RC BLEED XFER PUMP DISCH) valve on 1AB1 and open the valve by rotating the switch to the OPEN position. The red light will illuminate and the green light will go off.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 9:</u></b>      Step 3.8  <b>IF</b> required, throttle 1HP-15 as follows:</p> <ul style="list-style-type: none"> <li>• Ensure 1HP-15 Moore Controller in "MANUAL"</li> <li>• Throttle 1HP-15 to control make-up flow to LDST</li> </ul> <p><b><u>STANDARD:</u></b>    Determine throttling 1HP-15 is not required when two Letdown Filters are in service..</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 10:</u></b>      Step 3.9  <b>IF</b> required, lower LDST level per Section 4 "Reducing RCS Inventory".</p> <p><b><u>STANDARD:</u></b>    Determine lowering LDST level is not required.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      Step 3.10  <b>WHEN</b> required:</p> <ul style="list-style-type: none"> <li>• Stop BLEED TRANSFER PUMP</li> <li>• Close respective discharge valve: <ul style="list-style-type: none"> <li>• 1CS-46 (1A RC BLEED XFER PUMP DISCH)</li> </ul> </li> </ul> <p><u>Or</u></p> <ul style="list-style-type: none"> <li>• 1CS-56 (1B RC BLEED XFER PUMP DISCH)</li> </ul> <p><b><u>STANDARD:</u></b>    When the addition is completed the candidate should:</p> <ul style="list-style-type: none"> <li>• Stop 1A BLEED TRANSFER PUMP (located on 1AB1)</li> <li>• Close 1CS-46 (1A RC BLEED XFER PUMP DISCH) by rotating the switch to the CLOSE position. Valve is verified closed by red light off and green light illuminated. (located on 1AB1)</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 12:</u>      Step 3.11 Reset 1HP-15 Moore Controller for Normal Operation.</p> <p><u>STANDARD:</u>    Locate 1HP-15 Moore Controller on 1UB1 and ensure the following:</p> <ul style="list-style-type: none"> <li>• Mode selector in "MANUAL"</li> <li>• Display selector to "P"</li> <li>• Valve position: 100% open</li> <li>• Start-stop to "START"</li> </ul> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13:</u>      Step 3.12 <i>IF</i> required, repeat previous steps for additional makeup (batch additions)</p> <p><u>STANDARD:</u>    Determine additional makeup is required and return to step 3.3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 14:</b>      Step 3.3</p> <p>IF required, makeup with 1HP-15 in auto as follows:</p> <ul style="list-style-type: none"> <li>• Select "S" on 1HP-15 Moore Controller.</li> <li>• Enter batch size on 1HP-15 Moore Controller.</li> <li>• Place 1HP-15 Moore Controller in "AUTO".</li> <li>• Ensure "P" on 1HP-15 Moore Controller.</li> <li>• Ensure 1HP-14 (LDST BYPASS) to "NORMAL".</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Both filters may be used for RCS makeup and, as a result, may contain different boron concentrations.</li> <li>• Placing an idle Letdown Filter in service can affect reactivity management by adding different concentrations of boron to RCS.</li> <li>• One Letdown Filter holds ≈ 60 gals</li> </ul> </div> <p><b>STANDARD:</b>    Locate 1HP-15 Moore Controller on 1UB1 and perform the following:</p> <ul style="list-style-type: none"> <li>• Select "S" on 1HP-15 Moore Controller.</li> <li>• Enter batch size of 10 gallons on 1HP-15 Moore Controller.</li> <li>• Place 1HP-15 Moore Controller in "AUTO".</li> <li>• Ensure "P" on 1HP-15 Moore Controller.</li> <li>• Ensure 1HP-14 (LDST BYPASS) to "NORMAL".</li> </ul> <p><b>Cue:</b> Inform candidate that it is desired to perform the makeup with 1HP-15 in auto.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 15:</b>      Step 3.4</p> <p>IF available, place two Letdown Filters in service as follows:</p> <ul style="list-style-type: none"> <li>• Ensure open 1HP-17 (1A LETDOWN FILTER INLET)</li> <li>• Ensure open 1HP-18 (1B LETDOWN FILTER INLET)</li> </ul> <p><b>STANDARD:</b>    Verify Letdown Filters remain in service from previous addition.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 16:</b>      Step 3.5</p> <p>Open 1HP-16 (LDST MAKEUP ISOLATION)</p> <p><b>STANDARD:</b>    1HP-16 is verified OPEN from previous addition by RED light illuminated.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 17:</b>      Step 3.6 Start desired BLEED TRANSFER PUMP.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Normal make-up flow rate should be &gt; 55 gpm.</li> </ul> </div> <p><b>STANDARD:</b>    Locate the switch for 1B BHUT BLEED TRANSFER PUMP on 1AB1 and start the pump by rotating the switch to the START position. The red light will illuminate and the green light will go off.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p>   <p>___ UNSAT</p>
<p><b>STEP 18:</b>      Step 3.7 Open associated Bleed Transfer Pump discharge valve:</p> <ul style="list-style-type: none"> <li>• 1CS-46 (1A RC BLEED XFER PUMP DISCH)</li> <li style="padding-left: 20px;"><u>Or</u></li> <li>• 1CS-56 (1B RC BLEED XFER PUMP DISCH)</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• 1HP-15 may require throttling if only one Letdown Filter is in service and <math>\Delta P</math> is high.</li> </ul> </div> <p><b>STANDARD:</b>    Locate 1CS-56 (1B RC BLEED XFER PUMP DISCH) valve on 1AB1 and open the valve by rotating the switch to the OPEN position. The red light will illuminate and the green light will go off.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p>   <p>___ UNSAT</p>
<p><b>STEP 19:</b>      Step 3.8 <b>IF</b> required, throttle 1HP-15 as follows:</p> <ul style="list-style-type: none"> <li>• Ensure 1HP-15 Moore Controller in "MANUAL"</li> <li>• Throttle 1HP-15 to control make-up flow to LDST</li> </ul> <p><b>STANDARD:</b>    Determine throttling 1HP-15 is not required when two Letdown Filters are in service.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p>   <p>___ UNSAT</p>

<p><b><u>STEP 20:</u></b> Step 3.9 IF required, lower LDST level per Section 4 "Reducing RCS Inventory".</p> <p><b><u>STANDARD:</u></b> Determine lowering LDST level is <i>not</i> required.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 21:</u></b> Step 3.10 <b>WHEN</b> required:</p> <ul style="list-style-type: none"> <li>• Stop BLEED TRANSFER PUMP</li> <li>• Close respective discharge valve: <ul style="list-style-type: none"> <li>• 1CS-46 (1A RC BLEED XFER PUMP DISCH)</li> </ul> </li> </ul> <p><u>Or</u></p> <ul style="list-style-type: none"> <li>• 1CS-56 (1B RC BLEED XFER PUMP DISCH)</li> </ul> <p><b><u>STANDARD:</u></b> When the addition is completed the candidate should:</p> <ul style="list-style-type: none"> <li>• Stop 1B BLEED TRANSFER PUMP (located on 1AB1)</li> <li>• Close 1CS-56 (1B RC BLEED XFER PUMP DISCH) by rotating the switch to the CLOSE position. Valve is verified closed by red light off and green light illuminated. (located on 1AB1)</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 22:</u></b> Step 3.11 Reset 1HP-15 Moore Controller for Normal Operation.</p> <p><b><u>STANDARD:</u></b> Locate 1HP-15 Moore Controller on 1UB1 and ensure the following:</p> <ul style="list-style-type: none"> <li>• Mode selector in "MANUAL"</li> <li>• Display selector to "P"</li> <li>• Valve position: 100% open</li> <li>• Start-stop to "START"</li> </ul> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>



<p><b><u>STEP 23:</u></b>      Step 3.12  <b>IF</b> required, repeat previous steps for additional makeup (batch additions)</p> <p><b><u>STANDARD:</u></b>    Determine no additional makeup is required.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 24:</u></b>      Step 3.13  Close 1HP-16 (LDST MAKEUP ISOLATION) ,</p> <p><b><u>STANDARD:</u></b>    The candidate should close 1HP-16 by rotating the switch to the CLOSE position on 1UB1. Verify valve is closed by red light OFF and green light illuminated.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 25:</u></b>      Step 3.14  <b>IF</b> required, request RCS sample for boron.</p> <p><b><u>STANDARD:</u></b>    The candidate should indicate that they would request an RCS sample for boron.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 26:</u></b>      Step 3.15  <b>WHEN</b> all desired additions are complete record RCS batch volumes in Unit Log.</p> <p><b><u>STANDARD:</u></b>    The candidate should indicate that they would make an Autolog entry.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 27:</b> Step 3.16  <b>IF</b> required, place one Letdown Filter in service as follows:  3.16.1 Verify &gt; 10 minutes since LDST makeup was secured  3.16.2 Position <u>one</u> of the following:  <ul style="list-style-type: none"> <li>• Close 1HP-17 (1A LETDOWN FILTER INLET)</li> <li>Or</li> <li>• Close 1HP-18 (1B LETDOWN FILTER INLET)</li> </ul> </p> <p><b>STANDARD:</b> Candidate determines if one Letdown Filter is to be removed from service.</p> <p><b>Cue:</b> Inform candidate that the SRO has elected to keep <b>BOTH</b> Letdown Filters in service at this time.</p> <p><b>COMMENTS:</b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 28:</b> <b>IF</b> two Letdown Filters were used, make appropriate entries for Letdown Filters in component boron log.</p> <p><b>STANDARD:</b> Determine log entries would be required.</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>
4	Step required to properly setting up 1HP-15 for addition.
6	Step required to establish flow path to LDST.
7	Step required to pump water to LDST.
8	Step required to establish flow path to LDST.
14	Step required to properly setting up 1HP-15 for addition.
17	Step required to pump water to LDST.
18	Step required to establish flow path to LDST.

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

**INITIAL CONDITIONS:**

Unit 1 is at 100% power.

LDST level  $\approx$  80 inches

A batch addition to the LDST is desired

**INITIATING CUES:**

The SRO directs you to use OP/1/A/1103/004, Encl. 4.5 (RCS Inventory Control) to add the following to the LDST:

- 50 gallons from 1A BHUT
- 10 gallons from 1B BHUT

Enclosure 4.5  
RCS Inventory Control

OP/1/A/1103/004  
Page 1 of 5

**1. Initial Conditions**

1.1 None

**2. Procedure**

**NOTE:** This enclosure affects reactivity management by changing RCS boron.

2.1 IF required, makeup to RCS per Section 3 "RCS Normal Makeup".

2.2 IF required, lower LDST level per Section 4 "Reducing RCS inventory".

### 3. RCS Normal Makeup

- 3.1 Determine amount and source RCS makeup.
  - **IF** two Letdown Filters are available review component boron log and make appropriate adjustments to makeup volumes. {15}
- 3.2 Ensure 1HP-15 Moore Controller reset for Normal Operation.
- 3.3 **IF** required, makeup with 1HP-15 in auto as follows:
  - 3.3.1 Select "S" on 1HP-15 Moore Controller.
  - 3.3.2 Enter batch size on 1HP-15 Moore Controller.
  - 3.3.3 Place 1HP-15 Moore Controller in "AUTO".
  - 3.3.4 Ensure "P" on 1HP-15 Moore Controller.
  - 3.3.5 Ensure 1HP-14 (LDST BYPASS) to "NORMAL".

<p><b>NOTE:</b></p> <ul style="list-style-type: none"><li>• Both filters may be used for RCS makeup and, as a result, may contain different boron concentrations. {11}</li><li>• Placing an idle Letdown Filter in service can affect reactivity management by adding different concentration of boron to RCS. {11}</li><li>• One Letdown Filter holds <math>\approx</math> 60 gals. {11} {15}</li></ul>
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- 3.4 **IF** available, place two Letdown Filters in service as follows:
  - Ensure open 1HP-17 (1A LETDOWN FILTER INLET)
  - Ensure open 1HP-18 (1B LETDOWN FILTER INLET)
- 3.5 Ensure Open 1HP-16 (LDST MAKEUP ISOLATION).

Enclosure 4.5  
RCS Inventory Control

OP/1/A/1103/004  
Page 3 of 5

3.6 Start desired BLEED TRANSFER PUMP.

**NOTE:** Normal make-up flow rate should be > 55 gpm. {22}

3.7 Open associated Bleed Transfer Pump discharge valve:

- 1CS-46 (1A RC BLEED XFER PUMP DISCH)

Or

- 1CS-56 (1B RC BLEED XFER PUMP DISCH)

**NOTE:** 1HP-15 may require throttling if only one Letdown Filter is in service and  $\Delta P$  is high.

3.8 IF required, throttle 1HP-15 as follows: {20}

- Ensure 1HP-15 Moore Controller in "MANUAL"
- Throttle 1HP-15 to control makeup flow to LDST

3.9 IF required, lower LDST level per Section 4 "Reducing RCS Inventory".

3.10 WHEN required:

- Stop BLEED TRANSFER PUMP
- Close respective discharge valve:
  - 1CS-46 (1A RC BLEED XFER PUMP DISCH)

Or

- 1CS-56 (1B RC BLEED XFER PUMP DISCH)

3.11 Reset 1HP-15 Moore Controller for Normal Operation.

3.12 IF required, repeat previous steps for additional makeup (batch additions).

Enclosure 4.5  
RCS Inventory Control

OP/1/A/1103/004  
Page 4 of 5

- 3.13 Close 1HP-16 (LDST MAKEUP ISOLATION).
- 3.14 IF required, request RCS sample for boron.
- 3.15 WHEN all desired additions are complete record RCS batch volumes in Unit Log.
- 3.16 IF required, place one Letdown Filter in service as follows:
- 3.16.1 Verify > 10 minutes since LDST makeup was secured. {11}
- 3.16.2 Position one of the following:
- Close 1HP-17 (1A LETDOWN FILTER INLET)
- Or
- Close 1HP-18 (1B LETDOWN FILTER INLET)
- 3.17 IF two Letdown Filters were used, make appropriate entries for Letdown Filters in component boron log. {15}



#### 4. Reducing RCS inventory

**NOTE:** If make-up is in progress, make-up flow can be diverted from LDST to BHUT while cycling 1HP-14 (10-15 second stroke time). {21}

- 4.1 Bleed to reduce RCS inventory as follows:
  - 4.1.1 Check the following:
    - Ensure open 1CS-26 (LETDOWN TO RC BHUT)
    - Ensure open 1CS-41 (1A RC BHUT INLET)
  - 4.1.2 Position 1HP-14 (LDST BYPASS) to "BLEED".
- 4.2 WHEN required, position 1HP-14 (LDST BYPASS) to "NORMAL".

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

**CRO-083**

**Reestablish RCS Letdown Flow**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Reestablish RCS letdown flow

**Alternate Path:**

Yes

**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 \_\_\_\_\_

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 4.29.

**INITIATING CUES:**

The SRO directs you to restore letdown flow using AP/32 (Loss of Letdown) beginning at step 4.29.

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

<p><b><u>STEP 1:</u></b>      Step 4.29  <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>      Step 4.30  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>      Step 4.31  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>      Step 4.32 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>      Step 4.33 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>      Step 4.33 <b>RNO 1</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> Step 4.33 <b>RNO 2</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:</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 8:</u></b> Step 4.33 <b>RNO 3</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>Cue:</b> If asked, inform candidate that no deborating IXs are in service.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b> Step 4.33 <b>RNO 4</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>STEP 10:</b> Step 4.34 Ensure 1HP-5 (LETDOWN ISOLATION) is open.</p> <p><b>STANDARD:</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>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 11:</b> Step 4.35 Throttle open 1HP-7 (LETDOWN CONTROL) to establish <math>\approx 20</math> gpm.</p> <p><b>STANDARD:</b> 1HP-7 (LETDOWN CONTROL) is throttled Open to establish <math>\approx 20</math> gpm letdown flow as indicated on LETDOWN FLOW meter on 1UB1.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 12:</b> Step 4.36 <b>WHEN</b> letdown temperature is <math>&lt; 130^{\circ}\text{F}</math>, <b>THEN</b> ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.</p> <p><b>STANDARD:</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 <math>&lt; 130^{\circ}\text{F}</math>.</p> <p>LETDOWN HI TEMP INTLK BYP 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 BYPASSED, clears.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 13:</b> Step 4.37 Open 1HP-6 (LETDOWN ORIFICE STOP).</p> <p><b>STANDARD:</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>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 14:</b> Step 4.38 Adjust 1HP-7 (LETDOWN CONTROL) to control desired letdown flow.</p> <p><b>STANDARD:</b> 1HP-7, (LETDOWN CONTROL) station is located by student and the manual controller is slowly rotated clockwise, until <math>\approx 70</math> GPM is indicated on the LETDOWN FLOW meter.</p> <p><b>Cue:</b> SRO desires 70-gpm letdown flow.</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>
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 4.29.

**INITIATING CUES:**

The SRO directs you to restore letdown flow using AP/32 (Loss of Letdown) beginning at step 4.29.

# OTC MASTER FILE

## PREPARATION

(2) Station OCONEE NUCLEAR STATION(3) Procedure Title Loss of Letdown(4) Prepared By David P. Garland (Signature) David P. Garland Date 11/20/02

(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 [Signature] (QR) Date 12-03-02Cross-Disciplinary Review By Herald Oltman (QR) NA Date 12/10/02Reactivity Mgmt Review By [Signature] (QR) NA Date 12-03-02Mgmt Involvement Review By [Signature] (Ops Supt) NA [Signature] Date       

(7) Additional Reviews

Reviewed By        Date       Reviewed By        Date       

(8) Temporary Approval (if necessary)

By        (OSM/QR) Date       By        (QR) Date       (9) Approved By [Signature] Date 12/10/02

## 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       (13) Procedure Completion Approved       

(14) Remarks (Attach additional pages, if necessary)



## 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)

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### **1. Entry Conditions**

Unintentional loss of letdown flow

### **2. Automatic Systems Actions**

- Possible ES Channel 1 and 2 actuation
- 1HP-24 and 1HP-25 will open at 40" LDST level decreasing
- 1HP-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 1HP-120 in HAND and reduce demand to zero.	
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 1CS-48 (1A BHUT RECIRC) (A-1-107, Unit 1 RC Bleed Transfer Pump Rm).	
4.4 <input type="checkbox"/> 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.	
<p style="text-align: center;"><b>NOTE</b></p> <p>Tech Spec 3.4.9 applies when indicated Pzr level <math>\geq</math> 260" (corrected value for 285").</p>	
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 CC system in operation.	<input type="checkbox"/> GO TO Step 4.10.
4.8 <input type="checkbox"/> Position the standby HPI pump switch to OFF.	
4.9 <input type="checkbox"/> Throttle 1HP-31 to establish 12 - 15 gpm SEAL INLET HDR FLOW. (2)	
4.10 <input type="checkbox"/> Verify loss of letdown is due to letdown valve or interlock failure.	<input type="checkbox"/> GO TO Step 4.29.

## 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 <input type="checkbox"/> Verify 1HP-5 closed.	1. <input type="checkbox"/> Notify SPOC to initiate repairs on failed equipment. 2. <input type="checkbox"/> GO TO Step 4.29.
4.12 <input type="checkbox"/> Close 1HP-6.	
4.13 <input type="checkbox"/> Close 1HP-7.	
4.14 <input type="checkbox"/> Open 1HP-5.	<input type="checkbox"/> Dispatch an operator in continuous communication with Control Room to manually open 1HP-5 (LETDOWN ISOLATION) (East Pen Rm). (Tech Spec 3.6.3)
4.15 <input type="checkbox"/> WHEN 1HP-5 is open, THEN ensure CC System in operation.	
4.16 <input type="checkbox"/> Verify letdown temperature < 135°F.	1. <input type="checkbox"/> Open 1HP-13. 2. Ensure the following are closed: <input type="checkbox"/> 1HP-8 <input type="checkbox"/> 1HP-9&11 3. <input type="checkbox"/> IF any deborating IX in service, THEN perform the following: A. <input type="checkbox"/> Select 1HP-14 to NORMAL. B. <input type="checkbox"/> Close 1HP-16. 4. <input type="checkbox"/> Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.
4.17 <input type="checkbox"/> Throttle open 1HP-7 to establish = 20 gpm.	
4.18 <input type="checkbox"/> WHEN letdown temperature < 130°F, THEN ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.	
4.19 <input type="checkbox"/> Open 1HP-6.	
4.20 <input type="checkbox"/> Adjust 1HP-7 to control desired letdown flow.	
4.21 <input type="checkbox"/> Re-establish normal makeup through 1HP-120.	

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.22 <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.
4.23 <input type="checkbox"/> Notify SPOC to initiate repairs on 1HP-5.	
4.24 <input type="checkbox"/> Verify SEAL INLET HDR FLOW 12 - 15 gpm.	<input type="checkbox"/> GO TO Step 4.27.
4.25 <input type="checkbox"/> Re-establish normal RCP seal injection flow.	
4.26 <input type="checkbox"/> Position the standby HPI pump switch to AUTO.	
4.27 <input type="checkbox"/> WHEN repairs are complete on 1HP-5 (LETDOWN ISOLATION) (East Pen Rm), THEN locally turn 1HP-5 handwheel fully clockwise.	
4.28 <input type="checkbox"/> EXIT this procedure.	

... END ...

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
4.29 <input type="checkbox"/> WHEN letdown can be re-established, THEN ensure proper operation of the CC System.	
4.30 <input type="checkbox"/> Close 1HP-6.	
4.31 <input type="checkbox"/> Close 1HP-7.	
4.32 Ensure the following are open: <input type="checkbox"/> 1HP-1 <input type="checkbox"/> 1HP-2 <input type="checkbox"/> 1HP-3 <input type="checkbox"/> 1HP-4	
4.33 <input type="checkbox"/> Verify letdown temperature < 135°F.	1. <input type="checkbox"/> Open 1HP-13. 2. Ensure the following are closed: <input type="checkbox"/> 1HP-8 <input type="checkbox"/> 1HP-9&11 3. <input type="checkbox"/> IF any deborating IX in service, THEN perform the following: A. <input type="checkbox"/> Select 1HP-14 to NORMAL. B. <input type="checkbox"/> Close 1HP-16. 4. <input type="checkbox"/> Select LETDOWN HI TEMP INTLK BYP switch to BYPASS.
4.34 <input type="checkbox"/> Ensure 1HP-5 is open.	<input type="checkbox"/> GO TO Step 4.11.
4.35 <input type="checkbox"/> Throttle open 1HP-7 to establish = 20 gpm.	
4.36 <input type="checkbox"/> WHEN letdown temperature < 130°F, THEN ensure LETDOWN HI TEMP INTLK BYP switch in NORMAL.	
4.37 <input type="checkbox"/> Open 1HP-6.	
4.38 <input type="checkbox"/> Adjust 1HP-7 to control desired letdown flow.	
4.39 <input type="checkbox"/> Re-establish normal makeup through 1HP-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
4.40 <input type="checkbox"/> Verify SEAL INLET HDR FLOW 12 - 15 gpm.	<input type="checkbox"/> GO TO Step 4.43.
4.41 <input type="checkbox"/> Re-establish normal RCP seal injection flow.	
4.42 <input type="checkbox"/> Position the standby HPI pump switch to AUTO.	
4.43 <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.
4.44 <input type="checkbox"/> EXIT this procedure.	

••• END •••

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

**CRO-066**

**PERFORM REQUIRED ACTIONS FOR  
RCS PRESSURE  $\leq$  550 PSIG**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Perform required actions for RCS pressure  $\leq$  550 PSIG

**Alternate Path:**

Yes

**Facility JPM #:**

CRO-066

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

System: EPE011

K/A: EA1.13

Rating: 4.1/4.2

**Task Standard:**

Proper ES conditions are verified, using the appropriate procedures; 1B LPI pump is started and LPI Header flows are throttled to between 3000 gpm (Procedural High Flow Limit) and 2800 gpm (LPI Pump Flow Low Statalarm Setpoint).

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EOP Encl. 5.1 (ES Actuation)

**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:**

1. Recall Snap 202
2. Import CRO-066 simulator files
3. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

EOP Encl. 5.1 (ES Actuation)

**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:**

Large break LOCA in progress.

RCS saturated and RCPs are off.

ES channels 1 and 2 actuated on Low RCS Pressure and EP/1/A/1800/001 Enclosure 5.1, ES Actuation, has been completed up to Step 14.

Additional ES channels have just actuated.

HPI flow has been verified.

**INITIATING CUES:**

The Procedure Director directs you to continue with Enclosure 5.1 (ES Actuation) at Step 14.

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

<p><b><u>STEP 1:</u></b>      Step 1</p> <p>IAAT <u>either</u> of the following conditions exists:</p> <ul style="list-style-type: none"> <li>An ES channel is <b>NOT</b> bypassed, <b>AND</b> RCS pressure reaches actuation setpoint</li> <li>RB pressure reaches actuation setpoint</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Actuation Setpoint (psig)</th> <th style="padding: 5px;">Associated ES Channel</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">1600      (RCS)</td> <td style="padding: 5px;">1 &amp; 2</td> </tr> <tr> <td style="padding: 5px;">550      (RCS)</td> <td style="padding: 5px;">3 &amp; 4</td> </tr> <tr> <td style="padding: 5px;">3      (RB)</td> <td style="padding: 5px;">1, 2, 3, 4, 5 &amp; 6</td> </tr> <tr> <td style="padding: 5px;">10      (RB)</td> <td style="padding: 5px;">7 &amp; 8</td> </tr> </tbody> </table> <p><b>THEN</b> perform Step 2.</p> <p><b><u>STANDARD:</u></b>      Candidate checks outstanding IAAT steps and determines that Step 1 applies.</p> <p>ES channels 3, 4, 5, 6, 7, and 8 have actuated, so candidate goes to Step 2.</p> <p><b><u>COMMENTS:</u></b></p>	Actuation Setpoint (psig)	Associated ES Channel	1600      (RCS)	1 & 2	550      (RCS)	3 & 4	3      (RB)	1, 2, 3, 4, 5 & 6	10      (RB)	7 & 8	<p>___ SAT</p> <p>___ UNSAT</p>
Actuation Setpoint (psig)	Associated ES Channel										
1600      (RCS)	1 & 2										
550      (RCS)	3 & 4										
3      (RB)	1, 2, 3, 4, 5 & 6										
10      (RB)	7 & 8										
<p><b><u>STEP 2:</u></b>      Step 2</p> <p>Verify all ES channels associated with actuation setpoint have actuated.</p> <ul style="list-style-type: none"> <li>All Blue ES AUTO lights on</li> <li>All White ES POSITION lights on</li> </ul> <p><b><u>STANDARD:</u></b>      Candidate goes to RZ module and checks that the Blue ON lights and White POSITION lights for each component on the affected channels are illuminated.</p> <p>Candidate should determine that the White light for 1B LPI pump is not lit and then should perform the RNO. Verify digital channel 4 has actuated by observing "Tripped" light on 1UB1.</p> <p>Return to Step 14.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>										



<p><b>STEP 3:</b>        Step 14</p> <p><b>IAAT</b> flow in <u>any</u> LPI Header &gt; 3000 gpm, <b>THEN</b> perform Steps 15 and 16.</p> <p><b>STANDARD:</b>    Monitors LPI Flow Train A and B gauges located on 1UB2. Should recognize that flow in A Header is &gt; 3000 gpm and continue to the next step.</p> <p>Continue to Step 15</p> <p><b>CUE:</b> LPI Flow Train A will be greater than 3000 gpm.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b>        Step 15</p> <p>Throttle 1LP-17 to maximize header flow <math>\leq</math> 3000 gpm/pump.</p> <p><b>STANDARD:</b>    Locates 1LP-17 on RZ module on 1VB2 and depresses the MANUAL pushbutton for local control of 1LP-17.</p> <p><b>NOTE:</b> Candidate may also take <b>MANUAL</b> control of 1LP-18 at this time.</p> <p>Throttle 1LP-17 control switch in the CLOSE direction to obtain <math>\leq</math> 3000 gpm/pump.</p> <p>Continue to Step 16</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 5:</u>        Step 16 Throttle 1LP-18 to maximize header flow <math>\leq 3000</math> gpm/pump.</p> <p><u>STANDARD:</u>    Candidate: Observes there is no flow in this header.</p> <p><b>NOTE: 1B LPIP has failed to auto start.</b> Continue to Step 17</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u>        Step 17 Open the following:</p> <ul style="list-style-type: none"> <li>• 1BS-1</li> <li>• 1BS-2</li> </ul> <p><u>STANDARD:</u>    Verifies valves 1BS-1 and 1BS-2 are OPEN at RZ modules. Continue to Step 18</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u>        Step 18 IAAT ES Channels 7&amp; 8 are actuated, THEN perform Step 19.</p> <p><u>STANDARD:</u>    Verifies Channels 7 &amp; 8 are actuated by observing Statalarms 1SA-1/C-11, D-11 ES CHANNEL 7 (8) TRIP or by the ES digital "tripped" lights on 1UB1. Continue to Step 19</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 8:</u></b>      Step 19</p> <p>Throttle the following to maximize RBS header flow <math>\leq 1500</math> gpm for <u>each</u> <u>operating</u> header:</p> <ul style="list-style-type: none"> <li>• 1BS-1</li> <li>• 1BS-2</li> </ul> <p><b><u>STANDARD:</u></b>    At RZ modules the candidate throttles 1BS-1 and 1BS-2 as required to maximize RBS header flow.</p> <p>The candidate will place 1BS-1 and 1BS-2 to manual at the RZ module by depressing the MANUAL pushbutton. 1BS-1 and 1BS-2 will be throttled to adjust RBS flow to between 1500 and 1300 gpm (Procedural High Flow Limit) and (RBS Pump Low Flow Statalarm) by depressing the CLOSE pushbutton on the RZ module.</p> <p>Continue to Step 20</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b>      Step 20</p> <p><b>IAAT ES Channels 3&amp; 4 are actuated, THEN GO TO Step 21.</b></p> <p><b><u>STANDARD:</u></b>    Verifies Channels 3 &amp; 4 are actuated observing Statalarms 1SA-1/C-10, D-10 ES CHANNEL 3 (4) TRIP or by the ES digital "tripped" lights on 1UB1.</p> <p><b>GO TO Step 21</b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 10:</u>      Step 21</p> <p>Place the following in manual control:</p> <ul style="list-style-type: none"> <li>• 1A LPI pump</li> <li>• 1B LPI pump</li> <li>• 1LP-17</li> <li>• 1LP-18</li> </ul> <p><u>STANDARD:</u>      Components are located on RZ modules on 1VB2 and the MANUAL pushbuttons are depressed for each of the following:</p> <ul style="list-style-type: none"> <li>• 1A LPI pump</li> <li>• 1B LPI pump</li> <li>• 1LP-17</li> <li>• 1LP-18</li> </ul> <p>Continue to Step 22</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11:</u>      Step 22</p> <p>Verify <u>one</u> of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• 1LP-17 open</li> <li>• 1LP-17 throttled to control flow</li> </ul> <p><u>STANDARD:</u>      Recognizes that 1LP-17 has been throttled to control flow.</p> <p>Continue to Step 23</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 12:</u>      Step 23</p> <p>Verify <u>one</u> of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• 1LP-18 open</li> <li>• 1LP-18 throttled to control flow</li> </ul> <p><u>STANDARD:</u>    Verifies 1LP-18 OPEN at RZ module.</p> <p>Continue to Step 24</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13:</u>      Step 24</p> <p><b>IAAT</b> <u>any</u> LPI pump is operating against a shutoff head, <b>THEN</b> at the CR SRO's discretion, stop affected LPI pumps.</p> <p><u>STANDARD:</u>    Verifies RCS pressure is &lt; LPI pump shutoff head.</p> <p>Continue to Step 25</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14:</u>      Step 25</p> <p><b>IAAT</b> RCS pressure is &lt; LPI pump shutoff head, <b>AND</b> <u>any</u> of the following conditions exist:</p> <ul style="list-style-type: none"> <li>• power on 1LP-12</li> <li>• power on 1LP-17</li> <li>• 1LP-17 locally throttled</li> </ul> <p><b>THEN</b> perform Step 26.</p> <p><u>STANDARD:</u>    Recognizes that 1LP-12 and 1LP-17 have power by observing light indications.</p> <p>Continue to Step 26</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 15:</u></b>      Step 26 Verify 1A LPI Pump operating.</p> <p><b><u>STANDARD:</u></b>    Observes 1A LPI Pump control switch has red RUN indication and pump amps. Continue to Step 27</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 16:</u></b>      Step 27 <b>IAAT</b> RCS pressure is &lt; LPI pump shutoff head, <b>AND</b> <u>any</u> of the following conditions exist:</p> <ul style="list-style-type: none"> <li>• power on 1LP-14</li> <li>• power on 1LP-18</li> <li>• 1LP-18 locally throttled</li> </ul> <p><b>THEN</b> perform Step 28.</p> <p><b><u>STANDARD:</u></b>    Observes control switches for 1LP-14 and 1LP-18 for red or green lights. Continue to Step 28</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 17:</u></b>      Step 28</p> <p>Verify 1B LPI Pump operating. <b>RNO:</b> Attempt to start 1B LPI Pump.</p> <p><b><u>STANDARD:</u></b>    Observes 1B LPI Pump control switch has white OFF indication and NO pump amps. Locates the control switch for 1B LPI pump on 1UB2 and rotates it to the START position. The red RUN lights come on; the white OFF light goes off. The candidate monitors LPI Flow Train A and B gauges located on 1UB2, to ensure flow is less than/equal to 3000 gpm/pump. Candidate will realize that IAAT Step 14 applies (IAAT flow in any LPI header is &gt; 3000 gpm). Go to Step 14</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 18:</u></b>      Step 14</p> <p>IAAT flow in any LPI header is &gt; 3000 gpm, THEN perform Steps 15 and 16</p> <p><b><u>STANDARD:</u></b>    Candidate verifies that flow in the "B" LPI header is &gt; 3000 gpm. Continue to Step 15</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 19:</u></b>      Step 15</p> <p>Throttle 1LP-17 to maximize header flow ≤ 3000 gpm/pump.</p> <p><b><u>STANDARD:</u></b>    Candidate verifies that "A" LPI header flow is &lt; 3000 gpm/pump. Continue to Step 16</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 20:</u></b>      Step 16  Throttle 1LP-18 to maximize header flow <math>\leq</math> 3000 gpm/pump.</p> <p><b><u>STANDARD:</u></b>    Locates 1LP-18 on RZ module on 1VB2 and depresses the MANUAL pushbutton for local control of 1LP-18.</p> <p><b><u>NOTE:</u></b> This may have been performed earlier in Step 4.  Throttle 1LP-18 control switch in the CLOSE direction to obtain <math>\leq</math> 3000 gpm/pump.  Return to Step 28</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>
--	---

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



### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
4	This step is necessary to prevent the running out of the LPI pump and causing a loss of DHR capability.
17	This step starts the idle pump, ensuring adequate flow to the core.
20	This step is necessary to prevent the running out of the LPI pump and causing a loss of DHR capability.

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

**INITIAL CONDITIONS:**

Large break LOCA in progress.

RCS *saturated* and RCPs are off.

ES channels 1 and 2 actuated on Low RCS Pressure and EP/1/A/1800/001

Enclosure 5.1, ES Actuation, has been completed up to Step 14.

Additional ES channels have just actuated.

HPI flow has been verified.

**INITIATING CUES:**

The Procedure Director directs you to continue with Enclosure 5.1 (ES Actuation) at Step 14.

CHG 30H  
Entire Encl

Enclosure 5.1

ES Actuation

EP/1/A/1800/001

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED										
<p>1. <input type="checkbox"/> IAAT <u>either</u> of the following conditions exists:</p> <ul style="list-style-type: none"> <li>• an ES channel is <b>NOT</b> bypassed, <b>AND</b> RCS pressure reaches actuation setpoint</li> <li>• RB pressure reaches actuation setpoint</li> </ul> <table border="1"> <thead> <tr> <th>Actuation Setpoint (psig)</th> <th>Associated ES Channel</th> </tr> </thead> <tbody> <tr> <td>1600 (RCS)</td> <td>1 &amp; 2</td> </tr> <tr> <td>550 (RCS)</td> <td>3 &amp; 4</td> </tr> <tr> <td>3 (RB)</td> <td>1, 2, 3, 4, 5, &amp; 6</td> </tr> <tr> <td>10 (RB)</td> <td>7 &amp; 8</td> </tr> </tbody> </table> <p>THEN perform Step 2.</p>	Actuation Setpoint (psig)	Associated ES Channel	1600 (RCS)	1 & 2	550 (RCS)	3 & 4	3 (RB)	1, 2, 3, 4, 5, & 6	10 (RB)	7 & 8	
Actuation Setpoint (psig)	Associated ES Channel										
1600 (RCS)	1 & 2										
550 (RCS)	3 & 4										
3 (RB)	1, 2, 3, 4, 5, & 6										
10 (RB)	7 & 8										
<p>2. Verify <u>all</u> ES channels associated with actuation setpoint have actuated:</p> <p><input type="checkbox"/> <u>All</u> Blue ES AUTO lights on</p> <p><input type="checkbox"/> <u>All</u> White ES POSITION lights on</p>	<p><input type="checkbox"/> Ensure <u>affected</u> ES digital channels are actuated.</p>										
<p>3. <input type="checkbox"/> Place HPI in manual control.</p>											
<p>4. <input type="checkbox"/> Verify <u>any</u> RCP operating.</p>	<p><input type="checkbox"/> GO TO Step 6.</p>										
<p>5. Ensure the following are open:</p> <p><input type="checkbox"/> 1HP-20</p> <p><input type="checkbox"/> 1HP-21</p>											
<p>6. <input type="checkbox"/> IAAT <u>any</u> RCP is operating, <b>AND</b> ES Channels 5 and 6 actuate, <b>THEN</b> perform Steps 7 and 8.</p>	<p><input type="checkbox"/> GO TO Step 9.</p>										
<p>7. Ensure the following are open:</p> <p><input type="checkbox"/> 1CC-7</p> <p><input type="checkbox"/> 1CC-8</p> <p><input type="checkbox"/> 1LPSW-15</p> <p><input type="checkbox"/> 1LPSW-6</p>											
<p>8. <input type="checkbox"/> Ensure 1A <u>or</u> 1B Component Cooling Pump is operating.</p>											

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)

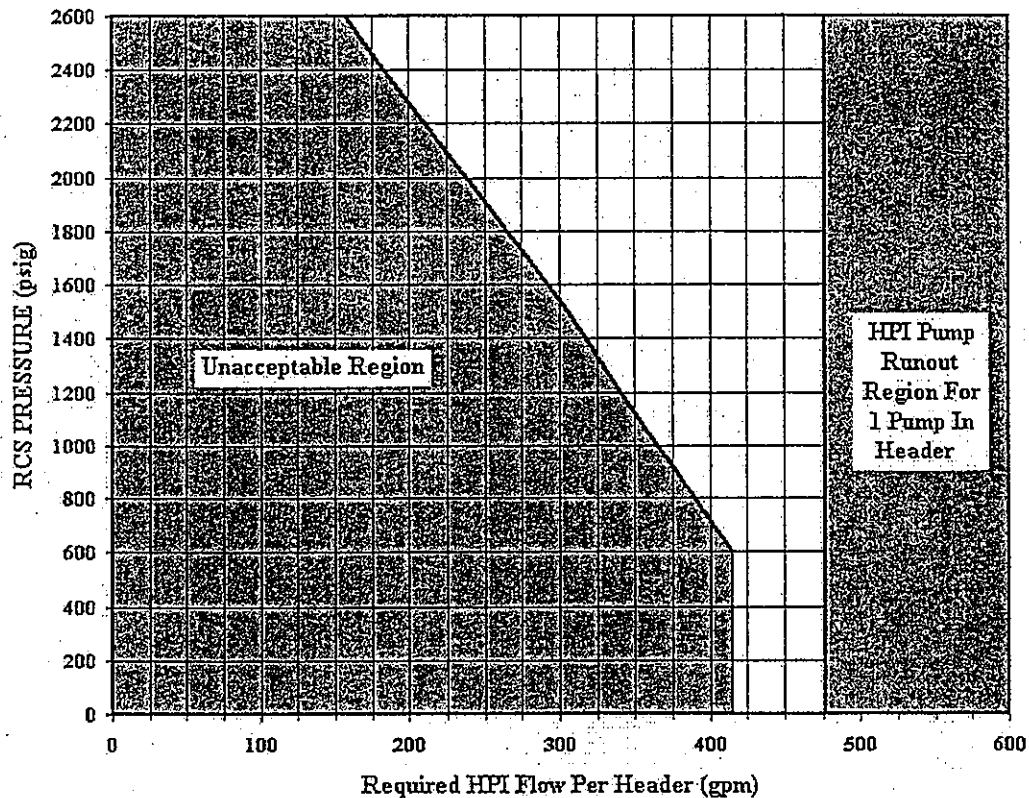
ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9. <input type="checkbox"/> Verify <u>all</u> SCMs > 0°F.	<input type="checkbox"/> GO TO Step 13.
10. Ensure the following are open: <input type="checkbox"/> 1HP-24 <input type="checkbox"/> 1HP-25	1. <input type="checkbox"/> IF <u>both</u> BWST suction valves (1HP-24 and 1HP-25) are closed, THEN perform the following: A. Ensure the following are open: (23) <input type="checkbox"/> 1LP-6 <input type="checkbox"/> 1LP-7 <input type="checkbox"/> 1LP-9 <input type="checkbox"/> 1LP-10 <input type="checkbox"/> 1LP-15 <input type="checkbox"/> 1LP-16 B. <input type="checkbox"/> Start 1A or 1B LPI Pump. C. <input type="checkbox"/> Dispatch an operator to open 1HP-363 (LETDOWN LINE TO LPI PUMP SUCTION BLOCK) (A-1-119, U1 LPI Hatch Rm, N end). 2. <input type="checkbox"/> IF only one BWST suction valve (1HP-24 or 1HP-25) is open, THEN perform the following: A. <input type="checkbox"/> Ensure only two HPI pumps are operating. B. <input type="checkbox"/> GO TO Step 12.
11. <input type="checkbox"/> Ensure at least two HPI pumps are operating.	
12. Ensure the following are open: <input type="checkbox"/> 1HP-26 <input type="checkbox"/> 1HP-27	

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED				
<p>13. ___ IAAT at least two HPI pumps are operating, AND HPI flow in <u>any</u> header is in the Unacceptable Region of Figure 1, THEN open the following in the <u>affected</u> header:</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> 1A Header</td><td><input checked="" type="checkbox"/> 1B Header</td></tr> <tr> <td><input type="checkbox"/> 1HP-410</td><td><input type="checkbox"/> 1HP-409</td></tr> </table>	<input checked="" type="checkbox"/> 1A Header	<input checked="" type="checkbox"/> 1B Header	<input type="checkbox"/> 1HP-410	<input type="checkbox"/> 1HP-409	
<input checked="" type="checkbox"/> 1A Header	<input checked="" type="checkbox"/> 1B Header				
<input type="checkbox"/> 1HP-410	<input type="checkbox"/> 1HP-409				

Figure 1  
Required HPI Flow Per Header



**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)



ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14. <input type="checkbox"/> IAAT flow in <u>any</u> LPI header is > 3000 gpm, THEN perform Steps 15 and 16.	<input type="checkbox"/> GO TO Step 17.
15. <input type="checkbox"/> Throttle 1LP-17 to maximize header flow $\leq$ 3000 gpm/pump.	1. <input type="checkbox"/> Throttle 1LP-12 to maximize header flow $\leq$ 3000 gpm/pump.  2. <input type="checkbox"/> IF 1LP-12 CANNOT be throttled, THEN perform the following: A. <input type="checkbox"/> Stop 1A LPI pump. B. Dispatch an operator to perform the following 1. <input type="checkbox"/> Close 1LP-17 (1A LP INJECTION) (A-4-402, E Pen Rm). 2. <input type="checkbox"/> Throttle 1LP-17 sixteen turns open.
16. <input type="checkbox"/> Throttle 1LP-18 to maximize header flow $\leq$ 3000 gpm/pump.	1. <input type="checkbox"/> Throttle 1LP-14 to maximize header flow $\leq$ 3000 gpm/pump.  2. <input type="checkbox"/> IF 1LP-14 CANNOT be throttled, THEN perform the following: A. <input type="checkbox"/> Stop 1B LPI pump. B. Dispatch an operator to perform the following 1. <input type="checkbox"/> Close 1LP-18 (1A LP INJECTION) (A-4-409, W Pen Rm). 2. <input type="checkbox"/> Throttle 1LP-18 sixteen turns open.
17. Open the following: <input type="checkbox"/> 1BS-1 <input type="checkbox"/> 1BS-2	Dispatch an operator to open the <u>affected</u> valve 20 turns: <input type="checkbox"/> 1BS-1 (1A RBS HEADER ISOLATION) (A-4-402, E Pen Rm) <input type="checkbox"/> 1BS-2 (1B RBS HEADER ISOLATION) (A-4-409, W Pen Rm)

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18. <u>  </u> IAAT ES Channels 7 & 8 are actuated, <b>THEN</b> perform Step 19.	<u>  </u> <b>GO TO</b> Step 20.
19. Throttle the following to maximize RBS header flow $\leq 1500$ gpm for <u>each operating</u> header: <u>  </u> 1BS-1 <u>  </u> 1BS-2	1. <u>  </u> <b>IF</b> 1BS-1 <b>CANNOT</b> be throttled $\leq 1500$ gpm, <b>THEN</b> stop 1A RBS Pump. 2. <u>  </u> <b>IF</b> 1BS-2 <b>CANNOT</b> be throttled $\leq 1500$ gpm, <b>THEN</b> stop 1B RBS Pump.
20. <u>  </u> IAAT ES Channels 3 & 4 are actuated, <b>THEN GO TO</b> Step 21.	<u>  </u> <b>GO TO</b> Step 50.
21. Place the following in manual control: <u>  </u> 1A LPI Pump <u>  </u> 1B LPI Pump <u>  </u> 1LP-17 <u>  </u> 1LP-18	
22. Verify <u>one</u> of the following conditions exists: <u>  </u> 1LP-17 open <u>  </u> 1LP-17 throttled to control flow	1. <u>  </u> <b>IF</b> power is available to 1LP-12, <b>THEN</b> dispatch an operator to open 1LP-17 (1A LP INJECTION) (A-4-402, E Pen Rm). 2. <u>  </u> <b>IF</b> power is <b>NOT</b> available to 1LP-12, <b>THEN</b> dispatch an operator to perform the following: A. <u>  </u> Close 1LP-17 (1A LP INJECTION) (A-4-402, E Pen Rm). B. <u>  </u> Throttle 1LP-17 sixteen turns open.
23. Verify <u>one</u> of the following conditions exists: <u>  </u> 1LP-18 open <u>  </u> 1LP-18 throttled to control flow	1. <u>  </u> <b>IF</b> power is available to 1LP-14, <b>THEN</b> dispatch an operator to open 1LP-18 (1B LP INJECTION) (A-4-409, W Pen Rm). 2. <u>  </u> <b>IF</b> power is <b>NOT</b> available to 1LP-14, <b>THEN</b> dispatch an operator to perform the following: A. <u>  </u> Close 1LP-18 (1B LP INJECTION) (A-4-409, W Pen Rm). B. <u>  </u> Throttle 1LP-18 sixteen turns open.

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)
- (18) ES Channels 7 & 8 are actuated... (throttle RBS)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>LPI pump damage may occur if operated in excess of 30 minutes against a shutoff head. (6)</p>	
<p>24. <input type="checkbox"/> IAAT <u>any</u> LPI pump is operating against a shutoff head,  <b>THEN</b> at the CR SRO's discretion, stop <u>affected</u> LPI pumps. (6, 22)</p>	
<p>25. <input type="checkbox"/> IAAT RCS pressure is &lt; LPI pump shutoff head,  <b>AND</b> <u>any</u> of the following conditions exist:  <input type="checkbox"/> power on 1LP-12  <input type="checkbox"/> power on 1LP-17  <input type="checkbox"/> 1LP-17 locally throttled  <b>THEN</b> perform Step 26.</p>	<p><input type="checkbox"/> <b>GO TO</b> Step 27.</p>
<p>26. <input type="checkbox"/> Verify 1A LPI Pump operating.</p>	<p><input type="checkbox"/> Attempt to start 1A LPI Pump.</p>
<p>27. <input type="checkbox"/> IAAT RCS pressure is &lt; LPI pump shutoff head,  <b>AND</b> <u>any</u> of the following conditions exist:  <input type="checkbox"/> power on 1LP-14  <input type="checkbox"/> power on 1LP-18  <input type="checkbox"/> 1LP-18 locally throttled  <b>THEN</b> perform Step 28.</p>	<p><input type="checkbox"/> <b>GO TO</b> Step 29.</p>
<p>28. <input type="checkbox"/> Verify 1B LPI Pump operating.</p>	<p><input type="checkbox"/> Attempt to start 1B LPI Pump.</p>

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)
- (18) ES Channels 7 & 8 are actuated... (throttle RBS)
- (24) any LPI pump is operating against a shutoff head... (at CR SRO's discretion, stop affected LPI pumps)
- (25) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-12, 1LP-17 or 1LP-17 throttled... (verify 1A LPI pump operating)
- (27) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-14, 1LP-18 or 1LP-18 throttled... (verify 1B LPI pump operating)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																
29. <u>IAAT</u> <u>any</u> of the following conditions exist: ___ an LPI Pump (1A and/or 1B) fails to start ___ an LPI Pump (1A and/or 1B) fails during operation, AND <u>all</u> the following conditions exists: ___ RCS pressure < LPI pump shutoff head ___ 1LP-19 closed ___ 1LP-20 closed ___ 1BS-1 open OR throttled open ___ 1BS-2 open OR throttled open THEN perform Steps 30 through 32.	___ GO TO Step 33.																
30. ___ Verify <u>any</u> LPI pump operating.	___ IF 1C LPI Pump is available, THEN perform the following: A. Ensure the following are open on the desired header to provide suction to 1C LPI Pump: <table border="1"> <thead> <tr> <th></th> <th>A Suction Header</th> <th></th> <th>B Suction Header</th> </tr> </thead> <tbody> <tr> <td></td> <td>1LP-28</td> <td></td> <td>1LP-28</td> </tr> <tr> <td></td> <td>1LP-21</td> <td></td> <td>1LP-22</td> </tr> <tr> <td></td> <td>1LP-6</td> <td></td> <td>1LP-7</td> </tr> </tbody> </table> B. ___ Start 1C LPI Pump.		A Suction Header		B Suction Header		1LP-28		1LP-28		1LP-21		1LP-22		1LP-6		1LP-7
	A Suction Header		B Suction Header														
	1LP-28		1LP-28														
	1LP-21		1LP-22														
	1LP-6		1LP-7														
31. Open the following: ___ 1LP-9 ___ 1LP-10																	
<p style="text-align: center;"><b>NOTE</b></p> <p>If 1LP-17/18 have NOT been locally throttled, header flow is maximized from the Control Room by throttling 1LP-17/18. If 1LP-17/18 CANNOT be used, 1LP-12/14 are used to maximize flow.</p>																	
32. ___ Maximize flow $\leq$ 1100 gpm in each LPI header that has NOT been locally throttled.																	

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)
- (18) ES Channels 7 & 8 are actuated... (throttle RBS)
- (24) any LPI pump is operating against a shutoff head... (at CR SRO's discretion, stop affected LPI pumps)
- (25) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-12, 1LP-17 or 1LP-17 throttled... (verify 1A LPI pump operating)
- (27) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-14, 1LP-18 or 1LP-18 throttled... (verify 1B LPI pump operating)
- (29) an LPI Pump (1A and/or 1B) fails to start or fails during operation **AND** RCS pressure is < LPI pump shutoff head **AND** 1LP-19 closed **AND** 1LP-20 closed **AND** 1BS-1 & 2 are open or throttled open ... (cross-tie or line up and start 1C LPI Pump)



ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33. Ensure the following are operating: ___ A Outside Air Booster Fan ___ B Outside Air Booster Fan ___ 3A Outside Air Booster Fan ___ 3B Outside Air Booster Fan	
34. ___ IAAT ES Channels 5 & 6 have actuated, <b>THEN</b> dispatch an operator to establish ≈ 1000 cfm flow in each PRVS filter train using the following flow controllers (A-6-602, Vent Equip Rm, N wall): ___ 1PR-13 (Controller) (Filter 1A) ___ 1PR-17 (Controller) (Filter 1B)	
35. ___ Verify RCS pressure is ≥ 550 psig.	___ <b>GO TO Step 38.</b>
36. Ensure the following are open: ___ 1CC-7 ___ 1CC-8 ___ 1LPSW-15 ___ 1LPSW-6	
37. ___ Ensure 1A <u>or</u> 1B Component Cooling Pump is operating.	
38. ___ Verify 1CF-1 and 1CF-2 being open is desired.	___ <b>GO TO Step 40.</b>
39. Ensure the following are open: ___ 1CF-1 ___ 1CF-2	
40. ___ Verify 1HP-410 closed.	___ Ensure 1HP-120 in manual and closed.

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)
- (18) ES Channels 7 & 8 are actuated... (throttle RBS)
- (24) any LPI pump is operating against a shutoff head... (at CR SRO's discretion, stop affected LPI pumps)
- (25) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-12, 1LP-17 or 1LP-17 throttled... (verify 1A LPI pump operating)
- (27) RCS pressure is < LPI pump shutoff head **AND** power on 1LP-14, 1LP-18 or 1LP-18 throttled... (verify 1B LPI pump operating)
- (29) an LPI Pump (1A and/or 1B) fails to start or fails during operation **AND** RCS pressure is < LPI pump shutoff head **AND** 1LP-19 closed **AND** 1LP-20 closed **AND** 1BS-1 & 2 are open or throttled open ... (cross-tie or line up and start 1C LPI Pump)
- (34) ES Channels 5 & 6 have actuated... (establish PRVS flow)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
41. <input type="checkbox"/> Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service). (PS)	
42. <input type="checkbox"/> Ensure Chemistry has been notified to prepare for caustic addition per CP/1&2/A/2002/005 (Post Accident Caustic Injection Into LPI System).	
43. <input type="checkbox"/> Ensure makeup to the LDST is secured.	
44. <input type="checkbox"/> Ensure ES channel 1 through 4 components that can be operated from the Control Room are in desired position.	
45. Place the following in manual control: <input type="checkbox"/> 1A LPI Pump <input type="checkbox"/> 1B LPI Pump	
46. <input type="checkbox"/> Select DECAY HEAT LOW FLOW ALARM SELECT switch to ON.	
47. <input type="checkbox"/> WHEN ES channels 5 & 6 have actuated, THEN ensure ES Channel 5 & 6 components that can be operated from the Control Room are in desired position.	
48. <input type="checkbox"/> WHEN ES channels 7 & 8 have actuated, THEN ensure ES Channel 7 & 8 components that can be operated from the Control Room are in the desired position.	
49. <input type="checkbox"/> WHEN CR SRO approves, THEN EXIT this enclosure.	

...END...

**IF AT ANY TIME:**

- (1) an ES channel is **NOT** bypassed and RCS pressure reaches actuation setpoint **OR** RB pressure reaches actuation setpoint... (verify associated channels have actuated)
- (6) any RCP is operating **AND** ES Channels 5 and 6 actuate... (ensure CC and LPSW to RCPs)
- (13) at least two HPI pumps are operating **AND** HPI flow in any header is in the Unacceptable Region of Figure 1... (open 1HP-410 and/or 409)
- (14) flow in any LPI header is > 3000 gpm... (throttle flow)
- (18) ES Channels 7 & 8 are actuated... (throttle RBS)
- (20) ES Channels 3 & 4 are actuated... (**GO TO** path for proper LPI actuation)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>Unit Status</u> ES Channels 3 &amp; 4 have NOT actuated.</p>	
50. Start the following: ___ A Outside Air Booster Fan ___ B Outside Air Booster Fan.	
51. Notify Unit 3 to start the following: ___ 3A Outside Air Booster Fan ___ 3B Outside Air Booster Fan	
52. ___ Verify 1CF-1 and 1CF-2 being open is desired.	___ GO TO Step 54.
53. Ensure the following are open: ___ 1CF-1 ___ 1CF-2	
54. ___ Verify 1HP-410 closed.	___ Ensure 1HP-120 in manual and closed.
55. ___ Dispatch an operator to perform Encl 5.2 (Placing RB Hydrogen Analyzers In Service). (PS )	
56. ___ Notify Chemistry to prepare for caustic addition per CP/1&2/A/2002/005 (Post Accident Caustic Injection Into LPI System).	
57. ___ Ensure makeup to the LDST is secured.	
58. ___ Ensure ES channel 1 & 2 components that can be operated from the Control Room are in desired position.	
59. ___ WHEN CR SRO approves, THEN EXIT this enclosure.	

...END...

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

**CRO-013**

**ALIGN MDEFDWP SUCTION TO THE HOTWELL AND  
FEED THE STEAM GENERATORS**

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

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

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

**Task:**

Align MDEFDWP suction to the hotwell and feed the steam generators.

**Alternate Path:**

No

**Facility JPM #:**

CRO-013

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

System: APE054

K/A: AA1.01

Rating: 4.5/4.4

**Task Standard:**

The MDEFDWPs are aligned to the hotwell and providing flow to the SG's within limits correctly per procedure.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EOP Enclosure 5.9 (Extended EFDW Operation)

**Validation Time:** 10 minutes

**Time Critical:** No

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

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

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

**Performance Time:** \_\_\_\_\_

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

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 203
2. Import CRO-013 files
3. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

EOP Enclosure 5.9 (Extended EFDW 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:**

Reactor has tripped due to a loss of Main FDW

Main FDW is not expected back for several hours.

The TDEFDWP is unavailable.

UST makeup flow capability has been lost.

Actions of the EOP have been completed.

Enclosure 5.9, Extended EFDW Operation has been completed up to Step 51.

Steps 1, 2, and 3 of Enclosure 5.24, Operation of the ADVs are complete.

**INITIATING CUES:**

The Procedure Director directs you to align the MDEFDWP suction from the hotwell using EOP Enclosure 5.9 (Extended EFDW Operation) beginning at Step 51.

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

**Note: Cues are provided for conducting JPM in the plant control room.**

<p><b>STEP 1:</b> Step 51</p> <p><b>WHEN</b> UST level is &lt; 3 feet, <b>THEN</b> ensure all CBPs stopped.</p> <p><b>STANDARD:</b> Monitors UST level by one or more of the following ways and determines that level is less than three feet:</p> <ul style="list-style-type: none"> <li>• OAC</li> <li>• UST B LEVEL meter on 1AB-1</li> <li>• UST A LEVEL meter on 1AB-3</li> <li>• UST LEVEL chart recorder on 1VB-1</li> </ul> <p>Locates Condensate Booster Pumps A, B, and C switches on 1AB1.</p> <p>Stops <u>all</u> Condensate Booster Pumps by rotating the switches to the OFF position.</p> <p>Booster Pump red run light goes off and white stop light comes on for pumps secured.</p> <p><b>Cue: Indicate UST level is 2.8 feet UST A/B LEVEL meter on 1AB-1.</b></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Step 52</p> <p>Ensure <u>all</u> HWP's stopped.</p> <p><b>STANDARD:</b> Locates Hotwell Pump A, B, and C switches on 1AB1.</p> <p>Stops <u>all</u> Hotwell Pumps by rotating the switches to the OFF position.</p> <p>Hotwell Pump red run light goes off and white stop light comes on for pumps secured.</p> <p><b>Cue: Indicate Hotwell Pump A, B, and C are off by red run lights off.</b></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>      Step 53</p> <p>Dispatch an operator with a safety harness to 1C-573 (MD EFDWPS SUCTION FROM UST) to standby until further notice.</p> <p><b><u>STANDARD:</u></b>    Dispatches NEO to 1C-573.</p> <p><b><i>Cue: Indicate NEO has been dispatched to 1C-573.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 4:</u></b>      Step 54</p> <p>Open 1V-186 (VACUUM BREAKER).</p> <p><b><u>STANDARD:</u></b>    Locates 1V-186 on 1AB1 and rotates the switch in the open direction. The red open light comes on and the green closed light goes off.</p> <p><b><i>Cue: Indicate 1V-186 is open by red open light illuminated.</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>      Step 55</p> <p>Stop <u>all</u> main vacuum pumps.</p> <p><b><u>STANDARD:</u></b>    Locates main vacuum pump switches on 2AB3 and verifies all three pumps indicate OFF.</p> <p><b><i>Cue: Indicate <u>all</u> Main Vacuum Pumps OFF by green "off" lights illuminated.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 6:</b> Step 56</p> <p>Close the following:</p> <ul style="list-style-type: none"> <li>• 1MS-47 (MS to CSAEs)</li> <li>• 1AS-40 (CSAE AUX STEAM SUPPLY)</li> </ul> <p><b>STANDARD:</b> Locates 1MS-47 on 1AB1 and rotates the switch in the closed direction. The green closed light comes on and the red open light goes off.</p> <p>Locates 1AS-40 on 1AB1 and verifies the green closed light on and the red open light off.</p> <p><b>Cue:</b> <i>Indicate 1MS-47 and 1AS-40 are closed by green "closed" lights illuminated.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 7:</b> Step 57</p> <p><b>IAAT</b> UST level &lt;1 foot, <b>AND</b> 1C-573 is open, <b>THEN</b> stop all EFDW pumps.</p> <p><b>STANDARD:</b> Monitors UST level and if UST level is &lt;1 foot <u>stop</u> both MDEFDW Pumps if 1C-573 is open by rotating pump switch to the off position and verifying red run light goes off and white stop light comes on.</p> <p><b>Cue:</b> <i>Indicate UST level is .8 feet UST A/B LEVEL meter on 1AB-1 and when candidate stops both MDEFDW Pumps indicate they are off by red run light off.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 8:</b>      Step 58  <b>WHEN</b> vacuum is broken,  <b>THEN</b> locally close 1C-573 (MD EFDWP Suction from UST).</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>NOTE:</b> MDEFWP flow is limited to &lt; 440 gpm/pump when suction is aligned to the hotwell</p> </div> <p><b>STANDARD:</b>    Observes vacuum gauge on 1UB2 and determines that vacuum is broken and then contacts an NEO to close 1C-573.    Ensures MDEFDWP flow <u>&lt; 440 gpm/pump</u> by observing MDEFDWP flow gauges on 1UB1.</p> <p><b>CUE:</b> <i>Inform student that 1C-573 is closed.</i>  <b>CUE:</b> <i>Inform student that MDEFDWP flow gauges on 1UB1 indicate 200 gpm/pump.</i></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 9:</b>      Step 59  Restart <u>all</u> MDEFWPs that were stopped due to UST level &lt;1 foot.</p> <p><b>STANDARD:</b>    Pumps are started if required. Step is N/A if the pumps were not secured.</p> <p><b>Cue:</b> <i>When candidate starts both MDEFDW Pumps indicate that red run lights are illuminated.</i></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 10:</u>      Step 60                     Ensure TDEFDWP is <b>NOT</b> operating.</p> <p><u>STANDARD:</u>    Determine the TDEFDWP is not available.</p> <p><b>Note: The TDEFDWP is OOS.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11:</u>      Step 61                     Locally close 1C-157 (TD EFDWP Suction from UST).</p> <p><u>STANDARD:</u>    Dispatches an NEO to close 1C-157.</p> <p><b>CUE: Inform student that 1C-157 is closed.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u>      Step 62                     OPEN 1C-391 (TDEFDWP Suction from Hotwell).</p> <p><u>STANDARD:</u>    Locates the control for 1C-391 on 1VB3 and rotates the switch in the                           OPEN direction. Red open light comes on, green closed light goes off.                           Continue to Step 63</p> <p><b>Cue: Indicate Red open light comes on, green closed light goes off.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 13:</u>      Step 63  <b>IAAT TDEFDWP operation is desired,  AND hotwell level is &gt;1",  THEN start TDEFDWP.</b></p> <p><u>STANDARD:</u>    Determine the TDEFDWP is not available.  <b>Note: The TDEFDWP is OOS.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14:</u>      Step 64  Dispatch an operator to open 1C-188 (HOTWELL Emergency Makeup #1 Control Bypass).</p> <p><u>STANDARD:</u>    Dispatches an NEO to open 1C-188.</p> <p><b>CUE: Inform student that 1C-188 is open.</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15:</u>      Step 65  Notify TSC to evaluate methods to maintain secondary inventory.</p> <p><u>STANDARD:</u>    Notifies TSC to evaluate methods to maintain secondary inventory.</p> <p><b>CUE: Inform candidate that the TSC will evaluate methods to maintain secondary inventory.</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>
1	STOP <u>all</u> CBPs to prevent damage to the MDEFDWP by decreasing NPSH.
2	STOP <u>all</u> HWPs to prevent damage to the MDEFDWP by decreasing NPSH.
4	Condenser vacuum must be broken thus increasing the NPSH to the EFDWPs. This prevents EFDWP damage due to not meeting suction head requirements when Hotwell level is < 1ft.
7	Stopping Emergency Feedwater Pumps prevents possible air introduction into the pumps suction, thus preventing pump cavitation and possible pump damage.
8	Closing 1C-573 prevents air introduction into the pumps suction, thus preventing pump cavitation and possible pump damage.
9	Restart of MDEFWPs is essential regaining feed to the SGs if feed had been secured.

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

**INITIAL CONDITIONS:**

Reactor has tripped due to a loss of Main FDW

Main FDW is not expected back for several hours.

The TDEFDWP is unavailable.

UST makeup flow capability has been lost.

Actions of the EOP have been completed.

Enclosure 5.9, Extended EFDW Operation has been completed up to Step 51.

Steps 1, 2, and 3 of Enclosure 5.24, Operation of the ADVs are complete.

**INITIATING CUES:**

The Procedure Director directs you to align the MDEFDWP suction from the hotwell using EOP Enclosure 5.9 (Extended EFDW Operation) beginning at Step 51.

CHG 30 H  
Entire Encl

Enclosure 5.9  
Extended EFDW Operation

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED								
1. <input type="checkbox"/> Monitor EFDW parameters on EFW graphic display.									
2. <input type="checkbox"/> IAAT UST level is < 4', THEN GO TO Step 49.									
3. <input type="checkbox"/> IAAT feeding both SGs with one MDEFDWP is desired, THEN perform Steps 4 - 7.	<input type="checkbox"/> GO TO Step 8.								
4. Ensure EFDW control valve on SG with NO EFDW flow is in MANUAL and closed: <table><tr><td><input checked="" type="checkbox"/></td><td>1A SG</td><td><input checked="" type="checkbox"/></td><td>1B SG</td></tr><tr><td><input type="checkbox"/></td><td>1FDW-315</td><td><input type="checkbox"/></td><td>1FDW-316</td></tr></table>	<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG	<input type="checkbox"/>	1FDW-315	<input type="checkbox"/>	1FDW-316	
<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG						
<input type="checkbox"/>	1FDW-315	<input type="checkbox"/>	1FDW-316						
5. Locally open the following: <input type="checkbox"/> 1FDW-313 (1A EFDW LINE DISCH TO 1A S/G X-CONN) (T-1, 1' N of M-16, 18' up) <input type="checkbox"/> 1FDW-314 (1B EFDW LINE DISCH TO 1B S/G X-CONN) (T-1, 3' S of M-24, 10' up)									
6. <input type="checkbox"/> Ensure a MDEFDWP is operating.									
7. Throttle EFDW control valve on SG with NO EFDW flow to establish appropriate level per Rule 7 (SG Feed Control): <table><tr><td><input checked="" type="checkbox"/></td><td>1A SG</td><td><input checked="" type="checkbox"/></td><td>1B SG</td></tr><tr><td><input type="checkbox"/></td><td>1FDW-315</td><td><input type="checkbox"/></td><td>1FDW-316</td></tr></table>	<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG	<input type="checkbox"/>	1FDW-315	<input type="checkbox"/>	1FDW-316	
<input checked="" type="checkbox"/>	1A SG	<input checked="" type="checkbox"/>	1B SG						
<input type="checkbox"/>	1FDW-315	<input type="checkbox"/>	1FDW-316						
8. Perform the following as required to maintain UST level > 7': <input type="checkbox"/> Makeup with demin water. <input type="checkbox"/> Ensure CST pumps are in AUTO.									

**Enclosure 5.9**  
**Extended EFDW Operation**

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**IF AT ANY TIME:**

- (2) UST level is  $< 4'$ ... (prepare to swap EFDW suction to hotwell)
- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>9. <input type="checkbox"/> IAAT <u>all</u> the following conditions exist:</p> <p style="padding-left: 40px;"><input type="checkbox"/> Rapid cooldown NOT in progress</p> <p style="padding-left: 40px;"><input type="checkbox"/> MDEFDWP operating for each <u>available</u> SG</p> <p style="padding-left: 40px;"><input type="checkbox"/> EFDW flow in <u>each</u> header &lt; 600 gpm</p> <p style="padding-left: 40px;">THEN place TDEFDWP switch in PULL TO LOCK.</p>	
<p>10. <input type="checkbox"/> Verify TDEFDW Pump operating.</p>	<p><input type="checkbox"/> GO TO Step 13.</p>
<p>11. <input type="checkbox"/> Ensure 1LPSW-137 is open.</p>	
<p>12. <input type="checkbox"/> Ensure EMER FDWPT BRNG OIL COOLING PUMP is operating.</p>	
<p>13. <input type="checkbox"/> IAAT UST level CANNOT be maintained &gt; 7', THEN dispatch an operator to close 1C-186 (HOTWELL EMERGENCY MAKEUP #1 CONTROL INLET) (T-1, W of E-24).</p>	
<p>14. <input type="checkbox"/> Verify <u>any</u> HWP operating.</p>	<p><input type="checkbox"/> GO TO Step 20.</p>
<p>15. <input type="checkbox"/> Verify <u>any</u> CBP operating.</p>	<p><input type="checkbox"/> GO TO Step 35.</p>
<p>16. <input type="checkbox"/> Verify 1C CBP operating. (12)</p>	<p>1. <input type="checkbox"/> Ensure <u>only one</u> CBP is operating.</p> <p>2. <input type="checkbox"/> GO TO Step 18.</p>
<p>17. Ensure the following stopped: (12)</p> <p style="padding-left: 40px;"><input type="checkbox"/> 1A CBP</p> <p style="padding-left: 40px;"><input type="checkbox"/> 1B CBP</p>	
<p>18. <input type="checkbox"/> Ensure <u>only one</u> HWP is operating.</p>	
<p>19. <input type="checkbox"/> GO TO Step 38.</p>	

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Extended EFDW Operation

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**IF AT ANY TIME:**

- (2) UST level is < 4'... (prepare to swap EFDW suction to hotwell)
- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)
- (13) UST level **CANNOT** be maintained > 7'... (dispatch an operator to close 1C-186)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>If &gt; 25 minutes has elapsed since a loss of <u>all</u> condensate flow, a steam-induced water hammer may occur when a Hotwell Pump is started. A Hotwell Pump should <b>NOT</b> be started unless <u>one</u> of the following is met:</p> <ul style="list-style-type: none"> <li>• An engineering evaluation is performed</li> <li>• EFDW is <b>NOT</b> available and secondary pumps are needed to restore feed to a SG. (17)</li> </ul>	
<p>20. <input type="checkbox"/> Verify <u>all</u> condensate flow has <b>NOT</b> been lost for &gt; 25 minutes.</p>	<p>1. <input type="checkbox"/> IF Engineering approves starting a HWP <b>OR</b> secondary pumps are needed to immediately restore SG feed, <b>THEN GO TO</b> Step 21.</p> <p>2. <input type="checkbox"/> Notify CR SRO to evaluate starting Main Vacuum Pumps per AP/27 (Loss of Condenser Vacuum).</p> <p>3. <input type="checkbox"/> <b>GO TO</b> Step 68.</p>
<p>21. <input type="checkbox"/> Place <u>all</u> HWP control switches in OFF.</p>	
<p>22. <input type="checkbox"/> Place <u>all</u> CBP control switches in OFF.</p>	
<p>23. <input type="checkbox"/> Dispatch an operator to start <u>all</u> CBP Aux Oil Pumps. (T-1/J-21)</p>	
<p>24. Close the following:</p> <p><input type="checkbox"/> 1FDW-4</p> <p><input type="checkbox"/> 1FDW-9</p>	
<p>25. Ensure Main FDWP Aux Oil Pumps operating:</p> <p><input type="checkbox"/> 1A FDWP AUXILIARY OIL PUMP</p> <p><input type="checkbox"/> 1B FDWP AUXILIARY OIL PUMP</p>	
<p>26. Place the following in MANUAL <u>and</u> close:</p> <p><input type="checkbox"/> 1FDW-53</p> <p><input type="checkbox"/> 1FDW-65</p>	
<p>27. <input type="checkbox"/> Ensure 1C-10 is closed.</p>	
<p>28. <input type="checkbox"/> Using a plant page, clear TB Basement and TB third floor of non-essential personnel.</p>	

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Extended EFDW Operation

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**IF AT ANY TIME:**

- (2) UST level is  $< 4'$ ... (prepare to swap EFDW suction to hotwell)
- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is  $< 600$  gpm... (place TDEFDWP in PULL TO LOCK)
- (13) UST level **CANNOT** be maintained  $> 7'$ ... (dispatch an operator to close 1C-186)



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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
29. <u>  </u> WHEN notified that <u>all</u> CBP Aux Oil Pumps are operating, THEN continue.	
30. <u>  </u> Start <u>one</u> HWP.	
31. <u>  </u> Throttle 1C-10 controller 10% open.	
32. <u>  </u> WHEN FWP SUCT HDR PRESS (1VB3) is $\geq$ 100 psig, THEN open 1C-10.	
33. Establish 1000-1200 gpm total recirc flow with <u>one</u> of the following: <u>  </u> 1FDW-53 <u>  </u> 1FDW-65	
34. <u>  </u> WHEN five minutes has elapsed, THEN GO TO Step 35.	
35. <u>  </u> Ensure <u>two</u> HWPs operating.	
36. <u>  </u> Start the 1C CBP. {12}	<u>  </u> Start <u>one</u> available CBP.
37. <u>  </u> Stop <u>one</u> operating HWP.	
38. <u>  </u> Ensure control switch for <u>one</u> idle HWP is in AUTO.	
39. <u>  </u> Ensure control switch for <u>one</u> idle CBP is in AUTO.	
40. Ensure the following in MANUAL: <u>  </u> 1FDW-53 <u>  </u> 1FDW-65	
41. Establish $\geq$ 2300 gpm total recirc flow with <u>one</u> of the following: <u>  </u> 1FDW-53 <u>  </u> 1FDW-65	
42. <u>  </u> IAAT UST level CANNOT be maintained $> 8'$ , THEN locally open 1C-209 (SEAL WATER SUPPLY HEADER) (T-1/E of J-23, 10' up).	

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**Extended EFDW Operation**

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**IF AT ANY TIME:**

- (2) UST level is < 4'... (prepare to swap EFDW suction to hotwell)
- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)
- (13) UST level **CANNOT** be maintained > 7'... (dispatch an operator to close 1C-186)
- (42) UST level **CANNOT** be maintained > 8'... (locally open 1C-209)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>43. <input type="checkbox"/> IAAT UST level increases &gt; 11', THEN perform the following as required:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Throttle demin water</li> <li><input type="checkbox"/> Locally throttle 1C-188 (HOTWELL EMERG MAKEUP #1 CONTROL BYPASS) (T-1/W of E-24)</li> </ul>	
<p>44. Verify the following are closed:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1FDW-4</li> <li><input type="checkbox"/> 1FDW-9</li> </ul>	<p><input type="checkbox"/> GO TO Step 49.</p>
<p>45. Ensure the following are closed with the switches in CLOSE:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1FDW-33</li> <li><input type="checkbox"/> 1FDW-31</li> <li><input type="checkbox"/> 1FDW-42</li> <li><input type="checkbox"/> 1FDW-40</li> </ul>	
<p>46. Locally open the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1FDW-5 (1A FDWP DISCHARGE BYPASS) (T-1/SE of D-24 12' up)</li> <li><input type="checkbox"/> 1FDW-10 (1B FDWP DISCHARGE BYPASS) (T-1/N of D-26 9' up)</li> </ul>	
<p>47. <input type="checkbox"/> WHEN FWP DISCH HDR PRESS (1VB3) is approximately equal to <u>either</u> of the following:</p> <ul style="list-style-type: none"> <li>• O1A1014 (FDWP 1A DISCHARGE PRESS)</li> <li>• O1A1391 (FDWP 1B DISCHARGE PRESS)</li> </ul> <p>THEN open the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1FDW-4</li> <li><input type="checkbox"/> 1FDW-9</li> </ul>	
<p>48. Locally close the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1FDW-5 (1A FDWP DISCHARGE BYPASS) (T-1/SE of D-24 12' up)</li> <li><input type="checkbox"/> 1FDW-10 (1B FDWP DISCHARGE BYPASS) (T-1/N of D-26 9' up)</li> </ul>	

**IF AT ANY TIME:**

- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)
- (13) UST level **CANNOT** be maintained > 7'... (dispatch an operator to close 1C-186)
- (42) UST level **CANNOT** be maintained > 8'... (locally open 1C-209)
- (43) UST level increases > 11'... (locally throttle 1C-188 as required)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
49. <u>  </u> WHEN UST level is < 4', THEN dispatch two operators to perform Encl 5.24 (Operation of the ADVs) in preparation for loss of vacuum. (PS)	
50. <u>  </u> Verify power available to 1V-186.	<u>  </u> Dispatch an operator with a safety harness to 1V-186 (VACUUM BREAKER) (T-3, catwalk at 1C2 waterbox).
51. <u>  </u> WHEN UST level is < 3', THEN ensure <u>all</u> CBPs stopped.	
52. <u>  </u> Ensure <u>all</u> HWPps stopped.	
53. <u>  </u> Dispatch an operator with a safety harness to 1C-573 (MD EFDWPS SUCTION FROM UST) (T-1, SW of E-24, 8' above floor).	
54. <u>  </u> Open 1V-186.	<u>  </u> Notify operator to open 1V-186 (MAIN CONDENSER VACUUM BREAKER) (T-3, catwalk at 1C2 waterbox).
55. <u>  </u> Stop <u>all</u> main vacuum pumps.	
56. Close the following: <u>  </u> 1MS-47 <u>  </u> 1AS-40	Dispatch an operator to close the following: <u>  </u> 1MS-49 (1A CSAE STEAM SUPPLY) (T-3/F-26) <u>  </u> 1MS-58 (1B CSAE STEAM SUPPLY) (T-3/G-26) <u>  </u> 1MS-67 (1C CSAE STEAM SUPPLY) (T-3/H-26)
57. <u>  </u> IAAT UST level is < 1', AND 1C-573 (MD EFDWPS SUCTION FROM UST) is open, THEN stop <u>all</u> EFDW pumps.	
<b>NOTE</b> MDEFDWP flow is limited to < 440 gpm/pump when suction is aligned to the hotwell (1C-573 closed).	
58. <u>  </u> WHEN vacuum is broken, THEN locally close 1C-573 (MD EFDWPS SUCTION FROM UST).	

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**Extended EFDW Operation**

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**IF AT ANY TIME:**

- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
59. __ Restart <u>all</u> MDEFDWPs that were stopped due to UST level < 1'.	
60. __ Ensure TDEFDWP is NOT operating.	
61. __ Locally close 1C-157 (TD EFDWP SUCTION FROM UST) (T-1/C-20).	
62. __ Open 1C-391.	__ Locally open 1C-391 (TD EFDWP SUCTION FROM HOTWELL) (T-1/C-20).
63. __ IAAT TDEFDWP operation is desired, AND hotwell level is > 1", THEN start TDEFDWP.	
64. __ Dispatch an operator to open 1C-188 (HOTWELL EMERG MAKEUP #1 CONTROL BYPASS) (T-1/W of E-24). {18}	
65. __ Notify TSC to evaluate methods to maintain secondary inventory.	
66. __ IAAT hotwell level is ≤ 1", THEN stop <u>all</u> EFDWPs.	
67. __ WHEN directed by CR SRO, THEN EXIT this enclosure.	

...END...

Enclosure 5.9  
Extended EFDW Operation

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**IF AT ANY TIME:**

- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
  
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)



Enclosure 5.9  
Extended EFDW Operation

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
68. <input type="checkbox"/> WHEN UST level is < 4', THEN dispatch two operators to perform Encl 5.24 (Operation of the ADVs) in preparation for loss of vacuum. (PS)	
69. <input type="checkbox"/> Verify power available to 1V-186.	<input type="checkbox"/> Dispatch an operator with a safety harness to 1V-186 (VACUUM BREAKER) (T-3, catwalk at 1C2 waterbox).
70. <input type="checkbox"/> WHEN UST level is < 3', THEN ensure <u>all</u> CBPs stopped.	
71. <input type="checkbox"/> Ensure <u>all</u> HWPs stopped.	
72. <input type="checkbox"/> Dispatch an operator with a safety harness to 1C-573 (MD EFDWPS SUCTION FROM UST) (T-1, SW of E-24, 8' above floor).	
73. <input type="checkbox"/> Open 1V-186.	<input type="checkbox"/> Notify operator to open 1V-186 (MAIN CONDENSER VACUUM BREAKER) (T-3, catwalk at 1C2 waterbox).
74. <input type="checkbox"/> Stop <u>all</u> main vacuum pumps.	
75. Close the following: <input type="checkbox"/> 1MS-47 <input type="checkbox"/> 1AS-40	Dispatch an operator to close the following: <input type="checkbox"/> 1MS-49 (1A CSAE STEAM SUPPLY) (T-3/F-26) <input type="checkbox"/> 1MS-58 (1B CSAE STEAM SUPPLY) (T-3/G-26) <input type="checkbox"/> 1MS-67 (1C CSAE STEAM SUPPLY) (T-3/H-26)
76. <input type="checkbox"/> IAAT UST level is < 1', AND 1C-573 (MD EFDWPS SUCTION FROM UST) is open, THEN stop <u>all</u> EFDW pumps.	
<b>NOTE</b> MDEFDWP flow is limited to < 440 gpm/pump when suction is aligned to the hotwell (1C-573 closed).	
77. <input type="checkbox"/> WHEN vacuum is broken, THEN locally close 1C-573 (MD EFDWPS SUCTION FROM UST).	

**IF AT ANY TIME:**

- (3) feeding both SGs with one MDEFDWP is desired... (cross-tie)
- (9) rapid cooldown **NOT** in progress **AND** MDEFDWP operating for each available SG **AND** EFDW flow in each header is < 600 gpm... (place TDEFDWP in PULL TO LOCK)

Enclosure 5.9  
Extended EFDW Operation

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
78. <input type="checkbox"/> Restart <u>all</u> MDEFDWPs that were stopped due to UST level < 1'.	
79. <input type="checkbox"/> Ensure TDEFDWP is NOT operating.	
80. <input type="checkbox"/> Locally close 1C-157 (TD EFDWP SUCTION FROM UST) (T-1/C-20).	
81. <input type="checkbox"/> Open 1C-391.	<input type="checkbox"/> Locally open 1C-391 (TD EFDWP SUCTION FROM HOTWELL) (T-1/C-20).
82. <input type="checkbox"/> IAAT TDEFDWP operation is desired, AND hotwell level is > 1", THEN start TDEFDWP.	
83. <input type="checkbox"/> Dispatch an operator to open 1C-188 (HOTWELL EMERG MAKEUP #1 CONTROL BYPASS) (T-1/W of E-24). (18)	
84. <input type="checkbox"/> Notify TSC to evaluate methods to maintain secondary inventory.	
85. <input type="checkbox"/> IAAT hotwell level is ≤ 1", THEN stop <u>all</u> EFDWPs.	
86. <input type="checkbox"/> WHEN directed by CR SRO, THEN EXIT this enclosure.	

... END ...

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

**CRO-201**

**Restart RCP**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Restart RCP

**Alternate Path:**

No

**Facility JPM #:**

New

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

System: 003  
K/A: A4.06  
Rating: 2.9\*/2.9

**Task Standard:**

1A1 RCP is started correctly per procedure.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

EOP Enclosure 5.6 (RCP Restart)

**Validation Time:** 20 minutes

**Time Critical:** No

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

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

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

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

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

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 206
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

EOP Enclosure 5.6 (RCP Restart)

**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:**

Reactor tripped from 100% power

1TA and 1TB did not auto transfer to CT-1 on the trip resulting in tripping of all RCPs

Power has been restored to 1TA and 1TB

EOP Subsequent Action in progress at Step 4.46

**INITIATING CUES:**

SRO directs you to initiate EOP Enclosure 5.6 (RCP Restart) to start 1A1 RCP.



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

<p><b>STEP 1:</b>        Step 1 Verify ICC tab <b>NOT</b> in progress.</p> <p><b>STANDARD:</b>    Determine ICC tab <b>NOT</b> in progress.</p> <p><b>Cue: If asked, inform candidate that the ICC tab NOT in progress.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b>        Step 2 Verify <b>NO</b> RCPs operating.</p> <p><b>STANDARD:</b>    Verify <b>NO</b> RCPs operating by observing RCP red run light off and "0" amps indicated on 1AB1.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b>        Step 3 Verify all the following:</p> <ul style="list-style-type: none"> <li>• Boiler condenser cooling has <b>NOT</b> occurred</li> <li>• Nat Circ cooling exists in at least one RCS loop</li> </ul> <p><b>STANDARD:</b>    Candidate should determine that Boiler condenser cooling has <b>NOT</b> occurred. Candidate should determine that Nat Circ cooling exists in at least one RCS loop by observing any of the following: SG pressure, core <math>\Delta</math> T, CETCs, feeding SGs, and TBV position.</p> <p><b>Cue: If asked, indicate that Boiler condenser cooling has NOT occurred.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 4:</u>      Step 4 Ensure all SCMs are &gt; 0°F.</p> <p><u>STANDARD:</u>    Determine all SCMs are &gt; 0°F by observing SCM on the ICCM located on 1UB1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u>      Step 5 Ensure adequate RCP NPSH per Encl 5.18 (P/T Curves).</p> <p><u>STANDARD:</u>    Obtain EOP Encl 5.18 (P/T Curves) and determine that adequate RCP NPSH exists.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u>      Step 6 Verify any of the following exist:</p> <ul style="list-style-type: none"> <li>• Either hot leg level &lt; 597"</li> <li>• Either train of vessel head level &lt; 171"</li> <li>• RVLIS indications <b>NOT</b> available <b>AND NO</b> RCPs operating</li> </ul> <p><u>STANDARD:</u>    Determine step not met. Both hot leg levels &gt; 597" and both trains of vessel head level indicate &gt; 171". RVLIS indications are available. Continue to Step 6 RNO</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 7:</b> Step 6 RNO Ensure Pzr level &gt; 100" [180" acc]. <b>GO TO</b> Step 8</p> <p><b>STANDARD:</b> Monitor Pzr level on 1UB1 and determine level is &gt; 100". Continue to Step 8</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b> Step 8 Verify HPI CD tab <b>NOT</b> in progress.</p> <p><b>STANDARD:</b> Determine HPI CD tab <b>NOT</b> in progress.</p> <p><b>Cue: If asked, inform candidate that the HPI CD tab NOT in progress.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 9:</b> Step 9 Ensure the following are closed:</p> <ul style="list-style-type: none"> <li>• 1RC-155</li> <li>• 1RC-156</li> <li>• 1RC-157</li> <li>• 1RC-158</li> <li>• 1RC-159</li> <li>• 1RC-160</li> </ul> <p><b>STANDARD:</b> Determine the above valves are all closed by observing their light indications on 1UB2 are de-energized. This indicates that they have not been opened.</p> <p><b>Cue: If asked, valves have not been opened.</b></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 10:</u>      Step 10 Verify Pzr level is &lt; 375" [340" acc].</p> <p><u>STANDARD:</u>    Monitor Pzr level on 1UB1 and determine level is &lt; 375".</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11:</u>      Step 11 Verify 1RC-4 is <b>NOT</b> closed to isolate leakage past PORV.</p> <p><u>STANDARD:</u>    Observe 1RC-4 position indication on 1UB1 and determine 1RC-4 is open by red light illuminated.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u>      Step 12 Ensure 1RC-4 is open.</p> <p><u>STANDARD:</u>    Observe 1RC-4 position indication on 1UB1 and determine 1RC-4 is open by red light illuminated.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 13:</u>      Step 13 Ensure 1RC-1 is in manual and closed.</p> <p><u>STANDARD:</u>    Locate 1RC-1 on 1UB1 and press "close". Verify the blue AUTO light goes out and the white "close" light illuminates.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 14:</u>      Step 14 Ensure the following are open:</p> <ul style="list-style-type: none"> <li>• 1LPSW-6</li> <li>• 1LPSW-15</li> </ul> <p><u>STANDARD:</u>    Verify 1LPSW-6 and 1LPSW-15 are open on the RZ modules located on 1VB2.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15:</u>      Step 15 Ensure the following are open for each RCP to be started using OAC graphic LPS02:</p> <ul style="list-style-type: none"> <li>• 1LPSW-7&amp;8 (1A1)</li> </ul> <p><u>STANDARD:</u>    Open 1LPSW-7&amp;8 by rotating the switch in the open direction and verify they both are open on the OAC by calling up graphic LPS02.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 16:</u>      Step 16 Ensure <math>\approx</math> 8 gpm seal injection for each RCP to be started.</p> <ul style="list-style-type: none"> <li>• 1A1</li> </ul> <p><u>STANDARD:</u>    Ensure <math>\approx</math> 8 gpm seal injection for 1A1 RCP by observing seal injection flow meter on 1VB3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 17:</u>      Step 17 Ensure the following are open for each RCP to be started:</p> <ul style="list-style-type: none"> <li>• 1HP-228 (1A1)</li> </ul> <p><u>STANDARD:</u>    Verify 1HP-228 open by observing red open light illuminated on 1VB3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 18:</u>      Step 18 Ensure the following are open:</p> <ul style="list-style-type: none"> <li>• 1HP-20</li> <li>• 1HP-21</li> </ul> <p><u>STANDARD:</u>    Verify 1HP-20 open by observing indication on the RZ module located on 1VB2. Verify 1HP-21 open by observing red open light illuminated on 1UB1.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 19:</u>      Step 19 Verify CC TOTAL FLOW <math>\geq</math> 575 gpm.</p> <p><u>STANDARD:</u>    Verify CC TOTAL FLOW <math>\geq</math> 575 gpm by observing gauge located on 1AB3.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 20:</u>      Step 20 Verify HPI CD tab is <b>NOT</b> in progress.</p> <p><u>STANDARD:</u>    Determine HPI CD tab is <b>NOT</b> in progress.</p> <p><b><i>Cue: If asked, inform candidate that the HPI CD tab NOT in progress.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 21:</u>      Step 21 Verify ICC tab is <b>NOT</b> in progress</p> <p><u>STANDARD:</u>    Determine ICC tab is <b>NOT</b> in progress</p> <p><b><i>Cue: If asked, inform candidate that the ICC tab NOT in progress.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 22:</u>      Step 22 <b>IAAT</b> any SCM is = 0°F due to RCP restart, <b>THEN</b> ensure full HPI flow per Rule 6 (HPI).</p> <p><u>STANDARD:</u>    Candidate should indicate that if any SCM is = 0°F due to RCP restart, then they would ensure full HPI flow per Rule 6 (HPI).</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 23:</u></b>      Step 23  <b>IAAT</b> any SCM is = 0°F for ≈ 2 minutes following RCP restart,  <b>THEN GO TO LOSCM</b> tab.</p> <p><b><u>STANDARD:</u></b>      Candidate should indicate if any SCM is = 0°F for ≈ 2 minutes following RCP restart they would inform the SRO to go to the LOSCM tab.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 24:</u></b>      Step 24  Start AC or DC lift oil pump for an RCP to be started.</p> <p><b><u>STANDARD:</u></b>      Start AC or DC lift oil pump for the 1A1 RCP by locating switch on 1AB1 and placing the switch in the start position. The red light should come on and the white light should 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 25:</u></b>      Step 25  <b>WHEN</b> computer alarm for low lift oil pump discharge pressure clears for RCP to be started,  <b>THEN</b> start RCP.</p> <p><b><u>STANDARD:</u></b>      Monitor computer alarms on the OAC "Alarm" screen located on 1UB2 and when low lift oil pump discharge pressure alarm clears, start the 1A1 RCP by rotating the switch located on 1AB1 clockwise. The red light should illuminate and the green light should go off. Monitor RCP amps to ensure they return to normal.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>



<p><u>STEP 26:</u>      Step 26                      Stabilize RCS P/T.</p> <p><u>STANDARD:</u>    Monitor RCS P/T on 1UB1 and the OAC to determine it is stable.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 27:</u>      Step 27                      <b>WHEN</b> RCP motor current stabilizes,                      <b>THEN</b> stop respective RCP lift oil pump.</p> <p><u>STANDARD:</u>    Monitor RCP motor current by observing amp gauge on 1AB1 and when it stabilizes stop the 1A1 lift pump previously started by placing the switch on 1AB1 in the trip position. Observe the red light goes off and the green light illuminates.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 28:</u>      Step 28                      Verify starting another RCP is <b>NOT</b> desired.</p> <p><u>STANDARD:</u>    Determine that starting another RCP is not desired.</p> <p><b><i>Cue: If asked, inform candidate that starting another RCP is not desired at this time.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 29:</u>      Step 29 Monitor OAC graphic RCPMPALL to analyze operating RCP parameters.</p> <p><u>STANDARD:</u>    Display OAC graphic RCPMPALL and analyze 1A1 RCP parameters.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 30:</u>      Step 30 Return the following components to their desired position:</p> <ul style="list-style-type: none"> <li>• 1RC-1</li> <li>• Pzr heaters</li> </ul> <p><u>STANDARD:</u>    Return 1RC-1 and Pzr heaters to AUTO by depressing the AUTO pushbuttons located on 1UB1 for 1RC-1 and Pzr heaters.</p> <p><i><b>Cue: If asked, inform candidate that it is desired to return 1RC-1 and Pzr heaters to AUTO.</b></i></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 31:</u>      Step 31 <b>EXIT</b> this enclosure.</p> <p><u>STANDARD:</u>    Candidate should indicate that they would exit this enclosure.</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>
15	This step aligns cooling water to the RCP.
24	This step required for the RCP to satisfy RCP start interlock requirements.
25	This step required to start the RCP.

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

**INITIAL CONDITIONS:**

Reactor tripped from 100% power

1TA and 1TB did not auto transfer to CT-1 on the trip resulting in tripping of all RCPs

Power has been restored to 1TA and 1TB

EOP Subsequent Action in progress at Step 4.46

**INITIATING CUES:**

SRO directs you to initiate EOP Enclosure 5.6 (RCP Restart) to start 1A1 RCP.

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1. <input type="checkbox"/> Verify ICC tab <b>NOT</b> in progress.	<input type="checkbox"/> <b>GO TO</b> Step 14.
2. <input type="checkbox"/> Verify <b>NO</b> RCPs operating.	<input type="checkbox"/> <b>GO TO</b> Step 4.
3. Verify <u>all</u> the following: <input type="checkbox"/> Boiler condenser cooling has <b>NOT</b> occurred <input type="checkbox"/> Nat Circ cooling exists in at least one RCS loop	1. <input type="checkbox"/> Obtain TSC concurrence to perform RCP restart. 2. <input type="checkbox"/> <b>IF</b> TSC does <b>NOT</b> concur with RCP restart, <b>THEN EXIT</b> this enclosure.
4. <input type="checkbox"/> Ensure <u>all</u> SCMs are > 0°F.	
5. <input type="checkbox"/> Ensure adequate RCP NPSH per Encl 5.18 (P/T Curves).	
6. Verify <u>any</u> of the following exist: <input type="checkbox"/> Either hot leg level < 597" <input type="checkbox"/> Either train of vessel head level < 171" <input type="checkbox"/> RVLIS indications <b>NOT</b> available <b>AND</b> <b>NO</b> RCPs operating	1. <input type="checkbox"/> Ensure Pzr level is $\geq$ 100" [180" acc]. 2. <input type="checkbox"/> <b>GO TO</b> Step 8.
7. <input type="checkbox"/> Ensure Pzr level > 200" [235" acc].	
8. <input type="checkbox"/> Verify HPI CD tab <b>NOT</b> in progress.	<input type="checkbox"/> <b>GO TO</b> Step 10.
9. Ensure the following are closed: <input type="checkbox"/> IRC-155 <input type="checkbox"/> IRC-156 <input type="checkbox"/> IRC-157 <input type="checkbox"/> IRC-158 <input type="checkbox"/> IRC-159 <input type="checkbox"/> IRC-160	
10. <input type="checkbox"/> Verify Pzr level is < 375" [340" acc].	<input type="checkbox"/> Reduce RCS pressure to < 2000 psig.
11. <input type="checkbox"/> Verify IRC-4 is <b>NOT</b> closed to isolate leakage past PORV.	<input type="checkbox"/> <b>GO TO</b> Step 13.
12. <input type="checkbox"/> Ensure IRC-4 is open.	
13. <input type="checkbox"/> Ensure IRC-1 is in manual and closed.	
14. Ensure the following are open: <input type="checkbox"/> ILPSW-6 <input type="checkbox"/> ILPSW-15	

Enclosure 5.6

RCP Restart

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15. Ensure the following are open for each RCP to be started using OAC graphic LPS02: <input type="checkbox"/> 1LPSW-7&8 (1A1) <input type="checkbox"/> 1LPSW-13&14 (1A2) <input type="checkbox"/> 1LPSW-9&10 (1B1) <input type="checkbox"/> 1LPSW-11&12 (1B2)	
16. Ensure $\approx 8$ gpm seal injection for each RCP to be started. <input type="checkbox"/> 1A1 <input type="checkbox"/> 1A2 <input type="checkbox"/> 1B1 <input type="checkbox"/> 1B2	
17. Ensure the following are open for each RCP to be started: <input type="checkbox"/> 1HP-228 (1A1) <input type="checkbox"/> 1HP-226 (1A2) <input type="checkbox"/> 1HP-232 (1B1) <input type="checkbox"/> 1HP-230 (1B2)	
18. Ensure the following are open: <input type="checkbox"/> 1HP-20 <input type="checkbox"/> 1HP-21	
19. <input type="checkbox"/> Verify CC TOTAL FLOW $\geq 575$ gpm.	Open the following as necessary to obtain $\geq 575$ gpm total CC flow: <input type="checkbox"/> 1HP-1 <input type="checkbox"/> 1HP-2
20. <input type="checkbox"/> Verify HPI CD tab is NOT in progress.	<input type="checkbox"/> GO TO Step 32.
21. <input type="checkbox"/> Verify ICC tab is NOT in progress.	<input type="checkbox"/> GO TO Step 41.

Enclosure 5.6

RCP Restart

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b>NOTE</b></p> <p>If SCM is lost due to RCP restart, performance of Rule 2 (Loss of SCM) may be delayed for up to 2 minutes to allow SCM to recover.</p>	
22. <input type="checkbox"/> IAAT any SCM is = 0°F due to RCP restart, THEN ensure full HPI flow per Rule 6 (HPI).	
23. <input type="checkbox"/> IAAT any SCM is = 0°F for ≈ 2 minutes following RCP restart, THEN GO TO LOSCM tab.	
24. <input type="checkbox"/> Start AC or DC lift oil pump for an RCP to be started.	
25. <input type="checkbox"/> WHEN computer alarm for low lift oil pump discharge pressure clears for RCP to be started, THEN start RCP.	
26. <input type="checkbox"/> Stabilize RCS P/T.	
27. <input type="checkbox"/> WHEN RCP motor current stabilizes, THEN stop respective RCP lift oil pump.	
28. <input type="checkbox"/> Verify starting another RCP is NOT desired.	<input type="checkbox"/> GO TO Step 22.
29. <input type="checkbox"/> Monitor OAC graphic RCPMPALL to analyze operating RCP parameters.	
30. Return the following components to their desired position: <input type="checkbox"/> IRC-1 <input type="checkbox"/> Pzr heaters	
31. <input type="checkbox"/> EXIT this enclosure.	

...END...

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>Unit Status</u></p> <p align="center">HPI CD tab is in progress.</p>	
<p align="center"><u>NOTE</u></p> <ul style="list-style-type: none"> <li>• If SCM is lost due to RCP restart, performance of Rule 2 (Loss of SCM) may be delayed for up to 2 minutes to allow SCM to recover.</li> <li>• Transition to LOSCM tab is <b>NOT</b> required if SCM is lost during RCP restart in HPI CD tab.</li> </ul>	
32. <u>IAAT</u> <u>any</u> SCM is = 0°F due to RCP restart, THEN ensure full HPI flow per Rule 6 (HPI).	
33. <u>Start AC or DC lift oil pump for an RCP to be started.</u>	
34. <u>WHEN</u> computer alarm for low lift oil pump discharge pressure clears for RCP to be started, THEN start RCP.	
35. <u>Stabilize RCS P/T.</u>	
36. <u>WHEN</u> RCP motor current stabilizes, THEN stop respective RCP lift oil pump.	
37. <u>Verify starting another RCP is NOT desired.</u>	<u>GO TO</u> Step 32.
38. <u>Monitor OAC graphic RCPMPALL to analyze operating RCP parameters.</u>	
39. Return the following components to their desired position: <u>IRC-1</u> <u>Pzr heaters</u>	
40. <u>EXIT</u> this enclosure.	

...END...

Enclosure 5.6

RCP Restart

EP/1/A/1800/001

Page 8 of 9

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p align="center"><u>Unit Status</u> ICC tab in progress.</p>	
41. <input type="checkbox"/> Start AC or DC lift oil pump for an RCP to be started.	
42. <input type="checkbox"/> WHEN computer alarm for low lift oil pump discharge pressure clears for RCP to be started, THEN start RCP.	
43. <input type="checkbox"/> IAAT RCP motor current stabilizes, THEN stop respective RCP lift oil pump.	
44. <input type="checkbox"/> Verify starting another RCP is NOT desired.	<input type="checkbox"/> GO TO Step 41.
45. <input type="checkbox"/> Monitor OAC graphic RCPMPALL to analyze operating RCP parameters.	
46. Return the following components to their desired position: <input type="checkbox"/> IRC-1 <input type="checkbox"/> Pzr heaters	
47. <input type="checkbox"/> EXIT this enclosure.	

...END...

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

**CRO-009**

**Following a Keowee Emergency Start  
Transfer from CT-4 to CT-5**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Following a Keowee Emergency Start Transfer from CT-4 to CT-5

**Alternate Path:**

No

**Facility JPM #:**

CRO-009

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

System: 062  
K/A: A4.01  
Rating: 3.3/3.1

**Task Standard:**

Auxiliary power is correctly swapped from CT-4 to CT-5 by procedure.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

OP/0/A/1106/19 Encl. 4.12

**Validation Time:** 10 minutes

**Time Critical:** No

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

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

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

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

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

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall Snap 204
2. Import CRO-009 files.
3. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

OP/0/A/1106/19, Encl. 4.12

**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:**

CT-1 is out of service for repairs.

A Switchyard Isolation has resulted in a reactor trip and Unit 1's Main Feeder Busses are being supplied from CT-4 via the Standby Busses.

CT-5 has been energized from a Lee Gas Turbine and the dedicated path, bypassing the Central switchyard, has been established.

Keowee personnel have requested that the Keowee units be shutdown.

OP/0/A/1106/19, Keowee Hydro at Oconee, Enclosure 4.12 has been completed up to step 2.1.4.

**INITIATING CUES:**

The Control Room SRO directs you to utilize Enclosure 4.12 of OP/0/A/1106/19, Keowee Hydro at Oconee, to transfer MFB power from CT-4 to CT-5 starting at step 2.1.4.

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

<p><b><u>STEP 1:</u></b>      Step 2.1.4 Place the following transfer switches in MANUAL:</p> <ul style="list-style-type: none"> <li>• CT-4 BUS 1 AUTO/MAN</li> <li>• CT-4 BUS 2 AUTO/MAN</li> <li>• CT-5 BUS 1 AUTO/MAN</li> <li>• CT-5 BUS 2 AUTO/MAN</li> </ul> <p><b><u>STANDARD:</u></b>    The following transfer switches are placed in the MANUAL position:</p> <ul style="list-style-type: none"> <li>• CT-4 BUS 1 AUTO/MAN</li> <li>• CT-4 BUS 2 AUTO/MAN</li> <li>• CT-5 BUS 1 AUTO/MAN <b>Not Critical</b></li> <li>• CT-5 BUS 2 AUTO/MAN <b>Not Critical</b></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 2:</u></b>      Step 2.1.5 Open SK1 (CT-4 Stby Bus 1 Feeder).</p> <p><b><u>STANDARD:</u></b>    SK1 (CT-4 Stby Bus 1 Feeder) is OPENED by placing the switch in the trip position on 2AB3.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 3:</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>NOTE:</b> The time period between opening SK2 and closing SL1 should be &gt; 3 seconds and &lt; 20 seconds.</p> </div> <p>Step 2.1.6 Energize the STBY BUSES from CT-5 by performing the following:</p> <ul style="list-style-type: none"> <li>• Open SK2 (CT-4 STBY BUS 2 FEEDER)</li> <li>• Close SL1 (CT-5 STBY BUS 1 FEEDER)</li> <li>• Close SL2 (CT-5 STBY BUS 2 FEEDER)</li> </ul> <p><b>STANDARD:</b> The following breakers located on 2AB3 are operated in the listed sequence:</p> <ul style="list-style-type: none"> <li>• Open SK2 (CT-4 STBY BUS 2 FEEDER)</li> <li>• Close SL1 (CT-5 STBY BUS 1 FEEDER)</li> <li>• Close SL2 (CT-5 STBY BUS 2 FEEDER)</li> </ul> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 4:</b></p> <p>Step 2.1.7 Return the following transfer switches to AUTO:</p> <ul style="list-style-type: none"> <li>• CT-4 BUS 1 AUTO/MAN</li> <li>• CT-4 BUS 2 AUTO/MAN</li> <li>• CT-5 BUS 1 AUTO/MAN</li> <li>• CT-5 BUS 2 AUTO/MAN</li> </ul> <p><b>STANDARD:</b> The following transfer switches located on 2AB3 are placed in the AUTO position:</p> <ul style="list-style-type: none"> <li>• CT-4 BUS 1 AUTO/MAN</li> <li>• CT-4 BUS 2 AUTO/MAN</li> <li>• CT-5 BUS 1 AUTO/MAN</li> <li>• CT-5 BUS 2 AUTO/MAN</li> </ul> <p><b>NOTE:</b> Recovery of lost loads is not required for this JPM.</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	Breakers required in manual to allow operation
2	Breaker required to be open to remove power from CT-4 allowing power restored from CT-5
3	Proper breaker alignment to transfer power from CT-4 to CT-5

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

**INITIAL CONDITIONS:**

CT-1 is out of service for repairs.

A Switchyard Isolation has resulted in a reactor trip and Unit 1's Main Feeder Busses are being supplied from CT-4 via the Standby Busses.

CT-5 has been energized from a Lee Gas Turbine and the dedicated path, bypassing the Central switchyard, has been established.

Keowee personnel have requested that the Keowee units be shutdown.

OP/0/A/1106/19, Keowee Hydro at Oconee, Enclosure 4.12 has been completed up to step 2.1.4.

**INITIATING CUES:**

The Control Room SRO directs you to utilize Enclosure 4.12 of OP/0/A/1106/19, Keowee Hydro at Oconee, to transfer MFB power from CT-4 to CT-5 starting at step 2.1.4.

Enclosure 4.12  
Transfer Of MFB Power Supply  
From CT 4 To CT 5

OP/0/A/1106/019  
Page 1 of 4

**1. Initial Conditions**

- \_\_\_\_\_ 1.1 KHUs have been started by emergency actuation AND it is desired to shut down the KHUs.
- \_\_\_\_\_ 1.2 It is desired to supply power from CT 5.
- \_\_\_\_\_ 1.3 Review Limits and Precautions.

**2. Procedure**

- 2.1 Perform a Dead Bus transfer to CT5 from CT4 while CT4 is supplying Unit 1, 2, OR 3 MFB by:
  - \_\_\_\_\_ 2.1.1 Ensure CT 5 is energized AND ready to power auxiliary loads.
  - 2.1.2 Prior to performing Dead Bus transfer, notify the following:
    - \_\_\_\_\_ • Security Force
    - \_\_\_\_\_ • Chemistry Department
    - \_\_\_\_\_ • Group Heads
    - \_\_\_\_\_ • Keowee Operator
  - \_\_\_\_\_ 2.1.3 Ensure reset MFB Monitor Panel for any Oconee Units receiving power from the STBY Buses.
  - 2.1.4 Place the following transfer switches in "MAN":
    - \_\_\_\_\_ • CT 4 BUS 1 AUTO/MAN
    - \_\_\_\_\_ • CT 4 BUS 2 AUTO/MAN
    - \_\_\_\_\_ • CT 5 BUS 1 AUTO/MAN
    - \_\_\_\_\_ • CT 5 BUS 2 AUTO/MAN
  - \_\_\_\_\_ 2.1.5 Open SK 1 CT 4 STANDBY BUS 1 FEEDER.

Transfer Of MFB Power Supply  
From CT 4 To CT 5

**CAUTION:** Transfer should be made in > 3 but < 20 seconds to prevent picking up MFB Monitor Panel actuation which will cause a Load Shed, Keowee Emergency start and possible EPSL actuation. Undervoltage relays will cause a loss of most non-safety loads.

2.1.6 Energize STBY BUSES from CT 5 by performing the following:

- \_\_\_\_\_ A. Open SK 2 CT 4 STBY BUS 2 FEEDER.
- \_\_\_\_\_ B. Close SL-1 CT 5 STBY BUS 1 FEEDER.
- \_\_\_\_\_ C. Close SL-2 CT 5 STBY BUS 2 FEEDER.

2.1.7 Return the following Transfer Switches to "AUTO":

- \_\_\_\_\_ • CT4 BUS 1 AUTO/MAN
- \_\_\_\_\_ • CT4 BUS 2 AUTO/MAN
- \_\_\_\_\_ • CT5 BUS 1 AUTO/MAN
- \_\_\_\_\_ • CT5 BUS 2 AUTO/MAN

\_\_\_\_\_ 2.1.8 Recover any loads lost in transfer.



Enclosure 4.12  
Transfer Of MFB Power Supply  
From CT 4 To CT 5

OP/0/A/1106/019  
Page 3 of 4

NOTE: IF KHU(s) are generating with Overhead ACB closed prior to an Emergency Start Actuation, that KHU(s) will shutdown when ES Channel has been reset unless ACB is currently closed.

2.2 When all three Units no longer require an energized Underground Power Path AND a Normal Lockout does NOT exist on either KHU supplying power to an Oconee Unit, completely shut down the KHU tied to the Underground by:

2.2.1 IF ES 1 OR 2 has actuated, either reset ES 1 AND 2 channels OR press "MANUAL" on the following ES 1 AND 2 modules:

- \_\_\_\_\_ • Keowee Emer Start Ch A
- \_\_\_\_\_ • Keowee Emer Start Ch B
- \_\_\_\_\_ • Load Shed and STBY Bkr 1
- \_\_\_\_\_ • Load Shed and STBY Bkr 2

2.2.2 IF a manual Keowee Emergency start has been performed from any Oconee Unit, return both Keowee Emergency Start Channel switches on the affected Unit to "OFF" position.

- \_\_\_\_\_ • Keowee Emergency Start Channel A
- \_\_\_\_\_ • Keowee Emergency Start Channel B

\_\_\_\_\_ 2.2.3 Ensure reset Main Feeder Bus Monitor Panels.

2.2.4 Reset External Grid Trouble Protection System by depressing the following buttons. (Unit 1/2):

- \_\_\_\_\_ • GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 1 RESET
- \_\_\_\_\_ • GRID TROUBLE PROTECTIVE SYSTEM U.V. CHANNEL 2 RESET
- \_\_\_\_\_ • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 1 RESET
- \_\_\_\_\_ • GRID TROUBLE PROTECTIVE SYSTEM U.F. CHANNEL 2 RESET

Enclosure 4.12  
Transfer Of MFB Power Supply  
From CT 4 To CT 5

OP/0/A/1106/019  
Page 4 of 4

2.2.5 Ensure External Grid Trouble Protection has been reset. (Unit 1/2):

- \_\_\_\_\_ • SA-15, A-2 Channel #1 Underfrequency
- \_\_\_\_\_ • SA-15, A-4 Channel #2 Underfrequency
- \_\_\_\_\_ • SA-15, C-1 Channel #1 Undervoltage
- \_\_\_\_\_ • SA-15, C-3 Channel #2 Undervoltage

**NOTE:** External Grid Trouble Protection System actuates Keowee Emergency Start from Oconee Unit 1 circuitry.

2.2.6 Depress Keowee "PUSH TO RET TO NORMAL AFT ES RESET" pushbutton on ALL Oconee Units which have generated a Keowee Emergency Start signal:

A. Unit 1

- \_\_\_\_\_ • KEOWEE LOGIC RESET CHANNEL 1
- \_\_\_\_\_ • KEOWEE LOGIC RESET CHANNEL 2

B. Unit 2

- \_\_\_\_\_ • KEOWEE LOGIC RESET CHANNEL 1
- \_\_\_\_\_ • KEOWEE LOGIC RESET CHANNEL 2

C. Unit 3

- \_\_\_\_\_ • KEOWEE ES CHANNEL A
- \_\_\_\_\_ • KEOWEE ES CHANNEL B

\_\_\_\_\_ 2.2.7 Notify Keowee Operator to shutdown the KHU(s) per OP/0/A/2000/041 (KHS - Modes of Operation).

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

**CRO-202**

**Reset RIA-40 setpoints and  
enter the OAC Pri to Sec Admin Limit**

CANDIDATE \_\_\_\_\_

EXAMINER \_\_\_\_\_

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Reset RIA-40 setpoints and enter the OAC Pri to Sec Admin Limit

**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 alarm setpoints for the RIA and OAC per AP/31, Primary to Secondary Leakage

**Preferred Evaluation Location:**

Simulator  X  In-Plant

**Preferred Evaluation Method:**

Perform  X  Simulate

**References:**

AP/31, Primary to Secondary Leakage

**Validation Time:** 10 minutes

**Time Critical:** No

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

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

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

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

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

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

=====

**COMMENTS**

**SIMULATOR OPERATOR INSTRUCTIONS:**

1. Recall IC-41
2. Place simulator in RUN

**Tools/Equipment/Procedures Needed:**

AP/31, Primary to Secondary Leakage

AP/31 (Primary to Secondary Leakage) Encl. 5.7 (Resetting 1RIA-40 and OAC Setpoints) completed thru step 5.

**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 is calculated to equal 17 gpd.

AP/31, Primary to Secondary Leakage is in progress and completed up to step 4.40.

**INITIATING CUES:**

The SRO directs you to complete step 4.40 of AP/31, Primary to Secondary Leakage.

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

<p><b>STEP 1:</b> Step 4.40</p> <p>Perform Enclosure 5.7 (Resetting 1RIA-40 and OAC Setpoints) to set the following setpoints:  1RIA-40 High – 75 gpd  1RIA-40 Alert – 30 gpd  OAC point O1K1430 (Total PRI To Sec Leakrate Admin Limit) – 30 gpd</p> <p><b>STANDARD:</b> Locate Enclosure 5.7 (Resetting 1RIA-40 and OAC Setpoints)</p> <p><b>Cue:</b> Give candidate the partially completed copy of Enclosure 5.7. Inform candidate that the enclosure is complete up to step 6.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Step 6 Enter the new 1RIA-40 Alert and High setpoints in the RIA View Node</p> <p><b>STANDARD:</b> Locate the RIA View Node on 1VB2, 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 (3602 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 (9006 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:</b> * Not critical</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>Step 7</b>  Enter the new OAC TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT by performing the following:</p> <ul style="list-style-type: none"> <li>• Enter MVU</li> <li>• Select PRI-LEAK PRIMARY TO SECONDARY LEAKAGE MANUAL INPUTS.</li> <li>• Select UPDATE</li> <li>• Select O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT)</li> <li>• Enter the new TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT.</li> <li>• Enter your LAN identification and reason for change.</li> <li>• Select SAVE</li> </ul> <p><b><u>STANDARD:</u></b>      Using one of the OAC terminals located on 1UB1 or 1UB2 the candidate should perform the following:</p> <ul style="list-style-type: none"> <li>• Enter MVU</li> <li>• Select PRI-LEAK PRIMARY TO SECONDARY LEAKAGE MANUAL INPUTS.</li> <li>• Select UPDATE</li> <li>• Select O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT)</li> <li>• Enter <b>30 gpd</b> as the new TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT.</li> <li>• *Enter their LAN identification and reason for change.</li> <li>• Select SAVE</li> </ul> <p><b>*Note: Reason for change can be either AP/31 guidance or increase in SG Leakrate. Step not critical</b></p> <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>
--	---

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



## **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Setpoint adjustment for the RIA View Node 1RIA-40 High and Alert alarm setpoints
3	Setpoint adjustment OAC TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT

**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 is calculated to equal 17 gpd.

AP/31, Primary to Secondary Leakage is in progress and completed up to step 4.40.

**INITIATING CUES:**

The SRO directs you to complete step 4.40 of AP/31, Primary to Secondary Leakage.

JMB/TPP  
Sim (3)  
Brief  
WRC  
SR  
115  
HLP

Duke Power Company  
PROCEDURE PROCESS RECORD  
**OTC MASTER**  
**FILE**  
CONFER NUCLEAR STATION

(1) ID No AP/1/A/1700/031  
Revision No 004

## PREPARATION

(2) Station AL1 OCONEE NUCLEAR STATION

(3) Procedure Title Primary to Secondary Leakage

(4) Prepared By David P. Garland (Signature) David P. Garland Date 10/23/02

(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 John L. Callahan (QR) Date 11-1-02

Cross-Disciplinary Review By Eric Lamm (QR) NA Date 10/24/02

Reactivity Mgmt Review By \_\_\_\_\_ (QR) NA   k   Date \_\_\_\_\_

Mgmt Involvement Review By \_\_\_\_\_ (Ops Supt) NA NA Date \_\_\_\_\_

### (7) Additional Reviews

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

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

(8) Temporary Approval (*if necessary*)

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

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

(9) Approved By [Signature] Date 11/4/02

**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

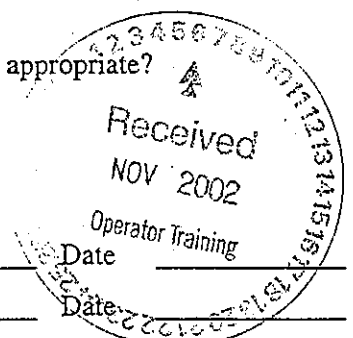
(12) Procedure Completion Verification:

- ☐ 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 \_\_\_\_\_ Date: \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary)



<div>Duke Power Company Oconee Nuclear Station</div> <div>Primary to Secondary Leakage</div>	Procedure No. AP/1/A/1700/031
	Revision No. 004
	Electronic Reference No. OP0095ZI

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**1. Entry Conditions**

Any actual or suspected primary to secondary leakage  $\geq 5$  gpd and  $< 25$  gpm.

**2. Automatic Systems Actions**

None

**3. Immediate Manual Actions**

None

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## 4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.1 <input type="checkbox"/> IAAT the SGTR tab of EP/1 (EOP) is entered, THEN EXIT this procedure.	
4.2 <input type="checkbox"/> IAAT <u>either</u> of the following exists for 1RIA-54: <input type="checkbox"/> is in alarm <input type="checkbox"/> inoperable THEN perform Steps 4.3 - 4.4.	<input type="checkbox"/> GO TO Step 4.5.
<p style="text-align: center;"><b>NOTE</b></p> <p>The white tags can be created and hung after the TBS pump breakers are opened. (1)</p>	
4.3 Dispatch an operator to open and white tag the following: <input type="checkbox"/> 1XD-R3C (1A TURBINE BUILDING SUMP PUMP BKR) <input type="checkbox"/> 1XE-R3D (1B TURBINE BUILDING SUMP PUMP BKR)	
4.4 Notify Secondary Chemistry to perform the following: <input type="checkbox"/> Obtain a TBS sample. <input type="checkbox"/> Recommend TBS release path.	
4.5 <input type="checkbox"/> IAAT gross tube leakage is indicated by an increase in normal RC makeup flow, THEN GO TO Step 4.71.	
4.6 <input type="checkbox"/> IAAT a tritium sample indicates $\geq 75$ gpd primary to secondary leakage, THEN GO TO Step 4.73.	



## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b>NOTE</b></p> <p>The samples taken in the steps below are used to verify primary to secondary leak rate. CSAE off-gas samples and RCS samples should be taken at approximately the same time (within 15 minutes of each other, if possible).</p>	
<p>4.7 Notify RP to perform the following:</p> <ul style="list-style-type: none"> <li>___ Use a portable monitor to identify leaking SG. (2)</li> <li>___ Obtain CSAE off-gas sample.</li> <li>___ Expect contact from Primary Chemistry to coordinate CSAE off-gas and RCS sample times within 15 minutes.</li> </ul>	
<p>4.8 Notify Primary Chemistry to perform the following:</p> <ul style="list-style-type: none"> <li>___ Obtain an RCS sample for use in calculating SG tube leakage rate.</li> <li>___ Contact RP to coordinate CSAE off-gas and RCS sample times within 15 minutes.</li> </ul>	
<p>4.9 ___ Verify OAC primary to secondary leak rate calculation available (including 1RIA-40 operable).</p>	<p>___ GO TO Step 4.12.</p>
<p>4.10 ___ Determine primary to secondary leakage rate using OAC point O1P1599 (EST TOTAL PRI TO SEC LEAKRATE).</p>	
<p>4.11 ___ GO TO Step 4.14.</p>	




## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) IRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.12 __ Verify IRIA-40 operable.	<p>1. __ IF CSAE off-gas sample indicates primary to secondary leakage &gt; 60 gpd (0.04164 gpm), AND leak rate was unstable/increasing at the time IRIA-40 became inoperable, THEN perform the following:</p> <p>A. __ Stop any power increase in progress.</p> <p>B. __ GO TO Step 4.73.</p> <p>2. __ IF CSAE off-gas sample indicates primary to secondary leakage <math>\geq</math> 5 gpd (0.003472 gpm), THEN perform the following:</p> <p>A. __ Stop any power increase in progress.</p> <p>B. __ GO TO Step 4.28.</p> <p>3. __ EXIT this procedure.</p>
4.13 __ PERFORM Encl 5.5 (Calculation of Primary to Secondary Leak Rate using IRIA-40). (3)	
4.14 __ Verify primary to secondary leak rate < 25 gpm (36,000 gpd).	<p style="text-align: center;"><b>NOTE</b></p> <p>If the EOP is NOT already in progress, entry will be directly to the SGTR tab.</p>
	__ GO TO EP/1 (EOP).
4.15 __ Verify primary to secondary leak rate < 75 gpd (0.05205 gpm).	<p>1. __ IF primary to secondary leak rate is <u>either</u> of the following:</p> <p style="padding-left: 40px;">__ <math>\geq</math> 75 gpd for at least one hour</p> <p style="padding-left: 40px;">__ <math>\geq</math> 100 gpd (0.0694 gpm)</p> <p style="padding-left: 40px;">THEN GO TO Step 4.73.</p> <p>2. __ GO TO Step 4.46.</p>
4.16 __ Verify primary to secondary leak rate < 30 gpd (0.02082 gpm).	__ GO TO Step 4.46.
4.17 __ Verify primary to secondary leak rate < 5 gpd (0.003472 gpm).	__ GO TO Step 4.28.

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) IRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
4.18 <input type="checkbox"/> WHEN CSAE off-gas and RCS samples are available, <b>THEN PERFORM</b> Encl 5.4 (Calculation of Primary to Secondary Leak Rate using CSAE Off-gas and RCS Samples) to confirm rate.										
4.19 <input type="checkbox"/> Verify primary to secondary leak rate confirmed < 5 gpd (0.003472 gpm).	<input type="checkbox"/> GO TO Step 4.28.									
4.20 Notify the following to take a second sample (within 15 minutes of each other, if possible): <table border="1"><tr><td></td><td>Group</td><td>Sample</td></tr><tr><td><input type="checkbox"/></td><td>RP</td><td>CSAE</td></tr><tr><td><input type="checkbox"/></td><td>Primary Chemistry</td><td>RCS</td></tr></table>		Group	Sample	<input type="checkbox"/>	RP	CSAE	<input type="checkbox"/>	Primary Chemistry	RCS	
	Group	Sample								
<input type="checkbox"/>	RP	CSAE								
<input type="checkbox"/>	Primary Chemistry	RCS								
4.21 <input type="checkbox"/> WHEN second CSAE off-gas and RCS samples are available, <b>THEN PERFORM</b> Encl 5.4 (Calculation of Primary to Secondary Leak Rate using CSAE Off-gas and RCS Samples) to confirm rate.										
4.22 <input type="checkbox"/> Verify primary to secondary leak rate confirmed < 5 gpd (0.003472 gpm).	<input type="checkbox"/> GO TO Step 4.28.									
4.23 <input type="checkbox"/> Verify IRIA-40 operable.	<input type="checkbox"/> GO TO Step 4.25.									
4.24 Initiate Encl 5.7 (Resetting IRIA-40 and OAC Setpoints) to ensure the following alarm setpoints: (7) <input type="checkbox"/> IRIA-40 High - 30 gpd <input type="checkbox"/> IRIA-40 Alert - 5 gpd <input type="checkbox"/> OAC point O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT) - 5 gpd										

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) IRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.25 Notify Secondary Chemistry of the following:  ___ Primary to secondary leak rate has been confirmed < 5 gpd and this procedure will be exited.  ___ To recommend TBS release path.	
4.26 Notify the following that primary to secondary leak rate has been confirmed < 5 gpd and this procedure will be exited:  ___ RP  ___ Primary Chemistry  ___ Personnel previously notified per OMP 1-14 (Notifications)	
4.27 ___ EXIT this procedure.	

...END...



**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (**EXIT** this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(**GO TO** shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(**GO TO** shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
4.28 __ IAAT primary to secondary leak rate increases to $\geq 30$ gpd (0.02082 gpm), THEN GO TO Step 4.46.										
4.29 __ Verify 1RIA-40 operable.	1. __ Monitor the following at least twice per shift for indications of an increasing leak rate: {4} <ul style="list-style-type: none"> <li>• 1RIA-16</li> <li>• 1RIA-17</li> </ul> 2. __ GO TO Step 4.31.									
4.30 __ Monitor the following at least once per shift for indications of an increasing leak rate: {4} <ul style="list-style-type: none"> <li>• 1RIA-16</li> <li>• 1RIA-17</li> <li>• 1RIA-40</li> </ul>										
4.31 __ Make notifications of primary to secondary leakage per OMP 1-14 (Notifications).										
4.32 __ Maintain the Primary to Secondary Leak Log to include the following: <ul style="list-style-type: none"> <li>• 1RIA-16, 17, and 40 readings</li> <li>• RCS activity levels</li> <li>• Calculated leak sizes (including those based on 1RIA-40 readings)</li> </ul>										
4.33 __ Issue a priority work request for any OOS SG tube leak monitoring equipment.										
4.34 Notify RP and Primary Chemistry to perform CSAE off-gas and RCS samples based on 1RIA-40 operability: {5}{6} <table border="1"> <thead> <tr> <th><input checked="" type="checkbox"/></th><th>1RIA-40</th><th>Frequency (hr)</th></tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td><td>Operable</td><td>24</td></tr> <tr> <td><input type="checkbox"/></td><td>Inoperable</td><td>4</td></tr> </tbody> </table>	<input checked="" type="checkbox"/>	1RIA-40	Frequency (hr)	<input type="checkbox"/>	Operable	24	<input type="checkbox"/>	Inoperable	4	
<input checked="" type="checkbox"/>	1RIA-40	Frequency (hr)								
<input type="checkbox"/>	Operable	24								
<input type="checkbox"/>	Inoperable	4								

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)
- (4.28) primary to secondary leak rate increases to  $\geq 30$  gpd... (GO TO guidance to increase monitoring)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.35 <input type="checkbox"/> IAAT CSAE off-gas sample and RCS sample results become available, THEN perform Steps 4.36 - 4.38.	<input type="checkbox"/> GO TO Step 4.39.
4.36 <input type="checkbox"/> PERFORM Encl 5.4 (Calculation of Primary to Secondary Leak Rate using CSAE Off-gas and RCS Samples).	
4.37 <input type="checkbox"/> Log leak rate calculation results in Primary to Secondary Leak Log.	
4.38 Notify the following to enter leak rate calculation results in the Excel leakage spreadsheet: <input type="checkbox"/> Ops Mods Supervisor <input type="checkbox"/> Ops Work Process Manager Administrative Specialist	
4.39 <input type="checkbox"/> IAAT 1RIA-40 is operable, THEN perform Steps 4.40 - 4.42.	<input type="checkbox"/> GO TO Step 4.43.
4.40 PERFORM Encl 5.7 (Resetting 1RIA-40 and OAC Setpoints) to set the following alarm setpoints: {7} <input type="checkbox"/> 1RIA-40 High - 75 gpd <input type="checkbox"/> 1RIA-40 Alert - 30 gpd <input type="checkbox"/> OAC point O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT) - 30 gpd	
4.41 <input type="checkbox"/> Record OAC and 1RIA-40 High and Alert setpoints on turnover sheet.	
4.42 <input type="checkbox"/> Verify CSAE off-gas and RCS samples are being performed on a 24 hour frequency.	<input type="checkbox"/> Notify RP and Primary Chemistry to perform CSAE off-gas and RCS samples on a 24 hour frequency.
4.43 <input type="checkbox"/> Notify OSM to include most recent primary to secondary leak rate (determined by CSAE off-gas sample or 1RIA-40) on the OSM turnover sheet. {8}	

**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)
- (4.28) primary to secondary leak rate increases to  $\geq 30$  gpd... (GO TO guidance to increase monitoring)
- (4.35) CSAE off-gas sample and RCS sample results become available... (calculate and record primary to secondary leak rate)
- (4.39) 1RIA-40 is operable... (reset OAC and 1RIA-40 setpoints and record new setpoints)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
<p>4.44 __ IAAT CSAE off-gas sample indicates primary to secondary leak rate &lt; 5 gpd (0.003472 gpm), THEN perform the following:</p> <p>A. Notify the following to take another sample (within 15 minutes of each other, if possible):</p> <table border="1"><tr><td><input checked="" type="checkbox"/></td><td>Group</td><td>Sample</td></tr><tr><td><input type="checkbox"/></td><td>RP</td><td>CSAE</td></tr><tr><td><input type="checkbox"/></td><td>Primary Chemistry</td><td>RCS</td></tr></table> <p>B. __ GO TO Step 4.21.</p>	<input checked="" type="checkbox"/>	Group	Sample	<input type="checkbox"/>	RP	CSAE	<input type="checkbox"/>	Primary Chemistry	RCS	
<input checked="" type="checkbox"/>	Group	Sample								
<input type="checkbox"/>	RP	CSAE								
<input type="checkbox"/>	Primary Chemistry	RCS								
<p>4.45 __ WHEN in MODE 5, THEN EXIT this procedure.</p>										

... END ...

**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>4.46 <input type="checkbox"/> IAAT <u>all</u> the following conditions exist:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1RIA-40 inoperable</li> <li><input type="checkbox"/> primary to secondary leak rate &gt; 60 gpd (0.04164 gpm)</li> <li><input type="checkbox"/> leak unstable/increasing at time 1RIA-40 became inoperable</li> </ul> <p><b>THEN GO TO Step 4.73.</b></p>	
<p>4.47 <input type="checkbox"/> IAAT primary to secondary leak rate increases to <u>either</u> of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <math>\geq 75</math> gpd (0.05205 gpm) for at least one hour</li> <li><input type="checkbox"/> <math>\geq 100</math> gpd (0.0694 gpm)</li> </ul> <p><b>THEN GO TO Step 4.73.</b></p>	
<p>4.48 <input type="checkbox"/> Make notifications of primary to secondary leakage per OMP 1-14 (Notifications).</p>	
<p>4.49 <input type="checkbox"/> Monitor the following every 15 minutes for indications of increasing leak rate: (9)</p> <ul style="list-style-type: none"> <li>• 1RIA-16</li> <li>• 1RIA-17</li> <li>• 1RIA-40</li> </ul>	
<p>4.50 <input type="checkbox"/> IAAT leak rate is stable (&lt; 10% change in a one hour time period), <b>THEN</b> reduce monitoring frequency of the following to every two hours:</p> <ul style="list-style-type: none"> <li>• 1RIA-16</li> <li>• 1RIA-17</li> <li>• 1RIA-40</li> </ul>	



**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)
- (4.46) 1RIA-40 is inoperable AND primary to secondary leak rate  $> 60$  gpd AND leak unstable/increasing at time 1RIA-40 became inoperable... (GO TO shutdown guidance)
- (4.47) primary to secondary leak rate increases to  $\geq 75$  gpd for at least one hour OR  $\geq 100$  gpd...  
(GO TO shutdown guidance)
- (4.50) leak rate is stable ( $< 10\%$  change in a one hour time period)... (reduce monitoring frequency of RIAs to every two hours)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
4.51 <input type="checkbox"/> Maintain the Primary to Secondary Leak Log to include the following: <ul style="list-style-type: none"><li>• 1RIA-16, 17, and 40 readings</li><li>• RCS activity levels</li><li>• Calculated leak sizes (including those based on 1RIA-40 readings)</li></ul>										
4.52 <input type="checkbox"/> Verify affected SG identified. {2}	Attempt to identify affected SG by <u>any</u> of the following methods: <input type="checkbox"/> 1RIA-16/17 readings <input type="checkbox"/> Local RP surveys of MS lines									
4.53 <input type="checkbox"/> Issue a priority work request for any OOS SG tube leak monitoring equipment.										
4.54 <input type="checkbox"/> IAAT the OSM desires, THEN initiate Encl 5.2 (Reduction of Secondary Leakage and Cross-Unit Contamination). {10}										
4.55 Notify RP and Primary Chemistry to perform CSAE off-gas and RCS samples based on 1RIA-40 operability: {5}{6} <table><tr><td><input checked="" type="checkbox"/></td><td>1RIA-40</td><td>Frequency (hr)</td></tr><tr><td><input type="checkbox"/></td><td>Operable</td><td>12</td></tr><tr><td><input type="checkbox"/></td><td>Inoperable</td><td>4</td></tr></table>	<input checked="" type="checkbox"/>	1RIA-40	Frequency (hr)	<input type="checkbox"/>	Operable	12	<input type="checkbox"/>	Inoperable	4	
<input checked="" type="checkbox"/>	1RIA-40	Frequency (hr)								
<input type="checkbox"/>	Operable	12								
<input type="checkbox"/>	Inoperable	4								
4.56 <input type="checkbox"/> IAAT CSAE off-gas sample and RCS sample results become available, THEN perform Steps 4.57 - 4.59.	<input type="checkbox"/> GO TO Step 4.60.									
4.57 <input type="checkbox"/> PERFORM Encl 5.4 (Calculation of Primary to Secondary Leak Rate using CSAE Off-gas and RCS Samples).										
4.58 <input type="checkbox"/> Log leak rate calculation results in Primary to Secondary Leak Log.										

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow... (GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage... (GO TO shutdown guidance)
- (4.46) 1RIA-40 is inoperable **AND** primary to secondary leak rate  $> 60$  gpd **AND** leak unstable/increasing at time 1RIA-40 became inoperable... (GO TO shutdown guidance)
- (4.47) primary to secondary leak rate increases to  $\geq 75$  gpd for at least one hour **OR**  $\geq 100$  gpd... (GO TO shutdown guidance)
- (4.50) leak rate is stable ( $< 10\%$  change in a one hour time period)... (reduce monitoring frequency of RIAs to every two hours)
- (4.54) OSM desires ... (initiate Encl 5.2 to reduce secondary leakage and cross-unit contamination)
- (4.56) CSAE off-gas and RCS sample results become available... (calculate and record primary to secondary leak rate)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.59 Notify the following to enter leak rate calculation results in the Excel leakage spreadsheet: ___ Ops Mods Supervisor ___ Ops Work Process Manager ___ Administrative Specialist	
4.60 ___ IAAT 1RIA-40 is operable, AND primary to secondary leak rate is unstable ( $\geq 10\%$ change in a two hour period), THEN perform Steps 4.61- 4.63.	___ GO TO Step 4.64.
4.61 <b>PERFORM</b> Encl 5.7 (Resetting 1RIA-40 and OAC Setpoints) to set the following alarm setpoints: (7) ___ 1RIA-40 High - 75 gpd ___ 1RIA-40 Alert - 75 gpd ___ OAC point O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT) - 75 gpd	
4.62 ___ Record OAC and 1RIA-40 High and Alert setpoints on turnover sheet.	
4.63 ___ Verify CSAE off-gas and RCS Samples are being performed on a 24 hour frequency.	___ Notify RP and Primary Chemistry to perform CSAE off-gas and RCS samples on a 24 hour frequency.
4.64 ___ IAAT 1RIA-40 is operable, AND primary to secondary leak rate is stable ( $< 10\%$ change in a two hour period), THEN perform Steps 4.65- 4.67.	___ GO TO Step 4.68.

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.5) gross tube leakage is indicated by an increase in normal RC makeup flow...  
(GO TO shutdown guidance)
- (4.6) tritium sample indicates  $\geq 75$  gpd primary to secondary leakage...  
(GO TO shutdown guidance)
- (4.46) 1RIA-40 is inoperable and primary to secondary leak rate  $> 60$  gpd AND leak unstable/increasing at time 1RIA-40 became inoperable... (GO TO shutdown guidance)
- (4.47) primary to secondary leak rate increases to  $\geq 75$  gpd for at least one hour OR  $\geq 100$  gpd...  
(GO TO shutdown guidance)
- (4.50) leak rate is stable ( $< 10\%$  change in a one hour time period)... (reduce monitoring frequency of RIAs to every two hours)
- (4.54) OSM desires ... (initiate Encl 5.2 to reduce secondary leakage and cross-unit contamination)
- (4.56) CSAE off-gas and RCS sample results become available... (calculate and record primary to secondary leak rate)
- (4.60) 1RIA-40 is operable AND primary to secondary leak rate is unstable... (set OAC and 1RIA-40 setpoints to 75 gpd)
- (4.64) 1RIA-40 is operable AND primary to secondary leak rate is stable... (set OAC and 1RIA-40 setpoints to 75 gpd and 30 gpd above current reading)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>4.65 <b>PERFORM</b> Encl 5.7 (Resetting 1RIA-40 and OAC Setpoints) to set the following alarm setpoints: {7}</p> <p>___ 1RIA-40 High - 75 gpd</p> <p>___ 1RIA-40 Alert - 30 gpd above existing leak rate (NOT to exceed 75 gpd)</p> <p>___ OAC point O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT) - 30 gpd above existing leak rate (NOT to exceed 75 gpd)</p>	
<p>4.66 ___ Record OAC and 1RIA-40 High and Alert setpoints on turnover sheet.</p>	
<p>4.67: ___ Verify CSAE off-gas and RCS Samples are being performed on a 24 hour frequency.</p>	<p>___ Notify RP and Primary Chemistry to perform CSAE off-gas and RCS samples on a 24 hour frequency.</p>
<p>4.68 ___ Notify OSM to include most recent primary to secondary leak rate (determined by CSAE off-gas sample or 1RIA-40) on the OSM turnover sheet. {8}</p>	
<p>4.69 ___ Prepare for response to primary to secondary leakage <math>\geq 75</math> gpd by reviewing Steps 4.73 - 4.97. {11}</p>	
<p>4.70 ___ <b>WHEN</b> in MODE 5, <b>THEN EXIT</b> this procedure.</p>	

•••END•••

**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.71 <input type="checkbox"/> Verify gross leak rate determination is desired.	<input type="checkbox"/> GO TO Step 4.73.
4.72 Determine primary to secondary leak rate: $LR = \frac{\text{MU} + \text{SI} - \text{LD} - \text{TSR}}{\text{gpm}}$ Where: LR = Leak Rate MU = Makeup Flow SI = Seal Inlet Header Flow LD = Letdown TSR = Total Seal Return	
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">If the EOP is NOT already in progress, entry will be directly to the SGTR tab.</p>	
4.73 <input type="checkbox"/> IAAT primary to secondary leak rate is $\geq 25$ gpm (36,000 gpd), THEN GO TO EP/1 (EOP).	
4.74 <input type="checkbox"/> Make notifications of primary to secondary leakage per OMP 1-14 (Notifications).	
4.75 <input type="checkbox"/> Log readings from the following every 15 minutes in the Primary to Secondary Leak Log: (9) <ul style="list-style-type: none"> <li>• 1RIA-16</li> <li>• 1RIA-17</li> <li>• 1RIA-40</li> </ul>	



## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) JRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.73) primary to secondary leak rate is  $\geq 25$  gpm... (GO TO EP/1 (EOP))

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>4.76 <input type="checkbox"/> Initiate a unit shutdown using the following as necessary to meet requirements of Encl 5.1 (Unit Shutdown Requirements):</p> <ul style="list-style-type: none"> <li>• OP/1/A/1102/004 (Operation at Power)</li> <li>• OP/1/A/1102/010 (Controlling Procedure for Unit Shutdown)</li> </ul>	
<p>4.77 <input type="checkbox"/> IAAT primary to secondary leakage increases, THEN modify shutdown as required by Encl 5.1 (Unit Shutdown Requirements).</p>	
<p>4.78 <input type="checkbox"/> Notify Radwaste to stop <u>all</u> liquid releases in progress until sample results assure release rates within limits.</p>	
<p>4.79 <input type="checkbox"/> Stop <u>all</u> gaseous releases in progress until sample results assure release rates within limits.</p>	
<p>4.80 <input type="checkbox"/> Make up to the UST only as necessary to maintain UST level &gt; 7'.</p>	
<p>4.81 Notify the following that a shutdown is in progress due to primary to secondary leakage:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> RP</li> <li><input type="checkbox"/> Primary Chemistry</li> <li><input type="checkbox"/> Secondary Chemistry</li> </ul>	
<p>4.82 <input type="checkbox"/> Initiate Encl 5.2 (Reduction of Secondary Leakage and Cross-Unit Contamination). (10)</p>	
<p>4.83 <input type="checkbox"/> Verify affected SG identified. (2)</p>	<p>Attempt to identify affected SG by <u>any</u> of the following methods:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> IRIA-16/17 readings</li> <li><input type="checkbox"/> Local RP surveys of MS lines</li> </ul>

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) LRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.73) primary to secondary leak rate is  $\geq 25$  gpm... (GO TO EP/1 (EOP))
- (4.77) primary to secondary leakage increases... (modify shutdown as required by Encl 5.1)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
4.84 Verify entry into this procedure was due to <u>one</u> of the following:  ___ gross tube leakage indicated by an increase in normal RC makeup flow  ___ tritium sample indicating $\geq 75$ gpd primary to secondary leak	___ GO TO Step 4.86.									
4.85 ___ GO TO Step 4.93.										
4.86 ___ Verify CSAE off-gas sample and RCS sample have been requested to verify leak rate.	Notify the following to take another sample (within 15 minutes of each other, if possible): <table><tr><td><input checked="" type="checkbox"/></td><td>Group</td><td>Sample</td></tr><tr><td><input type="checkbox"/></td><td>RP</td><td>CSAE</td></tr><tr><td><input type="checkbox"/></td><td>Primary Chemistry</td><td>RCS</td></tr></table>	<input checked="" type="checkbox"/>	Group	Sample	<input type="checkbox"/>	RP	CSAE	<input type="checkbox"/>	Primary Chemistry	RCS
<input checked="" type="checkbox"/>	Group	Sample								
<input type="checkbox"/>	RP	CSAE								
<input type="checkbox"/>	Primary Chemistry	RCS								
4.87 ___ WHEN CSAE off-gas and RCS sample results become available, THEN PERFORM Encl 5.4 (Calculation of Primary to Secondary Leak Rate using CSAE Off-gas and RCS Samples).										
4.88 ___ Log leak rate calculation results in Primary to Secondary Leak Log.										
4.89 Notify the following to enter leak rate calculation results in the Excel leakage spreadsheet:  ___ Ops Mods Supervisor  ___ Ops Work Process Manager Administrative Specialist										

**IF AT ANY TIME:**

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (**EXIT** this procedure)
- (4.2) LRIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.73) primary to secondary leak rate is  $\geq 25$  gpm... (**GO TO** EP/1 (EOP))
- (4.77) primary to secondary leakage increases... (modify shutdown as required by Encl 5.1)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED									
4.90 __ Ensure unit shutdown is in progress to meet the shutdown requirements of Encl 5.1 (Unit Shutdown Requirements).										
4.91 __ WHEN in MODE 3, THEN continue.										
4.92 __ Verify leak rate calculation (Step 4.87) confirms shutdown to MODE 5 is required due to leakage exceeding limits of Encl 5.1 (Unit Shutdown Requirements).	<p>1. __ IF OSM desires, THEN stop unit shutdown.</p> <p>2. __ IF unit shutdown is stopped, AND only one confirmation of leak rate (per Step 4.87) has been made, THEN perform the following:</p> <p>A. Notify the following to take a second sample (within 15 minutes of each other, if possible):</p> <table border="1"><thead><tr><th></th><th>Group</th><th>Sample</th></tr></thead><tbody><tr><td></td><td>RP</td><td>CSAE</td></tr><tr><td></td><td>Primary Chemistry</td><td>RCS</td></tr></tbody></table> <p>B. __ GO TO Step 4.87.</p> <p>3. __ IF unit shutdown is stopped, THEN GO TO Step 4.16.</p> <p>4. __ GO TO Step 4.93.</p>		Group	Sample		RP	CSAE		Primary Chemistry	RCS
	Group	Sample								
	RP	CSAE								
	Primary Chemistry	RCS								
4.93 __ WHEN LPI is providing DHR, THEN dispatch an operator to perform Encl 5.3 (Local SG Isolation) to isolate <u>affected</u> SGs. (12)										

## IF AT ANY TIME:

- (4.1) the SGTR tab of EP/1 (EOP) is entered... (EXIT this procedure)
- (4.2) 1RIA-54 in alarm or inoperable ... (open TBS pump breakers)
- (4.73) primary to secondary leak rate is  $\geq 25$  gpm... (GO TO EP/1 (EOP))
- (4.77) primary to secondary leakage increases... (modify shutdown as required by Encl 5.1)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																														
<p>4.94 Close the following on <u>affected</u> SGs: {12}</p> <table border="1"> <thead> <tr> <th>1A SG</th><th>1B SG</th></tr> </thead> <tbody> <tr><td>1FDW-31</td><td>1FDW-40</td></tr> <tr><td>1FDW-36</td><td>1FDW-45</td></tr> <tr><td>1FDW-38</td><td>1FDW-47</td></tr> <tr><td>1FDW-372</td><td>1FDW-382</td></tr> <tr><td>1MS-79</td><td>1MS-76</td></tr> <tr><td>1MS-24</td><td>1MS-33</td></tr> <tr><td>1MS-35</td><td>1MS-36</td></tr> <tr><td>1MS-82</td><td>1MS-84</td></tr> <tr><td>1FDW-368</td><td>1FDW-369</td></tr> <tr><td>1SD-2</td><td>1SD-5</td></tr> <tr><td>1SD-27</td><td>1SD-290</td></tr> <tr><td>1SD-358</td><td></td></tr> <tr><td>1SD-418</td><td>1SD-420</td></tr> <tr><td>1SD-419</td><td>1SD-421</td></tr> </tbody> </table>	1A SG	1B SG	1FDW-31	1FDW-40	1FDW-36	1FDW-45	1FDW-38	1FDW-47	1FDW-372	1FDW-382	1MS-79	1MS-76	1MS-24	1MS-33	1MS-35	1MS-36	1MS-82	1MS-84	1FDW-368	1FDW-369	1SD-2	1SD-5	1SD-27	1SD-290	1SD-358		1SD-418	1SD-420	1SD-419	1SD-421	
1A SG	1B SG																														
1FDW-31	1FDW-40																														
1FDW-36	1FDW-45																														
1FDW-38	1FDW-47																														
1FDW-372	1FDW-382																														
1MS-79	1MS-76																														
1MS-24	1MS-33																														
1MS-35	1MS-36																														
1MS-82	1MS-84																														
1FDW-368	1FDW-369																														
1SD-2	1SD-5																														
1SD-27	1SD-290																														
1SD-358																															
1SD-418	1SD-420																														
1SD-419	1SD-421																														
<p>4.95 — WHEN condenser vacuum is broken, OR in MODE 5, THEN notify RP to stop taking CSAE off-gas samples.</p>																															
<p>4.96 — Notify Primary Chemistry to stop taking non-routine samples as part of their primary to secondary leak rate monitoring program.</p>																															
<p>4.97 — EXIT this procedure.</p>																															

....END....



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## Resetting IRIA-40 and OAC Setpoints

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
--------------------------	-----------------------

NOTEXe 133 equivalent activity is required for this calculation.

1. ☒ Obtain Xe 133 equivalent activity from latest available Primary Chemistry RCS sample.

288 (μCi/ml)

2. ☒ Verify CSAE flow rate is on-scale.

PERFORM Encl 5.6 (CSAE Flow Rate Determination).

3. ☒ Obtain CSAE flow rate.

6.5 ft<sup>3</sup>/min

4. Determine IRIA-40 High setpoint from the following formulas:

$$\text{IRIA-40 High Setpoint (cpm)} = \frac{\text{High Setpoint (gpd)}}{\text{RCS (Xe 133eq) activity (μCi/ml)}} \times \frac{\text{CSAE flow (ft}^3\text{/min)}}{\text{CSAE flow (ft}^3\text{/min)}} \times \frac{2.71\text{E}+3 \text{ (ft}^3\text{)(day)(cpm)}}{(\text{gal})(\text{min})(\text{μCi/ml})}$$

$$\text{IRIA-40 High Setpoint (cpm)} = \frac{75 \text{ gpd}}{6.5 \text{ ft}^3\text{/min}} \times \frac{288 \text{ μCi/ml}}{6.5 \text{ ft}^3\text{/min}} \times \frac{2.71\text{E}+3 \text{ (ft}^3\text{)(day)(cpm)}}{(\text{gal})(\text{min})(\text{μCi/ml})} = 9006 \text{ cpm}$$

5. Determine IRIA-40 Alert setpoint from the following formulas:

$$\text{IRIA-40 Alert Setpoint (cpm)} = \frac{\text{Alert Setpoint (gpd)}}{\text{RCS (Xe 133eq) activity (μCi/ml)}} \times \frac{\text{CSAE flow (ft}^3\text{/min)}}{\text{CSAE flow (ft}^3\text{/min)}} \times \frac{2.71\text{E}+3 \text{ (ft}^3\text{)(day)(cpm)}}{(\text{gal})(\text{min})(\text{μCi/ml})}$$

$$\text{IRIA-40 Alert Setpoint (cpm)} = \frac{30 \text{ gpd}}{6.5 \text{ ft}^3\text{/min}} \times \frac{288 \text{ μCi/ml}}{6.5 \text{ ft}^3\text{/min}} \times \frac{2.71\text{E}+3 \text{ (ft}^3\text{)(day)(cpm)}}{(\text{gal})(\text{min})(\text{μCi/ml})} = 3602 \text{ cpm}$$

6. ☐ Enter the new IRIA-40 Alert and High Setpoints in the RIA View Node.

**Enclosure 5.7**  
**Resetting 1RIA-40 and OAC Setpoints**

AP/1/A/1700/031  
Page 2 of 3

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>7. Enter the new OAC TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT by performing the following:</p> <p>A. <input type="checkbox"/> Enter MVU.</p> <p>B. <input type="checkbox"/> Select PRI-LEAK PRIMARY TO SECONDARY LEAKAGE MANUAL INPUTS.</p> <p>C. <input type="checkbox"/> Select UPDATE.</p> <p>D. <input type="checkbox"/> Select O1K1430 (TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT).</p> <p>E. <input type="checkbox"/> Enter the new TOTAL PRI TO SEC LEAKRATE ADMIN LIMIT.</p> <p>F. <input type="checkbox"/> Enter your LAN identification and reason for change.</p> <p>G. <input type="checkbox"/> Select SAVE.</p>	
<p>8. <input type="checkbox"/> EXIT this enclosure.</p>	

...END...

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

**CRO-011A**

**Align Intake Canal For Recirc On Dam Failure**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Align Intake Canal for Recirc on Dam Failure

**Alternate Path:**

Yes

**Facility JPM #:**

CRO-011A

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

System: 075

K/A: A2.01

Rating: 3.0/3.2

**Task Standard:**

Intake Canal is aligned for recirculation correctly by procedure and an NEO is dispatched to manually open CCW-9.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

"CCW LAKE LEVEL LOW" statalarm (1SA-9, B-10)

AP/1/A/1700/13, Dam Failure

**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:**

1. Recall Snap 205
2. Import CRO-011A files
3. Place simulator in RUN



**Tools/Equipment/Procedures Needed:**

AP/1/A/1700/13, Dam Failure

**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:**

Dam failure has occurred.

Unit has been manually tripped.

Subsequent Actions of AP/1/A/1700/13, Dam Failure have been completed up to step 4.3.

**INITIATING CUES:**

Control Room Supervisor directs you to align the CCW Intake Canal for recirc following a dam failure beginning at step 4.3 of AP/1/A/1700/13, Dam Failure.

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

<p><u>STEP 1:</u>      Step 4.3: Depress the "CCW DAM FAILURE" pushbutton.</p> <p><u>STANDARD:</u>    The "CCW DAM FAILURE" pushbutton is located by the candidate on 1AB3 and depressed.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      Step 4.4: Dispatch an individual to the area of the dam failure to report damage to the Control Rooms.</p> <p><u>STANDARD:</u>    The candidate contacts the Shift Work Manager, or calls the Work Control Center kitchen directly, and dispatches an individual to the area of the dam failure to report damage to the control room.</p> <p><b><i>Cue: NEO dispatched to the area of the dam failure to report damage to the Control Rooms.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      Step 4.5 <b>GO TO Step 4.45</b></p> <p><u>STANDARD:</u>    The candidate proceeds to Step 4.45 in AP/013.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b>      Step 4.45: Stop <u>all</u> RCPs.</p> <p><b><u>STANDARD:</u></b>    The control switches for RCPs 1A1, 1A2, 1B1, 1B2 are located by the candidate on 1AB1 and rotated to the TRIP position. The candidate verifies by red run lights off and/or "0" amps indicated that the RCPs are tripped.</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>      Step 4.46: Ensure all CCW pumps are stopped.</p> <p><b><u>STANDARD:</u></b>    The candidate locates the CCW pump light indications on 1AB3 and verifies by red run lights off and/or "0" amps indicated that all CCW pumps are tripped.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 6:</u></b>      Step 4.47: Ensure 1CCW 1-6 are open.</p> <p><b><u>STANDARD:</u></b>    The candidate locates 1CCW 1-6 (WATERBOX EMER DISCH) control switch and indications located on 1AB3. The red "OPEN" indication light is verified on.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 7:</u>      Step 4.48: Ensure all condenser outlet valves indicate closed (GD AP13):</p> <ul style="list-style-type: none"> <li>• 01D0273 (1CCW-20 CONDENSER 1A OUTLET 1)</li> <li>• 01D0275 (1CCW-21 CONDENSER 1A OUTLET 2)</li> <li>• 01D0277 (1CCW-22 CONDENSER 1B OUTLET 1)</li> <li>• 01D0279 (1CCW-23 CONDENSER 1B OUTLET 2)</li> <li>• 01D0281 (1CCW-24 CONDENSER 1C OUTLET 1)</li> <li>• 01D0283 (1CCW-25 CONDENSER 1C OUTLET 2)</li> </ul> <p><u>STANDARD:</u>    The candidate displays OAC Graphics "GD AP13" and verifies 1CCW-20 through 1CCW-25 indicate closed. The candidate may also display individual points by Point ID or a Group Display to determine 1CCW-20 through 1CCCW-25 indicates closed.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u>      Step 4.49: Verify CCW-8 is open.</p> <p><u>STANDARD:</u>    CCW-8 switch and indication are located by the candidate on 2AB3 verifying red "OPEN" light illuminated and green "CLOSED" light extinguished.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u>      Step 4.50: Notify Unit 2 that emergency CCW siphon flow has been established on Unit 1.</p> <p><u>STANDARD:</u>    The candidate notifies Unit 2 that emergency CCW siphon flow has been established.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 10:</u></b>      Step 4.51: Dispatch operators to perform Encl 5.2 (CCW Inventory Conservation)</p> <p><b><u>STANDARD:</u></b>    The candidate contacts the Shift Work Manager, or calls the Work Control Center kitchen directly, and dispatches operators to perform Encl 5.2 (CCW Inventory Conservation).</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 11:</u></b>      Step 4.52: <b>IAAT</b> Unit 2 CR has directed Unit 1 to supply CCW recirculation, THEN perform Steps 4.53 – 4.67.</p> <p><b><u>STANDARD:</u></b>    The candidate determines where or not Unit 2 has directed Unit 1 to supply CCW recirculation.</p> <p>The candidate will proceed to Step 4.53 when informed that Unit 2 directs Unit 1 to supply CCW recirculation.</p> <p><b><i>CUE: When the candidate reaches Step 4.52 inform the candidate that Unit 2 directs that Unit 1 will supply CCW recirculation.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 12:</u></b>      Step 4.53: Determine which CCW pump will be started.</p> <p><b><u>STANDARD:</u></b>    The candidate determines which CCW pump to be started.</p> <p><b><i>Cue: If asked as the SRO which CCW pump to start, inform candidate to start the 1D CCW pump.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 13:</u>      Step 4.54:</p> <p>Place <u>all</u> CCW Pump switches in the trip position:</p> <ul style="list-style-type: none"> <li>• 1A CW Pump</li> <li>• 1B CW Pump</li> <li>• 1C CW Pump</li> <li>• 1D CW Pump</li> </ul> <p><u>STANDARD:</u>    The candidate locates the CCW Pump controls on 1AB2 and rotates the 1A, 1B, 1C, and 1D CCW Pump control switches to the trip position.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14:</u>      Step 4.55:</p> <p>Verify 1A or 1B CCW Pump is to be started.</p> <p><u>STANDARD:</u>    The candidate may ask the Procedure Director which CCW is desired to be started.</p> <p>When instructed by the Procedure Director that 1D CCW Pump is to be started, the candidate should refer to the RNO column.</p> <p><b><i>Cue: Instruct the candidate that the SRO requests that 1D CCW Pump be started.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15:</u>      Step 4.55 RNO:</p> <p>GO TO Step 4.57</p> <p><u>STANDARD:</u>    The candidate should proceed to Step 4.57.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 16:</u>      Step 4.57: Verify the 1C or 1D CCW Pump is to be started.</p> <p><u>STANDARD:</u>    The candidate determines from the direction given by the Procedure Director that 1D CCW Pump is to be started.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 17:</u>      Step 4.58 Verify both of the following CCW pump discharge valves are closed:</p> <ul style="list-style-type: none"> <li>• 1CCW-12</li> <li>• 1CCW-13</li> </ul> <p><u>STANDARD:</u>    The candidate verifies that 1CCW-12 indicates closed by the green closed light indication on 1AB3 or by OAC indications.</p> <p>                      The candidate verifies that 1CCW-13 indicates open by the red open light indication on 1AB3 or by OAC indications.</p> <p>                      The candidate proceeds to Step 5.58 RNO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

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<p><b><u>STEP 18:</u></b>      Step 4.58 RNO</p> <p>Dispatch an operator to close the discharge valves from the breaker switch (Unit 1 Equipment rm):</p> <table> <tr> <th>Pump</th> <th>Valve</th> <th>Breaker</th> </tr> <tr> <td>1C</td> <td>1CCW-12</td> <td>1XS3-2E</td> </tr> <tr> <td>1D</td> <td>1CCW-13</td> <td>1XS1-F3C</td> </tr> </table> <p><b><u>STANDARD:</u></b>      The candidate dispatches an operator to Unit 1 Equipment Room to close 1CCW-13.</p> <p>If the candidate directs the operator to close valves, 1CCW-12 and 1CCW-13, the operator will inform the candidate that 1CCW-12 indicated closed when he arrived to close 1CCW-13.</p> <p><b>Simulator operator: After the candidate has dispatched an operator to Unit 1's Equipment Room, <u>FIRE TIMER #1 TO CLOSE 1CCW-13;</u></b></p> <p><b><i>Cue: Inform the candidate that 1CCW-12 and 1CCW-13 both indicate closed from equipment room.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	Pump	Valve	Breaker	1C	1CCW-12	1XS3-2E	1D	1CCW-13	1XS1-F3C	<p>___ SAT</p> <p>___ UNSAT</p>
Pump	Valve	Breaker								
1C	1CCW-12	1XS3-2E								
1D	1CCW-13	1XS1-F3C								
<p><b><u>STEP 19:</u></b>      Step 4.59</p> <p>Start the selected CCW Pump.</p> <p><b><u>STANDARD:</u></b>      The candidate locates the control switch for 1D CCW Pump on 1AB3 and rotates the control switch to the close position.</p> <p>The candidate observes that the 1CCW-13 starts to travel open and when approx 20% open, the 1D CCW pump starts as indicated by red run light illuminated and amps indicated.</p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>									



<p><u>STEP 20:</u>      Step 4.60 Verify the started CCW pump discharge valve opened.</p> <p><u>STANDARD:</u>    The candidate verifies that 1CCW-13 indicates OPEN with a red light indication. The candidate may verify 1CCW-13 open by OAC indications.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 21:</u>      Step 4.61 Verify CCW-9 (EMERGENCY CCW DISCHARGE TO INTAKE) open.</p> <p><u>STANDARD:</u>    The candidate locates CCW-9 switch and indication on 2AB3 determines that CCW-9 is closed by the red "OPEN" indication off and the green "CLOSED" indication on.</p> <p>The candidate should proceed to step 4.61 RNO.</p> <p><b>NOTE: CCW-9 will be found CLOSED</b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 22:</b>      Step 4.61 RNO</p> <ol style="list-style-type: none"> <li>1. Stop the operating CCW pump.</li> <li>2. Notify Security to meet an operator at the IRW gate to provide access to CCW-9 at the Southwest corner of the Protected Area.</li> <li>3. Dispatch an operator to perform the following:             <ol style="list-style-type: none"> <li>A. Obtain the CCW-9 IRW Gate Key from Security box in Unit 3 Control Room storage area.</li> <li>B. Open CCW-9 (Emergency CCW Discharge to Intake) (between protected area fences).</li> <li>C. Notify Unit 1 CR when CCW-9 is open</li> <li>D. WHEN notified that CW-9 is open, THEN GO TO Step 4.53 to restart a CCW pump.</li> </ol> </li> </ol> <p><b>STANDARD:</b>    Locate the control switch for the 1D CCW Pump on 1AB2 and rotate the control switch to the trip position.</p> <p>Notify Security that access to CCW-9 (EMERGENCY CCW DISCHARGE TO INTAKE) is required</p> <p>Dispatch an operator to obtain the CCW-9 IRW Gate Key from the Security box in the Unit 3 Control Room Storage area.</p> <p>The operator, along with Security, proceeds between the Protected Area fences in order to open CCW-9</p> <p><b>Note: When an operator is dispatched to obtain the CCW-9 IRW Gate Key and is instructed to open CCW-9, END TASK.</b></p> <p><b>COMMENTS:</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>
1	Step (1) stops all CCW pumps, opens 1CCW-1-6, and closes condenser outlet valves.
4	Step (4) reduces RCS heat load and prevents RCP damage from inadequate LPSW.
19	Step (18) required for the start of 1D CCW Pump for recirculation back to the intake canal.
22	Step (21) ensures the operating CCW pump is stopped and CCW-9 is opened manually to align CCW recirc flow.

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

**INITIAL CONDITIONS:**

Dam failure has occurred.

Unit has been manually tripped.

Subsequent Actions of AP/1/A/1700/13, Dam Failure have been completed up to step 4.3.

**INITIATING CUES:**

Control Room Supervisor directs you to align the CCW Intake Canal for recirc following a dam failure beginning at step 4.3 of AP/1/A/1700/13, Dam Failure.

JMB/TPP  
Sim-3  
Brief  
HLP  
NRC  
SR  
115

Duke Power Company  
PROCEDURE PROCESS RECORD

(1) ID No AP/1/A/1700/ 013

Revision No Rev 18

## REPARATION

(2) Station OCONEE NUCLEAR STATION(3) Procedure Title Dam Failure(4) Prepared By A.S. Hollingsworth (Signature) Anthony Scott Hollingsworth Date 10-16-02

(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 Kevin McMunay (QR) Date 10/22/02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA KM Date \_\_\_\_\_Reactivity Mgmt Review By \_\_\_\_\_ (QR) NA KM Date \_\_\_\_\_Mgmt Involvement Review By \_\_\_\_\_ (Ops Supt) NA KM Date \_\_\_\_\_

(7) Additional Reviews

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

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

(8) Temporary Approval (if necessary)

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

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

(9) Approved By Dr. B. G. G. Date 10/22/02

## 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 \_\_\_\_\_

(3) Procedure Completion Approved \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary)



<b>Duke Power Company</b> <b>Oconee Nuclear Station</b>  <b>Dam Failure</b>	Procedure No.
	AP/ <b>1</b> /A/1700/013
	Revision No. 018
	Electronic Reference No. OX002RGQ

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**1. Entry Conditions**

Either of the following:

- Loss of CCW Intake Canal
- CCW Intake Canal intact and dam failure occurs or is imminent

**2. Automatic Systems Actions**

- Possible trip of Main Turbine and FDWP turbines on loss of vacuum
- Possible anticipatory Rx trip

**3. Immediate Manual Actions**

None



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#### 4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.1 ___ Ensure Rx is tripped.	
4.2 ___ Verify CCW Intake Canal intact.	___ GO TO Step 4.6.
4.3 ___ Depress CCW DAM FAILURE pushbutton.	
4.4 ___ Dispatch an individual to the area of the dam failure to report damage to the Control Rooms.	
4.5 ___ GO TO Step 4.45.	
4.6 ___ Ensure <u>only one</u> CCW pump operating.	

#### **CAUTION**

Continued operation of the RCPs will provide heat load with limited cooling capacity and may result in RCP damage due to inadequate LPSW flow. RCP restart when directed by EP/1 (EOP) should consider these factors.

4.7 ___ Stop <u>all</u> RCPs..	
4.8 Dispatch an operator to open the following valve(s) on <u>all</u> operable SSW headers: ___ HPSW-900 (B HDR SIPHON SEAL WATER (SSW) SYSTEM CONN) (T-1/M-48, 10' S., 15' up) ___ HPSW-901 (A HDR SIPHON SEAL WATER (SSW) SYSTEM CONN) (T-1/J-26, SE, 10' up)	

#### **NOTE**

- CCW-8 must be de-energized prior to submersion by lake water. This should be accomplished within 1 hour of initiation of the event.
- CCW Emergency Discharge Siphon Flow may have been established automatically as a result of loss of power.

4.9 ___ Verify CCW-8 is open.	___ GO TO Step 4.17.
4.10 ___ Verify 1CCW 1-6 are closed.	___ Ensure 1CCW 1-6 throttled.
4.11 ___ Verify 2CCW-7 is closed.	___ Ensure 2CCW-7 throttled.

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.12 ___ Verify 3CCW-93 is closed.	___ Ensure 3CCW-93 throttled.
4.13 ___ Close CCW-8.	
4.14 Ensure the following: ___ 1CCW 1-6 are closed. ___ 1CCW 1-6 switch in PULL TO LOCK.	
4.15 Notify Unit 2 to ensure the following: ___ 2CCW-7 is closed. ___ 2CCW-7 switch in PULL TO LOCK.	
4.16 Notify Unit 3 to ensure the following: ___ 3CCW-93 is closed. ___ 3CCW-93 switch in PULL TO LOCK.	
4.17 ___ Dispatch an operator to open IDP-F5C (CCW-8 BKR (EMERG CCW DISCH TO TAILRACE)) (T-3/L-24).	
4.18 Stop <u>all</u> Unit 1 ESV pumps: ___ 1A ESV PUMP ___ 1C ESV PUMP ___ 1B ESV PUMP	

**NOTE**

The EWST will be used as CCWP sealing water and to cool the following:

- HPI pump motor coolers
- TDEFDW Pump
- Operating CCWP motors

4.19 Place the following switches in OFF:  
\_\_\_ A HPSW PUMP  
\_\_\_ B HPSW PUMP

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>4.20 <input type="checkbox"/> IAAT <u>any</u> of the following is full open:</p> <ul style="list-style-type: none"> <li>• HPSW-900 (B HDR SIPHON SEAL WATER (SSW) SYSTEM CONN)</li> <li>• HPSW-901 (A HDR SIPHON SEAL WATER (SSW) SYSTEM CONN),</li> </ul> <p>THEN perform Steps 4.21 - 4.23.</p>	<p><input type="checkbox"/> GO TO Step 4.24.</p>
<p>4.21 <input type="checkbox"/> Ensure the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE.</p>	
<p>4.22 Stop the following pumps:</p> <p><input type="checkbox"/> A LPSW PUMP</p> <p><input type="checkbox"/> B LPSW PUMP</p> <p><input type="checkbox"/> C LPSW PUMP</p>	
<p style="text-align: center;"><b>NOTE</b></p> <p>The intent is to maintain adequate cooling water inventory while preventing loss through the EWST overflow.</p>	
<p>4.23 <input type="checkbox"/> Maintain EWST level &gt;70,000 gallons and &lt; OVERFLOW by cycling HPSW JOCKEY PUMP as necessary.</p>	
<p>4.24 <input type="checkbox"/> Dispatch an operator to place 1LPSW-138 &amp; 1HPSW-184 TDEFDWP COOLING BYPASS VALVE switch in BYPASS (T-1/D-25, 24' E, SG FDW Panel 1 SGFP).</p>	

**IF AT ANY TIME:**

- (4.20) HPSW-900 or HPSW-901 is full open ... (stop LPSW pumps and cycle HPSW Jockey Pump as necessary)

## ACTION/EXPECTED RESPONSE

## RESPONSE NOT OBTAINED

**NOTE**

Similar instructions are provided in Unit 2 and 3 procedures. The same operator should be used for these tasks.

4.25 \_\_\_ Ensure an operator has been dispatched to the CCW Intake.

4.26 \_\_\_ Notify operator at CCW Intake to isolate SSW to all stopped CCW pumps per Encl 5.4 (NLO Actions at CCW Intake). (PS)

<input checked="" type="checkbox"/>	CCW Pump
<input type="checkbox"/>	1A
<input type="checkbox"/>	1B
<input type="checkbox"/>	1C
<input type="checkbox"/>	1D



**IF AT ANY TIME:**

- (4.20) HPSW-900 or HPSW-901 is full open ... (stop LPSW pumps and cycle HPSW Jockey Pump as necessary)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.27 — IAAT RCP seal injection is lost, THEN dispatch an operator to perform AP/25 (SSF EOP) to operate the SSF RCMU system.	
4.28 — IAAT <u>all</u> the following exist: <ul style="list-style-type: none"> <li>• Loss of power occurred on Unit 1</li> <li>• Power has been restored to Unit 1</li> <li>• Keowee Lake Level &gt; 775' (6)</li> </ul> THEN perform Steps 4.29 - 4.36 to start <u>one</u> CCW pump.	— GO TO Step 4.37.
4.29 — Ensure Pressurizer Heaters are in AUTO. (4)	

**NOTE**

- At least one CCW Pump discharge valve is required to remain open prior to establishing forced flow.
- The adjacent CCW Pumps discharge valve must be closed to prevent excessive torque on the starting pumps discharge valve. The 1A and 1B CCW Pumps are adjacent, and the 1C and 1D CCW Pumps are adjacent.
- Similar instructions are provided in Unit 2 and 3 procedures. The same operator should be used for these tasks.

- 4.30 — Notify the operator performing  
Encl 5.4 (NLO Actions at CCW  
Intake) to open the SSW valves for the  
CCW pump to be started:

	CCW Pump
<input type="checkbox"/>	1A
<input type="checkbox"/>	1B
<input type="checkbox"/>	1C
<input type="checkbox"/>	1D

**IF AT ANY TIME:**

- (4.20) HPSW-900 or HPSW-901 is full open... (stop LPSW pumps and cycle HPSW Jockey Pump as necessary)
- (4.27) RCP seal injection is lost ... (dispatch an operator to operate SSF RCMU)
- (4.28) Loss of power occurred on Unit 1, power is restored, and Keowee Lake Level > 775' (6)... (restart a CCW pump)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																					
<p>4.31 — Place the CCW Pump switches in the trip position:</p> <table><tr><td><input checked="" type="checkbox"/></td><td>CCW Pump</td></tr><tr><td><input type="checkbox"/></td><td>1A</td></tr><tr><td><input type="checkbox"/></td><td>1B</td></tr><tr><td><input type="checkbox"/></td><td>1C</td></tr><tr><td><input type="checkbox"/></td><td>1D</td></tr></table>	<input checked="" type="checkbox"/>	CCW Pump	<input type="checkbox"/>	1A	<input type="checkbox"/>	1B	<input type="checkbox"/>	1C	<input type="checkbox"/>	1D												
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<input type="checkbox"/>	1B																					
<input type="checkbox"/>	1C																					
<input type="checkbox"/>	1D																					
<p>4.32 — Verify the 1A or 1B CCW Pump is to be started.</p>	<p>— GO TO Step 4.34.</p>																					
<p>4.33 — Verify both of the following CCW pump discharge valves are closed: (5).</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td></tr><tr><td>1A</td><td><input type="checkbox"/></td><td>1CCW-10</td></tr><tr><td>1B</td><td><input type="checkbox"/></td><td>1CCW-11</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	1A	<input type="checkbox"/>	1CCW-10	1B	<input type="checkbox"/>	1CCW-11	<p>— Dispatch an operator to close the discharge valves from the breaker switch (Unit 1 Equipment rm):</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td><td>Breaker</td></tr><tr><td>1A</td><td><input type="checkbox"/></td><td>1CCW-10</td><td>1XS1-F2C</td></tr><tr><td>1B</td><td><input type="checkbox"/></td><td>1CCW-11</td><td>1XS2-F2D</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	Breaker	1A	<input type="checkbox"/>	1CCW-10	1XS1-F2C	1B	<input type="checkbox"/>	1CCW-11	1XS2-F2D
Pump	<input checked="" type="checkbox"/>	Valve																				
1A	<input type="checkbox"/>	1CCW-10																				
1B	<input type="checkbox"/>	1CCW-11																				
Pump	<input checked="" type="checkbox"/>	Valve	Breaker																			
1A	<input type="checkbox"/>	1CCW-10	1XS1-F2C																			
1B	<input type="checkbox"/>	1CCW-11	1XS2-F2D																			
<p>4.34 — Verify the 1C or 1D CCW Pump is to be started.</p>	<p>— GO TO Step 4.36.</p>																					
<p>4.35 — Verify both of the following CCW pump discharge valves are closed: (5).</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td></tr><tr><td>1C</td><td><input type="checkbox"/></td><td>1CCW-12</td></tr><tr><td>1D</td><td><input type="checkbox"/></td><td>1CCW-13</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	1C	<input type="checkbox"/>	1CCW-12	1D	<input type="checkbox"/>	1CCW-13	<p>— Dispatch an operator to close the discharge valves from the breaker switch (Unit 1 Equipment rm):</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td><td>Breaker</td></tr><tr><td>1C</td><td><input type="checkbox"/></td><td>1CCW-12</td><td>1XS3-2E</td></tr><tr><td>1D</td><td><input type="checkbox"/></td><td>1CCW-13</td><td>1XS1-F3C</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	Breaker	1C	<input type="checkbox"/>	1CCW-12	1XS3-2E	1D	<input type="checkbox"/>	1CCW-13	1XS1-F3C
Pump	<input checked="" type="checkbox"/>	Valve																				
1C	<input type="checkbox"/>	1CCW-12																				
1D	<input type="checkbox"/>	1CCW-13																				
Pump	<input checked="" type="checkbox"/>	Valve	Breaker																			
1C	<input type="checkbox"/>	1CCW-12	1XS3-2E																			
1D	<input type="checkbox"/>	1CCW-13	1XS1-F3C																			

**IF AT ANY TIME:**

- (4.20) HPSW-900 or HPSW-901 is full open... (stop LPSW pumps and cycle HPSW Jockey Pump as necessary)
- (4.27) RCP seal injection is lost ... (dispatch an operator to operate SSF RCMU)
- (4.28) Loss of power occurred on Unit 1, power is restored, and Keowee Lake Level > 775' (6)... (restart a CCW pump)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.36 __ WHEN SSW is aligned to the pump, AND the discharge valves are closed, THEN start the CCW pump.	
4.37 __ IAAT Keowee Lake Level $\leq 775'$ (6), AND CCW-8 Bkr is open, THEN perform Steps 4.38 - 4.40.	__ GO TO Step 4.41.
4.38 __ Stop <u>all</u> CCW pumps.	

**CAUTION**

If CCW Intake and Discharge piping is NOT cross-connected within 4 hours of the Reactor trip, long term availability of CCW inventory CANNOT be assured. {3}

4.39 \_\_ Initiate Encl 5.3 (Cross-connect CCW Intake and Discharge Piping).

**NOTE**

Similar instructions are provided in Unit 2 and 3 procedures. The same operator should be used for these tasks.

4.40 __ Notify the operator performing Encl 5.4 (NLO Actions at CCW Intake) to isolate SSW to <u>all</u> Unit 1 CCW pumps.	
4.41 __ Notify TSC to replenish Unit 2 CCW intake lines.	
4.42 __ Notify Emergency Coordinator to review Encl 5.5 (Dam Failure Considerations).	
4.43 __ WHEN secondary heat removal systems are near depletion, THEN initiate AP/25 (SSF EOP) in preparation for feeding the SGs with SSF ASW.	
4.44 __ WHEN conditions permit, THEN EXIT this procedure.	

oooENDooo

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Continued operation of the RCPs will provide heat load with limited cooling capacity and may result in RCP damage due to inadequate LPSW flow. RCP restart when directed by EP/1 (EOP) should consider these factors.</p>	
4.45 <input type="checkbox"/> Stop <u>all</u> RCPs.	
4.46 <input type="checkbox"/> Ensure <u>all</u> CCW pumps are stopped.	
4.47 <input type="checkbox"/> Ensure 1CCW 1-6 are open.	
4.48 Ensure <u>all</u> condenser outlet valves indicate closed (GD AP13): <ul style="list-style-type: none"> <li><input type="checkbox"/> O1D0273 (1CCW-20 CONDENSER 1A OUTLET 1)</li> <li><input type="checkbox"/> O1D0275 (1CCW-21 CONDENSER 1A OUTLET 2)</li> <li><input type="checkbox"/> O1D0277 (1CCW-22 CONDENSER 1B OUTLET 1)</li> <li><input type="checkbox"/> O1D0279 (1CCW-23 CONDENSER 1B OUTLET 2)</li> <li><input type="checkbox"/> O1D0281 (1CCW-24 CONDENSER 1C OUTLET 1)</li> <li><input type="checkbox"/> O1D0283 (1CCW-25 CONDENSER 1C OUTLET 2)</li> </ul>	



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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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**NOTE**

CCW-8 should open after the CCW DAM FAILURE pushbutton is pressed and the first Waterbox Emergency Discharge valve (1CCW-1-6) opens. If CCW-8 does not open, it should be left closed in preparation for CCW recirculation.

4.49 ☐ Verify CCW-8 is open.

1. ☐ IF emergency CCW siphon flow has NOT been established on Unit 1, THEN notify Unit 2 that emergency CCW siphon flow has NOT been established on Unit 1.

2. ☐ GO TO Step 4.51.

4.50 ☐ Notify Unit 2 that emergency CCW siphon flow has been established on Unit 1.

4.51 ☐ Dispatch operators to perform Encl 5.2 (CCW Inventory Conservation).

**NOTE**

Unit 2 CR will decide which unit will establish CCW recirculation. Unit 1 will only supply CCW recirculation when directed by Unit 2.

4.52 ☐ IAAT Unit 2 CR has directed Unit 1 to supply CCW recirculation, THEN perform Steps 4.53 - 4.67 to start one CCW Pump and establish recirculation.

☐ GO TO Step 4.68.

**NOTE**

- At least one CCW Pump discharge valve is required to remain open prior to establishing forced flow.
- The adjacent CCW Pumps discharge valve must be closed to prevent excessive torque on the starting pumps discharge valve. The 1A and 1B CCW Pumps are adjacent, and the 1C and 1D CCW Pumps are adjacent.

4.53 ☐ Determine which CCW Pump will be started.

<input checked="" type="checkbox"/>	CCW Pump
<input type="checkbox"/>	1A
<input type="checkbox"/>	1B
<input type="checkbox"/>	1C
<input type="checkbox"/>	1D

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																					
<p>4.54 <input type="checkbox"/> Place <u>all</u> CCW Pump switches in the trip position:</p> <table><tr><td><input checked="" type="checkbox"/></td><td>CCW Pump</td></tr><tr><td><input type="checkbox"/></td><td>1A</td></tr><tr><td><input type="checkbox"/></td><td>1B</td></tr><tr><td><input type="checkbox"/></td><td>1C</td></tr><tr><td><input type="checkbox"/></td><td>1D</td></tr></table>	<input checked="" type="checkbox"/>	CCW Pump	<input type="checkbox"/>	1A	<input type="checkbox"/>	1B	<input type="checkbox"/>	1C	<input type="checkbox"/>	1D												
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<input type="checkbox"/>	1D																					
<p>4.55 <input type="checkbox"/> Verify the 1A or 1B CCW Pump is to be started.</p>	<p><input type="checkbox"/> GO TO Step 4.57.</p>																					
<p>4.56 <input type="checkbox"/> Verify both of the following CCW pump discharge valves are closed: (5).</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td></tr><tr><td>1A</td><td><input type="checkbox"/></td><td>1CCW-10</td></tr><tr><td>1B</td><td><input type="checkbox"/></td><td>1CCW-11</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	1A	<input type="checkbox"/>	1CCW-10	1B	<input type="checkbox"/>	1CCW-11	<p><input type="checkbox"/> Locally close the discharge valves from the breaker switch (Unit 1 Equipment rm):</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td><td>Breaker</td></tr><tr><td>1A</td><td><input type="checkbox"/></td><td>1CCW-10</td><td>1XS1-F2C</td></tr><tr><td>1B</td><td><input type="checkbox"/></td><td>1CCW-11</td><td>1XS2-F2D</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	Breaker	1A	<input type="checkbox"/>	1CCW-10	1XS1-F2C	1B	<input type="checkbox"/>	1CCW-11	1XS2-F2D
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Pump	<input checked="" type="checkbox"/>	Valve	Breaker																			
1A	<input type="checkbox"/>	1CCW-10	1XS1-F2C																			
1B	<input type="checkbox"/>	1CCW-11	1XS2-F2D																			
<p>4.57 <input type="checkbox"/> Verify the 1C or 1D CCW Pump is to be started.</p>	<p><input type="checkbox"/> GO TO Step 4.59.</p>																					
<p>4.58 <input type="checkbox"/> Verify both of the following CCW pump discharge valves are closed: (5).</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td></tr><tr><td>1C</td><td><input type="checkbox"/></td><td>1CCW-12</td></tr><tr><td>1D</td><td><input type="checkbox"/></td><td>1CCW-13</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	1C	<input type="checkbox"/>	1CCW-12	1D	<input type="checkbox"/>	1CCW-13	<p><input type="checkbox"/> Locally close the discharge valves from the breaker switch (Unit 1 Equipment rm):</p> <table><tr><td>Pump</td><td><input checked="" type="checkbox"/></td><td>Valve</td><td>Breaker</td></tr><tr><td>1C</td><td><input type="checkbox"/></td><td>1CCW-12</td><td>1XS3-2E</td></tr><tr><td>1D</td><td><input type="checkbox"/></td><td>1CCW-13</td><td>1XS1-F3C</td></tr></table>	Pump	<input checked="" type="checkbox"/>	Valve	Breaker	1C	<input type="checkbox"/>	1CCW-12	1XS3-2E	1D	<input type="checkbox"/>	1CCW-13	1XS1-F3C
Pump	<input checked="" type="checkbox"/>	Valve																				
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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>CCW pump amps and temperatures will read higher than normal when started with this plant configuration. CCWP motor stator temperature limit is 284°F.</p>	
4.59. <input type="checkbox"/> Start the selected CCW Pump.	
4.60 <input type="checkbox"/> Verify the started CCW pump discharge valve opened.	1. <input type="checkbox"/> Stop the operating CCW pump. 2. <input type="checkbox"/> <b>GO TO</b> Step 4.54 to attempt to start a different CCW pump.
4.61 <input type="checkbox"/> Verify CCW-9 is open.	1. <input type="checkbox"/> Stop the operating CCW pump. 2. <input type="checkbox"/> Notify Security to meet an operator at the IRW gate to provide access to CCW-9 at the Southwest corner of the Protected Area. 3. Dispatch an operator to perform the following: A. <input type="checkbox"/> Obtain the CCW-9 IRW Gate Key from the security box in Unit 3 Control Room storage area. B. <input type="checkbox"/> Open CCW-9 (EMERGENCY CCW DISCHARGE TO INTAKE) (between protected area fences). C. <input type="checkbox"/> Notify Unit 1 CR when CCW-9 is open. 4. <input type="checkbox"/> <b>WHEN</b> notified that CCW-9 is open, <b>THEN GO TO</b> Step 4.53 to restart a CCW pump.

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.62 __ Verify CCW-8 is closed.	1. __ Stop the operating CCW pump. 2. __ Dispatch an operator to open 1DP-F5C (CCW-8 BKR (EMERG CCW DISCH TO TAILRACE)) (T-3/L-24). 3. __ Dispatch two operators to close CCW-8 (EMERGENCY CCW DISCHARGE TO TAILRACE) (Beside tailrace 3' N of 8' drain pipe under middle valve pit cover). 4. __ WHEN CCW-8 is closed, THEN GO TO Step 4.53 to restart a CCW pump.

**NOTE**

CCW-8 must be de-energized prior to submersion by lake water. This should be accomplished within 1 hour of initiation of the event.

4.63 \_\_ Ensure an operator has been dispatched to open 1DP-F5C (CCW-8 BKR (EMERG CCW DISCH TO TAILRACE)) (T-3/L-24).

4.64 Ensure the discharge valves on all stopped CCW pumps are closed:

CCW Pump		Valve
1A	<input checked="" type="checkbox"/>	1CCW-10
1B	<input type="checkbox"/>	1CCW-11
1C	<input type="checkbox"/>	1CCW-12
1D	<input type="checkbox"/>	1CCW-13

4.65 \_\_ Notify Unit 2 and Unit 3 to ensure all Unit 2 and Unit 3 CCW pump discharge valves are closed.



ORIGINATING OFFICE: TRANSVAAL DATE: 1964

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

FORM NO. 72-1 (1-1975)

0134796-2 - 1985 - 1986 - 1987

1. *Chlorophyll a* (Chl *a*)

[illegible]

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
--------------------------	-----------------------

**NOTE**

The purpose of the following steps is to force CCW inlet flow to the other two units through the CCW inlet cross-connects to establish > 7" vacuum for TBV operability. Unit 2 and Unit 3 personnel will provide information about the effects of the following actions on their condenser vacuum.

4.66 \_\_\_ Throttle 1CCW 1-6 as necessary to establish > 7" vacuum on Unit 2 and Unit 3.

4.67 \_\_\_ WHEN condenser vacuum on all three units is being maintained > 7" vacuum,  
THEN stop adjusting 1CCW 1-6.

**NOTE**

CCW pump discharge valves act as throttle valves from the breaker switches unless the respective CCW pump switch is positioned to TRIP.

4.68 \_\_\_ IAAT another unit is to supply CCW recirculation,  
AND requests all Unit 1 CCW pump discharge valves closed,  
THEN perform the following:

- A. Dispatch an operator to close the following valves from the breaker switches (Unit 1 Equipment Rm):

<input checked="" type="checkbox"/>	Valve	Breaker
<input type="checkbox"/>	1CCW-10	1XS1-F2C
<input type="checkbox"/>	1CCW-13	1XS1-F3C
<input type="checkbox"/>	1CCW-11	1XS2-F2D
<input type="checkbox"/>	1CCW-12	1XS3-2E

- B. \_\_\_ Monitor Unit 1 condenser vacuum while CCW recirculation is established on another unit.
- C. \_\_\_ Communicate condenser vacuum changes to the unit supplying CCW recirculation flow.

**IF AT ANY TIME:**

- (4.52) Unit 1 is to supply CCW recirculation ... (start a CCW pump and align for recirculation)
- (4.68) another unit is to supply CCW recirculation and requests all Unit 1 CCW pump discharge valves closed ... (dispatch an operator to close the valves, monitor vacuum)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.69 <input type="checkbox"/> Verify TDEFDW PUMP is operating.	<input type="checkbox"/> GO TO Step 4.73.

**NOTE**

LPSW return from the MDEFDWP motor coolers is lost out the CCW discharge when these pumps are operating even after completion of Encl 5.1 (LPSW Recirc Lineup).

4.70 <input type="checkbox"/> Verify MDEFDWPs are NOT required to feed SGs.	<input type="checkbox"/> GO TO Step 4.72.
4.71 Stop the following: <input type="checkbox"/> 1A MDEFDWP <input type="checkbox"/> 1B MDEFDWP	
4.72 <input type="checkbox"/> Dispatch an operator to place 1LPSW-138 & 1HPSW-184 TDEFDWP COOLING BYPASS VALVE switch in the BYPASS position (T-1/D-25, 24' E, SG FDW Panel 1 SGFP).	

**NOTE**

EWST will be used to cool HPI Pump Motor Coolers and TDEFDW Pump.

4.73 Place the following switches in OFF: <input type="checkbox"/> A HPSW PUMP <input type="checkbox"/> B HPSW PUMP	
---	--

**NOTE**

The intent is to maintain adequate cooling water inventory while preventing loss through the EWST overflow.

4.74 <input type="checkbox"/> Maintain EWST level >70,000 gallons and < OVERFLOW by cycling HPSW JOCKEY PUMP as necessary.	
--	--

**IF AT ANY TIME:**

- (4.52) Unit 1 is to supply CCW recirculation ... (start a CCW pump and align for recirculation)
- (4.68) another unit is to supply CCW recirculation and requests all Unit 1 CCW pump discharge valves closed ... (dispatch an operator to close the valves, monitor vacuum)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.75 __ IAAT operating MDEFDWP motor stator temperatures > 210°F, THEN consult Station Management for guidance about stopping MDEFDWP's.	
4.76 __ Notify Emergency Coordinator to review Encl 5.5 (Dam Failure Considerations).	
4.77 __ Initiate Encl 5.1 (LPSW Recirc Lineup).	
4.78 __ WHEN conditions permit, THEN EXIT this procedure.	

oooENDooo

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

**NLO-022**

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

**CANDIDATE**

---

**EXAMINER**

---

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 by procedure.

**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 \_\_\_\_\_

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

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

NAME

SIGNATURE

DATE

**COMMENTS**



**SIMULATOR OPERATOR INSTRUCTIONS:**

NONE

**Tools/Equipment/Procedures Needed:**

Enclosure 5.10, Station ASW Pump Alignment, 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 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) of the EOP.

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

<p><b>STEP 1:</b> Step 1 Obtain racking equipment <u>and</u> pipe wrench from EOP equipment locker U2AB1 (A-1, hallway near U2 elevator lobby).</p> <p><b>STANDARD:</b> Candidate locates equipment locker and indicates they would open locker and obtain the racking equipment and pipe wrench.</p> <p><b>Note:</b> For this JPM the equipment locker should not be opened.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Step 2 Open CCW-99 (Aux. Service Water Pump Suction)</p> <p><b>STANDARD:</b> Candidate 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>Cue:</b> Indicate CCW-99 valve position indicator indicates, "open".</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Step 3 Open CCW-247 (Aux. Service Water Pump Recirc.).</p> <p><b>STANDARD:</b> Candidate 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>Cue:</b> Indicate CCW-247 open (rising stem) and at the hard stop.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b><u>STEP 4:</u></b>        Step 4 Open CCW-308 (Aux. Service Water Pump Vent.).</p> <p><b><u>STANDARD:</u></b>    Candidate locates and opens CCW-308 (Aux. Service Water Pump Vent). Candidate should indicate they would use a wrench to remove the pipe plug.</p> <p><b><i>Cue: Indicate CCW-308 open with air and water coming out of the vent. If the candidate does not remove the plug indicate that nothing is coming out of the vent.</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>        Step 5 <b>WHEN</b> all air is vented from Station ASW Pump, <b>THEN</b> close CCW-308.</p> <p><b><u>STANDARD:</u></b>    Candidate locates and closes CCW-308 (Aux. Service Water Pump Vent).</p> <p><b><i>Cue: Indicate that a solid stream of water is issuing out of the vent.</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> Don protective equipment</p> <p><b><u>STANDARD:</u></b> Candidate 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 should be simulated and discussed, at the discretion of the examiner. This is the equipment obtained in step 1.</p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 7:</u></b> Step 6 Rack in ASWS-6B (STATION ASW PUMP BKR) (ASW SWGR 600V LOAD CENTER Unit 6).</p> <p><b><u>STANDARD:</u></b> Candidate locates breaker and opens shutter door, inserts 600V rack out tool, and rotates tool clockwise to rack breaker in.</p> <p><b>Cue:</b> After breaker is racked in, indicate to candidate that the <b>AUX SERVICE WATER PUMP MOTOR breaker green "open" indicating light is ON</b> and when the "racking" tool is removed the shutter drops.</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> Step 7 Ensure closed ASW SWGR FDR (ASW SWGR FDR FROM B1T-UNIT10) (ASW SWGR 600V LOAD CENTER Unit 5)</p> <p><b><u>STANDARD:</u></b> Candidate locates the ASW SWGR FDR control switch and rotates it to the CLOSE direction.</p> <p>RED Closed lamp is observed to be illuminated OR Breaker position flag is observed to indicate Closed.</p> <p><b><i>CUE: Indicate to candidate that the 4160V Feeder Breaker for the "AUX SER WTR SWGR TRANSFORMER" red light is lit.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 9:</u></b> Step 8 <b>WHEN</b> notified that Standby Bus #1 is energized, <b>THEN</b> perform the following (ASW SWGR 600V LOAD CENTER Unit 5):</p> <ul style="list-style-type: none"> <li>• Ensure closed ASW TRANSFORMER FDR (ASW SWITCHGEAR TRANSFORMER FDR).</li> <li>• Start Station ASW Pump using the control switch STATION ASW PUMP SW.</li> </ul> <p><b><u>STANDARD:</u></b> Candidate locates the ASW TRANSFORMER FDR (ASW SWITCHGEAR TRANSFORMER FDR) Breaker control switch and rotates it to the CLOSE direction.</p> <p>RED Closed lamp is observed to be illuminated OR Breaker position flag is observed to indicate Closed.</p> <p>Candidate locates AUX SERVICE WATER PUMP MOTOR control switch and rotates switch to the CLOSE position.</p> <p><b><i>CUE: Indicate to candidate that Standby Bus #1 is energized.</i></b></p> <p><b><i>CUE: After control switch is rotated, indicate to candidate that the AUX SERVICE WATER PUMP MOTOR breaker red "closed" indicating light is ON and you can hear the pump.</i></b></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> Step 9 Close CCW-309 (Aux Service Water Pump Disch Drain) (12' West of ASW Pump).</p> <p><b>STANDARD:</b> Candidate 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>Cue:</b> <i>Indicate CCW-309 closed and at the hard stop.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 13:</b> Step 10 Open CCW-101 (Aux Service Water Pump Discharge).</p> <p><b>STANDARD:</b> Candidate 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>Cue:</b> <i>Indicate CCW-101 open (rising stem valve) and at a hard stop.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 14:</b> Step 11 Verify Turbine Building flood is NOT in progress.</p> <p><b>STANDARD:</b> Candidate determines that a Turbine Building flood is NOT in progress.</p> <p><b>Cue:</b> <i>Indicate that a Turbine Building flood is NOT in progress.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 15:</u>      Step 12                      Notify CRO that Station ASW Pump is operating.</p> <p><u>STANDARD:</u>    Using either the phone or a radio inform the CRO is that Station ASW                      Pump is operating.</p> <p><u>COMMENTS:</u></p> <p style="text-align: right;"><b>END TASK</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
---	---------------------------------

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



### **CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
2	Step necessary to align pump suction
3	Step 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.
4	Step is necessary to prevent damage to the pump due to air binding.
5	Step is necessary to prevent flooding of the Aux. Bldg when the Aux. Service Water Pump is started.
7	Step is necessary to power the Aux. Service Water Pump.
8	Step is necessary to power the Aux. Service Water Pump.
9	Step is necessary to start the Aux. Service Water Pump.
12	Step is necessary to prevent flooding of the Aux. Bldg when flow is established to the SGs.
13	Step is necessary to provide a flow path of water to the necessary components, in this case 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) of the EOP.

Enclosure 5.10  
Station ASW Pump Alignment

EP/1/A/1800/001

Page 1 of 3

CHG 301  
ENTIRE  
ENCL

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><u>NOTE</u></p> <p><u>All</u> equipment operated in the following steps is located in A-1-128, ASW Pump Rm.</p>	
1. ___ Obtain racking equipment <u>and</u> pipe wrench from EOP equipment locker U2AB1 (A-1, hallway near U2 elevator lobby).	
2. ___ Open CCW-99 (AUX. SERVICE WATER PUMP SUCTION).	
3. ___ Open CCW-247 (AUX. SERVICE WATER PUMP RECIRC).	
4. ___ Open CCW-308 (AUX. SERVICE WATER PUMP VENT).	
5. ___ <u>WHEN</u> <u>all</u> air is vented from Station ASW Pump, ... <u>THEN</u> close CCW-308.	
6. ___ Rack in ASWS-6B (STATION ASW PUMP BKR) (ASW SWGR 600V LOAD CENTER Unit 6).	
7. ___ Ensure closed ASW SWGR FDR (ASW SWGR FDR FROM BIT- UNIT 10) (ASW SWGR 600V LOAD CENTER Unit 5).	
8. ___ <u>WHEN</u> notified that Standby Bus #1 is energized, <u>THEN</u> perform the following (ASW SWGR 600V LOAD CENTER Unit 5):  A. ___ Ensure closed ASW TRANSFORMER FDR (ASW SWITCHGEAR TRANSFORMER FDR).  B. ___ Start Station ASW Pump using the control switch STATION ASW PUMP SW.	
9. ___ Close CCW-309 (AUX SERVICE WATER PUMP DISCH DRAIN) (12' West of ASW Pump).	

Enclosure 5.10  
Station ASW Pump Alignment

EP/1/A/1800/001  
Page 2 of 3

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Enclosure 5.10  
Station ASW Pump Alignment

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

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10. <input type="checkbox"/> Open CCW-101 (AUX SERVICE WATER PUMP DISCHARGE).	
11. <input type="checkbox"/> Verify Turbine Building flood is NOT in progress.	1. <input type="checkbox"/> Notify <u>all</u> Control Rooms that Station ASW Pump is operating. 2. <input type="checkbox"/> GO TO Step 13.
12. <input type="checkbox"/> Notify CRO that Station ASW Pump is operating.	
13. <input type="checkbox"/> WHEN Station ASW Pump is no longer needed in Unit 1, THEN continue in this enclosure.	
14. Verify <u>all</u> the following conditions exist: <input type="checkbox"/> Station ASW Pump is NOT supplying SGs in <u>any</u> other unit. <input type="checkbox"/> Station ASW Pump is NOT needed to supply HPI pump motor coolers in <u>any</u> unit.	<input type="checkbox"/> GO TO Step 19.
15. <input type="checkbox"/> Stop Station ASW Pump using the control switch STATION ASW PUMP SW (ASW SWGR 600V LOAD CENTER Unit 5).	
16. Close the following: <input type="checkbox"/> CCW-99 (AUX. SERVICE WATER PUMP SUCTION) <input type="checkbox"/> CCW-101 (AUX. SERVICE WATER PUMP DISCHARGE) <input type="checkbox"/> CCW-247 (AUX. SERVICE WATER PUMP RECIRC)	
17. <input type="checkbox"/> Open CCW-309 (AUX SERVICE WATER PUMP DISCH DRAIN) (12' West of ASW Pump).	
18. <input type="checkbox"/> Rack out ASWS-6B (STATION ASW PUMP BKR) (ASW SWGR 600V LOAD CENTER Unit 6).	
19. <input type="checkbox"/> EXIT this enclosure.	

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

**CRO-047**

**Emergency start SSF Diesel Generator and supply power  
to the SSF ASW and SSF RCMU pumps**

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

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

REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Emergency start SSF Diesel Generator and supply power to the SSF ASW and SSF RCMU pumps

**Alternate Path:**

Yes

**Facility JPM #:**

CRO-047

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

System: 062  
K/A: A2.11  
Rating: 3.7/4.1

**Task Standard:**

SSF Diesel Generator is emergency started aligned to supply power to the SSF ASW and SSF RCMU pumps correctly by procedure.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate   X  

**References:**

AP/0/A/1700/25 (SSF EOP)

**Validation Time:** 10 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:**

AP/0/A/1700/25 (SSF 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:**

Unit \_\_\_\_ was operating at 100% power.

Unit \_\_\_\_ TD EFDWP is out of service.

**INITIATING CUES:**

Unit \_\_\_\_ Reactor has just tripped and experienced a complete loss of all AC power. During the performance of Immediate Manual Actions, the OATC notified the Control Room SRO that HPI seal injection and Component Cooling have been lost and that the SSF must be activated. The Control Room SRO directs you to utilize AP/0/A/1700/025 (SSF EOP) to activate the SSF. No Operators have been staged at the SSF.

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

<p><b>STEP 1:</b>      Step 4.1</p> <p>Determine which SSF Systems are required:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 100px;">SSF System</td> </tr> <tr> <td style="text-align: center;"><b>U1</b></td> <td style="text-align: center;"><b>U2</b></td> <td style="text-align: center;"><b>U3</b></td> <td style="text-align: center;">SSF RCMU</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td style="text-align: center;">SSF ASW feed</td> </tr> </table> <p><b>STANDARD:</b>      Recognizes the initial conditions determine that SSF RCMU Pump flow is required. With no source of FDW available SSF ASW flow is also required.</p> <p>Continue to Step 4.2</p> <p><b>Cue:</b> <i>SSF ASW feed is required to SGs due to NO source of available FDW.</i></p> <p><b>COMMENTS:</b></p>	✓	✓	✓	SSF System	<b>U1</b>	<b>U2</b>	<b>U3</b>	SSF RCMU				SSF ASW feed	<p>___ SAT</p>  <p>___ UNSAT</p>								
✓	✓	✓	SSF System																		
<b>U1</b>	<b>U2</b>	<b>U3</b>	SSF RCMU																		
			SSF ASW feed																		
<p><b>STEP 2:</b>      Step 4.2</p> <p>Ensure <u>all</u> RCPs on <u>affected</u> Units are off.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 30px;">✓</td> <td style="text-align: center; width: 100px;">RCPs</td> </tr> <tr> <td style="text-align: center;"><b>U1</b></td> <td style="text-align: center;"><b>U2</b></td> <td style="text-align: center;"><b>U3</b></td> <td style="text-align: center;">A1</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td style="text-align: center;">B1</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td style="text-align: center;">A2</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td style="text-align: center;">B2</td> </tr> </table> <p><b>STANDARD:</b>      Determine that all RCPs are off.</p> <p>Continue to Step 4.3</p> <p><b>CUE:</b> <i>If asked, inform candidate of the following:</i></p> <ul style="list-style-type: none"> <li>• <i>All RCP white lights on</i></li> <li>• <i>All RCP red lights off</i></li> </ul> <p><b>COMMENTS:</b></p>	✓	✓	✓	RCPs	<b>U1</b>	<b>U2</b>	<b>U3</b>	A1				B1				A2				B2	<p>___ SAT</p>  <p>___ UNSAT</p>
✓	✓	✓	RCPs																		
<b>U1</b>	<b>U2</b>	<b>U3</b>	A1																		
			B1																		
			A2																		
			B2																		

<p><u>STEP 3:</u>        Step 4.3</p> <p>Verify a Licensed Operator staged in SSF to perform AP/25 (SSF EOP). <b>(PS)</b></p> <p><u>STANDARD:</u>    Determine that SSF Operator has <b>NOT</b> been staged. Continue to RNO for Step 4.3</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u>        Step 4.3 RNO</p> <p>1. Obtain the following items:</p> <ul style="list-style-type: none"> <li>• Vital area access keyring</li> <li>• Flashlight</li> </ul> <p>2. Proceed to SSF HVAC Room.</p> <p>3. <b>GO TO</b> Step 4.5</p> <p><u>STANDARD:</u>    Candidate proceeds to supply room and identifies the location of the dedicated flashlight and the required keys to be carried to the SSF.</p> <p>Candidate proceeds to the SSF with the AP.</p> <p><b>GO TO</b> Step 4.5</p> <p><b><i>CUE: When the flashlight and keys are located, inform the candidate that he/she is NOT required to actually carry them to the SSF for the purposes of this JPM.</i></b></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 5:</b> Step 4.5</p> <p>Perform the following on the affected unit:</p> <p>Open 3, 2, 1XSF-F5A (3, 2, 1XSF NORM INCOMING FDR BKR FROM 1, 2, or 3X8-5B) and remove Kirk Key</p> <p>Using the Kirk Key, close 3, 2, 1XSF-F3A (3, 2, 1XSF ALTERNATE INCOMING FDR BKR FROM OXSF-5A, 5B, or 5C)</p> <p><b>STANDARD:</b> NORMAL INCOMING FDR BKR is opened by rotating breaker switch to the OFF position and removing Kirk Key.</p> <ul style="list-style-type: none"> <li>• Compartment 5A on the affected unit's XSF MCC:</li> <li>• 1XSF 2XSF 3XSF</li> </ul> <p>ALTERNATE INCOMING FDR BKR is closed in by inserting Kirk Key and rotating breaker switch to the ON position.</p> <ul style="list-style-type: none"> <li>• Compartment 3A on the affected unit's XSF MCC:</li> <li>• 1XSF 2XSF 3XSF</li> </ul> <p>Continue to Step 4.6</p> <p><b>NOTE:</b> Kirk Key must be rotated ½ turn to be removed.</p> <p><b>CUE:</b> As operator performs the key/breaker operation, indicate to operator the appropriate component positions.</p> <p><b>NOTE:</b> Step 5 will power the SSF Systems from OXSF. Power supply for 600V MCC 1, 2, or 3XSF, located in HVAC Room.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b> Step 4.6</p> <p>Press DIESEL EMERGENCY START pushbutton.</p> <p><b>STANDARD:</b> The SSF Control Room DIESEL EMERGENCY START pushbutton is pressed.</p> <p>Continue to Step 4.7</p> <p><b>CUE:</b> Allow ~ 12 sec for the D/G to reach rated speed.</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>      Step 4.7 Verify D/G frequency 59.8 - 60.2 Hz.</p> <p><b><u>STANDARD:</u></b>    The D/G HERTZ meter is monitored to determine frequency is low. Continue to Step 4.7 RNO.</p> <p><b><i>CUE: Indicate D/G frequency is 57 Hertz on the SSF Control Room D/G HERTZ meter.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b><u>STEP 8:</u></b>      Step 4.7 RNO Adjust GOVERNOR CONTROL to obtain D/G frequency 59.8 - 60.2.</p> <p><b><u>STANDARD:</u></b>    The GOVERNOR CONTROL is used to raise D/G frequency to between 59.8 - 60.2. Continue to Step 4.8.</p> <p><b><i>CUE: After candidate indicates the GOVERNOR CONTROL would be used to raise D/G frequency indicate D/G frequency is 60 Hertz on the SSF Control Room D/G HERTZ meter.</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><u>STEP 9:</u>        Step 4.8 Verify D/G voltage 4100 - 4200V.</p> <p><u>STANDARD:</u>    The D/G AC VOLTS meter is monitored to determine voltage. Continue to step 4.9</p> <p><b><i>CUE: Indicate D/G voltage is 4160 volts on the SSF Control Room D/G AC VOLTS meter.</i></b></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u>      Step 4.9 Verify SSF D/G operating.</p> <p><u>STANDARD:</u>    Acknowledges successful completion of previous steps indicates SSF D/G is operating. Continue to Step 4.10</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 11:</b> Step 4.10</p> <p>Open breaker OTS1-1 (SSF NORMAL POWER SUPPLY BREAKER B2T).</p> <p><b>STANDARD:</b> TRIP pushbutton on the SSF OTS1-1 (SSF NORMAL POWER SUPPLY BREAKER B2T) control switch is pressed.</p> <p>Continue to Step 4.11</p> <p><b>Cue:</b> <i>Inform student that the green light for OTS1-1 (SSF NORMAL POWER SUPPLY BREAKER B2T) is on and the red light is off.</i></p> <p><b>Note:</b> <u>FOR UNIT 2 ONLY:</u> On a loss of power to Unit 2, OTS1-1 would have already tripped open.</p> <p><b>Note:</b> Steps 4.10 – 4.12 will Align the D/G to supply the SSF loads.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 12:</b> Step 4.11</p> <p><b>WHEN</b> 3 seconds have elapsed, <b>THEN</b> close breaker OTS1-4 (DIESEL GEN BREAKER).</p> <p><b>STANDARD:</b> Three seconds after OTS1-1 is opened, the red CLOSE pushbutton on the SSF Control Room OTS1-4 (DIESEL GEN BREAKER) switch is pressed.</p> <p>Continue to Step 4.12</p> <p><b>CUE:</b> <i>After student closes in diesel generator breaker, inform him/her that red light is on and green light is off.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>



<p><b>STEP 13:</b> Step 4.12</p> <p>Ensure the following breakers are closed:</p> <ul style="list-style-type: none"> <li>• OTS1-3 (SSF 600V OXSF FDR BKR CONTROL)</li> <li>• OXSF-4B (SSF LC OXSF 600V INC BKR)</li> </ul> <p><b>STANDARD:</b> Red CLOSE breaker position indicating light is observed to be ON at the SSF OTS1-3 (SSF 600V OXSF FDR BKR CONTROL) switch.</p> <p><b>CUE:</b> <i>Inform student the red light is on and the green light is off.</i></p> <p>Red CLOSE breaker position indicating light is observed to be ON at the (SSF OXSF-4B SSF LC OXSF 600V INC BKR) switch.</p> <p><b>CUE:</b> <i>Inform student the red light is on and the green light is off.</i></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>
4	Step is necessary to gain access to the SSF during a blackout.
5	Step <i>must be performed</i> to power the SSF from the Diesel/Generator.
6	Step must be performed to start the diesel and get power for the SSF.
8	Step is necessary to ensure D/G frequency is correct.
11	Step is necessary to power the SSF loads.
12	Step is necessary to power the SSF loads.

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

**INITIAL CONDITIONS:**

Unit \_\_\_\_ was operating at 100% power.

Unit \_\_\_\_ TD EFDWP is out of service.

**INITIATING CUES:**

Unit \_\_\_\_ Reactor has just tripped and experienced a complete loss of all AC power. During the performance of Immediate Manual Actions, the OATC notified the Control Room SRO that HPI seal injection and Component Cooling have been lost and that the SSF must be activated. The Control Room SRO directs you to utilize AP/0/A/1700/025 (SSF EOP) to activate the SSF. No Operators have been staged at the SSF.

## PROCEDURE PROCESS RECORD

Revision No 025

OTC MASTER  
FILE

## PREPARATION

(2) Station

OCONEE NUCLEAR STATION

(3) Procedure Title Standby Shutdown Facility Emergency Operating Procedure

(4) Prepared By Kevin McMurray (Signature) Kevin McMurray Date 07/13/02

(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 David P. Gault (QR) Date 11/4/02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA DPG Date \_\_\_\_\_Reactivity Mgmt Review By \_\_\_\_\_ (QR) NA DPG Date \_\_\_\_\_Mgmt Involvement Review By \_\_\_\_\_ (Ops Supt) NA DPG Date \_\_\_\_\_

(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. Gault Date 11/6/02

## 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

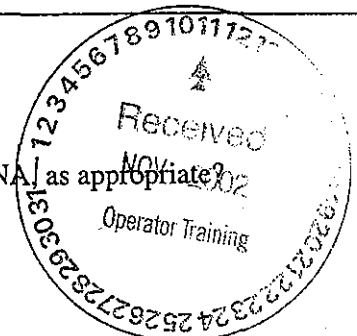
(12) Procedure Completion Verification:

☐ 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 \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages)



**SUMMARY OF CHANGES: (DESCRIPTION AND REASON)**

**General Changes**

In Enclosure 5.4B (Unit 1 MS Line Valve Breaker Checklist), changed the following breaker locations: 2MS-17 to "2XGB-F1DB", 2MS-26 to "2XA-F5C", 2MS-76 to "2XA-F5AT", and 2MS-79 to "2XA-F6AT" per NSM 23067.

**PCR Numbers Incorporated**

2002-3479

Duke Power Company  
Oconee Nuclear Station

**Standby Shutdown Facility Emergency Operating  
Procedure**

Procedure No.

AP/0/A/1700/025

Revision No.

025

Electronic Reference No.

OX002RG2

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**1. Entry Conditions**

- Directed by another AP or the EOP
- 10 CFR 50 Appendix R fire in any fire zone except West Pen Rms
- Security event

**2. Automatic Systems Actions**

None

**3. Immediate Manual Actions**

None



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#### 4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
--------------------------	-----------------------

##### NOTE

- SSF RCMU is required when CC and RCP seal injection are lost to the RCPs.
- SSF ASW feed is required to SGs when **NO** source of FDW is available.

4.1 Determine which SSF systems are required:

<input checked="" type="checkbox"/> U1	<input checked="" type="checkbox"/> U2	<input checked="" type="checkbox"/> U3	SSF System
			SSF RCMU
			SSF ASW feed

4.2 Ensure all RCPs on affected Units are off:

<input checked="" type="checkbox"/> U1	<input checked="" type="checkbox"/> U2	<input checked="" type="checkbox"/> U3	RCPs
			A1
			B1
			A2
			B2

4.3 ☐ Verify a Licensed Operator staged in SSF to perform AP/25 (SSF EOP). (PS)

- ☐ Obtain the following items:
  - Vital area access keyring
  - Flashlight
- ☐ Proceed to SSF HVAC Room.
- ☐ **GO TO** Step 4.5.

##### NOTE

After the following notification, **NO** further actions of this procedure are required in the Unit CRs unless directed by the SSF operator.

4.4 Notify the SSF operator of the following (SSF CR x-2766):

- ☐ Required SSF systems identified in Step 4.1
- ☐ To continue this procedure at Step 4.5

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
--------------------------	-----------------------

4.5 Perform the following on the affected units:

✓	Affected Units	✓	Actions Required on Affected Units
	1		Open 1XSF-F5A (1XSF NORM INCOMING FDR BKR FROM 1X8-5B) and remove Kirk Key.
			Using Kirk Key, close 1XSF-F3A (1XSF ALTERNATE INCOMING FDR BKR FROM OXSF-5A)
	2		Open 2XSF-F5A (2XSF NORM INCOMING FDR BKR FROM 2X8-5B) and remove Kirk Key.
			Using Kirk Key, close 2XSF-F3A (2XSF ALTERNATE INCOMING FDR BKR FROM OXSF-5B)
	3		Open 3XSF-F5A (3XSF NORM INCOMING FDR BKR FROM 3X8-5B) and remove Kirk Key.
			Using Kirk Key, close 3XSF-F3A (3XSF ALTERNATE INCOMING FDR BKR FROM OXSF-5C)

4.6	___ Press DIESEL EMERGENCY START push button.	
4.7	___ Verify D/G frequency 59.8 - 60.2 Hz.	___ Adjust GOVERNOR CONTROL to obtain D/G frequency 59.8 - 60.2 Hz.
4.8	___ Verify D/G voltage 4100 - 4200 V.	___ Adjust VOLTAGE REGULATOR to obtain D/G voltage 4100 - 4200 V.
4.9	___ Verify SSF D/G operating.	1. ___ <b>PERFORM</b> Encl 5.6 (Powering SSF from Unit 2 MFB). {4} 2. ___ <b>GO TO</b> Step 4.14.
4.10	___ Open breaker OTS1-1 (SSF NORMAL POWER SUPPLY BREAKER B2T).	
4.11	___ <b>WHEN</b> 3 seconds have elapsed, <b>THEN</b> close breaker OTS1-4 (DIESEL GEN BREAKER).	

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.12 Ensure the following breakers are closed: ___ OTS1-3 (SSF 600V OXSF FDR BKR CONTROL) ___ OXSF-4B (SSF LC OXSF 600V INC BKR)	
4.13 ___ Ensure Diesel Engine Service Water Pump operating.	
4.14 ___ Start SSF ASW PUMP.	
4.15 <b>PERFORM</b> the following enclosures on all <u>affected</u> units: ___ Encl 5.1A (Emergency Operation of SSF Systems Unit 1) (PS) ___ Encl 5.1B (Emergency Operation of SSF Systems Unit 2) (PS) ___ Encl 5.1C (Emergency Operation of SSF Systems Unit 3) (PS)	

**NOTE**

Power factor will be a function of the load applied to the generator. Voltage regulator adjustments will **NOT** affect the power factor but will affect generator output voltage.

- 4.16 \_\_\_ Maintain D/G operation within the following limits as posted on the D/G control panel:

Parameter	Limits
D/G Power	3500 KW max at 0.8 lagging power factor
D/G Current	610 amps continuous 650 amps temporary overload (2 hrs)
D/G Voltage	4350 volts max
D/G Frequency	59.8 - 60.2 Hz

- 4.17 \_\_\_ Verify D/G SER WTR PMP FLOW  $\approx$  500 gpm.

- \_\_\_ Dispatch an operator to throttle CCW-285 (SSF DIESEL SERVICE WATER PUMP DISCHARGE) to maintain 500 gpm through the Diesel Engine (SSF Pump Rm).

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ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p style="text-align: center;">OSM will determine desired frequency of monitoring SSF equipment.</p>	
4.18 __ Periodically dispatch an operator to perform Encl 5.2 (SSF Equipment Verification).	
4.19 __ Notify TSC to monitor SFP levels and makeup to SFPs as soon as possible to minimize SFP area dose rates.	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Diversion of SSF Diesel Service Water discharge to the yard drain must be completed between 1 hour and 50 minutes and 2 hours and 5 minutes of initiation of the event.</p>	
<p>4.20 __ IAAT 1 hour and 50 minutes have elapsed since the event causing activation of the SSF,  <b>THEN</b> dispatch an operator to perform the following:</p> <p>A. __ Open CCW-384 (JACKET COOLING WATER TO YARD DRAIN ISOLATION) (SSF D/G Rm).</p> <p>B. __ Close CCW-286 (DIESEL COOLING JACKET RETURN) (SSF Pump Rm).</p> <p>C. __ Throttle CCW-285 (SSF DIESEL SERVICE WATER PUMP DISCHARGE) to maintain 500 gpm through the Diesel Engine (SSF Pump Rm).</p>	



**IF AT ANY TIME:**

(4.20) 1 hour and 50 minutes have elapsed since the event ... (dispatch an operator)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>4.21 <input type="checkbox"/> IAAT SSF Control Room temperature exceeds 85°F,  <b>THEN</b> perform <u>one</u> of the following:</p> <p><input type="checkbox"/> Notify TSC to install portable spot coolers.</p> <p><b>OR</b></p> <p><input type="checkbox"/> Remove power from SSF Security Computer as follows:</p> <p>A. <input type="checkbox"/> Notify Security that power will be removed from SSF Security Computer.</p> <p>B. <input type="checkbox"/> Notify Local Information Technology (LIT) to remove power from SSF Security Computer to reduce heat load.</p>	
<p>4.22 Notify CRO from each <u>affected</u> unit to perform the following as appropriate:</p> <p><input type="checkbox"/> Encl 5.3A (Unit 1 Control Room Enclosure)</p> <p><input type="checkbox"/> Encl 5.3B (Unit 2 Control Room Enclosure)</p> <p><input type="checkbox"/> Encl 5.3C (Unit 3 Control Room Enclosure)</p>	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Siphon flow will be lost when CCW piping integrity is violated.</li> <li>• <u>Preparing</u> for installation of the submersible pump does <b>NOT</b> violate CCW piping integrity.</li> </ul>	
<p>4.23 <input type="checkbox"/> Notify SPOC to perform AM/0/A/1300/059 (Pump-Submersible-Emergency SSF Water Supply-Installation and Removal) as necessary to <u>prepare</u> the Dedicated Submersible Pump for installation in Unit 2 CCW piping.</p>	

**IF AT ANY TIME:**

- (4.20) 1 hour and 50 minutes have elapsed since the event ... (dispatch an operator)
- (4.21) SSF Control Room temperature exceeds 85°F... (perform one of the following)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED												
<p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"><li>Constant monitoring of CCW flow is required during an SSF event to ensure a supply of water from Unit 2 CCW System to the SSF. The TSC will determine method of monitoring CCW.</li><li>The Dedicated Submersible Pump must be installed and started within 3.5 hours of loss of <u>both</u> forced and gravity/siphon flow on the Unit 2 CCW System.</li></ul>													
<p>4.24 ___ IAAT <u>both</u> of the following are lost on the Unit 2 CCW System:</p> <p>___ Forced Flow</p> <p>___ Gravity/Siphon Flow</p> <p><b>THEN</b> perform Steps 4.25 - 4.26.</p>	<p>___ GO TO Step 4.27.</p>												
<p>4.25 ___ Notify SPOC to perform AM/0/A/1300/059 (Pump-Submersible-Emergency SSF Water Supply-Installation and Removal) as necessary to <u>install</u> the Dedicated Submersible Pump for Unit 2 CCW System.</p>													
<p>4.26 ___ <b>WHEN</b> I&amp;E and Maintenance have completed installation of the Dedicated Submersible Pump, <b>THEN</b> dispatch an operator to place the pump in service as follows:</p> <p>A. ___ Rack in <u>and</u> close OXSF-4D (SUBMERSIBLE PUMP BKR) (SSF Electrical Equip Rm).</p> <p>B. ___ Close CCW-R5-0010 (SUBMERSIBLE PUMP REMOTE STARTER BKR) (Outside SSF CR).</p> <p>C. ___ Start the Dedicated Submersible Pump by the push button on the Remote Starter Breaker (Outside SSF CR).</p>	<p>Notify TSC to provide makeup guidance to assure SSF ASW Pump suction based on availability of Unit 2 CCW piping:</p> <table><tr><th>✓</th><th>U-2 CCW Piping</th><th>Method</th></tr><tr><td></td><td>Intact</td><td>Cross-connect with Unit 1 or 3 with forced or siphon flow</td></tr><tr><td></td><td>Intact</td><td>Encl 5.5 (Supply of Water to SSF)</td></tr><tr><td></td><td>Not Intact or Questionable</td><td>Alternate method determined by TSC</td></tr></table>	✓	U-2 CCW Piping	Method		Intact	Cross-connect with Unit 1 or 3 with forced or siphon flow		Intact	Encl 5.5 (Supply of Water to SSF)		Not Intact or Questionable	Alternate method determined by TSC
✓	U-2 CCW Piping	Method											
	Intact	Cross-connect with Unit 1 or 3 with forced or siphon flow											
	Intact	Encl 5.5 (Supply of Water to SSF)											
	Not Intact or Questionable	Alternate method determined by TSC											

**IF AT ANY TIME:**

- (4.20) 1 hour and 50 minutes have elapsed since the event ... (dispatch an operator)
- (4.21) SSF Control Room temperature exceeds 85°F... (perform one of the following)
- (4.24) loss of Unit 2 CCW System forced flow and gravity/siphon flow ...  
(notify I&E and Maintenance to install Dedicated Submersible Pump)

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4.27 __ IAAT flooding has occurred in TB, AND actions affecting CCW System are performed, THEN dispatch an operator to monitor TB basement area.	
4.28 __ IAAT Unit 2 CCW Condenser Inlet piping has been isolated (from Lake Keowee or from the other units), THEN monitor level in CCW Condenser Inlet piping as directed by TSC.	
4.29 __ Notify Operations Support Group or TSC to order fuel oil for SSF Diesel Generator as necessary.	
4.30 __ WHEN all in progress enclosures of this procedure are complete, THEN EXIT this procedure.	

...END...

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

**NLO-007**

**START DIESEL AIR COMPRESSOR AND ALIGN TO  
SERVICE AIR HEADER**

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

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



REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

**Task:**

Start Diesel Air Compressor and Align to Service Air Header

**Alternate Path:**

No

**Facility JPM #:**

NLO-007

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

System: APE065

K/A: AA1.04

Rating: 3.5\*/3.4\*

**Task Standard:**

Diesel Air Compressor started and aligned to the Service Air Header correctly per procedure.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform \_\_\_\_\_ Simulate   X  

**References:**

AP/2/A/1700/22, Enclosure 5.4 (Emergency Start of the Diesel Air Compressor)

**Validation Time:** 10 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:**

AP/2/A/1700/22, Enclosure 5.4 (Emergency Start of the Diesel Air Compressor) prestaged at compressor.

**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:**

Units 1, 2, and 3 are operating at 100% power.

The Unit 1 Control Room Operator receives the "INSTRUMENT AIR SYSTEM TROUBLE" Statalarm and observes that Instrument Air pressure is decreasing on the Control Room IA pressure gauge.

**INITIATING CUES:**

The Unit 2 Control Room Operator directs you to obtain a copy of "Emergency Start of the Diesel Air Compressor" Enclosure of AP/2/A/1700/22 (Loss Of Instrument Air), start the diesel air compressor, and align it to the Service Air Header.

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

<p><u>STEP 1:</u>      Step 1 Position the "POWER" Toggle Switch to ON.</p> <p><u>STANDARD:</u>    The "POWER" Toggle Switch is located and pushed UP to the ON position.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      Step 2 Verify outside air temperature is above freezing.</p> <p><u>STANDARD:</u>    Determine outside air temperature is above freezing.</p> <p><i>Cue: If asked, inform candidate that the temperature is above freezing.</i></p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      Step 3 PRESS and HOLD the "BYPASS" button for 10 - 15 seconds).</p> <p><u>STANDARD:</u>    Operator locates and presses the BYPASS button, holding it for 10 - 15 seconds.</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 4:</b>        Step 4 PRESS <u>both</u> BYPASS <u>and</u> START buttons to crank the engine.</p> <p><b>STANDARD:</b>    While continuing to hold the BYPASS button, the operator locates and presses the START button.</p> <p><b>CUE:</b> <i>After the buttons are pressed, inform the candidate that the diesel has started.</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b>        Step 5 RELEASE the BYPASS button when engine speed reaches 1000 rpm.</p> <p><b>STANDARD:</b>    The candidate releases the BYPASS button when the engine speed reaches 1000 RPM</p> <p><b>CUE:</b> <i>Indicate to the operator that Engine speed is &gt; 1000 rpm.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 6:</b>        Step 6 Verify the following:</p> <ul style="list-style-type: none"> <li>• Engine speed is <math>\geq</math> 1000 rpm.</li> <li>• Low Engine Oil Pressure light <b>NOT</b> lit.</li> </ul> <p><b>STANDARD:</b>    Candidate should determine that Engine speed is &gt; 1000 rpm and the Low Engine Oil Pressure light NOT lit.</p> <p><b>CUE:</b> <i>Indicate to the operator that Engine speed is &gt; 1000 rpm and the Low Engine Oil Pressure light NOT lit.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 7:</b> Step 7 PUSH the "Service Air" Button to allow the compressor to fully load.</p> <p><b>STANDARD:</b> "Service Air" Button is LOCATED on the Control Panel, and is DEPRESSED.</p> <p><b>CUE:</b> Inform operator that the "Service Air" button is depressed.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b> Step 8 Open SA-2797 (SA BLOCK VALVE) (North side of compressor below the control panel)</p> <p><b>STANDARD:</b> Service Air Outlet Valve, located in front of the control panel, is OPENED by placing the valve operator lever PARALLEL with the service air line.</p> <p><b>CUE:</b> Inform operator that lever is parallel with service air line.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 9:</b> Step 9 OPEN SA-339 (DIESEL AIR COMPRESSOR STOP) (T-3/F/G-56)</p> <p><b>STANDARD:</b> Compressor is aligned to Service Air Header by rotating SA-339 (Diesel Air Compressor Stop) T-handle until parallel with pipe.</p> <p><b>CUE:</b> Inform operator that lever is parallel with service air line.</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 10:</b> Step 10 OPEN SA-143 (SA TO IA CONTROLLER BYPASS) (T-1/L-33, 15' E)</p> <p><b>STANDARD:</b> Valve is located and manually opened by rotating valve Counter-clockwise to the hard stop.</p> <p><b>Cue:</b> <i>After the operator indicates that he will open SA-143, inform operator that valve is open</i></p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 11:</b> Notify Unit 2 CR that the Diesel Air Compressor is operating.</p> <p><b>STANDARD:</b> Unit 2 CR is notified that the Diesel Air Compressor is operating using a phone or radio.</p> <p><b>Cue:</b> <i>Inform candidate that the Unit 2 CR has been notified that the Diesel Air Compressor is operating.</i></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	Provides power to engine indications and control circuits.
3	If you don't press and hold the bypass switch the engine will not start because it senses low oil pressure.
4	Operator must press start button to crank engine.
7	Step required to load the compressor.
8	Valve must be opened to allow the supply of air to leave the compressor.
9	Air is not supplied to the Service air Header until this valve is opened.
10	Allows SA to raise IA Header pressure above 85 psig.



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

**INITIAL CONDITIONS:**

Units 1, 2, and 3 are operating at 100% power.

The Unit 1 Control Room Operator receives the "INSTRUMENT AIR SYSTEM TROUBLE" Statalarm and observes that Instrument Air pressure is decreasing on the Control Room IA pressure gauge.

**INITIATING CUES:**

The Unit 2 Control Room Operator directs you to obtain a copy of "Emergency Start of the Diesel Air Compressor" Enclosure of AP/2/A/1700/22 (Loss Of Instrument Air), start the diesel air compressor, and align it to the Service Air Header.

Enclosure 5.4  
Emergency Start of the  
Diesel Air Compressor (3)

AP/2/A/1700/022

Page 1 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;"><b>NOTE</b></p> <p>The POWER toggle switch must be ON to have panel indication. All warning lamps will illuminate briefly to test the lamps. The Low Engine Oil Pressure light and the Alternator Not Charging light will stay on until the engine is started.</p>	
1. <input type="checkbox"/> Position the POWER toggle switch to ON.	
2. <input type="checkbox"/> Verify outside air temperature is above freezing.	1. <input type="checkbox"/> Place the HEATERS toggle switch to ON. 2. <input type="checkbox"/> <b>WHEN</b> a minimum of 60 seconds has passed since placing heaters on, <b>THEN</b> continue this enclosure.
3. <input type="checkbox"/> Press and hold the BYPASS button for 10-15 seconds.	
4. <input type="checkbox"/> Press <u>both</u> BYPASS <u>and</u> START buttons to crank the engine.	
5. <input type="checkbox"/> Release the BYPASS button when engine speed reaches 1000 rpm.	
6. Verify the following: <input type="checkbox"/> Engine speed is $\geq 1000$ rpm <input type="checkbox"/> Low Engine Oil Pressure light <b>NOT</b> lit.	1. <input type="checkbox"/> Trip the Diesel Air Compressor by placing the POWER toggle switch to OFF. 2. <input type="checkbox"/> Notify Unit 2 CR that the Diesel Air Compressor is inoperable.
7. <input type="checkbox"/> Push the SERVICE AIR button to allow the compressor to fully load.	
8. <input type="checkbox"/> Open SA-2797 (SA BLOCK VALVE) (North side of the compressor below the control panel).	
9. <input type="checkbox"/> Open SA-339 (DIESEL AIR COMPRESSOR STOP) (T-3/F/G-56).	

**Enclosure 5.4**  
**Emergency Start of the**  
**Diesel Air Compressor (3)**

AP/2/A/1700/022

Page 2 of 5

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**Enclosure 5.4**  
**Emergency Start of the**  
**Diesel Air Compressor {3}**

AP/2/A/1700/022

Page 3 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED												
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>SA-141 (SA TO IA CONTROLLER) automatically regulates IA header pressure to 85 psig. Opening SA-143 will bypass SA-141 and allow the SA header to pressurize the IA header greater than 85 psig.</p>													
10. ___ Open SA-143 (SERVICE AIR TO INSTRUMENT AIR CONTROLLER BYPASS) (T-1/L-33, 15' E).													
11. ___ Notify Unit 2 CR that the Diesel Air Compressor is operating.													
<p>12. ___ Periodically monitor compressor parameters and associated lamps:</p> <table border="1"> <thead> <tr> <th>Parameter</th><th>Range</th></tr> </thead> <tbody> <tr> <td>Engine speed</td><td>No Load ≈ 1200 rpm Full Load ≈ 1800 rpm</td></tr> <tr> <td>Engine Water Temperature</td><td>Max 200°F</td></tr> <tr> <td>Discharge Air Temperature</td><td>Max 220°F</td></tr> <tr> <td>Discharge Air Pressure</td><td>Min 75 psig (with compressor loaded)</td></tr> <tr> <td>Engine Oil Pressure</td><td>Min 20 psig Normal ≈ 50 - 60 psig</td></tr> </tbody> </table>	Parameter	Range	Engine speed	No Load ≈ 1200 rpm Full Load ≈ 1800 rpm	Engine Water Temperature	Max 200°F	Discharge Air Temperature	Max 220°F	Discharge Air Pressure	Min 75 psig (with compressor loaded)	Engine Oil Pressure	Min 20 psig Normal ≈ 50 - 60 psig	
Parameter	Range												
Engine speed	No Load ≈ 1200 rpm Full Load ≈ 1800 rpm												
Engine Water Temperature	Max 200°F												
Discharge Air Temperature	Max 220°F												
Discharge Air Pressure	Min 75 psig (with compressor loaded)												
Engine Oil Pressure	Min 20 psig Normal ≈ 50 - 60 psig												

**Enclosure 5.4**  
**Emergency Start of the**  
**Diesel Air Compressor {3}**

AP/2/A/1700/022

Page 4 of 5

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Enclosure 5.4  
Emergency Start of the  
Diesel Air Compressor {3}

AP/2/A/1700/022

Page 5 of 5

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>13. <input type="checkbox"/> <b>WHEN</b> directed by CR to secure the Diesel Air Compressor, <b>THEN</b> perform the following:</p> <p>A. <input type="checkbox"/> Close SA-143 (SERVICE AIR TO INSTRUMENT AIR CONTROLLER BYPASS) (T-1/L-33, 15' E).</p> <p>B. <input type="checkbox"/> Close SA-339 (DIESEL AIR COMPRESSOR STOP) (T-3/F/G-56).</p> <p>C. <input type="checkbox"/> Close SA-2797 (SA BLOCK VALVE) (North side of the compressor below the control panel).</p> <p>D. <input type="checkbox"/> Allow engine to idle for 5 minutes.</p> <p>E. <input type="checkbox"/> Position all toggle switches to OFF.</p> <p>F. <input type="checkbox"/> Replenish operating fluids as required.</p>	
<p>14. <input type="checkbox"/> Notify Unit 2 CR that the Diesel Air Compressor is shutdown.</p>	
<p>15. <input type="checkbox"/> <b>EXIT</b> this enclosure.</p>	

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

**CRO-203/Admin**

**Calculate Final SFP Boron Concentration**

**CANDIDATE**

---

**EXAMINER**

---



REGION II  
INITIAL LICENSE EXAMINATION  
JOB PERFORMANCE MEASURE

Task:

Calculate Final SFP Boron Concentration

Alternate Path:

NO

Facility JPM #:

New

K/A Rating(s):

Gen 2.1.23 3.9/4.0

Task Standard:

Calculate Final SFP Boron Concentration within  $\pm 10$  ppm

Preferred Evaluation Location:

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

Preferred Evaluation Method:

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

References:

OP/1&2/A/1104/006 C (SFP Makeup), Enclosure 4.9 (SFP Makeup With DW)

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:**

OP/1&2/A/1104/006 C (SFP Makeup), Enclosure 4.9 (SFP Makeup With DW)

**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:**

- Unit 1 & 2 Spent Fuel Pool (SFP) level = 0.0 ft
- Unit 1 & 2 SFP Boron = 2545 ppm
- SF-1 and SF-2 are closed
- In preparation for refueling operations, the Unit 1 & 2 SFP level will be increased to + .6 ft using DW.

**INITIATING CUE:**

The SRO directs to determine the final SFP Boron concentration.

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

<p><u>STEP 1:</u> Determine and locate appropriate procedure for DW makeup to the SFP.</p> <p><u>STANDARD:</u> Candidate locates Enclosure 4.9 (SFP Makeup With DW) of OP/1&amp;2/A/1104/006 C (SFP Makeup).</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Determine volume of water required to raise SFP from 0.0 ft to + .6 ft.</p> <p><u>STANDARD:</u> Refer to Enclosure 4.9 (SFP Makeup With DW) step 2.2 and determine that there is 13,080 Gal/Foot in the SFP and then calculate the total gallons required to raise level to + .6 ft.</p> <p>.6 ft x 13,080 gal/ft = 7848 gallons</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Determine final SFP Boron concentration.</p> <p><u>STANDARD:</u> Refer to Enclosure 4.9 (SFP Makeup With DW) step 2.2.</p> <p>SFP final ppm = <math>\frac{\text{(SFP present ppm)} \text{(SFP present vol)}}{\text{(SFP final vol)}}</math></p> <p>SFP final ppm = <math>\frac{(2545 \text{ ppm}) (546,000 \text{ gal})}{(553,848 \text{ gal})}</math></p> <p>SFP final ppm = 2508.9 (± 10 ppm)</p> <p><b>Note: SFP final vol = 546,000 gal + (13,080 gal/ft X .6 ft)</b> = 553,848 gal</p> <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: \_\_\_\_\_

**CRITICAL STEP EXPLANATIONS:**

<b>STEP #</b>	<b>Explanation</b>
1	Required to determine required volume of water to makeup to SFP.
2	Required to determine final SFP Boron concentration.

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

**INITIAL CONDITIONS:**

- Unit 1 & 2 Spent Fuel Pool (SFP) level = 0.0 ft
- Unit 1 & 2 SFP Boron = 2545 ppm
- SF-1 and SF-2 are closed
- In preparation for refueling operations, the Unit 1 & 2 SFP level will be increased to + .6 ft using DW.

**INITIATING CUE:**

The SRO directs to determine the final SFP Boron concentration.

**Enclosure 4.9**  
**SFP Makeup With DW {6}**

**OP/1&2/A/1104/006 C**  
Page 1 of 2

**1. Initial Conditions**

- \_\_\_ 1.1 U1 BWST NOT in purification.
- \_\_\_ 1.2 U2 BWST NOT in purification.
- \_\_\_ 1.3 Review Limits and Precautions.

**2. Procedure**

SRO

- \_\_\_ 2.1 Review Section 3 (SFP Makeup With DW Information).
- \_\_\_ 2.2 Calculate final SFP boron:  
  
SFP volume at zero level = 546,000 gal.  
  
Gal/Foot = 13,080  
  
$$\text{SFP final ppm} = \frac{(\text{SFP present ppm}) (\text{SFP present vol})}{(\text{SFP final vol})}$$
  
  
final boron \_\_\_\_\_ ppm      final lvl \_\_\_\_\_ ft
- \_\_\_ 2.3 Ensure DW makeup to all units USTs stopped to provide adequate DW pressure.
- \_\_\_ 2.4 Align valves: (A-2-SF Clr Rm)
  - \_\_\_ • Unlock and Open DW-112 (SF Cooling Supply)
  - \_\_\_ • Open SF-53 (SF Pump Suction Hdr Blk)
- \_\_\_ 2.5 WHEN desired level reached, perform the following: (A-2-SF Clr Rm)
  - \_\_\_ • Lock Closed DW-112 (SF Cooling Supply)
  - \_\_\_ • Close SF-53 (SF Pump Suction Hdr Blk)
- \_\_\_ 2.6 Request SFP boron sample. {1}

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

**CRO-43/Admin**

**PERFORM MANUAL RCS LEAKAGE CALCULATION**

**CANDIDATE**

---

**EXAMINER**

---



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):**

Gen 2.1.7      3.7/4.4

**Task Standard:**

RCS Leakage is correctly calculated within .1 gpm of attached key.

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**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 13.3 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. Use 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><u>STEP 1:</u></b>      Step 2.2 After 1 hour, Record final set of data in "Table #1".</p> <p><b><u>STANDARD:</u></b>    Student enters final set of data into "Table #1" of Enclosure 13.3 (Manual Leakage Calculation Data Sheet). <b><i>CUE: Present student with attachment of final data readings.</i></b> <b>OR</b> Student locates Pzr level gauge on UB1 and enters value on data sheet. <b><i>CUE: Pzr Level 219.0 inches</i></b></p> <p>Student locates Quench Tank level on AB1 and enters value on data sheet. <b><i>CUE: Quench Tank Level 84.9 inches</i></b></p> <p>Student locates LDST level gauge on UB1 and enters value on data sheet. <b><i>CUE: LDST Level 74.0 inches</i></b></p> <p>Student locates Tave meter on UB1 and enters value on data sheet. <b><i>CUE: Tave Indication 579.0°F</i></b></p> <p>Student locates Power meters on UB1 and enters value on data sheet. <b><i>CUE: Power Range NI indicates 100.1%</i></b></p> <p>Student locates RCS NR Pressure chart on UB1 and enters value on data sheet. <b><i>CUE: RCS NR Pressure chart 2150 psig</i></b></p> <p>Student locates Group 7 Control Rod Position on the Computer and enters value on data sheet. <b><i>CUE: Group 7 Control Rod Position is 93.6%</i></b></p> <p><b><u>COMMENTS:</u></b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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<p><b>STEP 2:</b> Step 2.3 Calculate and record Change values in "Table #1" of Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b>STANDARD:</b> Student performs calculation and records Change values in "Table #1" of Enclosure 13.3 (Manual Leakage Calculation Data Sheet).</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Step 2.4 – 2.9 Perform steps 2.4 – 2.9 to determine RCS Leakage Rate.</p> <p><b>STANDARD:</b> Candidate performs steps 2.4 – 2.9 and calculates RCS leakage rate.</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>COMMENTS:</b></p> <p style="text-align: center;"><b>END TASK</b></p>	<p><b>CRITICAL TASK</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

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

(OK)

### 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. Use 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.



Enclosure 13.3  
Manual RCS Leakage Calculation Data Sheet

PT/1/A/0600/010  
Page 1 of 2

1. Initial Conditions

1.1 None.

2. Procedure

- ✓ 2.1 Record initial data in "Table #1".
- \_\_\_\_\_ 2.2 After 1 hour, record final data in "Table #1".

NOTE:

- If RCS NR Pressure is off-scale, RCS WR Pressure range may be used.
- If  $T_{ave}$  is off-scale,  $T_{cold}$  may be used.

Table # 1

Value	Initial	Final	Change
Duration	0015 time	time	(1) minutes
Pzr Level	220 inches	inches	(2) inches
QT Level	84.6 inches	inches	(3) inches
LDST Level	74.3 inches	inches	(4) inches
$T_{ave}$ Or $T_{cold}$	579.1 °F	°F	(5) °F
Rx Power	100 %	%	(6) %
RCS NR or WR Pressure	2153 psig	psig	(7) psig
Control Rod Position	93.4 %	%	(8) %

NOTE:

- Change = Final - Initial
- Negative sign (-) should be included with values as appropriate.

- \_\_\_\_\_ 2.3 Calculate and record Change values in "Table # 1".

Enclosure 13.3  
Manual RCS Leakage Calculation Data Sheet

PT/1/A/0600/010  
Page 2 of 2

**NOTE:** Conversion Factor (-6.831 inches/°F) must be negative (-) value. {7}

\_\_\_\_\_ 2.4 Calculated Corrected PZR Level Change:

$$(-6.831 \text{ inches/}^\circ\text{F} \times \text{_____ } ^\circ\text{F}) + \text{_____ inches} = \text{_____ inches}$$

(5) Tave or Tcold Change      (2) PZR Level Change      Corrected PZR Level Change

\_\_\_\_\_ 2.5 Convert Corrected PZR Level Change to gallons:

$$\text{_____ inches} \times 14.364 \text{ gallons/inch} = \text{_____ gallons}$$

Corrected PZR Level Change      Conversion corrected to 68°F      Final PZR Change

\_\_\_\_\_ 2.6 Convert QT Level Change to gallons: {4}

$$\text{_____ inches} \times 34.94 \text{ gallons/inch} = \text{_____ gallons}$$

(3) QT Level Change      Conversion corrected to 68°F      Final QT Change

\_\_\_\_\_ 2.7 Convert LDST Level Change to gallons:

$$\text{_____ inches} \times 30.956 \text{ gallons/inch} = \text{_____ gallons}$$

(4) LDST Level Change      Conversion corrected to 68°F      Final LDST Change

\_\_\_\_\_ 2.8 Calculate Total Volume Change:

$$\text{_____ gallons} + \text{_____ gallons} + \text{_____ gallons} = \text{_____ gallons}$$

Final PZR Change      Final QT Change      Final LDST Change      Total Change

\_\_\_\_\_ 2.9 Calculate RCS Leakage Rate:

$$\text{_____ gallons} \div \text{_____ Minutes} = \text{_____ gpm}$$

Total Change      (1) Duration      RCS Leakage Rate

Enclosure 13.3  
Manual RCS Leakage Calculation Data Sheet

PT/1/A/0600/010  
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1. Initial Conditions

1.1 None.

2. Procedure

✓ 2.1 Record initial data in "Table #1".

gn 2.2 After 1 hour, record final data in "Table #1".

Answer Key

NOTE:

- If RCS NR Pressure is off-scale, RCS WR Pressure range may be used.
- If  $T_{ave}$  is off-scale,  $T_{cold}$  may be used.

Table # 1

Value	Initial	Final	Change
Duration	0015 time	0115 time	(1) 60 minutes
Pzr Level	220 inches	219.0 inches	(2) -1 inches
QT Level	84.6 inches	84.9 inches	(3) .3 inches
LDST Level	74.3 inches	74.0 inches	(4) -.3 inches
$T_{ave}$ or $T_{cold}$	579.1 °F	579.0 °F	(5) -.1 °F
Rx Power	100 %	100.1 %	(6) .1 %
RCS NR or WR Pressure	2153 psig	2150 psig	(7) -3 psig
Control Rod Position	93.4 %	93.6 %	(8) .2 %

NOTE:

- Change = Final - Initial
- Negative sign (-) should be included with values as appropriate.

gn 2.3 Calculate and record Change values in "Table # 1".

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NOTE: Conversion Factor (-6.831 inches/°F) must be negative (-) value. {7}

- 2.4 Calculated Corrected PZR Level Change:  
 $(-6.831 \text{ inches/}^\circ\text{F} \times -0.1^\circ\text{F}) + -1 \text{ inches} = -0.3169 \text{ inches}$   
(5) Tave or Tcold Change (2) PZR Level Change Corrected PZR Level Change
- 2.5 Convert Corrected PZR Level Change to gallons:  
 $-0.3169 \text{ inches} \times 14.364 \text{ gallons/inch} = -4.552 \text{ gallons}$   
Corrected PZR Level Change Conversion corrected to 68°F Final PZR Change
- 2.6 Convert QT Level Change to gallons: {4}  
 $0.3 \text{ inches} \times 34.94 \text{ gallons/inch} = 10.482 \text{ gallons}$   
(3) QT Level Change Conversion corrected to 68°F Final QT Change
- 2.7 Convert LDST Level Change to gallons:  
 $-0.3 \text{ inches} \times 30.956 \text{ gallons/inch} = -9.287 \text{ gallons}$   
(4) LDST Level Change Conversion corrected to 68°F Final LDST Change
- 2.8 Calculate Total Volume Change:  
 $-4.552 \text{ gallons} + 10.482 \text{ gallons} + -9.287 \text{ gallons} = -3.357 \text{ gallons}$   
Final PZR Change Final QT Change Final LDST Change Total Change
- 2.9 Calculate RCS Leakage Rate:  
 $-3.357 \text{ gallons} \div 60 \text{ Minutes} = -0.056 \text{ gpm}$   
Total Change (1) Duration RCS Leakage Rate

Answer Key

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

**CRO-204/Admin**

**Perform weekly surveillance test to determine RIA-40  
setpoint**

**CANDIDATE**

\_\_\_\_\_

**EXAMINER**

\_\_\_\_\_

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

**Task:**

Perform weekly surveillance test to determine RIA-40 setpoint

**Alternate Path:**

No

**Facility JPM #:**

New

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

Gen 2.2.12    3.0/3.4

**Task Standard:**

Correctly determine new RIA-40 setpoint within  $\pm 5$  cpm by procedure.

**Preferred Evaluation Location:**

Simulator   X   In-Plant       

**Preferred Evaluation Method:**

Perform   X   Simulate       

**References:**

PT/0/A/230/01, Encl. 13.10 (Operation of RIA-40)

**Validation Time:** 20 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:**

PT/0/A/230/01, Encl. 13.10 (Operation of RIA-40)

**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.

AP/31 (Primary to Secondary Leakage) not in effect

The weekly performance of PT/0/A/230/01 (Radiation Monitor Check) is in progress.

**CURRENT DATA**

RCS Xe 133 activity = 7.189 E-3  $\mu$ ci/ml

RCS Xe 133 activity eq = .4734 E-3  $\mu$ ci/ml

CSAE Off Gas Xe activity = 4.431 E-8  $\mu$ ci/ml

CSAE Off Gas Xe activity eq = 3.515 E-6  $\mu$ ci/ml

CSAE Off Gas Flow = 13 scfm

1RIA-40 = 120 cpm

**INITIATING CUES:**

The SRO directs you to perform PT/0/A/230/01, Encl. 13.10 (Operation of RIA-40) to determine RIA-40 setpoints.



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

<p><b>STEP 1:</b> Step 1.1  <b>IF</b> all of the following conditions exist,</p> <ul style="list-style-type: none"> <li>• Reactor power &gt; 15%</li> <li>• AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is <b>NOT</b> in effect</li> <li>• reactor has been at "steady state power operation &gt; 72 hours"</li> <li>• CSAE offgas Xe 133 <math>\mu\text{Ci/ml}</math> concentration is greater than MDA (Minimum Detectable Activity)</li> </ul> <p><b>THEN</b> set RIA-40 setpoints as follows:</p> <p><b>STANDARD:</b> Determine the above conditions are met and proceed to Step 1.1.1.</p> <p><b>Cue:</b> <i>If asked, inform candidate that CSAE offgas Xe 133 <math>\mu\text{Ci/ml}</math> concentration is greater than MDA (Minimum Detectable Activity).</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Step 1.1.1  Obtain the CSAE flow rate.  <b>IF</b> any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.</p> <p><b>STANDARD:</b> Candidate should obtain the CSAE flow rate (13 cfm) from the cue sheet.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT (ok)</p>

<p><b>STEP 3:</b>      Step 1.1.2</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• Xe 133 activity (<b>NOT</b> equivalent) is required for this calculation.</li> <li>• The RCS and the CSAE Offgas samples should be taken at approximately the same time (ideally within 15 minutes). The RIA-40 reading may be obtained from historical data.</li> </ul> </div> <p style="text-align: center;">Perform the following equations:</p> <p>High Setpoint = <math>\frac{(30 \text{ gal/day}) (RCS \text{ Xe } 133 \text{ } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (RIA-40 \text{ cpm})}{(7.48 \text{ gal/ft}^3) (CSAE \text{ Flow ft}^3/\text{min}) (CSAE \text{ offgas Xe } 133 \text{ } \mu\text{Ci/ml})}</math></p> <p>High Setpoint = <math>\frac{(RCS \text{ Xe } 133 \text{ } \mu\text{Ci/ml}) (RIA-40 \text{ cpm}) (2.77 \text{ E-3 ft}^3/\text{min})}{(CSAE \text{ flow ft}^3/\text{min}) (CSAE \text{ offgas Xe } 133 \text{ } \mu\text{Ci/ml})}</math></p> <p>High Setpoint = <math>\frac{(\text{ }) \mu\text{Ci/ml(RCS)} \times (\text{ }) \text{ cpm} \times 2.77 \text{ E-3 ft}^3/\text{min}}{(\text{ }) \text{ ft}^3/\text{min} (\text{ }) \mu\text{Ci/ml(CSAE)}} = \text{ } \text{ cpm}</math></p> <p><b>STANDARD:</b>      Calculate High Setpoint using data from Cue Sheet:</p> <p>High Setpoint = <math>\frac{(7.189 \text{ E-3}) \mu\text{Ci/ml(RCS)} \times (120) \text{ cpm} \times 2.77 \text{ E-3 ft}^3/\text{min}}{(13) \text{ ft}^3/\text{min} (4.431 \text{ E-8}) \mu\text{Ci/ml(CSAE)}} = 4148.4 \text{ cpm}</math></p> <p><b>COMMENTS:</b></p> <p style="text-align: center; margin-top: 50px;"><b>END TASK</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p>  <p>___ UNSAT</p>
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<p><b>STEP 4:</b>      Step 1.1.2 (cont)</p> <p>Alert Setpoint = <math>\frac{(5 \text{ gal/day}) (RCS \text{ Xe } 133 \text{ } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (RIA-40 \text{ cpm})}{(7.48 \text{ gal/ft}^3) (CSAE \text{ Flow ft}^3/\text{min}) (CSAE \text{ offgas Xe } 133 \text{ } \mu\text{Ci/ml})}</math></p> <p>Alert Setpoint = <math>\frac{(RCS \text{ Xe } 133 \text{ } \mu\text{Ci/ml}) (RIA-40 \text{ cpm}) (2.77 \text{ E-3 ft}^3/\text{min})}{(CSAE \text{ flow ft}^3/\text{min}) (CSAE \text{ offgas Xe } 133 \text{ } \mu\text{Ci/ml})}</math></p> <p>Alert Setpoint = <math>\frac{(\text{ }) \text{ } \mu\text{Ci/ml} (RCS) \times (\text{ }) \text{ cpm} \times 4.61 \text{ E-4 ft}^3/\text{min}}{(\text{ }) \text{ ft}^3/\text{min} (\text{ }) \text{ } \mu\text{Ci/ml} (CSAE)} = \text{ } \text{cpm}</math></p> <p><b>STANDARD:</b>      Calculate Alert Setpoint using data from Cue Sheet:</p> <p>Alert Setpoint = <math>\frac{(7.189 \text{ E-3}) \mu\text{Ci/ml} (RCS) \times (120) \text{ cpm} \times 4.61 \text{ E-4 ft}^3/\text{min}}{(13) \text{ ft}^3/\text{min} (4.431 \text{ E-8}) \mu\text{Ci/ml} (CSAE)} = 690.4 \text{ cpm}</math></p> <p><b>COMMENTS:</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	This step required to calculate High Setpoint.
4	This step required to calculate Alert Setpoint.

**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.

AP/31 (Primary to Secondary Leakage) not in effect

The weekly performance of PT/0/A/230/01 (Radiation Monitor Check) is in progress.

**CURRENT DATA**

RCS Xe 133 activity = 7.189 E-3 mc/ml

RCS Xe 133 activity eq = .4734 E-3 mc/ml

RIA-40 Xe activity = 4.431 E-8 mc/ml

RIA-40 Xe activity eq = 3.515 E-6 mc/ml

CSAE Off Gas Flow = 13 scfm

1RIA-40 = 120 cpm

**INITIATING CUES:**

The SRO directs you to perform PT/0/A/230/01, Encl. 13.10 (Operation of RIA-40) to determine RIA-40 setpoints.

1. Determine RIA-40 setpoints as follows:

- NOTE:
- "Steady state power operation > 72 hours" is defined as maintaining a constant power level ( $\pm 2\%$ ) for at least 72 hours.
  - Step 4 is performed in addition to Step 1.1 when the weekly RIA-40 setpoint calculation is being performed.

\_\_\_\_ 1.1 IF all of the following conditions exist,

- Reactor power  $\geq 15\%$
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is NOT in effect
- reactor has been at "steady state power operation > 72 hours"
- CSAE offgas Xe 133  $\mu\text{Ci/ml}$  concentration is greater than MDA (Minimum Detectable Activity) (7)

THEN set RIA-40 setpoints as follows:

\_\_\_\_ 1.1.1 Obtain the CSAE flow rate.

- \_\_\_\_ A. IF any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.

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\_\_\_\_ 1.1.2 Perform the following equations:

- NOTE:
- Xe 133 activity (**NOT** equivalent) is required for this calculation.
  - The RCS and the CSAE Offgas samples should be taken at approximately the same time (ideally within 15 minutes). The RIA-40 reading may be obtained from historical data.

$$\text{High Setpoint} = \frac{(30 \text{ gal/day}) (\text{RCS Xe } 133 \text{ } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (\text{RIA-40 cpm})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe } 133 \text{ } \mu\text{Ci/ml})}$$

$$\text{High Setpoint} = \frac{(\text{RCS Xe } 133 \text{ } \mu\text{Ci/ml}) (\text{RIA-40 cpm}) (2.77 \text{ E-3 ft}^3/\text{min})}{(\text{CSAE flow ft}^3/\text{min}) (\text{CSAE offgas Xe } 133 \text{ } \mu\text{Ci/ml})}$$

$$\text{High Setpoint} = \frac{(\text{ ) } \mu\text{Ci/ml}_{(\text{RCS})}}{(\text{ ) ft}^3/\text{min}} \times \frac{(\text{ ) cpm}}{(\text{ ) } \mu\text{Ci/ml}_{(\text{CSAE})}} \times \frac{2.77 \text{ E-3 ft}^3/\text{min}}{(\text{ ) }} = \text{ ) cpm}$$

$$\text{Alert Setpoint} = \frac{(5 \text{ gal/day}) (\text{RCS Xe } 133 \text{ } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (\text{RIA-40 cpm})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe } 133 \text{ } \mu\text{Ci/ml})}$$

$$\text{Alert Setpoint} = \frac{(\text{RCS Xe } 133 \text{ } \mu\text{Ci/ml}) (\text{RIA-40 cpm}) (4.61 \text{ E-4 ft}^3/\text{min})}{(\text{CSAE flow ft}^3/\text{min}) (\text{CSAE offgas Xe } 133 \text{ } \mu\text{Ci/ml})}$$

$$\text{Alert Setpoint} = \frac{(\text{ ) } \mu\text{Ci/ml}_{(\text{RCS})}}{(\text{ ) ft}^3/\text{min}} \times \frac{(\text{ ) cpm}}{(\text{ ) } \mu\text{Ci/ml}_{(\text{CSAE})}} \times \frac{4.61 \text{ E-4 ft}^3/\text{min}}{(\text{ ) }} = \text{ ) cpm}$$

\_\_\_\_ 1.1.3 **IF** SG primary to secondary leak rate is needed,  
**THEN GO TO** Step 4 to calculate leak rate.

\_\_\_\_ 1.1.4 Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)

**NOTE:** "Steady state power operation > 72 hours" is defined as maintaining a constant power level ( $\pm 2\%$ ) for at least 72 hours.

1.2 IF all of the following conditions exist,

- Reactor power  $\geq 15\%$
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is NOT in effect
- reactor has NOT been at "steady state power operation > 72 hours"
- current RIA-40 reading:

Unit 1	Unit 2, 3
< 55 cpm	< 75 cpm

THEN set RIA-40 setpoints at the following values:

	Setpoints	
	Unit 1	Unit 2,3
Alert	115 cpm	135 cpm
High	115 cpm	135 cpm

1.2.1 IF SG primary to secondary leak rate is needed,

THEN GO TO Step 3 to calculate leak rate.

1.2.2 Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)



- NOTE:**
- "Steady state power operation > 72 hours" is defined as maintaining a constant power level ( $\pm 2\%$ ) for at least 72 hours.
  - Experience has shown that it may be desirable to calculate setpoints prior to 72 hours of steady state power operation if a startup from an outage (refueling or forced) is in progress. If a small amount of tube leakage exists when the unit is in the startup mode (on the order of 1 to 2 gpd), the alert and high setpoints may be exceeded prior to 72 hours of steady state power operation.

1.3 IF all of the following conditions exist,

- Reactor power  $\geq 15\%$
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is NOT in effect
- reactor has NOT been at "steady state power operation > 72 hours"
- current RIA-40 reading:

Unit 1	Unit 2, 3
$\geq 55$ cpm	$\geq 75$ cpm

THEN GO TO Step 2 to calculate RIA-40 setpoints.

1.4 IF all of the following conditions exist,

- reactor is critical
- Reactor power  $< 15\%$
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is NOT in effect
- current RIA-40 reading:

Unit 1	Unit 2, 3
$\geq 55$ cpm	$\geq 75$ cpm

THEN GO TO Step 2 to calculate RIA-40 setpoints.

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1.5 IF all of the following conditions exist,

- reactor is critical
- Reactor power < 15%
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is NOT in effect
- current RIA-40 reading:

Unit 1	Unit 2, 3
< 55 cpm	< 75 cpm

THEN set RIA-40 setpoints at the following values:

	Setpoints	
	Unit 1	Unit 2,3
Alert	115 cpm	135 cpm
High	115 cpm	135 cpm

1.5.1 Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)

1.5.2 Exit this enclosure.

1.6 IF both of the following conditions exist,

- reactor is critical
- AP/1,2,3/A/1700/031 (Primary To Secondary Leakage) is in effect

THEN GO TO Step 5 to reset RIA-40 Alert/High setpoints as specified in AP/1,2,3/A/1700/031 (Primary To Secondary Leakage).

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\_\_\_\_\_ 1.7    IF both of the following conditions exist,

- reactor is subcritical
- current RIA-40 reading:

Unit 1	Unit 2, 3
$\geq 100$ cpm	$\geq 120$ cpm

THEN GO TO Step 2 calculate RIA-40 setpoints.

\_\_\_\_\_ 1.8    IF both of the following conditions exist,

- reactor is subcritical
- current RIA-40 reading:

Unit 1	Unit 2, 3
$< 100$ cpm	$< 120$ cpm

THEN set RIA-40 setpoints at the following values:

	Setpoints	
	Unit 1	Unit 2,3
Alert	115 cpm	135 cpm
High	115 cpm	135 cpm

\_\_\_\_\_ 1.8.1    Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)

\_\_\_\_\_ 1.8.2    Exit this enclosure.

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2. Calculate RIA-40 setpoints as follows:

2.1 Obtain the CSAE flow rate.

2.1.1 **IF** any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.

2.2 Perform the following equations:

**NOTE:**

- Xe 133 equivalent activity is required for this calculation.
- The RCS and the CSAE Offgas samples should be taken at approximately the same time (ideally within 15 minutes). The RIA-40 reading may be obtained from historical data.

$$\text{High Setpoint} = \frac{(30 \text{ gal/day}) (\text{RCS Xe 133 eq } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (\text{RIA-40 cpm})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe 133 eq } \mu\text{Ci/ml})}$$

$$\text{High Setpoint} = \frac{(\text{RCS Xe 133 eq } \mu\text{Ci/ml}) (\text{RIA-40 cpm}) (2.77 \text{ E-3 ft}^3/\text{min})}{(\text{CSAE flow ft}^3/\text{min}) (\text{CSAE offgas Xe eq 133 } \mu\text{Ci/ml})}$$

$$\text{High Setpoint} = \frac{(\text{ ) } \mu\text{Ci/ml}_{(\text{RCS eq})}}{(\text{ ) ft}^3/\text{min}} \times \frac{(\text{ ) cpm}}{(\text{ ) } \mu\text{Ci/ml}_{(\text{CSAE eq})}} \times 2.77 \text{ E-3 ft}^3/\text{min} = \text{ ) cpm}$$

$$\text{Alert Setpoint} = \frac{(5 \text{ gal/day}) (\text{RCS Xe 133 eq } \mu\text{Ci/ml}) (6.9 \text{ E-4 day/min}) (\text{RIA-40 cpm})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe 133 eq } \mu\text{Ci/ml})}$$

$$\text{Alert Setpoint} = \frac{(\text{RCS Xe 133 eq } \mu\text{Ci/ml}) (\text{RIA-40 cpm}) (4.61 \text{ E-4 ft}^3/\text{min})}{(\text{CSAE flow ft}^3/\text{min}) (\text{CSAE offgas Xe 133 eq } \mu\text{Ci/ml})}$$

$$\text{Alert Setpoint} = \frac{(\text{ ) } \mu\text{Ci/ml}_{(\text{RCS eq})}}{(\text{ ) ft}^3/\text{min}} \times \frac{(\text{ ) cpm}}{(\text{ ) } \mu\text{Ci/ml}_{(\text{CSAE eq})}} \times 4.61 \text{ E-4 ft}^3/\text{min} = \text{ ) cpm}$$

2.3 **IF** Reactor power is  $\geq 15\%$ ,

**THEN GO TO** Step 3 to calculate the SG primary to secondary leak rate.

2.4 **IF** Reactor power is  $< 15\%$ ,

**THEN** record which Unit, procedure was performed on, in Remarks section on coversheet.  
(eg. Unit 1, Unit 2, or Unit 3)

2.5 Exit this enclosure.

- NOTE:**
- SG primary to secondary leak rate calculation is NOT valid when CSAEs are NOT in service.
  - Calculation using Xe 133 Equivalent Activity should be used whenever reactor has NOT been at "steady state power operation > 72 hours".

### 3. Calculation of SG primary to secondary leak rate using Xe 133 Equivalent Activity.

3.1 Obtain the CSAE flow rate.

3.1.1 IF any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.

3.2 Perform the following equation:

- NOTE:**
- Xe 133 equivalent activity is required for this calculation.
  - The RCS and the CSAE Offgas samples should be taken at approximately the same time (ideally within 15 minutes).

$$\text{Leak Rate} = \frac{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe 133 eq } \mu\text{Ci/ml})}{(\text{RCS Xe 133 eq } \mu\text{Ci/ml}) (6.94\text{E-4 day/min})}$$

$$\text{Leak Rate} = \frac{(\text{CSAE flow ft}^3/\text{min})}{(\text{RCS Xe 133 eq } \mu\text{Ci/ml})} \times \frac{(\text{CSAE offgas Xe 133 eq } \mu\text{Ci/ml})}{(\text{RCS Xe 133 eq } \mu\text{Ci/ml})} \times \frac{(10,800 \text{ gal min})}{\text{ft}^3 \text{ day}}$$

$$\text{Leak Rate} = \frac{(\text{ft}^3/\text{min})}{(\text{ft}^3/\text{min})} \times \frac{(\mu\text{Ci/ml})_{(\text{CSAE eq})}}{(\mu\text{Ci/ml})_{(\text{RCS eq})}} \times \frac{(10,800 \text{ gal min})}{\text{ft}^3 \text{ day}} = \text{gpd}$$

3.3 Record the leak rate in the Unit Log.

3.4 Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)

3.5 Exit this enclosure.

- NOTE:**
- SG primary to secondary leak rate calculation is NOT valid when CSAEs are NOT in service.
  - Calculation using Xe 133 Activity should be used whenever reactor has been at "steady state power operation > 72 hours".

#### 4. Calculation of SG primary to secondary leak rate using Xe 133 Activity. (1)

\_\_\_\_\_ 4.1 Obtain the CSAE flow rate.

\_\_\_\_\_ 4.1.1 IF any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.

\_\_\_\_\_ 4.2 Perform the following equation:

- NOTE:**
- Xe 133 activity (NOT equivalent) is required for this calculation.
  - The RCS and the CSAE Offgas samples should be taken at approximately the same time (ideally within 15 minutes).

$$\text{Leak Rate} = \frac{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (\text{CSAE offgas Xe 133 } \mu\text{Ci/ml})}{(\text{RCS Xe 133 } \mu\text{Ci/ml}) (6.94\text{E-4 day/min})}$$

$$\text{Leak Rate} = \frac{(\text{CSAE flow ft}^3/\text{min}) \times (\text{CSAE offgas Xe 133 } \mu\text{Ci/ml}) \times (10,800 \text{ gal min})}{(\text{RCS Xe 133 } \mu\text{Ci/ml}) \times \text{ft}^3 \text{ day}}$$

$$\text{Leak Rate} = \frac{(\text{_____}) \text{ ft}^3/\text{min} \times (\text{_____}) \mu\text{Ci/ml}_{(\text{CSAE})} \times (10,800 \text{ gal min})}{(\text{_____}) \mu\text{Ci/ml}_{(\text{RCS})} \times \text{ft}^3 \text{ day}} = \text{_____ gpd}$$

\_\_\_\_\_ 4.3 Record the leak rate in the Unit Log.

\_\_\_\_\_ 4.4 Record which Unit, procedure was performed on, in Remarks section on coversheet. (eg. Unit 1, Unit 2, or Unit 3)

\_\_\_\_\_ 4.5 Exit this enclosure.

5. Resetting RIA-40 Alert/High alarm setpoints and entering the Total Pri To Sec Leakrate Admin Limit in the OAC as specified in AP/1,2,3/A/1700/031. {8}

NOTE: Xe 133 equivalent activity is required for this calculation.

5.1 Obtain the CSAE flow rate.

5.1.1 **IF** any CSAE flow meter(s) are off scale, refer to OP/0/A/1106/031 (Primary to Secondary Leak Rate Monitoring and Instrumentation) to determine the CSAE flow rate.

5.2 Perform the following equations:

$$\text{High Setpoint} = \frac{(\text{AP/31 RIA-40 High stpt gpd}) (\text{RCS Xe133 eq } \mu\text{Ci/ml}) (6.9\text{E-4 day/min})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (3.4 \text{ E-8 } \mu\text{Ci/ml/cpm})}$$

$$\text{High Setpoint} = \frac{(\text{AP/31 RIA-40 High stpt gpd}) (\text{RCS Xe133 eq } \mu\text{Ci/ml}) (2.71 \text{ E+3 ft}^3 \text{ day cpm})}{(\text{CSAE Flow ft}^3/\text{min}) \text{ gal min } \mu\text{Ci/ml}}$$

$$\text{High Setpoint} = \frac{(\text{ ) gpd} \times (\text{ ) } \mu\text{Ci/ml}_{(\text{RCS eq})} \times (2.71 \text{ E+3 ft}^3 \text{ day cpm})}{(\text{ ) ft}^3/\text{min} \text{ gal min } \mu\text{Ci/ml}} = \text{ cpm}$$

$$\text{Alert Setpoint} = \frac{(\text{AP/31 RIA-40 Alert stpt gpd}) (\text{RCS Xe133 eq } \mu\text{Ci/ml}) (6.9\text{E-4 day/min})}{(7.48 \text{ gal/ft}^3) (\text{CSAE Flow ft}^3/\text{min}) (3.4 \text{ E-8 } \mu\text{Ci/ml/cpm})}$$

$$\text{Alert Setpoint} = \frac{(\text{AP/31 RIA-40 Alert stpt gpd}) (\text{RCS Xe133 eq } \mu\text{Ci/ml}) (2.71 \text{ E+3 ft}^3 \text{ day cpm})}{(\text{CSAE Flow ft}^3/\text{min}) \text{ gal min } \mu\text{Ci/ml}}$$

$$\text{Alert Setpoint} = \frac{(\text{ ) gpd} \times (\text{ ) } \mu\text{Ci/ml}_{(\text{RCS eq})} \times (2.71 \text{ E+3 ft}^3 \text{ day cpm})}{(\text{ ) ft}^3/\text{min} \text{ gal min } \mu\text{Ci/ml}} = \text{ cpm}$$

5.3 Enter the new RIA-40 Alert and High Setpoints in the RIA View Node.

## Operation Of RIA-40

5.4 Perform the following on the OAC to enter the Unit's new "Total Pri To Sec Leakrate Admin Limit" as specified by AP/1,2,3/A/1700/031 (Primary To Secondary Leakage):

\_\_\_\_\_ 5.4.1 Select "Main" from the menu bar.

\_\_\_\_\_ 5.4.2 Select "Utilities" from the drop down menu.

\_\_\_\_\_ 5.4.3 Select "Manual Value Update" from the drop down menu.

\_\_\_\_\_ 5.4.4 Select "Pri-Leak Primary To Secondary Leakage Manual Inputs".

\_\_\_\_\_ 5.4.5 Select "Update".

\_\_\_\_\_ 5.4.6 Select the respective Unit's "Total Pri To Sec Leakrate Admin Limit" computer point ID from the following table.

Unit 1	Unit 2	Unit 3
O1K1430	O2K1430	O3K1430

\_\_\_\_\_ 5.4.7 Tab or use the mouse to place the cursor in the "New Value" field.

\_\_\_\_\_ 5.4.8 Enter the Unit's new "Total Pri To Sec Leakrate Admin Limit" as specified in AP/1,2,3/A/1700/031 (Primary To Secondary Leakage).

\_\_\_\_\_ 5.4.9 Tab or use the mouse to place the cursor in the "Modified By" field.

\_\_\_\_\_ 5.4.10 Enter your LAN identification.

\_\_\_\_\_ 5.4.11 Tab or use the mouse to place the cursor in the "Reason" field.

\_\_\_\_\_ 5.4.12 Enter the reason for the change (ex. PT/0/A/0230/001).

\_\_\_\_\_ 5.4.13 Select "Save".

\_\_\_\_\_ 5.4.14 Select "okay" on the pop-up menu.

\_\_\_\_\_ 5.4.15 Select "Cancel" to exit "Manual Value Update PID Update Display" screen.

\_\_\_\_\_ 5.4.16 Select "Cancel" to exit "Manual Value Update Croup Selection Display" screen.

\_\_\_\_\_ 5.5 Record which Unit, procedure was performed on, in Remarks section on coversheet.  
(eg. Unit 1, Unit 2, or Unit 3)

\_\_\_\_\_ 5.6 Exit this enclosure.



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

**CRO-205/Admin**

**Calculate the Maximum Permissible Stay Time  
Within Emergency Dose Limits (EDL)**

**CANDIDATE**

---

**EXAMINER**

---

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

**Task:**

Calculate the Maximum Permissible Stay Time Within Emergency Dose 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 Emergency Dose Limits ( $\pm$  5 minutes).

**Preferred Evaluation Location:**

Simulator \_\_\_\_\_ In-Plant   X  

**Preferred Evaluation Method:**

Perform   X   Simulate \_\_\_\_\_

**References:**

NSD-507, Radiation Protection

**Validation Time:** 20min.

**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:**

None

**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. Steam Generator Tube Rupture has occurred on Unit 3
2. Emergency Dose Limits are in effect
3. NEO "A" has received 1.46 R TEDE this year
4. The following tasks are required to be performed:

#	TASK	TIME REQUIRED	DOSE RATE
1	Closing 3C-573	12 min	6.55 R/hr
2	Open 3FDW-313	4 min	21.45 R/hr
3	Open all Unit 3's ADVs		2.88 R/hr

**Note: Assume no dose received while traveling between tasks.**

**INITIATING CUE:**

Refer to the above information. NEO "A" has completed tasks 1 and 2 in the time required. How long does he have to complete task 3 without exceeding his Emergency Dose Limits?

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

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

<p><u>STEP 1:</u> Determine dose received while performing task 1.</p> <p><u>STANDARD:</u> Determine dose received while performing task 1.</p> <p><math>6.55 \text{ R/hr} \times 1\text{hr}/60 \text{ min} \times 12 \text{ min} = 1.31 \text{ R}</math></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> Determine dose received while performing task 2.</p> <p><u>STANDARD:</u> Determine dose received while performing task 2.</p> <p><math>21.45 \text{ R/hr} \times 1\text{hr}/60 \text{ min} \times 4 \text{ min} = 1.43 \text{ R}</math></p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Determine dose remaining from EDLs.</p> <p><u>STANDARD:</u> Determine dose remaining from EDLs.</p> <p><math>5\text{R} - 1.31\text{R} - 1.43\text{R} = 2.26 \text{ R}</math></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> Determine time available for the NEO to complete task 3 without exceeding EDL.</p> <p><b><u>STANDARD:</u></b> Stay time is calculated to be:</p> $\frac{\text{Available Dose}}{\text{Dose Rate}} = \frac{2.26 \text{ R}}{2.88 \text{ R/hr}} = .785 \text{ hr} \times \frac{60 \text{ min}}{1 \text{ hr}} = \mathbf{47.1 \text{ min}}$ <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	Required to calculate stay time.
2	Required to calculate stay time.
3	Required to calculate stay time.
4	Required to calculate stay time.

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

**INITIAL CONDITIONS:**

1. Steam Generator Tube Rupture has occurred on Unit 3
2. Emergency Dose Limits are in effect
3. NEO "A" has received 1.46 R TEDE this year
4. The following tasks are required to be performed:

#	TASK	TIME REQUIRED	DOSE RATE
1	Closing 3C-573	12 min	6.55 R/hr
2	Open 3FDW-313	4 min	21.45 R/hr
3	Open all Unit 3's ADVs		2.88 R/hr

**Note: Assume no dose received while traveling between tasks.**

**INITIATING CUE:**

Refer to the above information. NEO "A" has completed tasks 1 and 2 in the time required. How long does he have to complete task 3 without exceeding his Emergency Dose Limits?



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

**JPM-003/Admin**

**Evaluate Overtime Eligibility**

**CANDIDATE**

---

**EXAMINER**

---

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 4 out of 5 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:** 25 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:**

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 *your* 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	0500 – 2200 (Called in early)
<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>	1400 – 0200 (Called in early)	0700 - 1200

OK

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

<p><b>STEP 1:</b> Obtain a copy of OMP 2-01 Attachment "C" and NSD-200 (Overtime Control).</p> <p><b>STANDARD:</b> A copy of OMP 2-01 Attachment "C" and NSD-200 (Overtime Control) is obtained.</p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 2:</b> Evaluate Operator 1</p> <p><b>STANDARD:</b> Determine Operator #1 overtime guidelines exceeded:</p> <ol style="list-style-type: none"> <li>1. &lt; 8 hr break (Sat – Sun)</li> <li>2. &gt; 16 hrs (Sat – Sun)</li> </ol> <p><b>COMMENTS:</b></p>	<p><b>*CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 3:</b> Evaluate Operator 2</p> <p><b>STANDARD:</b> 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. &gt; 16 straight (Tues)</li> <li>3. &gt; 28 in 48 hrs (Mon – Wed)</li> </ol> <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: \_\_\_\_\_

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

### **CRITICAL STEP EXPLANATIONS:**

**STEP #**

**Explanation**

- |   |   |
|---|---|
| 2 | Operator # 1 must be evaluated and a total of four out of five violations for both operators must be identified to be satisfactory. |
| 3 | Operator # 2 must be evaluated and a total of four out of five violations for both operators must be identified to be satisfactory. |

ok

**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	0500 – 2200 (Called in early)
<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>	1400 – 0200 (Called in early)	0700 - 1200

All operators are normally scheduled to work on 12-hour intervals. If overtime is required, the responsible supervisor shall control the use of overtime and limit employees to the following:

- Adhere to the limits of NSD 200, *Overtime Control*. On rare occasions when these limits must be exceeded, the guidance set forth in NSD 200 shall be followed including the completion of Appendix A, *Request For Work Hours Extension*, prior to exceeding any limits. These limits also apply to all employees.
- The maximum time at the control board is 12 hours straight excluding shift turnover time and time changes between standard time and daylight savings time.
- A maximum of 12 hours of non-productive time (e.g., vacation and holidays) will not count toward the limitation set forth for overtime.
- During selected "critical" activities (e.g., pulling control rods for criticality, involved testing), shift turnover may cause delays that might not be conservative. For these activities, operations management may allow a maximum deviation of one hour to the work schedule. The Shift Operations Manager or the on-coming and off-going OSM shall approve this deviation.
- If an operator is required to work in excess of 12 continuous hours, his/her duties shall be carefully selected to prevent assignment to activities in which fatigue may cause significant problems. Assignments that affect core reactivity or endanger safe operation of the plant or personnel should be avoided.
- The responsible supervisor or designee shall review the time sheets of non-exempt operators to ensure that overtime requirements are not exceeded without proper authorization. Approval of the time sheet documents this review.



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SR 13

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TECHNICAL SPECIFICATION RELATED



A Duke Energy Company

NUCLEAR POLICY MANUAL

Nuclear System Directive: 200.

Overtime Control

Process/Program Owner:

Human Resource Managers BEST

REVISION NUMBER

0  
1  
2  
3  
4  
5  
6  
7  
8

ISSUE DATE

07/01/92  
11/01/92  
02/28/94  
03/30/95  
12/12/96  
06/16/98  
03/31/99  
10/19/00  
03/22/01

**CATAWBA**

Approved By/Date

P.M. Grobusky/03-05-01  
Human Resource Manager

Effective Date:

04/16/01

**MCGUIRE**

Approved By/Date

W.B. Jackson/03-07-01  
Human Resource Manager

Effective Date:

04/16/01

**OCONEE**

Approved By/Date

A. Rose/03-07-01  
Human Resource Manager

Effective Date:

04/16/01

Issued By: C. J. Thomas

Manager, Nuclear Regulatory & Industry Affairs

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TECHNICAL SPECIFICATION RELATED	
DUKE POWER	NUCLEAR POLICY MANUAL
<div style="display: flex; justify-content: space-between;"> <span>Nuclear System Directive: 200.</span> <span>Overtime Control</span> </div>	
<u>REVISION NUMBER</u>  3 4 5 6 7 8	<u>ISSUE DATE</u>  03/30/95 12/12/96 06/16/98 03/31/99 10/19/00 03/22/01
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           Prepared By: <u>A. D. Jones-Young(NGO)</u>                              <u>(CNS)</u>                              <u>(MNS)</u> </div> <div style="width: 45%;"> <u>(ONS)</u>      </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           CNS Qualified Reviewer/Date: <u>L. J. Rudy</u>            MNS Qualified Reviewer/Date: <u>L. W. Abernathy</u>            ONS Qualified Reviewer/Date: <u>N. Clarkson</u> </div> <div style="width: 45%;">           02/20/01 02/15/01 02/22/01         </div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">           CNS BEST Approval/Date: <u>P. M. Grobusky</u>            MNS BEST Approval/Date: <u>W. B. Jackson</u>            ONS BEST Approval/Date: <u>A. Rose</u> </div> <div style="width: 45%;">           03/05/01 03/07/01 03/07/01         </div> </div>	

## DOCUMENT REVISION DESCRIPTION

<u>REVISION NO.</u>	<u>PAGES or SECTIONS REVISED AND DESCRIPTION</u>
0	Initial Issue
1	Revised to reflect tech. spec. requirements.
2	Revised Section 200.5.1 to reflect procedure change.
3	Revised Section 200.5, "Implementation" (Paragraph 2), to add clarification.  Changed 'Human Resource' to 'Organization Effectiveness' in Section 200.5.1 and added clarification for the review process.  Revised Appendix A, "Request For Work Hours Extension" to add clarification.
4	200.2, "Purpose" - Added a sentence regarding employees working overtime and requirements for FFD concerns.  200.5, "Implementation" - Added information contained on the Appendix A form and instructions for why and how to fill out the form. In addition, changed the responsibility for initiating a PIP from the OE group to the work group failing to have overtime approved in advance. Added definition for Routine Deviation.  200.5.1, "Review" - Clarified OE's responsibility in reviewing information on the Appendix A - Overtime Control Forms and defined discrepancies vs. violations as it relates to the reports generated by OE.  Appendix A, "Request For Work Hours Extension"  Section 1 - Added instructions to fill out all columns. Added columns Department/Vendor and Assigned Supv/ID  Section 3 - Added spaces for UserID and Time, as well as a footnote stating Supervisor should not assess himself/herself for FFD concerns.  Section 4 - Added correct Tech Spec for ONS, spaces for UserID and Time, as well as a footnote stating that Supervisor and Station Manager/Designee should not be the same person.  Section 5 - Added new section to document PIP # and comments.
5	200.2, "Purpose" - Deleted "hands on".  200.3.1, "Safety-Related Work" - Changed definition for safety-related work. Added examples of safety-related work.  200.4, "Applicability" - Changed statement to clarify to whom and when policy applies. Deleted "hands on".  200.4.1, "Requirements" - Added Oconee to the 28 in any 48-hour period limit.  200.5, "Implementation" - Changed "overtime" throughout this Section to clarify information requested on the Appendix A form. Changed "should" to shall to indicate policy requirements and not choices. Added list of positions authorized to sign as Station Manager/designee. Changed "employee's assigned crew" to Dept. ID. Changed "Organization Effectiveness" to Human Resources. Added statement: "Within approximately 4 hours to assure timely FFD assessments are being performed" to sentence referencing when the Assessment should be performed.  200.5.1, "Review" - Changed "Organization Effectiveness" to Human Resources. Changed "overtime" to clarify information required on the Appendix A form. Changed "should" to shall

**REVISION NO.    PAGES or SECTIONS REVISED AND DESCRIPTION**

to indicate policy requirements and not choices. Deleted "same day or earlier referencing authorization by Station Manager or designee. Deleted "will be considered violations of Technical Specifications and" referencing forms not authorized in advance.

Revised Appendix A, "Request For Work Hours Extension"

Section 1. Changed column headings and "overtime" to clarify information requested on Appendix A. Added explanation for Limit E. Added Oconee to Limit C. Working more than 28 hours in any 48-hour period (excluding shift turnover time.)

Section 2. Changed "overtime" to work hour for clarity.

Section 3. Changed statement that assessment be conducted before the work hour extension begins (within approximately 4 hours to assure timely FFD assessments are being performed) as a guideline to the timeliness for assessments.

Changed "Permission" to authorization to agree with Section "Implementation."

Section 6. Changed "Organization Effectiveness" to Human Resources.

Footnotes - Changed "should" to shall to indicate requirements of the policy and not choices.

- 6      Section 200.5.1 is being revised to reflect Tech Spec numbering changes due to implementation of the ITS at all three sites. Additionally, Appendix A is being revised to reflect Tech Spec numbering changes due to implementation of the ITS at all three sites.

- 7      Revised Appendix A (Request for Work Hours Extension) form to clarify existing requirements and revised Section 100.5 (Implementation) to correspond with changes made to the Appendix A form. Additionally, in Section 200.5, Maintenance Manager was changed to Maintenance Superintendent per PIP C-00-04542. There were no new requirements added.

- 8      Appendix A: Form revised due to the origination of PIP # C-01-00306.

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**NSD 200**

**Nuclear Policy Manual – Volume 2**

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## APPENDIX A.200. REQUEST FOR WORK HOURS EXTENSION

1. Permission is requested for the individuals listed below to exceed the guidelines of Tech Spec 5.2.2 for hours that will be worked on the date shown. (Fill out ALL columns including: Full name, actual date work hour extension will occur, the letter(s) of the limit(s) that will be exceeded, estimated hours that will be worked beyond guidelines, Emp. ID, department or vendor name and assigned supervisor's name.)

NAME (Print First, MI & Last Name)	DATE/TIME THE WORK HOUR EXT. BEGINS	LIMIT a, b, c, d, e	EST. HRS. EXCEEDING GUIDELINE	Emp. ID (Same as Badge Number)	DEPARTMENT/ VENDOR NAME	ASSIGNED SUPV NAME

- a. Working more than 16 hours straight (excluding shift turnover time)
- b. Working more than 16 hours in any 24 hour period (excluding shift turnover time)
- c. Working more than 24 hours (28 hours for MNS and ONS) in any 48 hour period (excluding shift turnover time)
- d. Working more than 72 hours in any 7 day period (excluding shift turnover time)
- e. Less than 8 hour break between scheduled work periods (excluding callouts, but including shift turnover time).  
Note: Call-outs are not considered scheduled work periods and do not require an Appendix A form unless limit(s) a, b, c, d is exceeded due to the call-out. FFD and Management Procedures provisions apply to call-outs).

2. Specific reasons describing the need for exceeding the work hour guidelines. (Brief description of work to be performed and why specific individuals are needed to complete task.

3. I have assessed the fitness for continued duty of the above named individual(s). The assessment included an evaluation of the working conditions, and the individual(s) mental and physical ability to complete the task safely. I find the individual(s) fitness satisfactory to safely complete the assignment. I will periodically re-assess their status as appropriate to determine their ability to continue. NOTE: The FFD assessment must be done within 4 hours prior to the beginning of the task date/time the work hour extension begins.

Signed: \_\_\_\_\_ Supv. ID: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Supervisor/Temp. Supervisor/Designee of employee(s)/vendor(s)\*

4. Authorization is hereby granted for the individual(s) listed above to exceed the work hour guidelines of Tech Spec 5.2.2.

Signed: \_\_\_\_\_ Station Mgr./Designee ID: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ AM PM

Station Manager/Designee\*\* (See Section 200.5 for approved list of designees)

Authorization obtained via phone From: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

5. If approval is not obtained prior to overtime being exceeded, document reasons below and initiate a PIP.

PIP #: \_\_\_\_\_ Comments: \_\_\_\_\_

6. Route the completed form to the Human Resource Manager.

**\*Supervisor shall not assess himself/herself for FFD concerns.**

**\*\*Supervisor of employee(s)/vendor(s) and Station Manager/Designee shall not be the same person.**



## **200. OVERTIME CONTROL**

### **200.1 INTRODUCTION**

A Policy Statement is necessary to provide the basis for the manner in which business is conducted and to address the department's, or company's position on such issues as they arise in the nuclear industry or as Duke experience indicates a need for a more definitive statement of policy.

### **200.2 PURPOSE**

The objective of this policy statement is to provide administrative guidance to limit the working hours of people working at the site who perform safety related functions. It is recognized that excessive working hours can impact an employee's fitness for duty (FFD). Therefore, employees working excessive hours will be assessed for FFD each day a limit is exceeded.

### **200.3 DEFINITIONS**

#### **200.3.1 SAFETY-RELATED WORK**

Safety-related work is the performance or independent verification of an 'A' procedure (QA1 procedures). Examples: Assembling/disassembling components, trains or systems; Performing, reviewing or approving QA1 drawing, evaluations, procedures, specifications, etc.

Non-safety related work must be counted towards work hour totals if that person routinely performs safety related work.

### **200.4 APPLICABILITY**

The provisions outlined in this policy statement are applicable to all Company employees and vendors/contractors when performing or immediately supervising the performance of safety related work ('A' procedures).

#### **200.4.1 REQUIREMENTS**

The objective shall be to have employees perform their duties without working excessive hours.

All work hours must be considered when calculating overtime. There is no provision for separating non-safety related and safety related work. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance or major plant modifications, on a temporary basis, the following guidelines shall be followed:

1. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time;
2. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 (28 for McGuire and Oconee) hours in any 48-hour period, nor more than 72 hours in any 7-day period, all excluding shift turnover time and an allowance for time changes between standard time and daylight saving time (the 7-day period is any 7 day period);
3. A break of at least 8 hours should be allowed between work periods, including shift turnover time; and

4. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

## 200.5 IMPLEMENTATION

All supervision shall be responsible for scheduling their personnel such that overtime is kept to a minimum and in accordance with requirements listed above. The individual employee is also responsible for tracking his/her individual work hours and informing supervision if asked to work overtime which exceeds these guidelines. Each work group has the ultimate responsibility for tracking the employee's overtime as it relates to this NSD.

Approval to exceed the guidelines of this directive shall be authorized in advance by one member of line supervision and the Station Manager /designee and documented per Appendix A, "Request For Work Hours Extension."

The form shall contain the following information about the employees:

- Printed name(s) of the affected employee(s) (First, MI, Last Name)
- actual date of the work hour extension (mm/dd/yy)
- letter(s) designating the limit(s) exceeded
- estimated range of hours remaining to complete work
- employee's ID
- employee's department or vendor company name
- assigned supervisor's name

In addition, reasons for the work hour extension should be clearly and specifically noted in Section 2 of the form, such as what unit and component is being worked on and why overtime is required for these individual(s) (i.e., critical path, tech spec requirement, only qualified workers, etc.).

The assigned supervisor/designee of the employee(s) at that time, must assure the ability of the workers to safely exceed the limits, taking into consideration the working conditions, physical and mental alertness of individual(s), their ability to maintain concentration to complete the task safely and estimate the number of hours needed to complete the task. These assessment(s) must be performed before the work hour extension begins (Within approximately 4 hours to assure timely FFD assessments are being performed). Therefore, only one day shall be used per Appendix A form. In addition, an employee/supervisor shall not assess himself/herself for FFD concerns, Section 3.

The Station Manager/designee must assure the employee assessment has been done by the supervisor or designee and the work should continue. The intent of the authorization by the Station Manager/designee is awareness of the situation and not a second personal assessment. If necessary, permission by Station Manager/designee may be obtained over the phone with documentation stating the name, date and time of the person giving permission as well as the person requesting permission, Section 4, Appendix A. This permission must be granted prior to the work hour guidelines being exceeded.

Any failure to authorize work hour extensions in advance shall be documented in a PIP. The PIP shall be initiated by the work group failing to have the work hour extension approved in advance. If it is recognized that the work hour guidelines have already been exceeded, fill out the Appendix A form as soon as possible including the PIP number and reason/comments in Section 5, and route to the Human Resources Manager. Work hour extensions outside the guidelines for vendors shall be authorized by a member of the affected management staff at the site, and/or direct reporting management staff of the individual's department. This authorization should normally be given by the designated supervisor/manager of the affected group/employee. This authorization shall be documented.

The following positions shall be authorized to sign the Appendix A., Request for Work Hours Extension form as Station Manager/designee. Additional positions may be added as a Station Manager Designee as deemed appropriate. The addition of positions to this list will require completion of the "Revisions to Station Manager

Designee" form, and approval by the Site VP or Station Manager prior to this individual authorizing the Appendix A., Request for Work Hours Extension form.

Site Vice President, Station Manager, Site Engineering Manager, Operations Manager, Maintenance Superintendent, Radiation Protection Manager, Chemistry Manager, Work Control Manager, On Duty Operations Shift Manager, On Duty Shift Work Manager, On Duty Emergency Coordinator, On Duty Outage Manager, On Duty Outage Window Sponsor, Innage Manager and Human Resources Manager.

A periodic report will be compiled for site management.

Routine deviation from the above guidelines is not authorized. Routine deviation shall be defined as 'repetitive tasks with a duration of less than 14 days.'

## 200.5.1 REVIEW

A monthly review of authorized work hour extension forms shall be performed by the Station Manager/designee (Human Resources Manager), to assure that overtime hours are not excessive, they have received proper authorization by the Station Manager or designee and have been documented in advance of the work hour extension (This is a requirement in the Catawba, McGuire, and Oconee Technical Specifications Sections 5.2.2; however, Oconee's Tech Specs require a periodic review of authorized work hour extension forms).

All employee's names and dates worked shall be clearly listed, with all blocks in Section 1, Appendix A completed. Reasons for the work hour extension shall be clearly and specifically noted in Section 2, Appendix A.

This review is also to assure that adequate employee/work assessments are being conducted for excessive work hours on the actual shift or day the work hour extension occurred. Therefore, only one day shall be used per Appendix A form. In addition, an employee/supervisor shall not assess himself/herself for fitness for duty concerns, Section 3.

Any failure to authorize work hour extensions in advance shall be documented in a PIP. The PIP shall be initiated by the work group failing to have the work hour extension approved in advance.

All Appendix A forms not completed in full or as stated in Section "Implementation" will be considered as discrepancies on the periodic report to management. Those forms which are not authorized in advance by the Station Manager/designee in Section 4 shall have supporting PIP information in Section 5 before being routed to the Human Resources Manager.

**VERIFY HARD COPY AGAINST WEB SITE IMMEDIATELY PRIOR TO EACH USE**

**NSD 200**

**Nuclear Policy Manual – Volume 2**

**VERIFY HARD COPY AGAINST WEB SITE IMMEDIATELY PRIOR TO EACH USE**

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

**SRO-206/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 #:**

New

**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 \_\_\_\_\_

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 intersection of Highway 183 and 130 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 Unit 3 Control Room. Security has isolated the area around Unit 3's Control Room.

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.

**Note: Do not use Emergency Coordinator's judgment while classifying the event.**



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

<p><u>STEP 1:</u>      Classify the Event</p> <p><u>STANDARD:</u>    Refer to RP/0/B/1000/01 (Emergency Classification) Enclosure 4.6 (Fires/Explosions and Security Actions). Classify the event as a "<b>General Emergency</b>" due to following:</p> <p>                    "Loss of physical control of the control room due to security event"</p> <p><u>COMMENTS:</u></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u>      Determine Protective Action Recommendations</p> <p><u>STANDARD:</u>    Refer to RP/0/B/1000/002 (Control Room Emergency Coordinator Procedure) and <b>GO TO</b> Enclosure 4.1 (General Emergency)</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u>      Step 1.1 IF It has been determined that an Emergency Action Level for an Initiating Conditions has been met, <b>THEN</b> Declare a <b>General Emergency</b> Time of Declaration: _____</p> <p><u>STANDARD:</u>    Determine Initiating Conditions have been met and Declare a General Emergency due to:</p> <ul style="list-style-type: none"> <li>• "Loss of physical control of the control room due to security event"</li> </ul> <p>Determine Time of Declaration is present time.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 4:</b> Step 1.2 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:</b> <i>If asked, indicate someone is maintaining the Emergency Coordinator Log.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 5:</b> Step 1.3 Appoint Control Room Offsite Communicator(s).</p> <p><b>STANDARD:</b> A Control Room Offsite Communicator is appointed.</p> <p><b>Cue:</b> <i>If asked, indicate a Control Room Offsite Communicator has been appointed.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p> <p style="text-align: right;">(OK)</p>
<p><b>STEP 6:</b> Step 1.4 Provide the Protective Action Recommendations for use by the Offsite Communicator to complete the Emergency Notification Form.</p> <p><b>STANDARD:</b> Determine from chart that the following Protective Action Recommendations should be given:</p> <p>Evacuate sectors: Pickens County – A0, A1, B1, C1; Oconee County – A0, D1, E1, F1</p> <p>Shelter sectors: Pickens County – A2, B2, C2; Oconee County – D2, E2, F2</p> <p><b>COMMENTS:</b></p>	<p><b>CRITICAL STEP</b></p> <p>___ SAT</p> <p>___ UNSAT</p>

<p><b>STEP 7:</b> Step 1.4.1  <b>IF</b> Conditions A, Imminent or Actual Dam Failure (Keowee or Jocassee) exist,</p> <p><b>THEN REFER TO</b> Enclosure 4.7, (Condition A/Condition B Response Actions), Step 1.0, for additional Protective Action Recommendations.</p> <p><b>STANDARD:</b> Candidate should refer to Enclosure 4.7, (Condition A/Condition B Response Actions).</p> <p><b>Cue:</b> <i>If asked, inform the candidate that Keowee Dam failure is imminent.</i></p> <p><b>COMMENTS:</b></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><b>STEP 8:</b> Step 1.1  <b>IF</b> Conditions A, Imminent or Actual Dam Failure (Keowee or Jocassee) exists,</p> <p><b>THEN</b> Perform the following actions:</p> <p>Provide the following protective action recommendations to Oconee County and Pickens County for imminent/actual Dam Failure.</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>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>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 General Emergency should be declared.
6	The candidate must be able to make recommendations to the local agencies as the actions necessary to protect the health and safety of the public.
8	The candidate must be able to make recommendations to the local agencies as the actions necessary to protect the health and safety of the public.

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

**INITIAL CONDITIONS:**

- 0800: Civil demonstration occurring at the intersection of Highway 183 and 130 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 Unit 3 Control Room. Security has isolated the area around Unit 3's Control Room.
- 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.

**Note: Do not use Emergency Coordinator's judgment while classifying the event.**

# INFORMATION ONLY

## Duke Power Company PROCEDURE PROCESS RECORD

(1) ID No. RP/O/B/1000/001Revision No. 013

### REPARATION

(2) Station OCONEE NUCLEAR STATION(3) Procedure Title Emergency Classification(4) Prepared By Mike Thorne (Signature) M R Thorne Date 01/27/03

(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 Ray Waterman (QR) Date 1/27/03Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA RAW Date 1/27/03Reactivity Mgmt Review By \_\_\_\_\_ (QR) NA RAW Date 1/27/03Mgmt Involvement Review By \_\_\_\_\_ (Ops Supt) NA RAW Date 1/27/03

(7) Additional Reviews

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

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

(8) Temporary Approval (if necessary)

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

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

(9) Approved By Rodney Brown Date 02/11/03

### 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 \_\_\_\_\_

Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(13) Remarks (Attach additional pages)

<p>Duke Power Company Oconee Nuclear Site</p> <p>Emergency Classification</p> <p>Reference Use</p>	Procedure No.
	RP/0/B/1000/001
	Revision No. 013
	Electronic Reference No. OX002WOS

## Emergency Classification

**NOTE:** This procedure is an implementing procedure to the Oconee Nuclear Site Emergency plan and must be forwarded to Emergency Planning within seven (7) working days of approval.

### 1. Symptoms

- 1.1 This procedure describes the immediate actions to be taken to recognize and classify an emergency condition.
- 1.2 This procedure identifies the four emergency classifications and their corresponding Emergency Action Levels (EALs).
- 1.3 This procedure provides reporting requirements for non-emergency abnormal events.
- 1.4 The following guidance is to be used by the Emergency Coordinator/EOF Director in assessing emergency conditions:
  - 1.4.1 The Emergency Coordinator/EOF Director shall review all applicable initiating events to ensure proper classification.
  - 1.4.2 The BASIS Document (Volume A, Section D of the Emergency Plan) is available for review if any questions arise over proper classification.
  - 1.4.3 **IF** An event occurs on more than one unit concurrently,  
**THEN** The event with the higher classification will be classified on the Emergency Notification Form.
    - A. Information relating to the problem(s) on the other unit(s) will be captured on the Emergency Notification Form as shown in RP/0/B/1000/015A, (Offsite Communications From The Control Room), RP/0/B/1000/015B, (Offsite Communications From The Technical Support Center) or RP/0/B/1000/015C, (Offsite Communications From The Emergency Operations Facility).
  - 1.4.4 **IF** An event occurs,  
**AND** A lower or higher plant operating mode is reached before the Classification can be made,  
**THEN** The classification shall be based on the mode that existed at the time the event occurred.



1.4.5 The Fission Product Barrier Matrix is applicable only to those events that occur at Hot Shutdown or higher.

A. An event that is recognized at Cold Shutdown or lower shall not be classified using the Fission Product Barrier Matrix.

1. Reference should be made to the additional enclosures that provide Emergency Action Levels for specific events (e.g., Severe Weather, Fire, Security).

1.5 IF A transient event should occur,

THEN Review the following guidance:

1.5.1 IF An Emergency Action Level (EAL) identifies a specific duration

AND The Emergency Coordinator/EOF Director assessment concludes that the specified duration is exceeded or will be exceeded, (i.e.; condition cannot be reasonably corrected before the duration elapses),

THEN Classify the event.

1.5.2 IF A plant condition exceeding EAL criteria is corrected before the specified duration time is exceeded,

THEN The event is NOT classified by that EAL.

A. Review lower severity EALs for possible applicability in these cases.

**NOTE:** Reporting under 10CFR50.72 may be required for the following step. Such a condition could occur, for example, if a follow up evaluation of an abnormal condition uncovers evidence that the condition was more severe than earlier believed.

1.5.3 IF A plant condition exceeding EAL criteria is not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g.; as a result of routine log or record review)

AND The condition no longer exists,

THEN An emergency shall NOT be declared.

1.5.4    IF                    An emergency classification was warranted, but the plant condition has been corrected prior to declaration and notification,

THEN                The Emergency Coordinator must consider the potential that the initiating condition (e.g.; Failure of Reactor Protection System) may have caused plant damage that warrants augmenting the on shift personnel through activation of the Emergency Response Organization.

A.    IF                    An *Unusual Event* condition exists,

THEN                Make the classification as required.

1.    The event may be terminated in the same notification or as a separate termination notification.

B.    IF                    An *Alert, Site Area Emergency, or General Emergency* condition exists,

THEN                Make the classification as required,

AND                Activate the Emergency Response Organization.

1.6    Emergency conditions shall be classified as soon as the Emergency Coordinator/EOF Director assessment determines that the Emergency Action Levels for the Initiating Condition have been exceeded.

## 2. Immediate Actions

2.1    Determine the operating mode that existed at the time the event occurred prior to any protection system or operator action initiated in response to the event.

2.2    IF                    The unit is at Hot Shutdown or higher

AND                The condition/event affects fission product barriers,

THEN                GO TO Enclosure 4.1, (Fission Product Barrier Matrix).

2.2.1    Review the criteria listed in Enclosure 4.1, (Fission Product Barrier Matrix) and make the determination if the event should be classified.

2.3 Review the listing of enclosures to determine if the event is applicable to one of the categories shown.

2.3.1 IF One or more categories are applicable to the event,

2.3.2 THEN Refer to the associated enclosures.

2.3.3 Review the EALs and determine if the event should be classified.

A. IF An EAL is applicable to the event,

THEN Classify the event as required.

2.4 IF The condition requires an emergency classification,

THEN GO TO RP/0/B/1000/002, (Control Room Emergency Coordinator Procedure) Subsequent Actions.

2.5 Continue to review the emergency conditions to assure the current classification continues to be applicable.

### 3. Enclosures

	Enclosures	Page Number
4.1	Fission Product Barrier Matrix	6
4.2	System Malfunctions	7
4.3	Abnormal Rad Levels/Radiological Effluents	9
4.4	Loss Of Shutdown Functions	11
4.5	Loss of Power	13
4.6	Fires/Explosions And Security Actions	14
4.7	Natural Disasters, Hazards, And Other Conditions Affecting Plant Safety	15
4.8	Radiation Monitor Readings For Emergency Classification	18
4.9	Unexpected/Unplanned Increase In Area Monitor Readings	19
4.10	Definitions	20
4.11	Operating Modes Defined In Improved Technical Specifications	24
4.12	Instructions For Using Enclosure 4.1	25

## Fission Product Barrier Matrix

DETERMINE THE APPROPRIATE CLASSIFICATION USING THE TABLE BELOW:

CIRCLE EALS CHOSEN. ADD POINTS TO CLASSIFY. (SEE NOTE BELOW)

RCS BARRIERS (BD 5-7)		FUEL CLAD BARRIERS (BD 8-9)		CONTAINMENT BARRIERS (BD 10-12)	
Potential Loss (4 Points)	Loss (5 Points)	Potential Loss (4 Points)	Loss (5 Points)	Potential Loss (1 Point)	Loss (3 Points)
RCS Leak rate > available makeup capacity as indicated by a loss of subcooling	RCS Leak rate > available makeup capacity as indicated by a loss of subcooling	Average of the 5 highest CETC $\geq 700^\circ\text{F}$	Average of the 5 highest CETC $\geq 1200^\circ\text{F}$	CETC $\geq 1200^\circ\text{F} \geq 15$ minutes OR CETC $\geq 700^\circ\text{F} \geq 15$ minutes with a valid RVLS reading 0"	Rapid unexplained containment pressure decrease after increase OR containment pressure or sump level not consistent with LOCA
SGTR > Makeup capacity of one HPI pump in normal makeup mode (approx. 160 gpm) with Letdown isolated.	SGTR > Makeup capacity of one HPI pump in normal makeup mode (approx. 160 gpm) with Letdown isolated.	Valid RVLS reading of 0"	Coolant activity $\geq 300 \mu\text{Ci/ml DEI}$	RB pressure $\geq 59$ psig OR RB pressure $\geq 10$ psig and no RBCU or RBS	Failure of secondary side of SG results in a direct opening to the environment with P/S leakage $\geq 10$ gpm in the same SG
Entry into the PTS (Pressurized Thermal Shock) Operation NOTE: PTS is entered under either of the following: • A cooldown below $400^\circ\text{F}$ @ $> 100^\circ\text{F/hr}$ has occurred. • HPI has operated in the injection mode while NO RCPs were operating.	1 RIA 57/58 reading $\geq 1.0$ R/hr 2 RIA 57 reading $\geq 1.6$ R/hr 2 RIA 58 reading $\geq 1.0$ R/hr 3 RIA 57/58 reading $\geq 1.0$ R/hr	NOTE: RVLS is NOT valid if one or more RCPs are running OR if LPI pump(s) are running.	Hours Since SD <u>RIA 57/58 R/hr</u> 0 - < 0.5 $\geq 300/150$ 0.5 - < 2.0 $\geq 80/40$ 2.0 - 8.0 $\geq 32/16$	Hours Since SD <u>RIA 57/58 - R/hr</u> 0 - < 0.5 $\geq 1800/860$ 0.5 - < 2.0 $\geq 400/195$ 2.0 - 8.0 $\geq 280/130$	Failure of secondary side of SG results in a direct opening to the environment with P/S leakage $\geq 10$ gpm in the other SG AND Feeding SG with secondary side failure from the affected unit
HPI Forced Cooling	RCS pressure spike $\geq 2750$ psig			Hydrogen concentration $\geq 9\%$	Containment isolation is incomplete and a release path to the environment exists
Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment	Emergency Coordinator/EOF Director judgment
UNUSUAL EVENT (1-3 Total Points)		ALERT (4-6 Total Points)		SITE AREA EMERGENCY (7-10 Total Points)	
OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4		OPERATING MODE: 1, 2, 3, 4	
Any potential loss of Containment	Any potential loss or loss of the Fuel Clad	Any potential loss or loss of the Fuel Clad	Loss of any two barriers	Loss of one barrier and potential loss of either RCS or Fuel Clad Barriers	Loss of any two barriers and potential loss of the third barrier
Any loss of containment	Any potential loss or loss of the RCS	Any potential loss or loss of the RCS	Potential loss of both the RCS and Fuel Clad Barriers		Loss of all three barriers
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1,2,3,4

**NOTE:** An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss threshold is IMMINENT (i.e., within 1-3 hours). In this IMMINENT LOSS situation, use judgment and classify as if the thresholds are exceeded.

4.2  
Enc. Systems Notifications

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. <u>RCS LEAKAGE (BD 14)</u> <u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A. Unidentified leakage <math>\geq</math> 10 gpm</p> <p>B. Pressure boundary leakage <math>\geq</math> 10 gpm</p> <p>C. Identified leakage <math>\geq</math> 25 gpm</p> <p>1. <u>UNPLANNED LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM FOR &gt; 15 MINUTES (BD 15)</u> <u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 <i>Unplanned loss of &gt; 50% of the following annunciators on one unit for &gt; 15 minutes:</i>   <u>Units 1 &amp; 3</u>            1 SA1-9, 14-16, and 18            3 SA1-9, 14-16, and 18   <u>Unit 2</u>            2 SA1-9, 14-16</p> <p><u>AND</u></p> <p>A.2 <i>Loss of annunciators /indicators requires additional personnel (beyond normal shift complement) to safely operate the unit</i></p> <p><u>AND</u></p> <p>A.3 <i>Significant plant transient in progress</i></p> <p><u>OR</u></p> <p>A.4 <i>Loss of the OAC and ALL PAM indications</i></p> <p>3. <u>INABILITY TO REACH REQUIRED SHUTDOWN WITHIN LIMITS (BD 16)</u> <u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A. Required operating mode not reached within TS LCO action statement time (CONTINUED)</p>	<p>1. <u>UNPLANNED LOSS OF MOST OR ALL SAFETY SYSTEM ANNUNCIATION/ INDICATION IN CONTROL ROOM (BD 19)</u> <u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 <i>Unplanned loss of &gt; 50% of the following annunciators on one unit for &gt; 15 minutes:</i>   <u>Units 1 &amp; 3</u>            1 SA1-9, 14-16, and 18            3 SA1-9, 14-16, and 18   <u>Unit 2</u>            2 SA1-9, 14-16</p> <p><u>AND</u></p> <p>A.2 <i>Loss of annunciators /indicators requires additional personnel (beyond normal shift complement) to safely operate the unit</i></p> <p><u>AND</u></p> <p>A.3 <i>Significant plant transient in progress</i></p> <p><u>OR</u></p> <p>A.4 <i>Loss of the OAC and ALL PAM indications</i></p> <p>(END)</p>	<p>1. <u>INABILITY TO MONITOR A SIGNIFICANT TRANSIENT IN PROGRESS (BD 21)</u> <u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 <i>Unplanned loss of &gt; 50% of the following annunciators on one unit for &gt; 15 minutes:</i>   <u>Units 1 &amp; 3</u>            1 SA1-9, 14-16, and 18            3 SA1-9, 14-16, and 18   <u>Unit 2</u>            2 SA1-9, 14-16</p> <p><u>AND</u></p> <p>A.2 <i>A significant transient is in progress</i></p> <p><u>AND</u></p> <p>A.3 <i>Loss of the OAC and ALL PAM indications</i></p> <p><u>AND</u></p> <p>A.4 <i>Inability to directly monitor any one of the following functions:</i>             1. Subcriticality            2. Core Cooling            3. Heat Sink            4. RCS Integrity            5. Containment Integrity            6. RCS Inventory</p> <p>(END)</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>
<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>4. UNPLANNED LOSS OF ALL ONSITE OR OFFSITE COMMUNICATIONS (BD 17)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Loss of all onsite communications capability (ROLM system, PA system, Pager system, Onsite Radio system) affecting ability to perform Routine operations</p> <p>B. Loss of all onsite communications capability (Selective Signaling, NRC ETS lines, Offsite Radio System, AT&amp;T line) affecting ability to communicate with offsite authorities.</p> <p>5. FUEL CLAD DEGRADATION (BD 18)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All:</p> <p>A. DEI - &gt;5µCi/ml</p> <p>(END)</p>			
<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1,2,3,4</p>			

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. ANY UNPLANNED RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS TWO TIMES THE SLC LIMITS FOR 60 MINUTES OR LONGER (BD 23)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Valid indication on radiation monitor RIA 33 of <math>\geq 4.06E+06</math> cpm for &gt; 60 minutes (See Note 1)</p> <p>B. Valid indication on radiation monitor RIA 45 of <math>\geq 9.35E+05</math> cpm for &gt; 60 minutes (See Note 1)</p> <p>C. Liquid effluent being released exceeds two times SLC 16.11.1 for &gt; 60 minutes as determined by Chemistry Procedure</p> <p>D. Gaseous effluent being released exceeds two times SLC 16.11.2 for &gt; 60 minutes as determined by RP Procedure</p> <p>NOTE 1: If monitor reading is sustained for the time period indicated in the EAL AND the required assessments (procedure calculations) cannot be completed within this period, declaration must be made on the valid Radiation Monitor reading.</p>	<p>1. ANY UNPLANNED RELEASE OF GASEOUS OR LIQUID RADIOACTIVITY TO THE ENVIRONMENT THAT EXCEEDS 200 TIMES RADIOLOGICAL TECHNICAL SPECIFICATIONS FOR 15 MINUTES OR LONGER (BD 28)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Valid indication on RIA 46 of <math>\geq 2.09E+04</math> cpm for &gt; 15 minutes (See Note 1)</p> <p>B.1 RIA 33 HIGH Alarm</p> <p>AND</p> <p>B.2 Liquid effluent being released exceeds 200 times the level of SLC 16.11.1 for &gt; 15 minutes as determined by Chemistry Procedure</p> <p>C. Gaseous effluent being released exceeds 200 times the level of SLC 16.11.2 for &gt; 15 minutes as determined by RP Procedure</p> <p>2. RELEASE OF RADIOACTIVE MATERIAL OR INCREASES IN RADIATION LEVELS THAT IMPEDES OPERATION OF SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR TO ESTABLISH OR MAINTAIN COLD SHUTDOWN (BD 30)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Valid radiation reading <math>\geq 15</math> mRad/hr in CR, CAS, or, Radwaste CR</p> <p>B. Unplanned/unexpected valid area monitor readings exceed limits stated in Enclosure 4.9</p>	<p>1. BOUNDARY DOSE RESULTING FROM ACTUAL/IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 32)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Valid reading on RIA 46 of <math>\geq 2.09E+05</math> cpm for &gt; 15 minutes (See Note 2)</p> <p>B. Valid reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 2)</p> <p>C. Dose calculations result in a dose projection at the site boundary of:</p> <p><math>\geq 100</math> mRem TEDE or 500 mRem CDE adult thyroid</p> <p>D. Field survey results indicate site boundary dose rates exceeding <math>\geq 100</math> mRad/hr expected to continue for more than one hour</p> <p>OR</p> <p>D.1 Analyses of field survey samples indicate adult thyroid dose commitment of <math>\geq 500</math> mRem CDE (3.84 E<sup>-7</sup> µCi/ml) for one hour of inhalation</p> <p>NOTE 2: If actual Dose Assessment cannot be completed within 15 minutes, then the valid radiation monitor reading should be used for emergency classification.</p>	<p>1. BOUNDARY DOSE RESULTING FROM ACTUAL/IMMINENT RELEASE OF GASEOUS ACTIVITY (BD 36)</p> <p>=====</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Valid reading on RIA 46 of <math>\geq 2.09E+06</math> cpm for <math>\geq 15</math> minutes (See Note 3)</p> <p>B. Valid reading on RIA 57 or 58 as shown on Enclosure 4.8 (See Note 3)</p> <p>C. Dose calculations result in a dose projection at the site boundary of:</p> <p>C.1 <math>\geq 1000</math> mRem TEDE</p> <p>OR</p> <p>C.2 <math>\geq 5000</math> mRem CDE adult thyroid</p> <p>D. Field survey results indicate site boundary dose rates exceeding <math>\geq 1000</math> mRad/hr expected to continue for more than one hour</p> <p>OR</p> <p>D.1 Analyses of field survey samples indicate adult thyroid dose commitment of <math>\geq 5000</math> mRem CDE for one hour of inhalation</p> <p>NOTE 3: If actual Dose Assessment cannot be completed within 15 minutes, then the valid radiation monitor reading should be used for emergency classification.</p>
(CONTINUED)	(CONTINUED)	(CONTINUED)	(END)
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

Assumptions used for calculation of vent monitors RIA 43 & 46:

1. Average annual meteorology (1.672 E-6 sec<sup>-1</sup>), semi-elevated
2. Vent flow rate 65,000 cfm (average daily flow rate)
3. No credit is taken for vent filtration
4. One hour release duration for Unusual Event, 15 minute duration for Alert, Site Area Emergency, General Emergency
5. General Emergency PAGs are 1 rem TEDE and 5 rem CDE; Site Area Emergency determination is based on 10% of the General Emergency PAGs
6. Calculations for monitor readings are based on whole body dose
7. Standard ODCM guidance together with NUNARC guidance indicates that effluent releases are based on Technical Specification releases

Enclosure 4.3  
Abnormal Rad Level  
Biological Effluent

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>2 UNEXPECTED INCREASE IN PLANT RADIATION OR AIRBORNE CONCENTRATION (BD 25)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. LT 5 reading 14" and decreasing with makeup not keeping up with leakage <u>WITH</u> fuel in the core</p> <p>B. <i>Uncontrolled</i> water level decrease in the SFP and fuel transfer canal with all irradiated fuel assemblies remaining covered by water</p> <p>C. 1 R/hr radiation reading at one foot away from a damaged storage cask located at the ISFSI</p> <p>D. <i>Valid</i> area monitor readings exceeds limits stated in Enclosure 4.9.</p> <p>(END)</p>	<p>2. MAJOR DAMAGE TO IRRADIATED FUEL OR LOSS OF WATER LEVEL THAT HAS OR WILL RESULT IN THE UNCOVERING OF IRRADIATED FUEL OUTSIDE THE REACTOR VESSEL (BD 31)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. <i>Valid</i> RIA 3, 6, 41, OR 49 HIGH Alarm</p> <p>B. HIGH Alarm for portable area monitors on the main bridge or SFP bridge</p> <p>C. Report of visual observation of irradiated fuel uncovered</p> <p>D. Operators determine water level drop in either the SFP or fuel transfer canal will exceed makeup capacity such that irradiated fuel will be uncovered</p> <p>(END)</p>	<p>2. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 35)</p> <p><u>OPERATING MODE:</u> 5, 6</p> <p>A.1 Failure of heat sink causes loss of Cold Shutdown condition</p> <p><u>AND</u></p> <p>A.2 LT 5 indicates 0 inches after initiation of RCS makeup</p> <p>B.1 Failure of heat sink causes loss of Cold Shutdown condition</p> <p><u>AND</u></p> <p>B.2 Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup</p> <p>NOTE: This Initiating Condition is also located in Enclosure 4.4., (Loss of Shutdown Functions). High radiation levels will also be seen with this condition.</p> <p>(END)</p>	
<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	



# Enclos. 4.4 Loss of Shutdown Functions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
	<p>1. FAILURE OF RPS TO COMPLETE OR INITIATE A R<sub>x</sub> SCRAM (BD 39)</p> <p><u>OPERATING MODE:</u> 1, 2, 3</p> <p>A.1 Valid reactor trip signal received or required <u>WITHOUT</u> automatic scram</p> <p><u>AND</u></p> <p>A.1.1 DSS has inserted Control Rod Groups 5, 6, 7</p> <p><u>OR</u></p> <p>A.1.2 Manual trip from the Control Room is successful and reactor power is less than 5% and decreasing</p> <p>2. INABILITY TO MAINTAIN PLANT IN COLD SHUTDOWN (BD 41)</p> <p><u>OPERATING MODE:</u> 5, 6</p> <p>A.1 Loss of LPI and/or LPSW</p> <p><u>AND</u></p> <p>A.2 Inability to maintain RCS temperature below 200° F as indicated by either of the following:</p> <p>A.2.1 RCS temperature at the LPI Pump Suction</p> <p><u>OR</u></p> <p>A.2.2 Average of the 5 highest CETCs as indicated by ICCM display</p> <p><u>OR</u></p> <p>A.2.3 Visual observation (END)</p>	<p>1. FAILURE OF RPS TO COMPLETE OR INITIATE A R<sub>x</sub> SCRAM (BD 42)</p> <p><u>OPERATING MODE:</u> 1, 2</p> <p>A.1 Valid reactor trip signal received or required <u>WITHOUT</u> automatic scram</p> <p><u>AND</u></p> <p>A.2 DSS has <u>NOT</u> inserted Control Rod Groups 5, 6, 7</p> <p><u>AND</u></p> <p>A.3 Manual trip from the Control Room was <u>NOT</u> successful in reducing reactor power to less than 5% and decreasing</p> <p>2. COMPLETE LOSS OF FUNCTION NEEDED TO ACHIEVE OR MAINTAIN HOT SHUTDOWN (BD 43)</p> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A. Average of the 5 highest CETCs <math>\geq 1200^{\circ}</math> F shown on ICCM</p> <p>B. Unable to maintain reactor subcritical</p> <p>C. SSF feeding SG per EOP</p> <p>(CONTINUED)</p>	<p>1. FAILURE OF RPS TO COMPLETE AUTOMATIC SCRAM AND MANUAL SCRAM NOT SUCCESSFUL WITH INDICATION OF CORE DAMAGE (BD 45)</p> <p><u>OPERATING MODE:</u> 1, 2</p> <p>A.1 Valid R<sub>x</sub> trip signal received or required <u>WITHOUT</u> automatic scram</p> <p><u>AND</u></p> <p>A.2 Manual trip from the Control Room was <u>NOT</u> successful in reducing reactor power to <math>&lt; 5\%</math> and decreasing</p> <p><u>AND</u></p> <p>A.3 Average of the 5 highest CETCs <math>\geq 1200^{\circ}</math> F on ICCM</p> <p>(END)</p>
	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>

Enclos. 4.4  
Loss of Shutdown Functions

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UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
		<p>3. LOSS OF WATER LEVEL IN THE REACTOR VESSEL THAT HAS OR WILL UNCOVER FUEL IN THE REACTOR VESSEL (BD 44)</p> <hr/> <p><u>OPERATING MODE: 5, 6</u></p> <p>A.1 Failure of heat sink causes loss of Cold Shutdown conditions</p> <p><u>AND</u></p> <p>A.2 LT-5 indicates 0 inches after initiation of RCS Makeup</p> <p>B.1 Failure of heat sink causes loss of Cold Shutdown conditions</p> <p><u>AND</u></p> <p>B.2 Either train ultrasonic level indication less than 0 inches and decreasing after initiation of RCS makeup</p> <p>(END)</p>	
		<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. LOSS OF ALL OFFSITE POWER TO ESSENTIAL BUSES FOR GREATER THAN 15 MINUTES (BD 47)</p> <p><u>OPERATING MODE:</u> All</p> <p>A.1 Loss of all offsite AC power to both the Red and Yellow Buses for &gt; 15 minutes</p> <p><u>AND</u></p> <p>A.2 Unit auxiliaries are being supplied from Keowee or CT5</p> <p>2. UNPLANNED LOSS OF REQUIRED DC POWER FOR GREATER THAN 15 MINUTES (BD 48)</p> <p><u>OPERATING MODE:</u> 5, 6</p> <p>A.1 Unplanned loss of vital DC power to required DC buses as indicated by bus voltage less than 110 VDC</p> <p><u>AND</u></p> <p>A.2 Failure to restore power to at least one required DC bus within 15 minutes from the time of loss</p> <p>(END)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	<p>1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES (BD 49)</p> <p><u>OPERATING MODE:</u> 5, 6 Defueled</p> <p>A.1 MFB 1 and 2 de-energized</p> <p><u>AND</u></p> <p>A.2 Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power</p> <p>2. AC POWER CAPABILITY TO ESSENTIAL BUSES REDUCED TO A SINGLE SOURCE FOR GREATER THAN 15 MINUTES (BD 50)</p> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A. AC power capability has been degraded to a single power source for &gt; 15 minutes due to the loss of all but one of:</p> <p>Unit Normal Transformer Unit SU Transformer Another Unit SU Transformer CT4 CT5</p> <p>(END)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	<p>1. LOSS OF ALL OFFSITE AC POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES (BD 51)</p> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 MFB 1 and 2 de-energized</p> <p><u>AND</u></p> <p>A.2 Failure to restore power to at least one MFB within 15 minutes from the time of loss of both offsite and onsite AC power</p> <p>2. LOSS OF ALL VITAL DC POWER (BD 52)</p> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 Unplanned loss of vital DC power to required DC buses as indicated by bus voltage less than 110 VDC</p> <p><u>AND</u></p> <p>A.2 Failure to restore power to at least one required DC bus within 15 minutes from the time of loss</p> <p>(END)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>	<p>1. PROLONGED LOSS OF ALL OFFSITE POWER AND ONSITE AC POWER (BD 54)</p> <p><u>OPERATING MODE:</u> 1, 2, 3, 4</p> <p>A.1 MFB 1 and 2 de-energized</p> <p><u>AND</u></p> <p>A.2 SSF fails to maintain Hot Shutdown</p> <p><u>AND</u></p> <p>A.3 At least one of the following conditions exist:</p> <p>A.3.1 Restoration of power to at least one MFB within 4 hours is <u>NOT</u> likely</p> <p><u>OR</u></p> <p>A.3.2 Indications of continuing degradation of core cooling based on Fission Product Barrier monitoring</p> <p>(END)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. FIRES/EXPLOSIONS WITHIN THE PLANT (BD 57)</p> <p>OPERATING MODE: All</p> <p>NOTE: Within the plant means Turbine Building, Auxiliary Building, Reactor Building, Keowee Hydro.</p> <p>A. Fire within the plant not extinguished within 15 minutes of Control Room notification or verification of a Control Room alarm</p> <p>B. Unanticipated explosion within the plant resulting in <i>visible damage</i> to permanent structures/equipment</p> <p>2. CONFIRMED SECURITY THREAT INDICATES POTENTIAL DEGRADATION IN THE LEVEL OF SAFETY OF PLANT (BD 58)</p> <p>OPERATING MODE: All</p> <p>NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications.</p> <p>A. <i>Discovery of bomb within plant protected area</i> and outside security vital areas</p> <p>B. <i>Hostage/Extortion</i> situation</p> <p>C. <i>Violent</i> civil disturbance within the owner controlled area</p> <p>D. <i>Credible</i> Security threat to the site (END)</p>	<p>1. FIRE/EXPLOSION AFFECTING OPERABILITY OF PLANT SAFETY SYSTEMS REQUIRED TO ESTABLISH/MAINTAIN SAFE SHUTDOWN (BD 59)</p> <p>OPERATING MODE: All</p> <p>NOTE: Only one train of a system needs to be affected or damaged in order to satisfy this condition.</p> <p>A.1 <i>Fire/explosions</i></p> <p>AND</p> <p>A.1.1 Affected safety-related system parameter indications show degraded performance</p> <p>OR</p> <p>A.1.2 Plant personnel report <i>visible damage</i> to permanent structures or equipment required for safe shutdown</p> <p>2. SECURITY EVENT IN A PLANT PROTECTED AREA (BD 60)</p> <p>OPERATING MODE: All</p> <p>NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications.</p> <p>A. <i>Intrusion</i> into plant <i>protected area</i> by a hostile force</p> <p>B. <i>Bomb</i> discovered in an area containing safety related equipment</p> <p>(END)</p>	<p>1. SECURITY EVENT IN A PLANT VITAL AREA (BD 61)</p> <p>OPERATING MODE: All</p> <p>NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications</p> <p>A. <i>Intrusion</i> into any of the following plant areas by a hostile force: Reactor Building Auxiliary Building Keowee Hydro</p> <p>B. <i>Bomb</i> detonated in any of the following areas: • Keowee Hydro • Keowee Dam • ISFSI • Reactor Building • Auxiliary Building • SSF</p> <p>(END)</p>	<p>1. SECURITY EVENT RESULTING IN LOSS OF ABILITY TO REACH AND MAINTAIN COLD SHUTDOWN (BD 62)</p> <p>OPERATING MODE: All</p> <p>NOTE: RP/0/B/1000/007, (Security Event), shall be used in conjunction with all security related emergency classifications</p> <p>A. Loss of physical control of the control room due to security event</p> <p>B. Loss of physical control of the Aux Shutdown panel and the SSF due to a Security Event</p> <p>(END)</p>
INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY. NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4	INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>1. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE PROTECTED AREA (BD 64)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Tremor felt and <i>valid</i> alarm on the strong motion accelerometer</p> <p>B. Tornado striking within <i>Protected Area</i> Boundary</p> <p>C. Vehicle crash into plant structures/systems within the <i>Protected Area</i> Boundary</p> <p>D. Turbine failure resulting in casing penetration or damage to turbine or generator seals</p> <p>(CONTINUED)</p>	<p>1. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING THE PLANT VITAL AREA (BD 69)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Tremor felt and seismic trigger actuates (0.05g)</p> <p>B.1 Tornado, high winds; missiles resulting from turbine failure, vehicle crashes, or other catastrophic event</p> <p><u>AND</u></p> <p>NOTE: Only one train of a safety-related system needs to be affected or damaged in order to satisfy these conditions.</p> <p>B.1.1 <i>Visible damage</i> to permanent structures or equipment required for safe shutdown of the unit</p> <p><u>OR</u></p> <p>B.1.2 Affected safety system parameter indications show degraded performance</p> <p>2. RELEASE OF TOXIC/FLAMMABLE GASES JEOPARDIZING SYSTEMS REQUIRED TO MAINTAIN SAFE OPERATION OR ESTABLISH MAINTAIN COLD SHUTDOWN (BD 71)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Report/detection of <i>toxic gases</i> in concentrations that will be life-threatening to plant personnel</p> <p>B. Report/detection of flammable gases in concentrations that will affect the safe operation of the plant:</p> <ul style="list-style-type: none"> <li>• Reactor Building</li> <li>• Auxiliary Building</li> <li>• Turbine Building</li> <li>• Control Room</li> </ul> <p>(CONTINUED)</p>	<p>1. CONTROL ROOM EVACUATION AND PLANT CONTROL CANNOT BE ESTABLISHED (BD 75)</p> <p><u>OPERATING MODE:</u> All</p> <p>A.1 Control Room evacuation has been initiated</p> <p><u>AND</u></p> <p>A.2 Control of the plant cannot be established from the Aux Shutdown Panel or the SSF within 15 minutes</p> <p>2. KEOWEE HYDRO DAM FAILURE (BD 76)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Imminent/actual dam failure includes any of the following:</p> <ul style="list-style-type: none"> <li>• Keowee Hydro Dam</li> <li>• Little River Dam</li> <li>• Dikes A, B, C, or D</li> <li>• Intake Canal Dike</li> </ul> <p>3. OTHER CONDITIONS WARRANT DECLARATION OF SITE AREA EMERGENCY (BD 77)</p> <p><u>OPERATING MODE:</u> All</p> <p>A. Emergency Coordinator/EOF Director judgment</p> <p>(END)</p>	<p>1. OTHER CONDITIONS WARRANT DECLARATION OF GENERAL EMERGENCY (BD 78)</p> <p><u>OPERATING MODE:</u> All</p> <p>A.1 Emergency Coordinator/EOF Director judgment indicates:</p> <p>A.1.1 Actual/imminent substantial core degradation with potential for loss of containment</p> <p><u>OR</u></p> <p>A.1.2 Potential for <i>uncontrolled</i> radionuclide releases that would result in a dose projection at the site boundary greater than 1000 mRem TEDE or 5000 mRem CDE Adult Thyroid</p> <p>(END)</p>
<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>2. NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING KEOWEE HYDRO (BD 66)</p> <p><u>OPERATING MODE: All</u></p> <p>A. Reservoir elevation <math>\geq</math> 807 feet with all spillway gates open and the lake elevation continues to rise</p> <p>B. Seepage readings increase or decrease greatly or seepage water is carrying a significant amount of soil particles</p> <p>C. New area of seepage or wetness, with large amounts of seepage water observed on dam, dam toe, or the abutments</p> <p>D. Slide or other movement of the dam or abutments which could develop into a failure</p> <p>E. Developing failure involving the powerhouse or appurtenant structures and the operator believes the safety of the structure is questionable</p> <p>3. RELEASE OF TOXIC OR FLAMMABLE GASES DEEMED DETRIMENTAL TO SAFE OPERATION OF THE PLANT (BD 67)</p> <p><u>OPERATING MODE: All</u></p> <p>A. Report/detection of toxic or flammable gases that could enter within the site area boundary in amounts that can affect normal operation of the plant</p> <p>B. Report by local, county, state officials for potential evacuation of site personnel based on offsite event</p> <p>(CONTINUED)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>	<p>3. TURBINE BUILDING FLOOD (BD 72)</p> <p><u>OPERATING MODE: All</u></p> <p>A. Turbine Building flood requiring use of AP/1,2,3/A/1700/10, (Turbine Building Flood)</p> <p>4. CONTROL ROOM EVACUATION HAS BEEN INITIATED (BD 73)</p> <p><u>OPERATING MODE: All</u></p> <p>A.1 Evacuation of Control Room</p> <p><u>AND ONE OF THE FOLLOWING:</u></p> <p><u>AND</u></p> <p>A.1.1 Plant control IS established from the Aux shutdown Panel or the SSF</p> <p><u>OR</u></p> <p>A.1.2 Plant control IS BEING established from the Aux Shutdown Panel or SSF</p> <p>5. OTHER CONDITIONS WARRANT CLASSIFICATION OF AN ALERT (BD 74)</p> <p><u>OPERATING MODE: All</u></p> <p>A.1 Emergency Coordinator judgment indicates that:</p> <p>A.1.1 Plant safety may be degraded</p> <p><u>AND</u></p> <p>A.1.2 Increased monitoring of plant functions is warranted (END)</p> <p>INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4</p>		
			INITIAL NOTIFICATION REQUIREMENTS: SEE EMERGENCY TELEPHONE DIRECTORY NOTIFY 1, 2, 3, 4

UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
<p>4 OTHER CONDITIONS EXIST WHICH WARRANT DECLARATION OF AN UNUSUAL EVENT (BD 68)</p> <hr/> <p><u>OPERATING MODE:</u> All</p> <p>A. Emergency Coordinator determines potential degradation of level of safety has occurred</p> <p>(END)</p>			
<p>INITIAL NOTIFICATION REQUIREMENTS:                      SEE EMERGENCY TELEPHONE DIRECTORY</p> <p>NOTIFY 1, 2, 3, 4</p>			

Enclos. - 4.8  
Radiation Monitor Readings for Emergency Classification

NOTE: IF Actual Dose Assessment cannot be completed within 15 minutes.  
THEN The valid monitor reading should be used for Emergency Classification.

All RIA values are considered GREATER THAN or EQUAL TO

HOURS SINCE REACTOR TRIPPED	RIA 57 R/hr		RIA 58 R/hr*	
	Site Area Emergency	General Emergency	Site Area Emergency	General Emergency
0.0 - < 0.5	5.9E+003	5.9E+004	2.6E+003	2.6E+004
0.5 - < 1.0	2.6E+003	2.6E+004	1.1E+003	1.1E+004
1.0 - < 1.5	1.9E+003	1.9E+004	8.6E+002	8.6E+003
1.5 - < 2.0	1.9E+003	1.9E+004	8.5E+002	8.5E+003
2.0 - < 2.5	1.4E+003	1.4E+004	6.3E+002	6.3E+003
2.5 - < 3.0	1.2E+003	1.2E+004	5.7E+002	5.7E+003
3.0 - < 3.5	1.1E+003	1.1E+004	5.2E+002	5.2E+003
3.5 - < 4.0	1.0E+003	1.0E+004	4.8E+002	4.8E+003
4.0 - < 8.0	1.0E+003	1.0E+004	4.4E+002	4.4E+003

\* RIA 58 is partially shielded

Assumptions used for calculation of high range in-containment monitors RIA 57 and 58:

1. Average annual meteorology ( $7.308 \text{ E}^{-6} \text{ sec/m}^3$ )
2. Design basis leakage ( $5.6 \text{ E}^6 \text{ ml/hr}$ )
3. One hour release duration
4. General Emergency PAGs are 1 rem TEDE and 5 rem CDE; Site Area Emergency determination is based on 10% of the General Emergency PAGs
5. Calculations for monitor readings are based on CDE because thyroid dose is limiting
6. No credit is taken for filtration
7. LOCA conditions are limiting and provide the more conservative reading



## Unexpected/Unplanned Increase In Area Monitor Readings

**NOTE:** This Initiating Condition is not intended to apply to anticipated temporary increases due to planned events (e.g.; incore detector movement, radwaste container movement, depleted resin transfers, etc.).

MONITOR NUMBER	UNITS 1, 2, 3		ALERT mRAD/HR
	UNUSUAL EVENT 1000x NORMAL LEVELS mRAD/HR		
RIA 7, Hot Machine Shop Elevation 796	150		≥ 5000
RIA 8, Hot Chemistry Lab Elevation 796	4200		≥ 5000
RIA 10, Primary Sample Hood Elevation 796	830		≥ 5000
RIA 11, Change Room Elevation 796	210		≥ 5000
RIA 12, Chem Mix Tank Elevation 783	800		≥ 5000
RIA 13, Waste Disposal Sink Elevation 771	650		≥ 5000
RIA 15, HPI Room Elevation 758	NOTE*		≥ 5000

**NOTE:** RIA 15 normal readings are approximately 9 mRad/hr on a daily basis. Applying 1000x normal readings would put this monitor greater than 5000 mRad/hr just for an *Unusual Event*. For this reason, an *Unusual Event* will NOT be declared for a reading less than 5000 mRad/hr.

## 1. List of Definitions and Acronyms

**NOTE:** Definitions are italicized throughout procedure for easy recognition.

- 1.1 **ALERT** - Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.
- 1.2 **BOMB** - A fused explosive device
- 1.3 **CONDITION A** - Failure is Imminent or Has Occurred - A failure at the dam has occurred or is about to occur and minutes to days may be allowed to respond dependent upon the proximity to the dam.
- 1.4 **CONDITION B** - Potentially Hazardous Situation is Developing - A situation where failure may develop, but preplanned actions taken during certain events (such as major floods, earthquakes, evidence of piping) may prevent or mitigate failure.
- 1.5 **CIVIL DISTURBANCE** - A group of ten (10) or more people *violently* protesting station operations or activities at the site.
- 1.6 **CREDIBLE THREAT** - The *determination* of what is a credible threat to the site will be the responsibility of Security Manager/designee in consultation with the OSM. The determination of "credible" is made through use of information found in the Oconee Nuclear Station Safeguards Contingency Plan and Security implementing procedures.
- 1.7 **EXPLOSION** - A rapid, *violent*, unconfined combustion, or a catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components. A sudden failure of a pressurized pipe/line could fit this definition. This definition includes MS line rupture and FW line ruptures.
- 1.8 **EXTORTION** - An attempt to cause an action at the station by threat of force.
- 1.9 **FIRE** - Combustion characterized by heat and light. Sources of smoke, such as slipping drive belts or overheated electrical equipment, do NOT constitute *fires*. Observation of flames is preferred but is NOT required if large quantities of smoke and heat are observed.
- 1.10 **GENERAL EMERGENCY** - Events are in process or have occurred which involve actual or *imminent* substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels outside the Exclusion Area Boundary.

- 1.11 **HOSTAGE** - A person or object held as leverage against the station to ensure demands will be met by the station.
- 1.12 **INTRUSION/INTRUDER** - Suspected hostile individual present in a *Protected Area* without authorization.
- 1.13 **INABILITY TO DIRECTLY MONITOR** - Operational Aid Computer data points are unavailable or gauges/panel indications are NOT readily available to the operator.
- 1.14 **LOSS OF POWER** – Emergency Action Levels (EALs) apply to the ability of electrical energy to perform its intended function, reach its intended equipment. Ex. – If both MFBs, are energized but all 4160v switchgear is not available, the electrical energy can not reach the motors intended. The result to the plant is the same as if both MFBs were de-energized.
- 1.15 **PROTECTED AREA** - Encompasses all Owner Controlled Areas within the security perimeter fence.
- 1.16 **REACTOR COOLANT SYSTEM (RCS) LEAKAGE** – RCS Operational Leakage as defined in the Technical Specification Basis B 3.4.13:

RCS leakage includes leakage from connected systems up to and including the second normally closed valve for systems which do not penetrate containment and the outermost isolation valve for systems which penetrate containment.

A. Identified LEAKAGE

LEAKAGE to the containment from specifically known and located sources, but does not include pressure boundary LEAKAGE or controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE).

LEAKAGE, such as that from pump seals, gaskets, or valve packing (except RCP seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;

LEAKAGE through a steam generator (SG) to the Secondary System: Primary to secondary LEAKAGE must be included in the total calculated for identified LEAKAGE.

B. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE.

C. Pressure Boundary LEAKAGE

LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

- 1.17 **RUPTURED** (As relates to Steam Generator) - Existence of Primary to Secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.
- 1.18 **SABOTAGE** - Deliberate damage, mis-alignment, or mis-operation of plant equipment with the intent to render the equipment unavailable.

- 1.19 **SAFETY-RELATED SYSTEMS AREA** - Any area within the *Protected area* which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.
- 1.20 **SIGNIFICANT PLANT TRANSIENT** - An *unplanned* event involving one or more of the following:
- (1) Automatic turbine runback >25% thermal reactor power
  - (2) Electrical load rejection >25% full electrical load
  - (3) Reactor Trip
  - (4) Safety Injection System Activation
- 1.21 **SITE AREA EMERGENCY** - Events are in process or have occurred which involve actual or likely major failures of plant functions needed for the protection of the public. Any releases are NOT expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels outside the Exclusion Area Boundary.
- 1.22 **SELECTED LICENSEE COMMITMENT (SLC)** -Chapter 16 of the FSAR
- 1.23 **SITE BOUNDARY** - That area, including the *Protected Area*, in which DPC has the authority to control all activities including exclusion or removal of personnel and property (1 mile radius from the center of Unit 2).
- 1.24 **TOXIC GAS** - A gas that is dangerous to life or health by reason of inhalation or skin contact (e.g.; Chlorine).
- 1.25 **UNCONTROLLED** - Event is not the result of planned actions by the plant staff.
- 1.26 **UNPLANNED** - An event or action is UNPLANNED if it is not the expected result of normal operations, testing, or maintenance. Events that result in corrective or mitigative actions being taken in accordance with abnormal or emergency procedures are UNPLANNED.
- 1.27 **UNUSUAL EVENT** - Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
- 1.28 **VALID** - An indication or report or condition is considered to be VALID when it is conclusively verified by: (1) an instrument channel check; or, (2) indications on related or redundant instrumentation; or, (3) by direct observation by plant personnel such that doubt related to the instrument's operability, the condition's existence, or the report's accuracy is removed. Implicit with this definition is the need for timely assessment.
- 1.29 **VIOLENT** - Force has been used in an attempt to injure site personnel or damage plant property.

- 1.30 **VISIBLE DAMAGE** - Damage to equipment or structure that is readily observable without measurements, testing, or analyses. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage: deformation due to heat or impact, denting, penetration, rupture.

Enclosure 4.11  
Operating Modes Defined In Improved  
Technical Specifications

RP/0/B/1000/001

Page 1 of 1

MODES

MODE	TITLE	REACTIVITY CONDITION ( $K_{eff}$ )	% RATED THERMAL POWER (a)	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	$\geq 0.99$	$> 5$	NA
2	Startup	$\geq 0.99$	$\leq 5$	NA
3	Hot Standby	$< 0.99$	NA	$\geq 250$
4	Hot Shutdown (b)	$< 0.99$	NA	$250 > T > 200$
5	Cold Shutdown (b)	$< 0.99$	NA	$\leq 200$
6	Refueling (c)	NA	NA	NA

(a) Excluding decay heat.

(b) All reactor vessel head closure bolts fully tensioned.

(c) One or more reactor vessel head closure bolts less than fully tensioned.

## 1. Instructions For Using Enclosure 4.1 – Fission Product Barrier Matrix

- 1.1 If the unit was at Hot S/D or above, (Modes 1, 2, 3, or 4) and one or more fission product barriers have been affected, refer to Enclosure 4.1, (Fission Product Barrier Matrix) and review the criteria listed to determine if the event should be classified.

- 1.1.1 For each Fission Product Barrier, review the associated EALs to determine if there is a Loss or Potential Loss of that barrier. Circle any that apply.

**NOTE:** An event with multiple events could occur which would result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e. within 1-3 hours). In this situation, use judgement and classify as if the thresholds are exceeded.

- 1.2 Three possible outcomes exist for each barrier. No challenge, potential loss, or loss. Use the worst case for each barrier and the classification table at the bottom of the page to determine appropriate classification.
- 1.3 The numbers in parentheses out beside the label for each column can be used to assist in determining the classification. If no EAL is met for a given barrier, that barrier will have 0 points. The points for the columns are as follows:

<u>Barrier</u>	<u>Failure</u>	<u>Points</u>
RCS	Potential Loss	4
	Loss	5
Fuel Clad	Potential Loss	4
	Loss	5
Containment	Potential Loss	1
	Loss	3

- 1.3.1 To determine the classification, add the highest point value for each barrier to determine a total for all barriers. Compare this total point value with the numbers in parentheses beside each classification to see which one applies.
- 1.3.2 Finally as a verification of your decision, look below the Emergency Classification you selected. The loss and/or potential loss EALs selected for each barrier should be described by one of the bullet statements.

## Instructions For Using Enclosure 4.1

EXAMPLE: Failure to properly isolate a 'B' MS Line Rupture outside containment, results in extremely severe overcooling.

PTS entry conditions were satisfied.

Stresses on the 'B' S/G resulted in failure of multiple S/G tubes.

RCS leakage through the S/G exceeds available makeup capacity as indicated by loss of subcooling margin.

Barrier	EAL	Failure	Points
RCS	SGTR > Makeup capacity of one HPI pump in normal makeup mode with letdown isolated	Potential Loss	4
	Entry into PTS operating range	Potential Loss	4
	RCS leak rate > available makeup capacity as indicated by a loss of subcooling	Loss	5
Fuel Clad	No EALs met and no justification for classification on judgment	No Challenge	0
Containment	Failure of secondary side of SG results in a direct opening to the environment	Loss	3

RCS 5 + Fuel 0 + Containment 3 = Total 8

- A. Even though two Potential Loss EALs and one Loss EAL are met for the RCS barrier, credit is only taken for the worst case (highest point value) EAL, so the points from this barrier equal 5.
- B. No EAL is satisfied for the Fuel Clad Barrier so the points for this barrier equal 0.
- C. One Loss EAL is met for the Containment Barrier so the points for this barrier equal 3.
- D. When the total points are calculated the result is 8, therefore the classification would be a *Site Area Emergency*.
- E. Look in the box below "*Site Area Emergency*". You have identified a loss of two barriers. This agrees with one of the bullet statements. The classification is correct.



**INFORMATION  
ONLY**Duke Power Company  
**PROCEDURE PROCESS RECORD**(1) ID No. RP/0/B/1000/002Revision No. 010**SEPARATION**(2) Station OCONEE NUCLEAR STATION(3) Procedure Title Control Room Emergency Coordinator Procedure(4) Prepared By Rodney Brown (Signature) Rodney Brown Date 08/27/2002

(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 Robert J. Hill (QR) Date 8/28/02Cross-Disciplinary Review By Michelle Hill (QR)NA Date 8/28/02

Reactivity Mgmt Review By \_\_\_\_\_ (QR)NA Date \_\_\_\_\_

Mgmt Involvement Review By \_\_\_\_\_ (Ops Supt) NA Date \_\_\_\_\_

(7) Additional Reviews

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

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

Temporary Approval (if necessary)

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

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

(9) Approved By Rodney Brown Date 08/29/02**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 \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages)

<p>Duke Power Company Oconee Nuclear Site</p> <p>Control Room Emergency Coordinator Procedure</p> <p>Reference Use</p>	Procedure No.
	RP/0/B/1000/002
	Revision No. 010
	Electronic Reference No. OX002WOT

## Control Room Emergency Coordinator Procedure

**NOTE:** This procedure is an implementing procedure to the Oconee Nuclear Site Emergency Plan and must be forwarded to Emergency Planning within three (3) working days of approval.

### 1. Symptoms

- 1.1 Events are in process or have occurred which require activation of the Oconee Nuclear Site Emergency Plan.

### 2. Immediate Actions

The Operations Shift Manager/Emergency Coordinator shall use this procedure until relieved by the Station Manager/Alternate in the Technical Support Center.

**NOTE:** Place Keeping Aids: ☐ at left of steps may be used for procedure place keeping. (☒)

- ☐ 2.1 **IF** General Emergency conditions are met,  
**THEN** GO TO Enclosure 4.1 (General Emergency).
- ☐ 2.2 **IF** Site Area Emergency conditions are met,  
**THEN** GO TO Enclosure 4.2 (Site Area Emergency).
- ☐ 2.3 **IF** Alert conditions are met,  
**THEN** GO TO Enclosure 4.3 (Alert).
- ☐ 2.4 **IF** Unusual Event conditions are met,  
**THEN** GO TO Enclosure 4.4 (Unusual Event).
- ☐ 2.5 **IF** An Emergency Classification does **NOT** exist and ERO Activation is desired,  
**THEN** GO TO Step 1.6 of Enclosure 4.4 (Unusual Event).

### 3. Subsequent Actions

**NOTE:** Actions are **NOT** required to be followed in any particular sequence.

- ☐ 3.1 **IF** A SBLOCA or Steam Generator Tube Leak exist,  
**THEN** Implement Step 5.4, Emergency Worker Exposure Limits, of OMP 1-18,  
(Implementation Standard During Abnormal And Emergency Events).

- ☐ 3.2    IF            RIA 46 is on scale,  
          THEN        Use Enclosure 4.3 of RP/0/B/1000/001, (Emergency Classification), to determine if the emergency classification should be upgraded to a Site Area Emergency or General Emergency based on radiation activity.
- ☐ 3.2.1    Instruct RP to perform an Offsite Dose Calculation and determine any additional Protective Action Recommendations.
- ☐ 3.3    IF            1, 3 RIA 57 reads  $\geq 1.0$  R/hr; 2 RIA 57 reads  $\geq 1.6$  R/hr; or 1, 2, 3 RIA 58 reads  $\geq 1.0$  R/hr.  
          THEN        Use Enclosure 4.1 or 4.8 of RP/0/B/1000/001, (Emergency Classification), to determine if the emergency classification should be upgraded to a Site Area Emergency or General Emergency based on radiation activity.
- ☐ 3.4    IF            RIA 16 or 17 are/were in Alert or High Alarm ( $\geq 2.5$  mR/hr),  
          THEN        Instruct RP to perform an Offsite Dose Calculation using the RIA values.
- ☐ 3.4.1    Use Enclosure 4.3 of RP/0/B/1000/001, (Emergency Classification), and the Offsite Dose Calculation results to determine if the emergency classification should be upgraded to a Site Area Emergency or General Emergency based on dose projection at the site boundary.
- ☐ 3.4.2    Determine any additional Protective Action Recommendations.
- ☐ 3.5    IF            A large scale fire or flood damage has occurred or is occurring,  
          THEN        Use RP/0/B/1000/022, (Procedure For Site Fire Damage Assessment And Repair) and /or RP/0/B/1000/29, (Fire Brigade Response) to determine additional actions that may be required.
- ☐ 3.6    IF            A Security Event is in progress,  
          THEN        Use RP/0/B/1000/007, (Security Event), to determine additional actions that may be required.
- ☐ 3.7    IF            A hazardous substance has been released,  
          THEN        Use RP/0/B/1000/017, (Spill Response), to determine additional actions that may be required.

**NOTE:** Priority should be placed on providing treatment for the most life-threatening event (i.e., medical vs radiation exposure - OSC procedure RP/0/B/1000/011, (Planned Emergency Exposure). The Emergency Coordinator may authorize (either verbal or signature) exposures greater than 25 rem TEDE (Total Effective Dose Equivalent) for lifesaving missions.

- ☐ 3.8    **IF**            A medical response is required,  
          **THEN**        Use RP/0/1000/016, (Medical Response).
- ☐ 3.8.1    Document verbal approval of Planned Emergency Exposures required for lifesaving missions in the Control Room Emergency Coordinator Log.
- ☐ 3.9    **IF**            Changing plant conditions require an emergency classification upgrade,  
          **THEN**        **GO TO** the applicable enclosure, designated in the Immediate Actions section of this procedure, required for the appropriate emergency classification.
- ☐ 3.10    Announce over the Plant Public address System the following information:
  - ☐ 3.10.1    The current emergency classification level and plant status UE/Alert/SAE/GE
  - ☐ 3.10.2    If appropriate, the status of contamination and how people are to handle themselves:

Plant personnel should assume they are contaminated until surveyed by RP or until they have frisked themselves.

**NO** eating, drinking, or smoking until the area is cleared by RP

Identify areas of contamination to plant personnel:

\_\_\_\_\_

\_\_\_\_\_

**WARNING:** Use of the Outside Air Booster Fans during a Security Event may introduce incapacitating agents into the Control Room.

{3}

- NOTE:**
- The Outside Air Booster Fans (Control Room Ventilation System - CRVS) are used to provide positive pressure in the Control Room to prevent smoke, toxic gases, or radioactivity from entering the area as required by NuReg 0737.
  - Chlorine Monitor Alarm will either stop the Air Booster Fans or will not allow them to start.

☐ 3.11 **IF** There is an indication that smoke or toxic gases from the Turbine Building may enter the Control Room.

**THEN** Instruct Control Room personnel to turn on the Outside Air Booster Fans.

Fans On \_\_\_\_\_ Time: \_\_\_\_\_

☐ 3.12 **IF** RIA-39 is in **ALARM**,

**THEN** Follow AP/1/2/3/1700/018, (Abnormal Release Of Radioactivity).

Fans On \_\_\_\_\_ Time: \_\_\_\_\_

☐ Secure fans if back-up sample by RP shows RIA-39 is in error.

☐ Isolate source of airborne contamination to the Control Room if sample from RP shows RIA alarm is valid.

☐ Secure fans if dose levels in CR/TSC/OSC are increased by the addition of outside filtered air.

Fans Off \_\_\_\_\_ Time: \_\_\_\_\_

- NOTE:**
- 10CFR50.54(q) allows for reasonable actions that depart from a License Condition or Technical Specification to be performed in an emergency when this action is immediately needed to protect the health and safety of the public and no action consistent with the License Condition or Technical Specification that can provide adequate or equivalent protection is immediately apparent.
  - 10CFR50.54 (y) requires approval of any 10CFR50.54(x) actions by a Licensed Senior Operator
  - Implementation of Oconee Severe Accident Guidelines (OSAG) requires the use of 10CFR50.54 (x) and (y) provisions.

- ☐ 3.13 **IF** Plant conditions require a decision to implement 10CFR50.54(x),  
**THEN** Perform the following steps:
- ☐ 3.13.1 Document decision and actions taken in the affected unit's log.
- ☐ 3.13.2 Document decision and actions taken in the CR Emergency Coordinator Log.

**NOTE:** NRC must be notified of any 10CFR50.54(x) decisions and actions within one (1) hour.

- ☐ 3.13.3 Request CR NRC Communicator to report decision and actions taken to the NRC.

**NOTE:** 10CFR50.72 requires NRC notification for specific plant conditions.

- ☐ 3.14 **IF** Plant conditions require NRC notification under 10CFR50.72,  
**THEN** Request the CR NRC Communicator to provide this notification using the guidance in OMP 1-14, (Notifications).
- 3.15 **IF** The Emergency Response Organization was activated and a security event involving an intrusion/attempted intrusion **does not exist**, {4}
- THEN** Provide turnover to the Technical Support Center using Enclosure 4.5 of this procedure.

Technical Support Center Activated \_\_\_\_\_ Time: \_\_\_\_\_

A. Turn over all emergency response procedures in use to the TSC.

- NOTE:**
- After normal working hours, emergency response personnel will not report to the TSC or OSC until after the security threat has been neutralized.
  - The EOF Director will notify the Control Room Emergency Coordinator once the EOF is *Operational* and initiate turnover.

- ☐ 3.16 **IF** The Emergency Response Organization was activated after normal working hours **AND** a security event involving an intrusion/attempted intrusion does exist,

**THEN** Provide turnover to the EOF Director using the following guidance. {4}

- ☐ 3.16.1 Obtain the current copy of the Emergency Notification Form and plant status.  
A. Verify the following information being provided by the EOF Director to the Control Room Emergency Coordinator.

- Present Emergency Classification \_\_\_\_\_ Time of Classification \_\_\_\_\_  
Initial Emergency Classification \_\_\_\_\_ Time of Classification \_\_\_\_\_
- Initiating Condition/Unit(s) Affected: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Present status of affected unit(s), including significant equipment out of service.  
Plant Condition: Improving \_\_\_\_\_ Stable \_\_\_\_\_ Degrading \_\_\_\_\_  
Status of affected unit(s):  
Unit 1 shutdown at \_\_\_\_\_ or at \_\_\_\_\_ % Power  
Unit 2 shutdown at \_\_\_\_\_ or at \_\_\_\_\_ % Power  
Unit 3 shutdown at \_\_\_\_\_ or at \_\_\_\_\_ % Power  
Equipment out of service: \_\_\_\_\_
- Emergency Releases:  
None \_\_\_\_\_ Potential \_\_\_\_\_ Is Occurring \_\_\_\_\_ Has Occurred \_\_\_\_\_
- Protective Action Recommendations:  
None \_\_\_\_\_  
Oconee County: \_\_\_\_\_  
Pickens County: \_\_\_\_\_
- Last Message Number \_\_\_\_\_ Next Message due at (time): \_\_\_\_\_



☐ 3.16.2 Control Room Emergency Coordinator turnover to EOF Director completed.  
EOF Activated \_\_\_\_\_ Time \_\_\_\_\_

☐ 3.16.3 Direct NRC Communicator to notify the NRC Operations Center that the EOF is activated.

3.17 **IF** An Unusual Event classification is being terminated,

**THEN** **REFER TO** Enclosure 4.6, (Emergency Classification Termination Criteria), of this procedure for termination guidance.

☐ 3.17.1 Verify that the Offsite Communicator has provided termination message to the offsite agencies.

**NOTE:** The EP Section shall develop a written report, for signature by the Site Vice President, to the State Emergency Preparedness Agency, Oconee County EPD, and Pickens County EPD within 24 working hours of the event termination.

☐ 3.17.2 Notify Emergency Planning Section (Emergency Planning Duty person after hours) that the Unusual Event has been terminated.

☐ 3.17.3 Emergency Planning shall hold a critique following termination of any actual Unusual Event.

#### 4. Enclosures

4.1 General Emergency

4.2 Site Area Emergency

4.3 Alert

4.4 Unusual Event

4.5 Operations Shift Manager to TSC Emergency Coordinator Turnover Sheet

4.6 Emergency Classification Termination Criteria

4.7 Condition A/Condition B Response Actions

4.8 ERO Pager Activation By Security

4.9 References

## 1. Immediate Actions

- NOTE:**
- State and County Agencies must be notified of event classification within **15 minutes** of Emergency Declaration.
  - Provide Offsite Communicator with declaration time.

- ☐ 1.1 **IF** It has been determined that an Emergency Action Level for an Initiating Condition has been met,  
**THEN** Declare a **General Emergency**.

Time of Declaration: \_\_\_\_\_

- ☐ 1.2 Appoint a person to maintain the Emergency Coordinator Log **OR** maintain the log yourself.

- NOTE:**
- Remind the Control Room Offsite Communicator that Follow Up notifications (updates) are required at least every **60 Minutes** for this classification.
  - Condition A, Dam Failure (Keowee or Jocassee), **OR** Condition B also requires notification of the Georgia Emergency Management Agency and National Weather Service. Remind the Control Room Offsite Communicator to notify these agencies in addition to and after SC State, Oconee County, and Pickens County.

- ☐ 1.3 Appoint Control Room Offsite Communicator(s).
- ☐ 1.4 Provide the following Protective Action Recommendations for use by the Offsite Communicator to complete the Emergency Notification Form.

PROTECTIVE ACTION RECOMMENDATION	PICKENS COUNTY SECTORS							OCONEE COUNTY SECTORS						
	A0	A1	B1	C1	A2	B2	C2	A0	D1	E1	F1	D2	E2	F2
EVACUATE	X	X	X	X				X	X	X	X			
SHELTER					X	X	X					X	X	X

- 1.4.1 **IF** Condition A, Imminent or Actual Dam Failure (Keowee or Jocassee) exists,  
**THEN** **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions), Step 1.0, for additional Protective Action Recommendations.

Enclosure 4.1  
General Emergency

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Page 2 of 4

**NOTE:** Steps 1.6 - 1.13 may be started/completed while the Emergency Notification Form is being prepared by the Offsite Communicator.

- ☐ 1.5 Review and approve completed Emergency Notification Form.

1.5.1 Sign Emergency Notification Form.

**NOTE:** Activate the Alternate TSC and OSC in the Oconee Office Building, Rooms 316 and 316A, if a fire in the Turbine Building, flooding conditions, security events (except those involving intrusion/attempted intrusion), or onsite/offsite hazardous materials spill have occurred or are occurring. {4}

- ☐ 1.6 Activate the Emergency Response Organization (ERO) by completing the following actions.

1.6.1 Activate ERO Pagers as follows:

**NOTE:** Flooding/dam failure/earthquake conditions assume bridges may be impassable to reach emergency facilities. Provide the code below for these conditions.

- ☐ A. IF ERO activation for an Emergency (Blue Echo) is required,  
THEN Press ERO Pager Activation Panel Button 1.
- ☐ B. IF ERO activation for an Emergency affecting bridges (Blue Echo Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 2.
- ☐ C. IF ERO activation for a Drill (Blue Delta) is required,  
THEN Press ERO Pager Activation Panel Button 3.
- ☐ D. IF ERO activation for a Drill affecting bridges (Blue Delta Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 4.

**WARNING:** Activating the Alternate TSC and OSC during security events involving an intrusion/attempted intrusion into the site is not recommended. {4}

- ☐ E. IF Alternate TSC/OSC will be used,  
THEN Press ERO Pager Activation Panel Button 5.
- ☐ F. IF A Security Event is in progress,  
THEN Press ERO Pager Activation Panel Button 6.

- ☐ 1.6.2 Wait one minute and repeat step 1.6.1.

**Enclosure 4.1**  
**General Emergency**

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- ☐ 1.6.3 Monitor ERO Pager and verify that message has been provided to the ERO.
- ☐ 1.6.4 Repeat steps 1.6.1 - 1.6.3 if message is not displayed on ERO Pager.
- A. **REFER TO** Enclosure 4.8, (ERO Pager Activation By Security), if the ERO Pager is not activated by the completion of Steps 1.6.1 - 1.6.3.
- ☐ 1.6.5 **IF** ERO activation is after normal working hours,  
**THEN** Contact Security at extension 3636 or 2309.

Security Officer Name \_\_\_\_\_

- A. Request Security Officer to activate the CAN call list.

**WARNING:** Conducting Site Assembly during a Security Event may not be prudent.

- ☐ 1.7 Contact the Security Shift Supervisor.
- 1.7.1 Inform the Security Shift Supervisor that the ERO has been activated.
- 1.7.2 Discuss the need to conduct Site Assembly.
- ☐ 1.8 **IF** A Security Event does **NOT** exist,  
**OR** A Security Event does exist and the Security Shift Supervisor agrees,  
**THEN** Conduct Site Assembly per RP/0/B/1000/009, (Procedure For Site Assembly), Enclosure 4.1 and 4.3.
- ☐ 1.9 **IF** Area Radiation Monitors are in **ALARM**,  
**OR** Steam Line Break has occurred,  
**THEN** Contact shift RP and dispatch onsite monitoring teams.

**NOTE:**

- Remind the NRC Communicator to complete the NRC Event Notification Worksheet and Plant Status Sheet from OMP 1-14 (Notifications).
- An open line to the NRC may be required.

- ☐ 1.10 Appoint a SRO to notify the NRC immediately after notification of the Offsite Agencies but not later than **one (1) hour** after declaration of the emergency.
- 1.10.1 NRC Communicator (SRO) Name \_\_\_\_\_

**NOTE:** The NRC Communicator is responsible for activating ERDS.

- ☐ 1.10.2 Start the Emergency Response Data System (ERDS) for unit(s) involved within one (1) hour of the emergency classification.
  - A. **REFER TO** RP/0/B/1000/003A, (ERDS Operation).
- ☐ 1.11 Evacuate all non-essential personnel from the site after personnel accountability has been reached.
  - 1.11.1 **REFER TO** RP/0/B/1000/010, (Procedure For Emergency Evacuation/Relocation Of Site Personnel).
- ☐ 1.12 **IF** Condition A, Imminent or Actual Dam Failure (Keowee or Jocassee),  
**OR** Condition B (Keowee) exists,  
**THEN** **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions), Step 2.0 or 3.0, for additional response actions.
- ☐ 1.13 Return to Step 3.0, (Subsequent Actions), of this procedure.

**Enclosure 4.2**  
**Site Area Emergency**

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Page 1 of 4

**1. Immediate Actions**

- NOTE:**
- State and County Agencies must be notified of event classification within **15 minutes** of Emergency Declaration.
  - Provide Offsite Communicator with declaration time.

- ☐ 1.1    **IF**            It has been determined that an Emergency Action Level for an Initiating Condition has been met,

**THEN**    Declare a **Site Area Emergency**.

                         Time of Declaration: \_\_\_\_\_

- ☐ 1.2    Appoint a person to maintain the Emergency Coordinator Log **OR** maintain the log yourself.

- NOTE:**
- Remind the Control Room Offsite Communicator that Follow Up notifications (updates) are required at least every **60 Minutes** for this classification.
  - Condition A, Dam Failure (Keowee or Jocassee), **OR** Condition B also requires notification of the Georgia Emergency Management Agency and National Weather Service. Remind the Control Room Offsite Communicator to notify these agencies in addition to and after SC State, Oconee County, and Pickens County.

- ☐ 1.3    Appoint Control Room Offsite Communicator(s).

- ☐ 1.4    **IF**            Condition A, Imminent or Actual Dam Failure (Keowee or Jocassee), exists,

**THEN**    **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions), Step 1.0, and provide Protective Action Recommendations to the Offsite Communicator.

{5}

- NOTE:**    Steps 1.6 - 1.12 may be started/completed while the Emergency Notification Form is being prepared by the Offsite Communicator.

- ☐ 1.5    Review and approve completed Emergency Notification Form.

          1.5.1    Sign Emergency Notification Form.

Enclosure 4.2  
Site Area Emergency

RP/0/B/1000/002  
Page 2 of 4

**NOTE:** Activate the Alternate TSC and OSC in the Oconee Office Building, Rooms 316 and 316A, if a fire in the Turbine Building, flooding conditions, security events (except those involving intrusion/attempted intrusion), or onsite/offsite hazardous materials spill have occurred or are occurring. {4}

- ☐ 1.6 Activate the Emergency Response Organization (ERO) by completing the following actions.

1.6.1 Activate ERO Pagers as follows:

**NOTE:** Flooding/dam failure/earthquake conditions assume bridges may be impassable to reach emergency facilities. Provide the code below for these conditions.

- ☐ A. **IF** ERO activation for an Emergency (Blue Echo) is required,  
**THEN** Press ERO Pager Activation Panel Button 1.
- ☐ B. **IF** ERO activation for an Emergency affecting bridges (Blue Echo Bridges) is required,  
**THEN** Press ERO Pager Activation Panel Button 2.
- ☐ C. **IF** ERO activation for a Drill (Blue Delta) is required,  
**THEN** Press ERO Pager Activation Panel Button 3.
- ☐ D. **IF** ERO activation for a Drill affecting bridges (Blue Delta Bridges) is required,  
**THEN** Press ERO Pager Activation Panel Button 4.

**WARNING:** Activating the Alternate TSC and OSC during security events involving an intrusion/attempted intrusion into the site is not recommended. {4}

- ☐ E. **IF** Alternate TSC/OSC will be used,  
**THEN** Press ERO Pager Activation Panel Button 5.
- ☐ F. **IF** A Security Event is in progress,  
**THEN** Press ERO Pager Activation Panel Button 6.
- ☐ 1.6.2 Wait one minute and repeat step 1.6.1.
- ☐ 1.6.3 Monitor ERO Pager and verify that message has been provided to the ERO.
- ☐ 1.6.4 Repeat steps 1.6.1 - 1.6.3 if message is not displayed on ERO Pager.
- A. **REFER TO** Enclosure 4.8, (ERO Pager Activation By Security), if the ERO Pager is not activated by the completion of Steps 1.6.1 - 1.6.3.

## Site Area Emergency

- ☐ 1.6.5 IF ERO activation is after normal working hours,  
THEN Contact Security at extension 3636 or 2309.

Security Officer Name \_\_\_\_\_

- A. Request Security Officer to activate the CAN call list.

**WARNING:** Conducting Site Assembly during a Security Event may not be prudent.

- ☐ 1.7 Contact the Security Shift Supervisor.
- 1.7.1 Inform the Security Shift Supervisor that the ERO has been activated.
- 1.7.2 Discuss the need to conduct Site Assembly.
- ☐ 1.8 IF A Security Event does NOT exist,  
OR A Security Event does exist and the Security Shift Supervisor agrees,  
THEN Conduct Site Assembly per RP/0/B/1000/009, (Procedure For Site Assembly),  
Enclosure 4.1 and 4.3.
- ☐ 1.9 IF Area Radiation Monitors are in **ALARM**,  
OR Steam Line Break has occurred,  
THEN Contact shift RP and dispatch onsite monitoring teams.

**NOTE:**

- Remind the NRC Communicator to complete the NRC Event Notification Worksheet and Plant Status Sheet from OMP 1-14 (Notifications).
- An open line to the NRC may be required.

- ☐ 1.10 Appoint an SRO to notify the NRC immediately after notification of the Offsite Agencies but not later than **one (1) hour** after declaration of the emergency.

1.10.1 NRC Communicator (SRO) Name \_\_\_\_\_

**NOTE:** The NRC Communicator is responsible for activating ERDS.

- ☐ 1.10.2 Start the Emergency Response Data System (ERDS) for unit(s) involved within **one (1) hour** of the emergency classification.

- A. **REFER TO** RP/0/B/1000/003A, (ERDS Operation).



Site Area Emergency

- ☐ 1.11 **IF** Condition A, Imminent or Actual Dam Failure (Keowee or Jocassee),  
**OR** Condition B (Keowee) exists,  
**THEN** **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions),  
Step 2.0 or 3.0, for additional response actions.
- ☐ 1.12 Return to Step 3.0, (Subsequent Actions), of this procedure.

## 1. Immediate Actions

- NOTE:**
- State and County Agencies must be notified of event classification within **15 minutes** of Emergency Declaration.
  - Provide Offsite Communicator with declaration time.

- ☐ 1.1    **IF**            It has been determined that an Emergency Action Level for an Initiating Condition has been met,

**THEN**    Declare an **Alert**.

Time of Declaration: \_\_\_\_\_

- ☐ 1.2    Appoint a person to maintain the Emergency Coordinator Log **OR** maintain the log yourself.

- NOTE:**
- Remind the Control Room Offsite Communicator that Follow Up notifications (updates) are required at least every **60 minutes** for this classification.
  - Condition B for Keowee Hydro Project Dams/Dikes also requires notification of the Georgia Emergency Management Agency and National Weather Service. Remind the Control Room Offsite Communicator to notify these agencies in addition to and after SC State, Oconee County, and Pickens County.

- ☐ 1.3    Appoint Control Room Offsite Communicator(s).

**NOTE:**    Steps 1.5 - 1.11 may be started/completed while the Emergency Notification Form is being prepared by the Offsite Communicator.

- ☐ 1.4    Review and approve completed Emergency Notification Form.

1.4.1    Sign Emergency Notification Form.

**NOTE:** Activate the Alternate TSC and OSC in the Oconee Office Building, Rooms 316 and 316A, if a fire in the Turbine Building, flooding conditions, security events (except those involving intrusion/attempted intrusion), or onsite/offsite hazardous materials spill have occurred or are occurring. {4}

- ☐ 1.5 Activate the Emergency Response Organization (ERO) by completing the following actions.

1.5.1 Activate ERO Pagers as follows:

**NOTE:** Flooding/dam failure/earthquake conditions assume bridges may be impassable to reach emergency facilities. Provide the code below for these conditions.

- ☐ A. IF ERO activation for an Emergency (Blue Echo) is required,  
THEN Press ERO Pager Activation Panel Button 1.
- ☐ B. IF ERO activation for an Emergency affecting bridges (Blue Echo Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 2.
- ☐ C. IF ERO activation for a Drill (Blue Delta) is required,  
THEN Press ERO Pager Activation Panel Button 3.
- ☐ D. IF ERO activation for a Drill affecting bridges (Blue Delta Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 4.

**WARNING:** Activating the Alternate TSC and OSC during security events involving an intrusion/attempted intrusion into the site is not recommended. {4}

- ☐ E. IF Alternate TSC/OSC will be used,  
THEN Press ERO Pager Activation Panel Button 5.
- ☐ F. IF A Security Event is in progress,  
THEN Press ERO Pager Activation Panel Button 6.
- ☐ 1.5.2 Wait one minute and repeat step 1.5.1.
- ☐ 1.5.3 Monitor ERO Pager and verify that message has been provided to the ERO.
- ☐ 1.5.4 Repeat steps 1.5.1 - 1.5.3 if message is not displayed on ERO Pager.
- A. **REFER TO** Enclosure 4.8, (ERO Pager Activation By Security), if the ERO Pager is not activated by the completion of Steps 1.5.1 - 1.5.3.

## Alert

- ☐ 1.5.5    IF        ERO activation is after normal working hours,  
                 THEN    Contact Security at extension 3636 or 2309.

Security Officer Name \_\_\_\_\_

- A. Request Security Officer to activate the CAN call list.

**WARNING:** Conducting Site Assembly during a Security Event may not be prudent.

- ☐ 1.6    Contact the Security Shift Supervisor.
- 1.6.1    Inform the Security Shift Supervisor that the ERO has been activated.
- 1.6.2    Discuss the need to conduct Site Assembly.
- ☐ 1.7    IF        A Security Event does NOT exist,  
                 OR        A Security Event does exist and the Security Shift Supervisor agrees,  
                 THEN    Conduct Site Assembly per RP/0/B/1000/009, (Procedure For Site Assembly),  
                 Enclosure 4.1 and 4.3.
- ☐ 1.8    IF        Area Radiation Monitors are in **ALARM**,  
                 OR        Steam Line Break has occurred,  
                 THEN    Contact shift RP and dispatch onsite monitoring teams

**NOTE:**

- Remind the NRC Communicator to complete the NRC Event Notification Worksheet and Plant Status Sheet from OMP 1-14 (Notifications).
- An open line to the NRC may be required.

- ☐ 1.9    Appoint an SRO to notify the NRC immediately after notification of the Offsite Agencies but not later than **one (1) hour** after declaration of the emergency.

1.9.1    NRC Communicator (SRO) Name \_\_\_\_\_

**NOTE:** The NRC Communicator is responsible for activating ERDS.

- ☐ 1.9.2 Start the Emergency Response Data System (ERDS) for unit(s) involved within **one (1) hour** of the emergency classification.
  - A. **REFER TO** RP/0/B/1000/003A, (ERDS Operation).
- ☐ 1.10 **IF** Condition B at Keowee exists,  
**THEN** **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions), Step 3.0, for additional response actions.
- ☐ 1.11 Return to Step 3.0, (Subsequent Actions), of this procedure.

## 1. Immediate Actions

- NOTE:**
- State and County Agencies must be notified of event classification within **15 minutes** of Emergency Declaration.
  - Provide Offsite Communicator with declaration time.

- ☐ 1.1 **IF** It has been determined that an Emergency Action Level for an Initiating Condition has been met,

**THEN** Declare an **Unusual Event**.

Time of Declaration: \_\_\_\_\_

- ☐ 1.2 Appoint a person to maintain the Emergency Coordinator Log **OR** maintain the log yourself.

- NOTE:**
- Remind the Control Room Offsite Communicator that an Initial Message and a Termination Message are required for this classification. No Follow Up Notifications (updates) are required unless requested by the Offsite Agencies.
  - Condition B for Keowee Hydro Project Dams/Dikes also requires notification of the Georgia Emergency Management Agency and National Weather Service. Remind the Control Room Offsite Communicator to notify these agencies in addition to and after SC State, Oconee County, and Pickens County.

- ☐ 1.3 Appoint Control Room Offsite Communicator(s).

**NOTE:** Steps 1.5 - 1.11 may be started/completed while the Emergency Notification Form is being prepared by the Offsite Communicator.

- ☐ 1.4 Review and approve completed Emergency Notification Form.

1.4.1 Sign Emergency Notification Form.

- ☐ 1.5 **IF** Condition B at Keowee exists,  
**THEN** **REFER TO** Enclosure 4.7, (Condition A/Condition B Response Actions), Step 3.0, for additional response actions.

**NOTE:**

- Activation of the ERO is NOT required for an Unusual Event Classification.
- Activate the Alternate TSC and OSC in the Oconee Office Building, Rooms 316 and 316A, if a fire in the Turbine Building, flooding conditions, security events (except those involving intrusion/attempted intrusion), or onsite/offsite hazardous materials spills have occurred or are occurring.

{4}

☐ 1.6 IF Emergency Response Organization (ERO) activation is desired,  
THEN Complete the following actions.

1.6.1 Activate ERO Pagers as follows:

**NOTE:** Flooding/dam failure/earthquake conditions assume bridges may be impassable to reach emergency facilities. Provide the code below for these conditions.

- ☐ A. IF ERO activation for an Emergency (Blue Echo) is required,  
THEN Press ERO Pager Activation Panel Button 1.
- ☐ B. IF ERO activation for an Emergency affecting bridges (Blue Echo Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 2.
- ☐ C. IF ERO activation for a Drill (Blue Delta) is required,  
THEN Press ERO Pager Activation Panel Button 3.
- ☐ D. IF ERO activation for a Drill affecting bridges (Blue Delta Bridges) is required,  
THEN Press ERO Pager Activation Panel Button 4.

**WARNING:** Activating the Alternate TSC and OSC during security events involving an intrusion/attempted intrusion into the site is not recommended.

{4}

- ☐ E. IF Alternate TSC/OSC will be used,  
THEN Press ERO Pager Activation Panel Button 5.
- ☐ F. IF A Security Event is in progress,  
THEN Press ERO Pager Activation Panel Button 6.

☐ 1.6.2 Wait one minute and repeat step 1.6.1.

☐ 1.6.3 Monitor ERO Pager and verify that message has been provided to the ERO.

- ☐ 1.6.4 Repeat steps 1.6.1 - 1.6.3 if message is not displayed on ERO Pager.
- A. **REFER TO** Enclosure 4.8, (ERO Pager Activation By Security), if the ERO Pager is not activated by the completion of Steps 1.6.1 - 1.6.3.
- ☐ 1.6.5 **IF** ERO activation is after normal working hours,  
**THEN** Contact Security at extension 3636 or 2309.

Security Officer Name \_\_\_\_\_

- A. Request Security Officer to activate the CAN call list.

**WARNING:** Conducting Site Assembly during a Security Event may not be prudent.

- ☐ 1.7 Contact the Security Shift Supervisor.
- 1.7.1 Inform the Security Shift Supervisor that the ERO has been activated.
- 1.7.2 Discuss the need to conduct Site Assembly.

**NOTE:** Consider conducting a Site Assembly if a Hazardous Materials spill affecting personnel safety is involved; or, if personnel safety is a concern.

- ☐ 1.8 **IF** The Emergency Response Organization is needed to assist with the Unusual Event emergency activities,  
**AND** A Security Event does **NOT** exist,  
**OR** A Security Event does exist and the Security Shift Supervisor agrees,  
**THEN** Conduct Site Assembly per RP/0/B/1000/009, (Procedure For Site Assembly), Enclosure 4.1 and 4.3.
- ☐ 1.8.1 Document the decision to conduct Site Assembly in the Control Room Emergency Coordinator Log.
- ☐ 1.9 **IF** Area Radiation Monitors are in **ALARM**,  
**OR** Steam Line Break has occurred,  
**THEN** Contact shift RP and dispatch onsite monitoring teams.



Enclosure 4.4  
Unusual Event

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- NOTE:**
- Remind the NRC Communicator to complete the NRC Event Notification Worksheet and Plant Status Sheet from OMP 1-14 (Notifications).
  - An open line to the NRC may be required.

- ☐ 1.10 Appoint an SRO to notify the NRC immediately after notification of the Offsite Agencies but not later than **one (1) hour** after declaration of the emergency.

1.10.1 NRC Communicator (SRO) Name\_\_\_\_\_

- ☐ 1.11 Return to Step 3.0, (Subsequent Actions), of this procedure.

Operations Shift Manager To TSC Emergency  
Coordinator Turnover Sheet

EMERGENCY CLASSIFICATION \_\_\_\_\_ TIME DECLARED \_\_\_\_\_  
DESCRIPTION OF EVENT \_\_\_\_\_  
\_\_\_\_\_

Unit One Status:

Reactor Power \_\_\_\_\_ RCS Pressure \_\_\_\_\_ RCS Temperature \_\_\_\_\_  
Auxiliaries Being Supplied Power From \_\_\_\_\_ ES Channels Actuated \_\_\_\_\_

MAJOR EQUIPMENT OUT OF SERVICE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

JOBS IN PROGRESS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Unit Two Status:

Reactor Power \_\_\_\_\_ RCS Pressure \_\_\_\_\_ RCS Temperature \_\_\_\_\_  
Auxiliaries Being Supplied Power From \_\_\_\_\_ ES Channels Actuated \_\_\_\_\_

MAJOR EQUIPMENT OUT OF SERVICE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

JOBS IN PROGRESS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Unit Three Status:

Reactor Power \_\_\_\_\_ RCS Pressure \_\_\_\_\_ RCS Temperature \_\_\_\_\_  
Auxiliaries Being Supplied Power From \_\_\_\_\_ ES Channels Actuated \_\_\_\_\_

MAJOR EQUIPMENT OUT OF SERVICE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

JOBS IN PROGRESS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Operations Shift Manager To TSC Emergency  
Coordinator Turnover Sheet**

Classification Procedure in Use:

RP/0/B/1000/002 (Control Room Emergency Coordinator Procedure)

Is RP/0/B/1000/03A, (ERDS Operation) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Unit No. \_\_\_\_

Step No. \_\_\_\_

Is RP/0/B/1000/007, (Security) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Step No. \_\_\_\_

Is RP/0/B/1000/016, (Medical) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Step No. \_\_\_\_

Is RP/0/B/1000/017, (Spill Response) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Step No. \_\_\_\_

Is RP/0/B/1000/022, (Fire/Flood) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Step No. \_\_\_\_

Is RP/0/B/1000/029, (Fire Brigade) in use? Yes \_\_\_\_ No \_\_\_\_ If Yes, Step No. \_\_\_\_

Is Step 5.4 of OMP 1-18 (Implementation Standard During  
Abnormal And Emergency Events) in use? \* Yes \_\_\_\_ No \_\_\_\_

\* If yes, implementation of emergency worker exposure limits must be announced over Public  
Address System. {1}

**IF** Condition A, Dam Failure, has been declared for Keowee Hydro Project,**THEN** Provide the following information to the TSC Emergency Coordinator:

- ◆ Status of Offsite Agency Notifications \_\_\_\_\_
- ◆ Recommendations made to offsite agencies \_\_\_\_\_
- ◆ Status of relocation of site personnel \_\_\_\_\_

What is the status of Site Assembly? (This question is only applicable for those times that the  
Emergency Response Organization is activated after hours, holidays, or weekends.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Next message due to Offsite Agencies at Time: \_\_\_\_\_

Operations Shift Manager/CR \_\_\_\_\_ Time: \_\_\_\_\_

Emergency Coordinator/TSC \_\_\_\_\_ Time: \_\_\_\_\_

Enclosure 4.6  
Emergency Classification Termination  
Criteria

RP/0/B/1000/002  
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**IF** The following guidelines applicable to the present emergency condition have been met or addressed,

**THEN** An emergency condition may be considered resolved when:

- \_\_\_\_\_ 1. Existing conditions no longer meet the existing emergency classification criteria and it appears unlikely that conditions will deteriorate further.
- \_\_\_\_\_ 2. Radiation levels in affected in-plant areas are stable or decreasing to below acceptable levels.
- \_\_\_\_\_ 3. Releases of radioactive material to the environment greater than Technical Specifications are under control or have ceased.
- \_\_\_\_\_ 4. The potential for an uncontrolled release of radioactive material is at an acceptably low level.
- \_\_\_\_\_ 5. Containment pressure is within Technical Specification requirements.
- \_\_\_\_\_ 6. Long-term core cooling is available.
- \_\_\_\_\_ 7. The shutdown margin for the core has been verified.
- \_\_\_\_\_ 8. A fire, flood, earthquake, or similar emergency condition is controlled or has ceased.
- \_\_\_\_\_ 9. Offsite power is available per Technical Specification requirements.
- \_\_\_\_\_ 10. All emergency action level notifications have been completed.
- \_\_\_\_\_ 11. Hydro Central has been notified of termination of Condition B for Keowee Hydro Project. {2}

♦ **REFER TO** Section 6 of the Emergency Telephone Directory, (Keowee Hydro Project Dam/Dike Notification).

- \_\_\_\_\_ 12. The Regulatory Compliance Section has evaluated plant status with respect to Technical Specifications and recommends Emergency classification termination.

_____ Date/Time	_____ Initial	13. Emergency terminated. Request the Control Room Offsite Communicator to complete an Emergency Notification Form for a Termination Message using guidance in RP/0/1000/015A, (Offsite Communications From The Control Room), and provide information to offsite agencies.
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♦ Return to Step 3.16.1.

## 1. Condition A Response - Immediate Actions

- ☐ 1.1 **IF** Condition A, Imminent or Actual Dam Failure (Keowee or Jocassee) exists,  
**THEN** Perform the following actions:
- ☐ 1.1.1 Provide the following **protective action recommendations** to Oconee County and Pickens County for imminent/actual dam failure.
- A. Provide the following recommendation for Emergency Notification Form Section 15 (B) Evacuate:
1. Move residents living downstream of the Keowee Hydro Project dams to higher ground.
- B. Provide the following recommendation for Emergency Notification Form Section 15 (D) Other:
1. Prohibit traffic flow across bridges identified on your inundation maps until the danger has passed.
- ☐ 1.2 Return to applicable Enclosure (4.1 or 4.2).
- ☐ 1.2.1 **IF** A General Emergency has been declared,  
**THEN** GO TO Step 1.5 of Enclosure 4.1, (General Emergency).
- ☐ 1.2.2 **IF** A Site Area Emergency has been declared,  
**THEN** GO TO Step 1.5 of Enclosure 4.2, (Site Area Emergency).

## 2. Condition A Response - Subsequent Actions

- ☐ 2.1 Notify Hydro Central and provide information related to the event.
- 2.1.1 **REFER TO** Section 6 of the Emergency Telephone Directory, (Keowee Hydro Project Dam/Dike Notification). {2}
- ☐ 2.2 Relocate Keowee personnel to the Operational Support Center (OSC) if events occur where their safety could be affected.
- ☐ 2.2.1 **IF** Keowee personnel are relocated to the OSC,  
**THEN** Notify Hydro Central.
- A. **REFER TO** Section 6 of the Emergency Telephone Directory, (Keowee Hydro Project Dam/Dike Notification). {2}

**NOTE:** A loss of offsite communications capabilities (Selective Signaling and the Wide Area Network - WAN) could occur within 1.5 hours after Keowee Hydro Dam failure. Rerouting of the Fiber Optic Network through Bad Creek should be started as soon as possible.

- ☐ 2.3 Notify Telecommunications Group in Charlotte to begin rerouting the Oconee Fiber Optic Network.

2.3.1 **REFER TO** Selective Signaling Section of the Emergency Telephone Directory (page 9).

- ☐ 2.4 Request Security to alert personnel at the Security Track/Firing Range and Building 8055 (Warehouse #5) to relocate to work areas inside the plant.

**NOTE:**

- Plant access road to the Oconee Complex could be impassable within 1.5 hours if the Keowee Hydro Dam fails. A loss of the Little River Dam (Newry Dam) or Dikes A-D will take longer to affect this road.
- PA Announcements can be made by the Control Room using the Office Page Override feature or Security.

- ☐ 2.5 Make a PA Announcement to relocate personnel at the following locations to the World Of Energy/Operations Training Center.

\_\_\_\_\_ Oconee Complex

\_\_\_\_\_ Oconee Garage

\_\_\_\_\_ Oconee Maintenance Training Facility

- ☐ 2.6 Dispatch operators to the SSF and establish communications.

- ☐ 2.7 Return to applicable Enclosure (4.1 or 4.2).

☐ 2.7.1 **IF** A General Emergency has been declared,  
**THEN** GO TO Step 1.13 of Enclosure 4.1, (General Emergency).

☐ 2.7.2 **IF** A Site Area Emergency has been declared,  
**THEN** GO TO Step 1.12 of Enclosure 4.2, (Site Area Emergency).

- ☐ 3.1     **IF**           Condition B at Keowee exists,  
              **THEN**      Notify Hydro Central. {2}
- 3.1.1     **REFER TO** Section 6 of the Emergency Telephone Directory, (Keowee Hydro Project Dam/Dike Notification).
- ☐ 3.2     Return to applicable Enclosure (4.1, or 4.2, or 4.3, or 4.4).
- ☐ 3.2.1     **IF**           A General Emergency has been declared,  
                      **THEN**   GO TO Step 1.13 of Enclosure 4.1, (General Emergency).
- ☐ 3.2.2     **IF**           A Site Area Emergency has been declared,  
                      **THEN**   GO TO Step 1.12 of Enclosure 4.2, (Site Area Emergency).
- ☐ 3.2.3     **IF**           An Alert has been declared,  
                      **THEN**   GO TO Step 1.11 of Enclosure 4.3, (Alert).
- ☐ 3.2.4     **IF**           An Unusual Event has been declared,  
                      **THEN**   GO TO Step 1.6 of Enclosure 4.4, (Unusual Event).

Enclosure 4.8  
ERO Pager Activation By Security

RP/0/B/1000/002  
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## 1. Symptoms

- 1.1 Activation of the ERO Pagers using the ERO Pager Activation Panel in the TSC was unsuccessful.

## 2. Immediate Actions

- 2.1 Activate the Emergency Response Organization (Technical Support Center, Operational Support Center, and Emergency Operations Facility) by completing the following actions.:

2.1.1 Contact Security.

- A. Dial 3636 (Dial 2309 if no response is received).

Security Officer Name \_\_\_\_\_

2.1.2 Read the following information to the Security Officer:

- A. The Emergency Response Organization (Technical Support Center, Operational Support Center, and Emergency Response Facility) is being activated for an emergency relating to Unit # \_\_\_\_\_.

- B. This is a \_\_\_\_\_ Blue Delta (Drill) activation, OR

This is a \_\_\_\_\_ Blue Echo (Emergency) activation

**NOTE:** Flooding/dam failure/earthquake conditions assume bridges may be impassable to reach emergency facilities. Provide the code below for these conditions.

- C. This is a \_\_\_\_\_ Blue Delta Bridges (Drill) activation, OR

This is a \_\_\_\_\_ Blue Echo Bridges (Emergency) activation

**NOTE:** Activate the Alternate TSC and OSC in the Oconee Office Building, Rooms 316 and 316A, if a fire in the Turbine Building, flooding conditions, security events (except those involving intrusion/attempted intrusion), or onsite/offsite hazardous materials spills have occurred or are occurring. {4}

**WARNING:** Activating the Alternate TSC and OSC during security events involving an intrusion/attempted intrusion into the site is not recommended. {4}

- D. \_\_\_\_\_ The Alternate TSC/OSC will be used



**Enclosure 4.8**  
**ERO Pager Activation By Security**

RP/0/B/1000/002  
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<b>NOTE:</b> The following step is only applicable during security events.
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E. \_\_\_\_\_ A Security Event is in progress.