

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-0xx JPM REVISION: 0	JPM TITLE: Review a Clearance Tagout for 2FWE-P23A, 'A' Motor Driven Aux Feedwater Pump
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K/A REFERENCE: 2.2.13 4.1 / 4.3

TASK ID: 0481-007-03-043

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☒ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 25 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	Correctly identify the incorrect tagged components, required positions, and clearance sequence for 2FWE-P23A Auxiliary Feedwater Pump.
<b>RECOMMENDED STARTING LOCATION:</b>	Classroom
<b>INITIAL CONDITIONS:</b>	<ul style="list-style-type: none"><li>• The plant is in Refueling Mode, no fuel is in the reactor.</li><li>• 2FWE-P23A Auxiliary Feedwater Pump is to be placed on clearance for pump repacking.</li></ul>
<b>INITIATING CUE:</b>	<p>You are to verify/review the required clearance points (equipment), position (placement configuration), and sequence for clearing 2FWE-P23A, Auxiliary Feedwater Pump for work specified as shown on the clearance coversheet using the references provided.</p> <p>ESOMS is out of service.</p> <p>Document your results on the table provided.</p>
<b>REFERENCES:</b>	<p>NOBP-OP-1001, "Manual Clearance Generation", Rev. 4</p> <p>NOP-OP-1001, "Clearance/Tagging Program", Rev. 24</p> <p>OP Manual Fig. No. 24-3, 8700-RM-424-003, Rev. 19</p> <p>2OM-24, Steam Generator Feedwater System Operating Manual</p>
<b>TOOLS:</b>	None
<b>HANDOUT:</b>	<p>NOBP-OP-1001, "Manual Clearance Generation", Rev. 4</p> <p>NOP-OP-1001, "Clearance/Tagging Program", Rev. 24</p> <p>OP Manual Fig. No. 24-3, 8700-RM-424-003, Rev. 19</p> <p>2OM-24, Steam Generator Feedwater System Operating Manual</p> <p>Clearance coversheet 2R00-24-FW-001</p>

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-0xx JPM REVISION: 0	JPM TITLE: Review a Clearance Tagout for 2FWE-P23A, 'A' Motor Driven Aux Feedwater Pump
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR NOTE:</b> This task is normally performed using the ESOMS clearance computer and signed electronically. For this JPM, the ESOMS computer is NOT available.         </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>EVALUATOR NOTE:</b> Provide JPM handout references and student copy of table.         </div>	
	START TIME: _____	
1.C Candidate notices that the steps were not performed in the correct order.	1.1 Recognizes that the turning off the power supplies, placing the pump switch in PTL, and racking out the breaker should be performed first.  COMMENTS:	
2.C Candidate notices that the casing vent valve (2FWE-1169) was not identified in the tagout.	2.1C Candidate adds 2FWE-1169 in the required position as <b>OPEN</b> on the tagout sheet.  COMMENTS:	
3.C Candidate notices that the casing vent valve (2FWE-1171) was marked in the incorrect position. Correct position should be SHUT.	3.1C Candidate adds 2FWE-1171 in the required position as <b>OPEN</b> on the tagout sheet.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-0xx	JPM TITLE: Review a Clearance Tagout for 2FWE-P23A, 'A' Motor
JPM REVISION: 0	Driven Aux Feedwater Pump

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4.C Recognizes that there was a transcription error for 4KVS-2AE-4/2E18 and 4KVS-2AE-2E18 were written as 4KVS-2AE-4/2E16 and 4KVS-2AE-2E16, respectively, <b>but</b> were written in the correct position.	4.1C Candidate changes the power supplies to 4KVS-2AE-2E18, 4160 Volt Breaker for 2FWE-P23A.  4.2C Candidate changes the power supply to 4KVS-2E-4/2E18, 125 VDC Breaker Control for 4KVS-2AE-2E18.  COMMENTS:	
5.C Recognizes that these components are in the correct position.	5.1C <ul style="list-style-type: none"> <li>• 2FWE-P23A-CS PTL</li> <li>• 2FWE-37 SHUT</li> <li>• 2FWE-52 SHUT</li> <li>• 2FWE-91 SHUT</li> <li>• 2FWE-94 SHUT</li> </ul> COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>TERMINATING CUE:</b> When the candidate identifies and reports that all tags and errors are identified, the evaluation for this JPM is complete. Grader discretion will be required.           </div>	
	STOP TIME: _____	

# ANSWER KEY ---DO NOT GIVE TO STUDENT---

Component ID	Component Description	Position	Sequence
2FWE-P23A-CS	BB C/S Steam Generator Aux FW Pump	Pull-To-Lock (PTL)	1
(*1) 4KVS-2AE-4/2E18	125 VDC Breaker Control for 4KVS-2AE-2E18	OFF	2
4KVS-2AE-2E18	4160 Volt Breaker for 2FWE-P23A	Racked Out	3
2FWE-37	(2FWE*P23A) 'A' Header Disch Isolation	Shut	4
2FWE-52	(2FWE*P23A) Recirc Isolation	Shut	4
2FWE-91	(2FWE*P23A) Supply from Service Water	Shut	5 (**2)
2FWE-94	(2FWE*P23A) Supply from Primary DWST	Shut	5 (**2)
2FWE-1171	(2FWE*P23A) Casing Drain	Open	6 (**2)
2FWE-1169	(2FWE*P23A) Casing Vent	Open	6 (**2)

**Evaluator NOTE:** Student may identify additional points. The points listed above are the minimum required for this JPM. All additional points must be evaluated to ensure the clearance is correct. Component Descriptions may vary. The student will correct it and it will look similar to this.

(\*1). DC Control PWR is optional and not required.

(\*\*2) This Sequence may be either 4 or 5, or 5,6,7.

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024  
JPM REVISION: 1JPM TITLE: Evaluate Operators Work History to Determine if License Status  
is Active (SRO)

K/A REFERENCE: 2.1.4

3.8

TASK ID: 0481-024-03-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☒ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:

Performer SAP:

Time ☐ Yes  
Critical: ☒ No

Allotted Time: 20 Minutes

Actual Time: minutes

JPM RESULTS: ☐ SAT  
☐ UNSAT (Comments required for UNSAT evaluation)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## OBSERVERS

Name/SSN:

Name/SSN:

Name/SSN:

Name/SSN:

## EVALUATOR

Evaluator (Print): \_\_\_\_\_ Date: \_\_\_\_\_

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

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

TASK STANDARD:

Determines SRO 1 and SRO 3 are Inactive. Determines SRO 2 and SRO 4 are Active.

RECOMMENDED

Classroom

STARTING LOCATION:

INITIAL CONDITIONS:

Today is 11/7/17. Four Senior Reactor Operators have the following work history for the third quarter of 2017 (Plant was in Mode 1 the entire quarter):

SRO 1	Entered third quarter with active license	
	7/01/17	Worked 0700-1500 as Command SRO
	7/02/17	Worked 0700-1500 as Command SRO
	7/03/17	Worked 0700-1500 as Command SRO
	7/07/17	Worked 0700-1500 as Command SRO. Was relieved for 3 hours to obtain required biennial License Physical at the Health Center
	7/08/17	Worked 0700-1500 as Command SRO
	7/17/17	Worked 0700-1500 as Command SRO
	7/16/17	Worked 0700-1500 as Command SRO
SRO 2	Entered third quarter with inactive license	
	Completed all requirements for license reactivation 9/15/17 through 9/20/17	
	9/23/17	Worked 0700-1500 as Command SRO
	9/24/17	Worked 0700-1500 as Command SRO
	9/28/17	Worked 0700-1500 as Shift Technical Advisor
SRO 3	Entered third quarter with active license	
	7/10/17	Worked 0700-1500 as Shift Manager
	7/11/17	Worked 0700-1500 as Shift Manager
	7/18/17	Worked 0700-1500 as Shift Manager
	7/19/17	Worked 0700-1500 as Shift Technical Advisor
	7/20/17	Worked 0700-1500 as Shift Manager
	8/01/17	Worked 0700-1500 as Shift Manager
	8/02/17	Worked 0700-1500 as Shift Manager
SRO 4	Entered third quarter with active license	
	8/01/17	Worked 0700-1900 as Command SRO
	8/02/17	Worked 0700-1900 as Command SRO
	8/03/17	Worked 0700-1500 as Command SRO
	8/09/17	Worked 0700-1900 as Command SRO
	8/10/17	Worked 0700-1500 as Command SRO
	8/25/17	Worked 0700-1900 as Command SRO
	8/26/17	Worked 0700-1500 as Command SRO

INITIATING CUE:

Based on the previous quarters work history determine the license status as of today, 11/7/17, for each Senior Reactor Operator and document as ACTIVE or INACTIVE on this form, include the basis for your determination.

## OPERATIONS JOB PERFORMANCE MEASURE

REFERENCES: NOBP-TR-1271, Operator License Administration, Rev 3

TOOLS: Calculator

HANDOUT: NOBP-TR-1271, Operator License Administration, Rev 3



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024	JPM TITLE: Evaluate Operators Work History to Determine if License Status
JPM REVISION: 1	is Active (SRO)

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR NOTE:</b> Provide a copy of NOBP-TR-1271.	
	START TIME: _____	
1. Reviews NOBP-TR-1271 for Maintaining an Active License.	1.1 Reviews NOBP-TR-1271 Section 4.5, Shift requirements for Active license maintenance.  COMMENTS:	
2.C Evaluates SRO 1 work history.	2.1.C Determines requirement for working seven 8 hour shifts is NOT credited towards active license. The time for the License Physical is not credited toward the watch.  COMMENTS:	
3.C Evaluates SRO 2 work history.	3.1.C Determines requirement for maintaining an active license is met by reactivating the license in the quarter.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024	JPM TITLE: Evaluate Operators Work History to Determine if License Status is Active (SRO)
JPM REVISION: 1	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4.C Evaluates SRO 3 work history.	<p>4.1.C Determines requirement for working seven 8 hour shifts is NOT credited towards active license. The STA position is not credited for maintaining an active license, even though STAs may hold a license.</p> <p>COMMENTS:</p>	
5.C Evaluates SRO 4 work history.	<p>5.1.C Determines requirement for maintaining an active license is met by working the required seven shifts in a licensed position, Shift Manager or Command SRO.</p> <p>COMMENTS:</p>	
6. Reports SROs 1 and 3 are NOT active SROs 2 and 4 ARE active.	<p>6.1 Determines that the SRO 1 and 3 Licenses are NOT active due to not working seven 8 hour shifts or five 12 hour shifts in the previous quarter, SRO 2 and 4 are active.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> When the applicant makes a decision regarding Active or Inactive License, the evaluation for this JPM is complete.</p> </div> <p>COMMENTS:</p>	
	STOP TIME: _____	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001MS JPM REVISION: 0	JPM TITLE: Reviewing a Shutdown Margin Calculation Following a Dropped Rod then Stuck Rod
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K/A REFERENCE: 2.1.25 3.9/4.2 TASK ID: 0011-006-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP:	
Time Critical: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Allotted Time: 20 Minutes	Actual Time: minutes	
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____ _____ _____ _____			
OBSERVERS			
Name/SAP:		Name/SAP:	
Name/SAP:		Name/SAP:	
EVALUATOR			
Evaluator (Print): _____		Date: _____	
Evaluator Signature: _____			

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	Identifies and corrects errors in SDM calculation and boration requirements for one dropped rod, then two other rods stuck full out.
<b>RECOMMENDED STARTING LOCATION:</b>	Classroom
<b>INITIAL CONDITIONS:</b>	<ul style="list-style-type: none"><li>• All rods are at 228 steps on group demand counters.</li><li>• A single Bank "D" Control Rod has dropped and indicates 0 steps.</li><li>• The plant is at 100% power.</li><li>• Tavg is within 1 F of Tref.</li><li>• Current RCS boron concentration is 600 PPM from a sample at 1115.</li><li>• Core Burn-up is 16500 MWD/MTU.</li><li>• The date is [today] at 1300</li></ul>
<b>INITIATING CUE:</b>	<p>Part 1: Your supervisor has directed you to review a Shutdown Margin calculation that was calculated for the present plant conditions using 2OST-49.1, "Shutdown Margin Calculation (Plant Critical)", and recorded in the COMMENT section of the OST cover sheet.</p> <p>Part 2: After reviewing the Shutdown Margin calculation using 2OST-49.1, the unit reduced power to 90% and two stuck rods was discovered by the ATC. Review the new shutdown margin calculation that was performed in accordance with 2OST-49.1, "Shutdown Margin Calculation (Plant Critical)"</p>
<b>REFERENCES:</b>	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 20), Rev. 22 Unit 2 Plant Curve Book (Updated for Cycle 20) Unit 2 LRM
<b>TOOLS:</b>	Calculator Ruler/straight edge
<b>HANDOUT:</b>	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 20), Rev. 22 place kept up to step VII.A. Unit 2 Plant Curve Book (Updated for Cycle 20) Unit 2 LRM Completed SDM calculations IAW 2OST-49.1 and 2OST-49.2 Provide Data Sheet 1 for 2OST-49.1 for both parts.

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001MS JPM REVISION: 0	JPM TITLE: Reviewing a Shutdown Margin Calculation Following a Dropped Rod then Stuck Rod and Reactor Trip
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR NOTE:</b> Provide the Candidate with a copy of the completed 2OST-49.1, Cycle 20 Curve Book, Unit 2 LRM, calculator, and a ruler/straight edge.	
	START TIME: _____	
1.C (Step VII.A.1 through Step VII.B.1.d)	<p>1.C Determines these steps were performed correctly.</p> <ul style="list-style-type: none"> <li>• Step 1 initialed</li> <li>• Power is recorded at 100%</li> <li>• Program Tav<sub>g</sub> is initialed as within 3F of Tref.</li> <li>• N/A Step VII.A.2</li> <li>• Boron Concentration is 600 ppm</li> <li>• Control Bank D is 228 steps withdrawn</li> <li>• Data Sheet 1 is filled out correctly until B.2</li> <li>• Number of Inoperable Rods is 1</li> <li>• N/A Step VII.A.7</li> <li>• B.1.a ARO Total Bank Worth is 7.813% <math>\Delta k/k</math></li> <li>• B.1.b IRW is ZERO (0)</li> <li>• B.1.c TBW-IRW = 7.813% <math>\Delta k/k</math></li> <li>• B.1.d = 7.0317% <math>\Delta k/k</math></li> <li>• B.4.a = 600 ppm boron</li> <li>• B.4.b = 0.837</li> <li>• B.4.c = 502.2 ppm</li> <li>• B.4.d = 2580 pcm</li> <li>• B.4.e = 2.580% <math>\Delta k/k</math></li> <li>• B.4.f = 2.730% <math>\Delta k/k</math></li> </ul> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001MS JPM REVISION: 0	JPM TITLE: Reviewing a Shutdown Margin Calculation Following a Dropped Rod then Stuck Rod and Reactor Trip
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2.C Inoperable (Untrippable) OR Dropped Rods: If ONE rod is inoperable (untrippable) OR dropped, Record "Worst Case Rod with Inoperable Rod" worth on Data Sheet 1. Value is determined from Column "B" on Attachment 2 for the appropriate Cycle Burnup.  (Step VII.B.2.b)</p>	<p>2.1C Determines that the operator interpolated stuck rod worth to be 2.742% <math>\Delta k/k</math> and determines that it should be the higher burnup value and puts in 2.774% <math>\Delta k/k</math>.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EXAMINER NOTE:</b> this is the only error, however the applicant must use 2.774% <math>\Delta k/k</math> in his or her calculations.</p> </div> <p>COMMENTS:</p>	
<p>3. Subtract Stuck Rod Worth from the 90% Total Bank Worth value AND Enter the result on Data Sheet 1.  (Step VII.B.3)</p>	<p>3.1 Determines 90% Total Bank Worth minus Stuck Rod(s) Worth to be 4.2577 %<math>\Delta k/k</math> and records on Data Sheet 1 (Block B.3).</p> <p>COMMENTS:</p>	
<p>4.C Determine SHUTDOWN MARGIN by subtracting Power Defect (Step VII.B.4.f) from the value determined in Step VII.B.3 AND Record on Data Sheet 1.  (Step VII.B.5)</p>	<p>4.1C Determines SDM to be 1.5277% (+/- 0.100%) <math>\Delta k/k</math>, and records on Data Sheet 1 (Block B.4.f) AND records on the OST cover sheet.</p> <p>4.2C Compares calculated SDM to the limits specified in the COLR, and determines that it does NOT meet acceptance criteria AND records on the OST cover sheet.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001MS JPM REVISION: 0	JPM TITLE: Reviewing a Shutdown Margin Calculation Following a Dropped Rod then Stuck Rod and Reactor Trip
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<b>PART 2: Two Stuck Rods</b>		
5.C Steps VII.A.1 through VII.A.6 were performed correctly.	5.1C Candidate determines that these steps were performed correctly.  COMMENTS:	
6.C If the number of inoperable (untripable) OR dropped control Rods is greater than 1, Use Attachment 1 to determine the required boron concentration with greater than one inoperable rod and Record below. (Otherwise N/A)  (Step VII.A.7)	6.1C Candidate uses Attachment 1, "Required Boron Concentration With Greater Than One Inoperable Rod" and determines that the operator used the required boron concentration associated with 14000 MWD/MTU (1508 ppm boron). The candidate determines the <b>CORRECT</b> required boron concentration to be 1314 ppm.  <b>EXAMINER NOTE:</b> The procedure is not clear on what do to when in between burnup values for this table. Need to clarify, applicant may interpolate or pick higher burnup value instead of higher boron requirement. Interpolation value: 1266 ppm. Higher Burnup = 1121 ppm is NOT conservative and therefore, not correct. Examiner discretion is required.  COMMENTS:	
7.C With the number of inoperable (untripable) <b>OR</b> dropped rods greater than one, the shutdown margin is < 1.77% $\Delta k/k$ . Perform Step VII.C.2 <b>UNTIL</b> the required boron concentration of Attachment 1 is reached.  (Step VII.A.7.a)	7.1C Determines that this step is applicable and goes to Step VII.C.2.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001MS JPM REVISION: 0	JPM TITLE: Reviewing a Shutdown Margin Calculation Following a Dropped Rod then Stuck Rod and Reactor Trip
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<b>8.C</b> If SDM is not within limits specified in the COLR, initiate boration and continue UNTIL the required SDM is restored.  (Step VII.C.2)	<b>8.1C</b> Determines that the SDM is NOT within limits specified in the COLR and reports that boration is required. Boration value = Step VII.A.7 – Step VII.A.3= 1314 ppm – 502 ppm = 812 ppm boron.  COMMENTS:	
	<div><b>EVALUATOR CUE:</b> When the candidate hands in the OST cover sheet, the evaluation for this JPM is complete.</div> <div><b>EVALUATOR CUE:</b> Grader discretion may be required.</div>	
	STOP TIME: _____	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015 JPM REVISION: 1	JPM TITLE: Classify an Event and Determine Protective Action Recommendations (SRO Only)
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K/A REFERENCE: 2.4.44      4.4      TASK ID: 1350-011-03-023  
                         2.4.41      4.6                           1350-004-03-023

JPM APPLICATION: ☒ REQUALIFICATION      ☒ INITIAL EXAM      ☐ TRAINING

☒ SRO ONLY      ☐ ALTERNATE PATH JPM      ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input checked="" type="checkbox"/> Yes Critical: <input type="checkbox"/> No	Allotted Time: 15 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____ _____ _____ _____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

TASK STANDARD:	Determines the Emergency Classification is a General Emergency and Protective Action Recommendations in accordance with 1/2-EPP-IP-4.1.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<p>The Unit was operating at 100% power for 160 days on-line when the following occurred:</p> <ul style="list-style-type: none"> <li>• The reactor failed to trip on low Steam Generator water level, attempts to manually trip the reactor have been unsuccessful.</li> <li>• The reactor is currently at 8% power and stable.</li> <li>• Steam Generator narrow range levels are 2% on all SGs.</li> <li>• Total Aux Feedwater flow is 290 gpm.</li> </ul> <p>The following plant conditions exist:</p> <ul style="list-style-type: none"> <li>• 35' wind direction is from 195° at 4 MPH.</li> <li>• 150' wind direction is from 52° at 11 MPH.</li> <li>• 500' wind direction is from 230° at 15 MPH.</li> <li>• <b>NO</b> radioactive release has occurred or is imminent (within 1 hour).</li> <li>• The Containment Fission Product Barrier EAL is <b>NOT</b> challenged (no Loss or Potential Loss)</li> <li>• There is <b>NO</b> Hostile Action event in progress.</li> <li>• Offsite agencies have <b>NOT</b> identified any impediments to evacuation.</li> <li>• Health Physics has provided the following dose projections:            At the EAB: .025 REM TEDE; .008 REM CDE            At 2 miles: .0015 REM TEDE; .004 REM CDE            At 5 miles: .009 REM TEDE; .025 REM CDE</li> </ul> <p>Unit 1 remains operating at 100% power.</p>
INITIATING CUE:	<p>You are the Emergency Director and the TSC/EOF has <b>NOT</b> yet been activated. You are to evaluate the above conditions and determine which, if any, Emergency Classification and offsite Protective Action Recommendations (PAR) are necessary. Complete 1/2-EPP-IP-1.1.F01 Nuclear Power Plant Initial Notification Form. The evaluator will peer check the form.</p> <p>This JPM is <b>TIME CRITICAL</b>.</p>
REFERENCES:	<p>EPP/I-1b, Recognition And Classification of Emergency Conditions, Rev. 17</p> <p>1/2-EPP-IP-4.1, "Offsite Protective Actions", Rev. 31</p> <p>1/2-EPP-IP-1.1.F01 FENOC INF Rev. 9</p> <p>1/2-EPP-I-5 General Emergency Rev 44</p> <p>EPP Flow Chart</p>

## OPERATIONS JOB PERFORMANCE MEASURE

TOOLS: None

HANDOUT: EPP/I-1b, Recognition And Classification of Emergency Conditions,  
Rev. 17  
1/2-EPP-IP-4.1, "Offsite Protective Actions", Rev. 31  
1/2-EPP-IP-1.1.F01 FENOC INF Rev. 9  
1/2-EPP-I-2 Unusual Event Rev 46  
1/2-EPP-I-3 Alert Rev 43  
1/2-EPP- I-4 Site Area Emergency Rev 43  
1/2-EPP-I-5 General Emergency Rev 44  
EPP Flow Chart  
EOP Status Trees

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015	JPM TITLE: Classify an Event and Determine Protective Action
JPM REVISION: 1	Recommendations (SRO Only)

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
	<div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR NOTE:</b> Record the start and stop times for classification and PAR determination once the candidate begins his assessment of the event. The candidate may fill out information on the INF AFTER completing the classification and PAR.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p><b>TIME CRITICAL START TIME:</b> _____.</p> </div>	
1.C Correctly classify the emergency event from the EP Wallboard / procedure.	<p>1.1C Candidate classifies the event as a GENERAL EMERGENCY based on SG3 as indicated by the following conditions:</p> <ul style="list-style-type: none"> <li>• An Automatic Reactor Trip failed to shutdown the reactor as indicated by reactor power &gt;5%, AND</li> <li>• all manual trip actions failed to shutdown the reactor as indicated by reactor power &gt;5% AND</li> <li>• Heat Sink RED entry conditions met.</li> </ul> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015	JPM TITLE: Classify an Event and Determine Protective Action Recommendations (SRO Only)
JPM REVISION: 1	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2.C Completes the initial notification form for the classification.</p>	<p>2.1 Places the following information on the space provided on the initial notification form:</p> <ul style="list-style-type: none"> <li>• Box 1 Call Status: Places a checkmark in the "A Drill" box.</li> <li>• Box 1 Call Status: Places /Verifies the word "Simulator" in the code word space.</li> <li>• C Box 2 Affected Station: Places a checkmark in <b>BV 2</b> block.</li> <li>• C Box 3 Classification: Places a checkmark in the appropriate classification box (<b>GENERAL EMERGENCY</b> as identified in step 1 of the JPM above).</li> <li>• C Box 4 Declared At: Places <b>current time</b> in the declaration time space, places the <b>date</b> in the date space.</li> <li>• C Box 5 Emergency Action Level: Places the appropriate EAL number in the EAL number space (<b>SG3</b> as identified in step 1 of the JPM above).</li> <li>• Box 6 Radiological Release Status: Places a checkmark in the box for <b>NO</b> radiological release in progress due to this event box.</li> <li>• Box 7 Places <b>52°</b> in the 150' Wind Direction and <b>4 mph</b> in the Wind Speed at 35' spaces.</li> <li>• Box 8 Protective Action Recommendation: Routes to procedure ½-EPP-IP-4.1, Offsite Protective Actions.</li> </ul> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015	JPM TITLE: Classify an Event and Determine Protective Action Recommendations (SRO Only)
JPM REVISION: 1	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3. Locates Offsite Protective Action Recommendation Flowchart.	3.1 Refers to 1/2-EPP-IP-4.1, Attachment A, Part 1 Offsite Protective Action Recommendation Flowchart.  COMMENTS:	
4. Determines offsite protective action.	4.1 Navigates PAR flowchart as follows: <ul style="list-style-type: none"> <li>• General Emergency declared (↓)</li> <li>• Records Met data that was provided in Initial Conditions (↓)</li> <li>• <b>ONE</b> of the following is TRUE (↓): <ul style="list-style-type: none"> <li>➤ 35' wind speed LESS than 2 MPH (or unavailable)?</li> <li>➤ Is either 150' or 500' wind directions unavailable?</li> <li>➤ <b>The difference between the 150' &amp; 500' wind directions is <math>\geq 165</math> and <math>\leq 195</math> degrees? (opposite wind directions) or unavailable? (→) May Route to page 2 at this step.</b></li> <li>➤ Release transport will span sunrise or sunset hours. No Release is in progress.</li> <li>➤ The TSC / EOP is NOT activated.</li> </ul> </li> <li>• <b>Routes to page 2 based upon opposite wind directions.</b></li> <li>• Containment FPB is NOT a Loss. (→)</li> <li>• No Hostile Action or No impediment to evacuation. (→)</li> <li>• Projected Dose at 5 Miles is less than limits. (→)</li> </ul> COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015	JPM TITLE: Classify an Event and Determine Protective Action
JPM REVISION: 1	Recommendations (SRO Only)

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Determine Offsite Protective Action Recommendations.	<p>5.1. Determines and documents on 1/2-EPP-IP-1.1.F01, the following PARs:</p> <ul style="list-style-type: none"> <li>• C Evacuate 0-5 Miles 360 Degrees</li> <li>• All others monitor and prepare</li> <li>• Advise the general public to administer KI per state plan</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>TIME CRITICAL STOP TIME: _____.</b> </div> <p>COMMENTS:</p>	
6. Continues assessment.	<p>6.1 Indicates that they would continue monitoring for changes in the meteorological and radiological conditions.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-015	JPM TITLE: Classify an Event and Determine Protective Action Recommendations (SRO Only)
JPM REVISION: 1	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
7.C Completes section 8 and 9 of the Initial Notification Form for the PAR.	<p>7.1C Box 8 PAR: Completes recording the PAR on the INF.</p> <ul style="list-style-type: none"> <li>• Places a checkmark on the recommended PAR box.</li> <li>• C Places a checkmark in the EVACUATE box.</li> <li>• C Places a checkmark in the 5 Miles – 360° box.</li> </ul> <p>7.2 Box 9 Call Back Number: Places a checkmark in the Control Room number box.</p> <p>7.3 Print / Signs the form and requests a Peer Check.</p> <p>COMMENTS:</p>	
8.C Completes the Initial Declaration and PAR within 15 minutes.	<p>8.1. Determine that declaration is completed within 15 minutes of the start time.</p> <p>8.2 C Confirm the Time Critical start and stop times are within 15 minutes.</p> <p>COMMENTS:</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR NOTE:</b> Refer to Answer Key for initial notification form critical steps.</p> </div>	
	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> When the candidate completes the Declaration and Protective Action Recommendation, the evaluation for this JPM is complete.</p> </div>	
	STOP TIME: _____	



1. Call Status:	<input checked="" type="checkbox"/> This is a DRILL <input type="checkbox"/> This is an ACTUAL EMERGENCY	CODE WORD: <b>SIMULATOR</b>
2. Affected Station:	Beaver Valley Power Station <input type="checkbox"/> UNIT 1 <input checked="" type="checkbox"/> UNIT 2 <input type="checkbox"/> BOTH Units 1 & 2	
3. Classification:	<input type="checkbox"/> UNUSUAL EVENT <input type="checkbox"/> PAR MODIFIED (Check only 1 box) <input type="checkbox"/> ALERT <input type="checkbox"/> EVENT TERMINATION <input type="checkbox"/> SITE AREA EMERGENCY <input checked="" type="checkbox"/> GENERAL EMERGENCY	
4. Declared At:	TIME: <u>Current Time</u> hrs	DATE: <u>Current Date</u> / <u>    </u> / <u>    </u>
5. EMERGENCY ACTION LEVEL:	<u>SG3</u> (See BVPS EAL Reference for more information)	
6. Radiological Release Status:	<input checked="" type="checkbox"/> a. NO radiological release in progress due to the event <input type="checkbox"/> b. AIRBORNE radiological release in progress due to the event <input type="checkbox"/> c. LIQUID radiological release in progress due to the event	
7. Wind DIRECTION at 150' is FROM:	<u>52</u> degrees	Wind SPEED at 35' is: <u>4</u> mph
8. Protective Action Recommendation (PAR):	<input type="checkbox"/> NO Protective Action Recommendation <hr style="border-top: 1px dashed black;"/> <input checked="" type="checkbox"/> The PROTECTIVE ACTION RECOMENDATION from the Utility is: a. <input checked="" type="checkbox"/> EVACUATE <input type="checkbox"/> SHELTER b. <input type="checkbox"/> 2 Miles - 360° AND the following sectors out to <input type="checkbox"/> 5 miles <input type="checkbox"/> 10 Miles <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H <input type="checkbox"/> J <input type="checkbox"/> K <input type="checkbox"/> L <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> P <input type="checkbox"/> Q <input type="checkbox"/> R c. <input checked="" type="checkbox"/> 5 Miles - 360° <input type="checkbox"/> 10 Miles - 360° d. <input type="checkbox"/> Other: _____ (PAR beyond 10-miles following discussion with State Agencies, per IP-4.1 section 8.4) e. <b>AND</b> that potassium iodide (KI) be administered to the general public in accordance with State procedures. The general public in unaffected areas should be advised to monitor EAS and prepare for further protective actions.	
9. Call Back Number:	<input checked="" type="checkbox"/> Control Room: 724-643-8000 <input type="checkbox"/> TSC: 724-682-5427 <input type="checkbox"/> Alt TSC: 724-891-1946	
<b>For Utility Use Only</b>		
Approved:	<u>Candidates Name / Candidates Name</u>	Peer Check: <u>Requests Peer Check / Evaluator</u>
	<u>Print/Sign (Emergency Director)</u>	<u>Print/Sign</u>

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-023  
JPM REVISION: 3

JPM TITLE: Review/Approve LW Discharge (SRO ONLY)

K/A REFERENCE: 2.3.11

4.3

TASK ID: 1300-009-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:

Performer SAP#:

Time ☐ Yes  
Critical: ☒ No

Allotted Time: 20 Minutes

Actual Time: minutes

JPM RESULTS: ☐ SAT  
☐ UNSAT (Comments required for UNSAT evaluation)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## OBSERVERS

Name/SSN:

Name/SSN:

Name/SSN:

Name/SSN:

## EVALUATOR

Evaluator (Print): \_\_\_\_\_ Date: \_\_\_\_\_

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

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

TASK STANDARD:	RWDA-L-99999T is <b>NOT</b> approved for the following reasons: Wrong tank volume and Wrong alternate radiation monitor alarm setpoint calculation.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<ul style="list-style-type: none"><li>• Unit 2 is at 100% power.</li><li>• RWDA-L-99999T has been prepared for discharging Steam Generator Blowdown Evaporator Test Tank 2SGC-TK23B.</li><li>• Steam Generator Blowdown Evaporator Test Tank 2SGC-TK23B level is 130 inches.</li><li>• Procedure 2OM-25.4.L, "Discharging Steam Generator Blowdown Evaporator Test Tank [2SGC-TK23A(B)] Contents To Cooling Tower Blowdown" has been completed through step IV.A.12.a.</li></ul>
INITIATING CUE:	Approve RWDA-L-99999T IAW procedure 2OM-25.4.L, "Discharging Steam Generator Blowdown Evaporator Test Tank [2SGC-TK23A(B)] Contents To Cooling Tower Blowdown", step IV.A.12.b-f. Document the results of your approval in appropriate steps of 2OM-25.4.L <b>AND</b> in the block below. (Located on candidate direction sheet)
REFERENCES:	2OM-25.4.L, "Discharging Steam Generator Blowdown Evaporator Test Tank [2SGC-TK23A(B)] Contents To Cooling Tower Blowdown", Rev. 34
TOOLS:	Calculator.
HANDOUT:	RWDA-L-99999T filled out with the following errors: 17,394 gal volume for the tank instead of 17,705 gals. Wrong alternate radiation monitor alarm setpoint calculation. ( $1.88\text{E}^{-3}$ instead of $1.88\text{E}^{-4}$ )  2OM-25.4.L, "Discharging Steam Generator Blowdown Evaporator Test Tank [2SGC-TK23A(B)] Contents To Cooling Tower Blowdown", Rev. 34, filled out up to step IV.A.12.b

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-023 JPM REVISION: 3	JPM TITLE: Review/Approve LW Discharge (SRO ONLY)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b>            Provide marked up copy of 2OM-25.4.L and completed Discharge Permit.         </div>	
	START TIME: _____	
<b>1.C</b> After the RWDA-L is approved by Radiation Protection AND Chemistry, have the SM or US review the RWDA-L to confirm the following:  The tank data is correct.	<b>1.1C</b> Refers to Tank Curve Book or Table 1 in 2OM-25.4.L and determines that the tank data is <b>INCORRECT</b> . The correct volume for 130 inches should be 17,705 gals. <b>NOT</b> 17,394 gals.  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUTOR NOTE:</b> Candidate may also refer to recirculation time of the tank. The recirculation time is more than the minimum required.         </div> COMMENTS:	
<b>2.</b> Verify Radiation Protection has authorized the RWDA-L.	<b>2.1</b> Verifies Rad Pro has signed the appropriate block on the RWDA-L.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-023

JPM REVISION: 3

JPM TITLE: Review/Approve LW Discharge (SRO ONLY)

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3.C All hand calculations are correct.</p>	<p>3.1C Determines that the alternate radiation Alarm setpoint calculation is <b>INCORRECT</b>.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUTOR NOTE:</b> <math>4000/85 \times 4.0E^{-6}</math> should equal <math>1.88E^{-4}</math> <b>NOT</b> <math>1.88E^{-3}</math> <b>AND</b> this also makes <math>1.88E^{-4} \times 0.70</math> <b>INCORRECT</b>.</p> </div> <p>COMMENTS:</p>	
<p>4. Verify the effective period for the RWDA-L has <b>NOT</b> expired.</p>	<p>4.1 Determines RWDA-L is still effective.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUTOR NOTE:</b> IAW P&amp;L I on page 3 the RWDA-L is effective for 72 hours from the time the sample was drawn.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-023

JPM REVISION: 3

JPM TITLE: Review/Approve LW Discharge (SRO ONLY)

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5.C If the tank is NOT acceptable for discharge, an approval signature is NOT required.</p> <p>Mark the RWDA-L VOID, state reason, initial, AND Return the RWDA-L to Radiation Protection. (Otherwise N/A this step).</p>	<p>5.1C In the remarks section places the following information:</p> <ul style="list-style-type: none"> <li>• Mark the RWDA-L VOID</li> <li>• Tank volume is incorrect.</li> <li>• Radiation monitor alarm setpoint calculations are incorrect</li> <li>• Candidate initials</li> </ul> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUTOR NOTE:</b> Some discretion is required when grading this step of the JPM. It is NOT required to place the exact words listed here for the tank volume and radiation monitor alarm setpoint. However, it is critical the candidate documents all the errors on the form.</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px;"> <p><b>TERMINATING CUE:</b> That completes this JPM.</p> </div>	
	<p>STOP TIME: _____</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023 JPM REVISION: 1	JPM TITLE: Determine if License Status is Maintained Active (RO)
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K/A REFERENCE: 2.1.4

3.3

TASK ID: 0481-024-03-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:

Performer SAP:

Time ☐ YesCritical: ☒ No

Allotted

Time:

20 Minutes

Actual

Time:

minutes

JPM RESULTS: ☐ SAT  
☐ UNSAT (Comments required for UNSAT evaluation)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## OBSERVERS

Name/SSN:

Name/SSN:

Name/SSN:

Name/SSN:

## EVALUATOR

Evaluator (Print): \_\_\_\_\_ Date: \_\_\_\_\_

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

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	Determines active license status is not maintained, and evaluates whether each shift meets the requirements.
<b>RECOMMENDED STARTING LOCATION:</b>	Classroom
<b>INITIAL CONDITIONS:</b>	<p>Today is 11/6/17. You are a Reactor Operator. You are scheduled to stand a Reactor Operator ATC watch tomorrow and need to determine whether or not your license is Active or Inactive based upon the previous quarter work history. The plant has been at power the entire quarter. Your work history is as follows:</p> <p>7/12/17 Worked 8 hours as BOP (day shift).</p> <p>7/13/17 Worked 4 hours as BOP (day shift).</p> <p>7/14/17 Worked 6 hours as ATC and 2 hours ATC doing Crew JIT training on Simulator (day shift).</p> <p>8/19/17 Worked 12 hours as BOP (night shift).</p> <p>8/25/17 Worked 8 hours as ATC (night shift).</p> <p>9/21/17 Worked 12 hours as BOP (night shift).</p> <p>9/22/17 Worked 8 hours as BOP (night shift).</p> <p>9/23/17 Worked 8 hours as WEC Clearance RO (night shift).</p> <p>9/27/17 Worked 8 hours as the 3rd RO in the Control Room (day shift).</p>
<b>INITIATING CUE:</b>	<p>Determine if your license status is active or inactive based on the previous quarters work history and document as ACTIVE or INACTIVE on this form. Document the basis for your determination for each work history item.</p> <p><b>(Provide copies of the references)</b></p>
<b>REFERENCES:</b>	NOBP-TR-1271, Operator License Administration, Rev 3 10CFR-55_53 Conditions of Licenses
<b>TOOLS:</b>	Calculator
<b>HANDOUT:</b>	NOBP-TR-1271, Operator License Administration, Rev 3



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023

JPM TITLE: Determine if License Status is Maintained Active (RO)

JPM REVISION: 1

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR NOTE:</b> Provide the candidate a copy of NOBP-TR-1271.	
	START TIME: _____	
1. Reviews NOBP-TR-1271 for Maintaining an Active License.	1.1 Reviews NOBP-TR-1271 Section 4.5 and reviews the Shift requirements for Active license maintenance.  COMMENTS:	
2. Evaluates 7/12/17 work period of 8 hours.	2.1. Determines requirement for working the 8 hour shift is credited towards active license. This counts as one shift.  COMMENTS:	
3.C Evaluates 7/13/17 work period of 4 hours.	3.1.C Determines requirement for working the 4 hour shift is NOT credited towards active license, since it was not a complete shift turnover to turnover.  COMMENTS:	
4.C Evaluates 7/14/17 work period of 8 hours.	4.1.C Determines requirement for working the 8 hour shift is NOT credited towards active license, since the 2 hours of JIT Training is not a licensed position function.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023

JPM TITLE: Determine if License Status is Maintained Active (RO)

JPM REVISION: 1

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5. Evaluates 8/19/17 work period of 12 hours.	5.1 Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift.  COMMENTS:	
6. Evaluates 8/25/17 work period of 8 hours.	6.1 Determines requirement for working the 8 hour shift is credited towards active license. This counts as one shift.  COMMENTS:	
7. Evaluates 9/21/17 work period of 12 hours.	7.1 Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift.  COMMENTS:	
8. Evaluates 9/22/17 work period of 8 hours.	8.1 Determines requirement for working the 8 hour shift is credited towards active license. This counts as one shift.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023 JPM REVISION: 1	JPM TITLE: Determine if License Status is Maintained Active (RO)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
9.C Evaluates 9/23/17 work period of 8 hours.	9.1C Determines requirement for working the 8 hour shift is NOT credited towards active license, since this was performed in the Work Execution Center (WEC).  COMMENTS:	
10.C Evaluates 9/27/17 work period of 8 hours.	10.1C Determines requirement for working the 8 hour shift is NOT credited towards active license since it was not for the ATC or BOP position.  COMMENTS:	
11.C Evaluates work history and determines if the license is NOT Active.	11.1C Determines that the License is INACTIVE due the requirements to work five 12-hour shifts, seven 8-hour shifts, or a combination of 8 & 12 hour shifts totaling >56 hours in the quarter not being met.  COMMENTS:	
	<b>EVALUATOR CUE:</b> When the applicant makes a recommendation regarding Active or Inactive License, state that "The evaluation for this JPM is complete".	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-0xx JPM REVISION: 0	JPM TITLE: Prepare a Clearance Tagout for 2FWE-P23A, 'A' Motor Driven Aux Feedwater Pump
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K/A REFERENCE: 2.2.13 4.1 / 4.3

TASK ID: 0481-007-03-043

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input type="checkbox"/> Simulator <input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 25 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____ _____ _____ _____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	Identify the tagged components, required positions, and clearance sequence for 2FWE-P23A Auxiliary Feedwater Pump.
<b>RECOMMENDED STARTING LOCATION:</b>	Classroom
<b>INITIAL CONDITIONS:</b>	<ul style="list-style-type: none"><li>• The plant is in Refueling Mode, no fuel is in the reactor.</li><li>• 2FWE-P23A Auxiliary Feedwater Pump is to be placed on clearance for pump repacking.</li></ul>
<b>INITIATING CUE:</b>	<p>You are to identify the required clearance points (equipment), position (placement configuration), and sequence for clearing 2FWE-P23A, Auxiliary Feedwater Pump for work specified on the clearance coversheet using the references provided.</p> <p>ESOMS is out of service.</p> <p>Document your results on the table provided.</p>
<b>REFERENCES:</b>	<p>NOBP-OP-1001, "Manual Clearance Generation", Rev. 4</p> <p>NOP-OP-1001, "Clearance/Tagging Program", Rev. 24</p> <p>OP Manual Fig. No. 24-3, 8700-RM-424-003, Rev. 19</p> <p>2OM-24, Steam Generator Feedwater System Operating Manual</p>
<b>TOOLS:</b>	None
<b>HANDOUT:</b>	<p>NOBP-OP-1001, "Manual Clearance Generation", Rev. 4</p> <p>NOP-OP-1001, "Clearance/Tagging Program", Rev. 24</p> <p>OP Manual Fig. No. 24-3, 8700-RM-424-003, Rev. 19</p> <p>2OM-24, Steam Generator Feedwater System Operating Manual</p> <p>Clearance coversheet 2R00-24-FW-001</p>

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-0xx	JPM TITLE: Prepare a Clearance Tagout for 2FWE-P23A, 'A' Motor
JPM REVISION: 0	Driven Aux Feedwater Pump

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR NOTE:</b> This task is normally performed using the ESOMS clearance computer and signed electronically. For this JPM, the ESOMS computer is NOT available.         </div> <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR NOTE:</b> Provide JPM handout references and student copy of table.         </div>	
	START TIME: _____	
1.C Candidate completes the table.	1.1 Candidates table matches the ANSWER KEY. <ul style="list-style-type: none"> <li>• 2FWE-P23A-CS PTL</li> <li>• 4KVS-2AE-4/2E18 OFF</li> <li>• C 4KVS-2AE-2E18 RACKED OUT</li> <li>• C 2FWE-37 SHUT</li> <li>• C 2FWE-52 SHUT</li> <li>• C 2FWE-91 SHUT</li> <li>• C 2FWE-94 SHUT</li> <li>• C 2FWE-1171 OPEN</li> <li>• C 2FWE-1169 OPEN</li> </ul> COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>TERMINATING CUE:</b> When the candidate identifies and reports that all tags are identified, the evaluation for this JPM is complete. Grader discretion will be required.         </div>	
	STOP TIME: _____	

# ANSWER KEY (DO NOT GIVE TO STUDENTS)

Component ID	Component Description	Position	Sequence
2FWE-P23A-CS	BB C/S Steam Generator Aux FW Pump	Pull-To-Lock (PTL)	1
(*1) 4KVS-2AE-4/2E18	125 VDC Breaker Control for 4KVS-2AE-2E18	OFF	2
4KVS-2AE-2E18	4160 Volt Breaker for 2FWE-P23A	Racked Out	3
2FWE-37	(2FWE*P23A) 'A' Header Disch Isolation	Shut	4
2FWE-52	(2FWE*P23A) Recirc Isolation	Shut	4
2FWE-91	(2FWE*P23A) Supply from Service Water	Shut	5 (**2)
2FWE-94	(2FWE*P23A) Supply from Primary DWST	Shut	5 (**2)
2FWE-1171	(2FWE*P23A) Casing Drain	Open	6 (**2)
2FWE-1169	(2FWE*P23A) Casing Vent	Open	6 (**2)

**Evaluator NOTE:** Student may identify additional points. The points listed above are the minimum required for this JPM. All additional points must be evaluated to ensure the clearance is correct. Component Descriptions may vary.

(\*1). DC Control PWR is optional and not required.

(\*\*2) This Sequence may be either 4 or 5, or 5,6,7.

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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K/A REFERENCE: 2.4.43 3.2 TASK ID: 0481-024-03-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:		Performer SAP#:	
Time <input checked="" type="checkbox"/> Yes	Allotted Time: 15 Minutes	Actual Time:	minutes
Critical: <input type="checkbox"/> No			
JPM RESULTS: <input type="checkbox"/> SAT			
<input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

## OBSERVERS

Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

## EVALUATOR

Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	



## OPERATIONS JOB PERFORMANCE MEASURE

### **EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** Completes the 15 minute initial notifications to the organizations listed in Section 1 of the Emergency Notification Call-List. (6 agencies)

**RECOMMENDED  
STARTING LOCATION:** Classroom

**INITIAL CONDITIONS:** The Emergency Director has declared an Alert at Beaver Valley Unit 2. He has provided you the Initial Notification Form for the event, procedure ½-EPP-IP-1.1 Notifications, and the Emergency Notification Call-List. The Network copier/ scanner is not available, the FAX machine will be used.  
You are to make the notifications per Attachment A, Initial Notifications.

**INITIATING CUE:** You are to notify the offsite agencies listed in section 1 of the Emergency Notification Call-List. You are only required to contact the agencies that are to be notified within 15 minutes of the event.

Use Passcode 9999 when activating the Initial Notification Bridge Line.

### **THIS IS A TIME CRITICAL JPM**

**REFERENCES:** ½-EPP-IP-1.1, Notifications, Rev 54  
½-EPP-IP-1.1.F02, Emergency Notifications Call-List Rev 24  
½-EPP-IP-1.1.F01, FENOC Nuclear Power Plant Initial Notification Form, Rev 9

**TOOLS:** EPP Fax Machine (not connected) or simulated machine  
Telephone (not connected) or simulated

**HANDOUT:** ½-EPP-IP-1.1, Notifications  
½-EPP-IP-1.1.F02, Emergency Notifications Call-List  
½-EPP-IP-1.1.F01, FENOC Nuclear Power Plant Initial Notification Form, completed for an ALERT (SA1) Classification. No PAR with a Code Word of SIMULATOR.

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
1. Reviews Attachment A of ½-EPP-IP-1.1 for Initial Notifications, the Initial Notification form and the Call List.	<p><b>EVALUATOR NOTE:</b> The use of the FAX Machine and Telephone will be simulated. The equipment is not to be connected for communications. Record the time critical start when candidate reviews the handouts.</p> <p><b>TIME CRITICAL START TIME:</b> _____</p> <p>1.1 Reviews the Attachment and Call List materials.</p> <p>1.2 Reviews the Initial Notification form for the ALERT classification.</p> <p>COMMENTS:</p>	
<p>2.C Transmit the Initial Notification Form to the Offsite Agencies:</p> <p>Place completed Notification Form on the fax machine (face down).</p> <p>Press Speed Dial number "01" labeled "INF/FUN" (or dial 9-1-330-436-8514) on the fax machine.</p> <p>Push the START button.</p>	<p><b>EVALUATOR NOTE:</b> The copier/scanner is not available per the initial conditions, if needed cue the candidate to use the FAX machine.</p> <p>2.1C Places the completed Initial Notification form on the FAX machine face down.</p> <p>2.2C Depresses the Speed Dial number "01" labeled INF/FUN, or dials the listed phone number.</p> <p>2.3C Pushes the START button.</p> <p><b>EVALUATOR CUE:</b> The FAX machine starts and the Initial Notification Form is transmitted.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p><b>3.C</b> Initiate the Primary Initial Notification Conference (INC) Bridge Line</p> <p>Dial 1-724-682-1900 (or from a PAX phone, "1900").</p> <p>When prompted, enter Passcode XXXX and then the # key</p> <p><b>(NOTE the following steps are N/A)</b> IF unable to activate the Primary INC Bridge Line, THEN dial the Backup INC Bridge Line. Dial 1-800-882-3610. When prompted, enter Backup Bridge Line Passcode XXXXXX. IF unable to activate either INC Bridge line, THEN individually contact each required Offsite Agency using the contact information listed on Form 1/2-EPP-IP-1.1.F02, EMERGENCY NOTIFICATION CALL-LIST, SECTION 1.</p>	<p><b>3.1C</b> Dials 1-724-682-1900 or 1900.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>EVALUATOR CUE:</b> After dialing state, "Welcome to the Beaver Valley Power Station Conferencing System please enter your passcode followed by a pound sign."</p> <p>If needed, cue that the passcode is 9999, as was given in the initiating cue.</p> </div> <p><b>3.2C</b> Enters Passcode "9999" the "#".</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>EVALUATOR CUE:</b> After dialing state, "Your passcode has been confirmed, please wait while you are joined to your conference."</p> <p>You are now connected to the conference line.</p> </div> <p><b>3.3</b> Does not access the backup INC bridge or each Agency individually.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p><b>4.C</b> Provide Initial Notification to Offsite Agencies. As each Agency enters the INC call, state the following: "This is Beaver Valley Power Station, please stand-by for an emergency notification."</p> <p>After all Agencies appear to be on the call, state the following: "This is (Your Name) at Beaver Valley Power Station, and the Code Word is " (get Code Word from the Initial Notification Form).</p> <p>Perform a roll-call and record the contact time of each agency representative on Form 1/2-EPP-IP-1.1.F02, EMERGENCY NOTIFICATION CALL-LIST, SECTION 1.</p> <p><b>(NOTE: The following are N/A)</b> If a party does not answer to the roll call in a reasonable period of time, bypass that party and proceed down the list. After other required State/County contact times are logged, re-attempt to contact any bypassed parties. State the Emergency Classification and Protective Action Recommendation(s) from the Initial Notification Form.</p>	<div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR CUE:</b> The following are on the conference line:</p> <ul style="list-style-type: none"> <li>• Beaver County Emergency Management Agency</li> <li>• PA Emergency Management Agency Duty Officer</li> <li>• Columbiana County Emergency Management Agency</li> <li>• Ohio Emergency Management Agency Duty Officer</li> <li>• West Virginia Division of Homeland Security/ Emergency Management</li> <li>• Hancock County Office of Emergency Management</li> </ul> </div> <p>4.1 States, "This is the Beaver Valley Power Station, please standby for an emergency notification."</p> <p>4.2 After all Agencies appear to be on the call, state the following, "This is (their Name) at Beaver Valley Power Station, and the Code Word is SIMULATOR."</p> <p>4.3C Performs a roll call and records the contact time of each agency representative on Form 1/2EPP-IP-1.1.F02 Emergency Notification Call-List.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR CUE:</b> Report that all agencies listed on section 1 of the form respond to the Roll Call.</p> </div> <p>4.4C States the Emergency Classification is an ALERT (SA1) and that there is NO Protective Action Recommendation.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>TIME CRITICAL STOP TIME:</b> _____ NOTE: Must be within 15 minutes of the start time.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5. Ask each agency if they received the Initial Notification Form FAX or EMAIL, and if it is legible.</p> <p>If the FAX or EMAIL is not legible, or was not received, read the information from the entire Initial Notification Form verbally. The Initial Notification Form may be re-sent after the call, if requested.</p> <p>Ask if there are any questions. Answer the questions if the answer is known. Do not give an answer unless you have firm information that the answer is valid. Do not speculate on any future events or actions.</p> <p>If any questions cannot be immediately answered, get a telephone number where someone can return the call with the answer when the answer is found.</p> <p>State "A Follow-Up Notification will be provided as additional information becomes available. Beaver Valley Power Station is now exiting the Initial Notification Conference Call. This will terminate the conference bridge."</p>	<p>5.1. Asks if all agencies have received the Initial Notification Form FAX and if it was legible.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>EVALUATOR CUE:</b> Report that all agencies have received the legible FAX.</p> </div> <p>5.2 Asks if there are any questions.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>EVALUATOR CUE:</b> Report that all agencies have no questions.</p> </div> <p>5.3 State "A Follow-Up Notification will be provided as additional information becomes available. Beaver Valley Power Station is now exiting the Initial Notification Conference Call. This will terminate the conference bridge."</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-A4 RO JPM REVISION: 0	JPM TITLE: Complete Emergency Plan Initial Notifications (RO Only)
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. For any State/County Agency(ies) not on the conference call, perform the following:</p> <p>Contact each remaining Offsite Agency individually using the contact information on Form 1/2-EPP-IP-1.1.F02, EMERGENCY NOTIFICATION CALL-LIST, SECTION 1.</p> <p>Repeat steps 4.2 through 4.7. Every effort MUST be made to contact all six (6) required State/County organizations and all attempts MUST be documented.</p> <p>Sign and Date page 1 of Form 1/2-EPP-IP-1.1.F02.</p> <p>Notify the SM/ED that the six (6) required State/County Agency Notifications are completed.</p>	<p>6.1. Recognizes that all agencies have been notified, steps are N/A.</p> <p>6.2 Signs and Dates page 1 of Form 1/2-EPP-IP-1.1.F02.</p> <p>6.3 Notifies the SM/ED that the six (6) required State/County Agency Notifications are completed.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> Acknowledge report as the Shift Manager.</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> Once the report is made to the Supervisor, state "This JPM is complete".</p> </div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Stuck Rod
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K/A REFERENCE: 2.1.25 3.9/4.2 TASK ID: 0011-006-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input checked="" type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

EVALUATION RESULTS			
Performer Name:		Performer SAP:	
Time <input type="checkbox"/> Yes	Allotted Time: 20 Minutes	Actual Time:	minutes
Critical: <input checked="" type="checkbox"/> No			
JPM RESULTS: <input type="checkbox"/> SAT			
<input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

OBSERVERS	
Name/SAP:	Name/SAP:
Name/SAP:	Name/SAP:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	Determines correct SDM and boration requirements for one dropped rod, then two other rods stuck full out.
<b>RECOMMENDED STARTING LOCATION:</b>	Classroom
<b>INITIAL CONDITIONS:</b>	<ul style="list-style-type: none"><li>• All rods are at 228 steps on group demand counters.</li><li>• A single Bank "D" Control Rod has dropped and indicates 0 steps.</li><li>• The plant is at 100% power.</li><li>• Tavg is within 1F of Tavg.</li><li>• Current RCS boron concentration is 600 PPM from a sample at 1115.</li><li>• Core Burn-up is 16500 MWD/MTU.</li><li>• The date is [today] at 1300</li></ul>
<b>INITIATING CUE:</b>	<p>Part 1: Your supervisor has directed you to perform a Shutdown Margin calculation for the present plant conditions using 2OST-49.1, "Shutdown Margin Calculation" (Plant Critical), beginning at step VII.A, and other provided references. Report your results in the COMMENT section of the OST cover sheet.</p> <p>Part 2: At 1304, after calculating the shutdown margin using 2OST-49.1, power was reduced to 90% and two rods were reported by the ATC as stuck full out. Evaluate any effects on shutdown margin.</p>
<b>REFERENCES:</b>	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 20), Rev. 22 Unit 2 Plant Curve Book (Updated for Cycle 20) Unit 2 LRM
<b>TOOLS:</b>	Calculator Ruler/straight edge
<b>HANDOUT:</b>	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 20), Rev. 22 place kept up to step VII.A. Unit 2 Plant Curve Book (Updated for Cycle 20) Unit 2 LRM



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR NOTE:</b> Provide the Candidate with a copy of 2OST-49.1, Cycle 20 Curve Book, Unit 2 LRM, calculator, and a ruler/straight edge.         </div>	
	START TIME: _____	
1. If the plant is in Mode 1 with the Main Generator online, Verify that Tavg is less than 3°F above Tref. (Otherwise N/A).  (Step VII.A.1)	1.1 Initials Step VII.A.1, (From initial conditions Tavg is within 1F of Tref.  COMMENTS:	
2. If the plant is in Mode 2 OR Mode 1 with Main Generator offline, Verify that Tavg is less than 8F above Program Tavg as follows: (Otherwise N/A).  (Step VII.A.2)	2.1 Places N/A in Step VII.A.2, (Plant not in Mode 2).  COMMENTS:	
3. Request Chemistry to determine current RCS Boron concentration in ppm.  (Step VII.A.3)	3.1 Determines current boron concentration is 600 ppm from initial conditions.  COMMENTS:	
4. Record the number of steps withdrawn for Control Bank D from the group demand counters, (BB-B) on Data Sheet 1.  (Step VII.A.4)	4.1 Records Control Bank D as 228 steps withdrawn on Data Sheet 1 from initial conditions.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5. Record the current reactor power level in percent of full power from [2NME-NR45], Reactor Excore Recorder, (VB-B) OR PCS computer point U1150, PWR RNG NUCLEAR FLUX 1M AVG, on Data Sheet 1.  (Step VII.A.5)	5.1 Records reactor power as 100% on Data Sheet 1.  COMMENTS:	
6.C Record the number of immovable or untrippable control rods on Data Sheet 1.  (Step VII.A.6)	6.1C Determines one rod is dropped and records as immovable or untrippable on Data Sheet 1.  COMMENTS:	
7. If the number of inoperable (untrippable) OR dropped control Rods is greater than 1, Use Attachment 1 to determine the required boron concentration with greater than one inoperable rod and Record below. (Otherwise N/A)  (Step VII.A.7)	7.1 Places N/A in Step VII.A.7.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8. <b>C</b> Determine control bank reactivity worth per the following:</p> <p>Using the ARO Total Bank Worth table on Data Sheet 1, Enter the total bank worth for the current core burnup range, in the space provided on Data Sheet 1.</p> <p>(Step VII.B.1.a)</p>	<p>8.1 Recognizes initial plant core burnup is 16500 MWD/MTU, based on initial plant conditions.</p> <p>8.2 Refers to ARO Total Bank Worth table on Data Sheet 1 AND determines ARO Total Bank Worth to be 7.813.</p> <p>8.3 <b>C</b> Records 7.813 on Data Sheet 1 (Block B.1.a).</p> <p>COMMENTS:</p>	
<p>9. <b>C</b> Using Curve Book Figures CB24A, 24B OR 24C, Determine integral rod worth for the current bank position AND Enter this value on Data Sheet 1.</p> <p>Divide value from curve (in pcm) by 1000 to convert to <math>\% \Delta k/k</math> AND Record on Data Sheet 1.</p> <p>(Step VII.B.1.b)</p>	<p>9.1 <b>C</b> Using Curve Book Figure CB-24C, determines integral rod worth to be ZERO and records on Data Sheet 1 (Blocks B.1.b.1) and (B.1.b).</p> <p>COMMENTS:</p>	
<p>10. <b>C</b> Subtract the integral rod worth from the Total Bank Worth AND Enter the result on Data Sheet 1.</p> <p>(Step VII.B.1.c)</p>	<p>10.1 Determines TBW-IRW is 7.813% <math>\Delta k/k</math> and records on Data Sheet 1 (Block B.1.c).</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. <b>C</b> Multiply this result by 0.9 to apply a 10% uncertainty <b>AND</b> Enter the result on Data Sheet 1.  (Step VII.B.1.d)	11.1 Determines 90% of TBW to be 7.0317% $\Delta k/k$ and records on Data Sheet 1 (Block B.1.d).  COMMENTS:	
12. <b>C</b> Inoperable (Untrippable) OR Dropped Rods: If ONE rod is inoperable (untrippable) OR dropped, Record "Worst Case Rod with Inoperable Rod" worth on Data Sheet 1. Value is determined from Column "B" on Attachment 2 for the appropriate Cycle Burnup.  (Step VII.B.2.b)	12.1 <b>C</b> Determines stuck rod worth to be 2.774% $\Delta k/k$ and records on Data Sheet 1 (Block B.2).  COMMENTS:	
13. Subtract Stuck Rod Worth from the 90% Total Bank Worth value <b>AND</b> Enter the result on Data Sheet 1.  (Step VII.B.3)	13.1 Determines 90% Total Bank Worth minus Stuck Rod(s) Worth to be 4.2577 % $\Delta k/k$ and records on Data Sheet 1 (Block B.3).  COMMENTS:	
14. Determine Power Defect as follows:  Record RCS Boron Concentration results from Chemistry on Data Sheet 1.  (Step VII.B.4.a)	14.1 Record RCS Boron Concentration of 600 ppm on Data Sheet 1 (Block B.4.a).  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
15. Using Curve Book Figure 29, Determine the B-10 Correction Factor for the present Burnup (If between two Burnup values, Use the B-10 Correction Factor for the greater MWD/MTU Burnup entry) AND Record on Data Sheet 1.  (Step VII.B.4.b)	15.1 Determines B-10 Correction Factor to be 0.837 and records on Data Sheet 1 (Block B.4.b).  COMMENTS:	
16. Determine Corrected Boron Concentration by multiplying the RCS Boron Concentration and the B-10 Correction Factor AND Record on Data Sheet 1.  (Step VII.B.4.c)	16.1 Determines Corrected Boron Concentration to be 502.2 ppm and records on Data Sheet 1 (Block B.4.c).  COMMENTS:	
17. Using Curve Book Figure 21, Determine the ABSOLUTE VALUE of the Power Defect for the current power level and the Corrected Boron Concentration AND Enter this value on Data Sheet 1.  (Step VII.B.4.d)	17.1 Determines ABSOLUTE VALUE of the Power Defect to be 2580 pcm and records on Data Sheet 1 (Block B.4.d).  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
18.C Divide value from curve (in pcm) by 1000 to convert to $\% \Delta k/k$ AND Record on Data Sheet 1.  (Step VII.B.4.e)	18.1C Converts ABSOLUTE VALUE of the Power Defect of 2580 pcm to 2.580 $\% \Delta k/k$ and records on Data Sheet 1 (Block B.4.e).  COMMENTS:	
19. Add 0.150% $\Delta k/k$ for operating temperature band margin to the Power Defect recorded in Step VII.B.4.e AND Record on Data Sheet 1.  (Step VII.B.4.f)	19.1 Determines Power Defect plus operating temperature band margin to be 2.730 $\% \Delta k/k$ and records on Data Sheet 1 (Block B.4.f).  COMMENTS:	
20.C Determine SHUTDOWN MARGIN by subtracting Power Defect (Step VII.B.4.f) from the value determined in Step VII.B.3 AND Record on Data Sheet 1.  (Step VII.B.5)	20.1C Determines SDM to be 1.5277% (+/- 0.100%) $\Delta k/k$ , and records on Data Sheet 1 (Block B.4.f) AND records on the OST cover sheet.  20.2C Compares calculated SDM to the limits specified in the COLR, and determines that it does NOT meet acceptance criteria AND records on the OST cover sheet.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<b>PART 2:</b> 21. Step VII.A.1 through VII.A.4 were previously completed.  (Step VII.A.1)	COMMENTS:	
22. Record the current reactor power level in percent of full power from [2NME-NR45], Reactor Excore Recorder, (VB-B) OR PCS computer point U1150, PWR RNG NUCLEAR FLUX 1M AVG, on Data Sheet 1.  (Step VII.A.5)	22.1 Records 90% from the cue in part 2.  COMMENTS:	
23.C Record the number of immovable or untrippable control rods on Data Sheet 1.  (Step VII.A.6)	23.1C Determines one rod is dropped, two rods are stuck and records three (3) rods as immovable or untrippable on Data Sheet 1.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>24.C If the number of inoperable (untripable) OR dropped control Rods is greater than 1, Use Attachment 1 to determine the required boron concentration with greater than one inoperable rod and Record below. (Otherwise N/A)</p> <p>(Step VII.A.7)</p>	<p>24.1C Candidate uses Attachment 1, "Required Boron Concentration With Greater Than One Inoperable Rod" and determines required boron concentration to be 1314 ppm.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EXAMINER NOTE:</b> The procedure is not clear on what do to when in between burnup values for this table. Need to clarify, applicant may interpolate or pick higher burnup value instead of higher boron requirement. Interpolation value: 1266 ppm. Higher Burunup = 1121 ppm. Examiner discretion is required.</p> </div> <p>COMMENTS:</p>	
<p>25.C With the number of inoperable (untripable) <b>OR</b> dropped rods greater than one, the shutdown margin is &lt; 1.77% <math>\Delta k/k</math>. Perform Step VII.C.2 <b>UNTIL</b> the required boron concentration of Attachment 1 is reached.</p> <p>(Step VII.A.7.a)</p>	<p>25.1C Determines that this step is applicable and goes to Step VII.C.2.</p> <p>COMMENTS:</p>	
<p>26.C If SDM is not within limits specified in the COLR, intiate boration and continue UNTIL the required SDM is restored.</p> <p>(Step VII.C.2)</p>	<p>26.1C Determines that the SDM is NOT within limits specified in the COLR and reports that boration is required. Boration value = Step VII.A.7 – Step VII.A.3= 1314 ppm – 502 ppm = 812 ppm boron.</p> <p>COMMENTS:</p>	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-001M JPM REVISION: 0	JPM TITLE: Calculating a Shutdown Margin Following a Dropped Rod then Stuck Rod
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>EVALUATOR CUE:</b> When the candidate hands in the OST cover sheet and reports how much additional boration is required, the JPM is complete.</p> <p><b>EVALUATOR CUE:</b> Grader discretion may be required.</p>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023 JPM REVISION: 11	JPM TITLE: Perform a Hot Bus Transfer
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K/A REFERENCE: 062 K1.04 3.7/4.2 TASK ID: 0361-013-01-013  
062 A4.01 3.3/3.1

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 15 Minutes	Actual Time: minutes	
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ _____ _____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

TASK STANDARD:	The 4KV Bus 2B is being supplied by the System Station Service Transformer.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	The plant is at 100% power with all systems in NSA. It is desired to place the 2B 4KV bus on offsite power to allow for a relay check on ACB-142C.
INITIATING CUE:	Your supervisor directs you to transfer the 2B 4KV bus to the 2A SSST in accordance with 2OM-36.4.C, "Transferring 4KV System from US Serv Tfmr To SS Serv Tfmr". Do <b><u>NOT</u></b> set up for auto transfer back to USST 2C.
REFERENCES:	2OM-36.4.C, "Transferring 4KV System From US Serv Tfmr To SS Serv Tfmr", Rev 15
TOOLS:	None
HANDOUT:	2OM-36.4.C, "Transferring 4KV System From US Serv Tfmr To SS Serv Tfmr", Rev 15

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023 JPM REVISION: 11		JPM TITLE: Perform a Hot Bus Transfer	
STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒		S/U
	<b>SIMULATOR SETUP:</b> Initialize to a 100% power IC Set with all systems in NSA.		
	<b>EVALUATOR NOTE:</b> Provide the candidate a copy of 2OM-36.4.C. When candidate is ready to begin, ENSURE the simulator in RUN.		
	START TIME: _____		
1. Reviews the copy of 2OM-36.4.C, "Transferring 4KV System From US Serv Tfmr To SS Serv Tfmr", provided.	1.1 Reviews 2OM-36.4.C.  COMMENTS:		

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023	JPM TITLE: Perform a Hot Bus Transfer
JPM REVISION: 11	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2. Verify voltages on the 4KV Busses and SSSTs are approximately the same on all phases as follows:</p> <p>a. Places the 2A SS Serv Tfmr Voltmeter Phase selector switch to each of the phases of Bus 2A &amp; 2B and compares the values on the 4KV Common Volt meter to the same phase values on the 4KV Bus 2A &amp; 2B Volt meters when 4KV Bus 2A &amp; 2B Voltmeter Phase Selector switches are selected to each phase.</p>	<p><b>EVALUATOR NOTE:</b> Candidate needs to check only Bus 2B since the other Busses will NOT be transferred for this JPM.</p> <p><b>EVALUATOR NOTE:</b> The values specified in step 2.2 are identified in P&amp;L K of the procedure.</p>	
	<p>2.1 Locates the 4KV Common Voltmeter, KV Bus 2B Voltmeter, and 2A SS Serv Tfmr Voltmeter Phase Selector Switch.</p> <p>2.2 Checks all phases on the 2A SS Serv Tfmr Voltmeter Phase Selector Switch, "X" position. Verifies SSST 2A voltage is 0 to 2.0 volts higher than Bus 2B voltage, and the unloaded transformer secondary is between 122 volts and 126.5 volts.</p> <p>COMMENTS:</p>	
<p>3. Perform Data Sheet 1 to check for an open primary circuit on SSST-2A.</p>	<p><b>EVALUATOR CUE:</b> Another operator has completed Data Sheet 1, all readings are within the required ranges.</p> <p>3.1 Step is N/A.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023 JPM REVISION: 11	JPM TITLE: Perform a Hot Bus Transfer
---	---------------------------------------

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4. Adjust SSST secondary voltage to 0 to 2 volts higher than respective 4KV bus volts for each bus being transferred.	<p>4.1 Determines it is necessary to adjust tap changer and lower SSST secondary voltage.</p> <p>4.2 Locates the Load Tap Changer X Windings – Bus 2B SS Serv TFM R 2A swith and pushes inward to take out of AUTO.</p> <p>4.3 Places the Load Tap Changer switch to LOWER until the SSST secondary voltage is 0 to 2 volts higher than Bus 2B.</p> <p>COMMENTS:</p>	
5.C Place the Live Bus Transfer Switch to ON.	<p>5.1C Places the Live Bus Transfer Switch to the ON position.</p> <p>COMMENTS:</p>	
6.C Close [ACB-142A], 2A SS Serv Tfm r to 4KV Bus 2B.	<p>6.1C Places control switch for ACB-142A to the CLOSE position.</p> <p>6.2 Verifies BOTH RED lights – LIT and WHITE light – NOT LIT</p> <p>6.3 Acknowledges A8-1H, “4160V NORM BUS SUPPLY ACBs PARALLELED”, if received.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023	JPM TITLE: Perform a Hot Bus Transfer
JPM REVISION: 11	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
7. Check that amps increase on 4KV Bus 2B Tfmr 2A Amps.	7.1 Checks 4KV Bus 2B Tfmr 2A ammeter indicates greater than ZERO amps.  COMMENTS:	
8. IF SSST 2A voltage less than 122 volts prior to transfer, Adjust Load Tap Changer, X-Winding – Bus 2B, by 4 steps to raise bus voltage. (Otherwise N/A)	8.1 This step is N/A. SSST 2A voltage is >122 volts.  COMMENTS:	
9.C Open [ACB-142C], 2C US Serv Tfmr to 4KV Bus 2B.	9.1C Places control switch for ACB-142C to the OPEN/TRIP position.  9.2 Verifies WHITE light – LIT and BOTH RED lights – NOT LIT  9.3 Silences and resets Annunciator A8-1H, if cleared.  COMMENTS:	
10. Place the Bus 2B load tap changer in AUTO (pulled out slightly from vertical board).	10.1 Places the Load Tap Changer switch to AUTO by pulling outward on the switch.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-023 JPM REVISION: 11	JPM TITLE: Perform a Hot Bus Transfer
---	---------------------------------------

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. Check load was picked up by observing 4KV Bus 2B Tfmr 2A Amps.	11.1 Checks load was picked up by observing 4KV Bus 2B Tfmr 2A amps increasing to a higher value.  COMMENTS:	
12. Place the Live Bus Transfer Switch to OFF.	12.1 Places the Live bus Transfer Switch to the OFF position.  COMMENTS:	
	<b>EVALUATOR CUE:</b> State "This JPM is complete"	
	STOP TIME: _____	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx JPM REVISION: 0	JPM TITLE: Respond to VCT Level Transmitter Failure
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K/A REFERENCE: 004 A2.18 3.1 / 3.1 TASK ID: 0071-025-01-013  
004 A4.12 3.8 / 3.3 0071-115-04-012

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 15 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ _____ _____			
OBSERVERS			
Name/SAP:		Name/SAP:	
Name/SAP:		Name/SAP:	
EVALUATOR			
Evaluator (Print): _____		Date: _____	
Evaluator Signature: _____			

## OPERATIONS JOB PERFORMANCE MEASURE

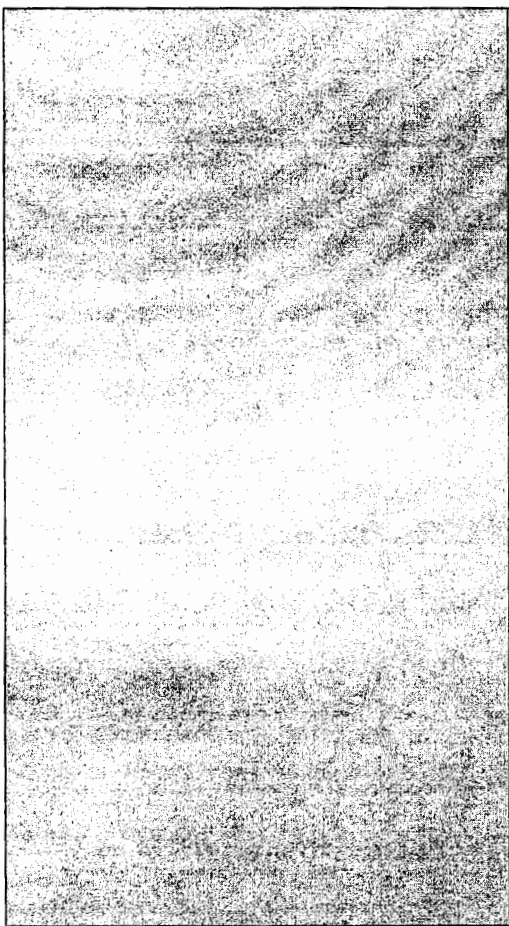
**EVALUATOR DIRECTION SHEET**

TASK STANDARD:	Perform calculations and manipulations required to perform a manual blender makeup to the VCT in accordance with 2OM-7.4.N, "Blender Manual Makeup Operations", and stop the VCT from diverting prior to emptying the VCT during the 2CHS-LT115 level transmitter failure.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none"><li>• The plant is in Mode 1.</li><li>• The in service 'A' Boric Acid Tank concentration is 7487 ppm.</li><li>• Current Corrected RCS boron concentration is 1471 ppm.</li><li>• VCT level is currently 28%.</li></ul>
INITIATING CUE:	Your supervisor directs you to perform a 200 gallon makeup to the VCT at 75 gpm to raise VCT level to 42%, in accordance with 2OM-7.4.N, "Blender Manual Makeup Operations", beginning at step IV.A.6.
REFERENCES:	2OM-7.4.N, Blender Manual Makeup Operations, Rev. 16 2OM-7.4.AAC, Volume Control Tank Trouble, Rev. 6 2OM-7.4.IF, Instrument Failure Procedure, Rev. 3
TOOLS:	Calculator
HANDOUT:	2OM-7.4.N, Blender Manual Makeup Operations, Rev. 16, place kept up to Step IV.A.6. <b>Have copies of the following available to replace Simulator copy.</b> 2OM-7.4.AAC, Volume Control Tank Trouble, Rev. 6 2OM-7.4.IF, Instrument Failure Procedure, Rev. 3

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx  
JPM REVISION: 0

JPM TITLE: Respond to VCT Level Transmitter Failure

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>EVALUATOR NOTE:</b> Simulator setup:</p> <ul style="list-style-type: none"> <li>- Any Mode 1 IC.</li> <li>- Expert command to set VCT level to 28%: Set AVCTLIQ=6720 (Preloaded to IC snap)</li> <li>- Fail 2CHS-MOV350 Closed - VLV-BAT014 2</li> <li>- Mark in service BAST 7487 PPM; (RCS Cb=1471).</li> </ul> <p>Set 2CHS*FCV114A Potentiometer for 100 gpm flow rate. (625 dial units)</p> <p>Fail 2CHS*LT115 high when VCT level reaches 38%.</p>	
	<p><b>EVALUATOR NOTE:</b></p> <p>The blender makeup calculations may be completed during the JPM brief for time efficiency.</p>	
	<p><b>BOOTH OPERATOR NOTE:</b></p> <p>Set BA &amp; Total flow totalizers to ZERO after each performance of the JPM.</p>	
	<p>START TIME: _____</p>	
<p>1. Reviews 2OM-7.4.N, "Blender Manual Makeup Operation.</p>	<p>1.1 Reviews 2OM-7.4.N, "Blender Manual Makeup Operation.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx

JPM REVISION: 0

JPM TITLE: Respond to VCT Level Transmitter Failure

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2. Place Boric Acid Makeup Blender Control switch in Stop.	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR NOTE:</b> Candidate may perform flow setpoint calculations prior to making any control manipulations. </div> <p>2.1 Places Boric Acid Makeup Blender Control switch in STOP position.</p> <p>2.2 Verifies Green Light – LIT, Red Light – NOT LIT.</p> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> If asked, role-play the US and report independent verifications of calculations SAT. </div>	
3.C Determine desired boric acid flow.	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> If asked, provide BAST boron of 7487 ppm and Corrected RCS boron is 1471 ppm. </div> <p>3.1C Calculates boric acid flow:</p> $\frac{1471 \text{ ppm} \times 75 \text{ gpm}}{7487 \text{ ppm}} = 14.74 \text{ gpm}$ <p>COMMENTS:</p>	
4.C Adjust [2CHS*FCV113A] Boric Acid to Blender to the calculated setpoint.	<p>4.1C Calculates the desired flow setpoint:</p> $\frac{14.74 \text{ gpm}}{4 \text{ gpm}} \times 100 = 368$ <p>4.2C Adjusts 2CHS*FCV113A for the desired flow setpoint, 368 units ± 5 units.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx JPM REVISION: 0	JPM TITLE: Respond to VCT Level Transmitter Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Set Boric Acid Flow to Blender Flow Totalizer.	<div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR NOTE:</b> Batch amounts are at the operator's discretion. Total volume change is approximately 200 gallons. Candidate must set the appropriate amount of BA volume for the batch amount. If performing full makeup (200 gals) then the amount of BA is:  <math>14.74 \text{ gpm} \times (200 \text{ gals} / 75 \text{ gpm}) = 39 \text{ gal.}</math></p> </div> <p>5.1C Adjusts 2CHS-FQIS113 Boric Acid Flow to Blender Flow Totalizer to the desired value.</p> <p>5.2C Depresses "RESET" on 2CHS-FQIS113.</p> <p>COMMENTS:</p>	
6.C Adjust [2CHS*FCV114A] setpoint.	<p>6.1C Adjusts 2CHS*FCV114A for 75 gpm.  <math>(75 \text{ gpm}/16) \times 100 = 468 \text{ units} \pm 5 \text{ units.}</math></p> <p>COMMENTS:</p>	
7.C Set [2CHS-FQIS168] Total Makeup From Blender Flow Totalizer to the desired total volume in gallons of makeup water to be added.	<p>7.1C Adjusts Total Makeup from Blender Flow Totalizer to 200 gallons).</p> <p>7.2C Depresses "RESET" on 2CHS-FQIS168.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR NOTE:</b> Batch amounts are at the operator's discretion. Total volume change is approximately 200 gallons (~14 gal/%).</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx JPM REVISION: 0		JPM TITLE: Respond to VCT Level Transmitter Failure	
STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U	
8. Adjust [2CHS*HIC168] Blender Total Flow Auto Setpoint.	8.1 Verifies 2CHS*HIC168 is set to 75 gpm. (75 gpm/16) x 100 = 468 units ± 5 units.  COMMENTS:		
9. Note flow totalizer indication and adds it to the gallon set on the batch integrators for 2CHS*FQIS113 and 2CHS*FQIS168.	9.1 Notes the Boric Acid Flow to Blender Flow Totalizer value on 2CHS*FQIS113 and adds the Boric Acid volume previously calculated (39 gallons).  9.2 Notes the Blender Total Flow value on 2CHS*FQIS168 and adds the Total Volume previously calculated (200 gallons).  COMMENTS:		
10. Verify a Reactor Coolant Pump is operating in an unisolated loop and has ≥ 3000 gpm flow through the core and records the commencement of makeup and flow verification in the Narrative Log.	10.1 Verifies that RCS flow is ≥ 3000 gpm flow by observing RCP operation or flow indications.  10.2 Records information in the Narrative Log.  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"><b>EVALUATOR CUE:</b> Inform the candidate that another operator will make the Narrative Log entry.</div> COMMENTS:		

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx JPM REVISION: 0	JPM TITLE: Respond to VCT Level Transmitter Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. Verify the inservice Boric Acid Transfer Pump in AUTO.	11.1 Verifies 2CHS-P22A is in AUTO. 11.2 Control switch has GREEN Target, and GREEN light – LIT COMMENTS:	
12.C Open [2CHS*FCV114B], Blender Outlet to Volume Control Tank.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b> If asked, as Unit Supervisor direct the use of 2CHS*FCV114B.         </div> 12.1C Places 2CHS*FCV114B control switch to OPEN. 12.2 Verifies RED Light – LIT and GREEN Light – NOT LIT. COMMENTS:	
13.C Place Mode Selector in MAN.	13.1C Places the Mode Selector Switch in MAN position. COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx  
JPM REVISION: 0

JPM TITLE: Respond to VCT Level Transmitter Failure

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>14.C Place Boric Acid Makeup Blender Control switch to START.</p> <ul style="list-style-type: none"> <li>• Verify Boric Acid Transfer Pump in AUTO is running.</li> <li>• Verify proper boric acid flow on [2CHS*FR113].</li> <li>• Verify proper total makeup flow on [2CHS*FR113].</li> </ul>	<p>14.1C Places Boric Acid Makeup Blender Control switch to START.</p> <p>14.2 Verifies 2CHS-P22A starts, RED Light – LIT and GREEN Light – NOT LIT.</p> <p>14.3 Verifies Boric Acid to Blender Flow, and Total M/U Flow from Blender on 2CHS-FR113.</p> <p>COMMENTS:</p>	
	<p style="text-align: center;"><b><u>FAULT STATEMENT:</u></b></p> <p>When VCT level reaches 38%, 2CHS-LT115 will fail high and cause an auto divert to the Boron Recovery System. Candidate must take manual action to stop diverting letdown flow, and align it back to the VCT.</p>	
<p>15. Operate pressurizer heaters [2RCS*H2A,B,C,D,E], PRZR Heaters Group A, B, C, D, E, to automatically initiate spray as required to equalize boron concentration between coolant loops and pressurizer to within 50 ppm. (Otherwise N/A)</p>	<p>15.1 N/A step due to sufficient PRZR heaters.</p> <p>COMMENTS:</p>	
<p>16. At least once per hour during makeup, Verify a reactor coolant pump operating in an unisolated loop with &gt;3000 gpm flow through the core.</p>	<p>16.1 Acknowledges, or N/As the step.</p> <p>COMMENTS:</p>	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx

JPM REVISION: 0

JPM TITLE: Respond to VCT Level Transmitter Failure

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>17. Annunciator A2-2G "Volume Control Tank Trouble will alarm.</p>	<div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR NOTE:</b> The alarm response procedure may not be referenced if the instrument failure of 2CHS-LT115 is diagnosed based upon plant indications. The following step may not be performed. Candidate may also enter AOP 2.4.1 for the loss of process control.</p> </div> <p>17.1 Acknowledges annunciator A2-2G.</p> <p>17.2 References 2OM-7.4.AAC alarm response procedure probable cause No. 2, Instrument Failure.</p> <p>17.3 Confirms that 2CHS-LT115 has failed by comparing level indicator 2CHS-LI115 and Computer point L2704A for redundant channel 2CHS-LT112.</p> <p>17.4 Refers to 2OM-7.4.IF, Instrument Failure.</p> <p>COMMENT:</p>	
<p>18. Enters 2OM-7.4.IF, Instrument Failure procedure for the failure of 2CHS-LT115.</p>	<p>18.1 Refers to 2OM-7.4.IF, Instrument Failure procedure Attachment 1 for the high failure of 2CHS-LT115.</p> <p>18.2 Confirms that 2CHS-LT115 has failed by comparing level indicator 2CHS-LI115 and Computer point L2704A for redundant channel 2CHS-LT112.</p> <p>COMMENT:</p>	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-xxx JPM REVISION: 0	JPM TITLE: Respond to VCT Level Transmitter Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>19.C Place the VCT level Control Selector Switch in the VCT position.</p> <p>Check [2CHS*LCV112], VCT Level Control To Clnt Rcvy Vlv, AND [2CHS*LCV115A], VCT Level Cont Divert To Degas Vlv, are aligned to the VCT.</p>	<p>19.1C Places 2CHS-LCV115A.control switch to VC Tank position.</p> <p>19.2 Verifies 2CHS*LCV112, VCT RED Light – LIT and CLNT RCVY RED Light – NOT LIT.</p> <p>19.3 Verifies 2CHS*LCV115A, VCT RED Light – LIT and DEGAS RED Light – NOT LIT.</p> <p>COMMENT:</p>	
<p>20. If necessary raise VCT level by performing a manual makeup per 2OM-7.4.N, Blender Manual Makeup Operation.</p> <p><b>OR</b></p> <p>Lower VCT level by diverting letdown flow to the Boron Recovery System.</p>	<p>20.1 Evaluates the VCT level response to the failure and determines if action is needed to adjust level.</p> <p>COMMENT:</p>	
	<div>EVALUATOR CUE: State "This JPM is complete."</div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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K/A REFERENCE: 002 A2.02 4.2 / 4.4 TASK ID: 0063-039-01-013  
 010 A4.01 3.7 / 3.5 0063-011-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input checked="" type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes	Allotted Time: 15 Minutes	Actual Time:	minutes
Critical: <input checked="" type="checkbox"/> No			
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** Prevent a Reactor trip on Low PRZR pressure, and RCS pressure under operator control with pressurizer spray valves in manual after the Master PRZR Pressure Controller fails high.

**RECOMMENDED  
STARTING LOCATION:** Simulator

**INITIAL CONDITIONS:**

- Plant is 100% power and stable.
- All Initial Conditions are met.
- All PRZR heaters are energized.
- PRZR Pressure control is in AUTO and stable.
- 2CHS\*FCV122 is in AUTO and stable.

**INITIATING CUE:**

- Your supervisor directs you perform 2OM-6.4.AB, Pressurizer Level Control Test starting at Sect B.
- Sect A, Test Preparation has been completed.
- You are to respond to all annunciators.

**REFERENCES:**

2OM-6.4.AB, Pressurizer Level Control Test, Rev 1  
2OM-53C.4.2.4.1, Process Control Failure, Rev 1  
2OM-6.4.AAM, Pressurizer Control Pressure High/Low, Rev 3

**TOOLS:** None

**HANDOUT:** 2OM-6.4.AB, Pressurizer Level Control Test, Rev 1 completed up to section B.

**Have copies of the following available for Simulator replacement:**  
2OM-53C.4.2.4.1, Process Control Failure, Rev 1  
2OM-6.4.AAM, Pressurizer Control Pressure High/Low, Rev 3

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>SIMULATOR SETUP:</b> Start with any 100% power IC Energize all przr heaters. Ensure 2CHS-FCV122 is in Auto, and przr master pressure controller and spray valves are in Auto. TRGSET 6 'XB1D048M &gt;=0.46' sets the trigger to fire when przr level controller reaches 46%. IMF CNH-PCS10A (6 20) 70 30 ASIS for 2RCS*PK444A Press Cont Fixed Output M/A at 70. [write snap]</p> <p><b>EVALUATOR NOTE:</b> This is a faulted JPM. When the PRZR level controller is raised to 4.5-5%, the Master Pressure Controller will fail to 70, causing the PRZR spray valves to open.</p> <p><b>EVALUATOR CUE:</b> Provide candidate a marked up copy of 2OM-6.4.AB.</p>	
	START TIME: _____	
1. Reviews 2OM-6.4.AB, Pressurizer Level Control Test.	1.1 Reviews provided procedure 2OM-6.4.AB.  COMMENTS:	
2. Verify [2RCS*LI459A, 460, 461], Pressurizer Level stable.	2.1 Monitors 2RCS*LI459A, 460, 461 for stable pressurizer level.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3.C Place [2RCS*LK459F] PRZR Level Control in MAN	3.1C Depresses 2RCS*LK459F MAN pushbutton  3.2 Verifies RED MAN light – LIT and AUTO light – NOT LIT.  COMMENTS:	
4. Verify [2RCS*LI459A, 460, 461], Pressurizer Level remains stable.	4.1 Verifies 2RCS*LI459A, 460, 461 pressurizer levels remain stable.  COMMENTS:	
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>FAULT STATEMENT:</b>            The next step will trigger the fault for the Master Pressure Controller failure, causing the PRZR spray valves to open.         </div>	
5.C Raise [2RCS*LK459F] PRZR Level Control output 4.5 to 5 % as quickly as possible.	5.1C Depresses the controller output ▲ pushbutton to raise controller output 4.5 to 5 %.  5.2 Monitors system response by observing PRZR level and a rise in charging flow.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6. Receives Annunciator A4-1D, Pressurizer Control Pressure High/Low and recognizes PRZR pressure is lowering.	<div> <b>EVALUATOR NOTE:</b>  Candidate may refer to Annunciator A4-1D, Pressurizer Control Pressure High/Low which will correct the lowering pressure. </div> <p>6.1 Recognizes PRZR pressure is lowering by monitoring 2RCS-PI444, 445, 455, 456, 457, or PCS.</p> <p>6.2 Takes Immediate Operator Actions of AOP- 2.4.1 Part B for PRZR Pressure Process Control Failure.</p> <p>COMMENTS:</p>	
7. PRZR PORV(s) - CLOSED	<p>7.1 Checks 2RCS*PCV455D, 2RCS*PCV456, and 2RCS*PCV455C CLOSED.</p> <p>7.2 Verifies GREEN Lights – LIT and RED Lights – NOT LIT.</p> <p>COMMENTS:</p>	
8. Check PRZR Pressure Control  PRZR Pressure – LESS THAN 2200 PSIG	<p>8.1 Recognizes PRZR pressure is &lt; 2200 psig and lowering.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR NOTE:</b>            2RCS-PK444A is failed at ~70 % and will not respond when the operator attempts to lower demand.         </div>	
9. Close PRZR spray valves by Placing PRZR master pressure controller in MAN AND Adjusting demand to <40%.	9.1 Depresses 2RCS-PK444A MAN pushbutton.  9.2 Verifies RED MAN light – LIT and AUTO light – NOT LIT.  9.3 Depresses 2RCS-PK444A controller output ▼ pushbutton to lower demand to < 40%, but recognizes the controller does not respond.  COMMENTS:	



# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new  
JPM REVISION: 0

JPM TITLE: Respond to Master Pressure Controller Failure

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>10.C IF spray valves do NOT Close, THEN Place spray valve controllers in MAN AND Adjust as necessary to control pressure.</p>	<div> <p><b>EVALUATOR NOTE:</b> The intent of this step is to control RCS pressure with manual control of the spray valves, therefore the candidate may not fully close the spray valves. This is permitted to meet the critical step if RCS pressure is under their control.</p> </div>	
	10.1 Recognizes that the spray valves failed to close.	
	10.2C Depresses 2RCS-PCV455A MAN pushbutton.	
	10.3 Verifies RED MAN light – LIT and AUTO light – NOT LIT.	
	10.4C Depresses 2RCS-PCV455A controller output ▼ pushbutton until valve is CLOSED.	
	10.5 Verifies GREEN light – LIT and RED light – NOT LIT.	
	10.6C Depresses 2RCS-PCV455B MAN pushbutton.	
	10.7 Verifies RED MAN light – LIT and AUTO light – NOT LIT.	
	10.8C Depresses 2RCS-PCV455B controller output ▼ pushbutton until valve is CLOSED.	
	10.9 Verifies GREEN light – LIT and RED light – NOT LIT.	
	COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Respond to Master Pressure Controller Failure
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. Checks PRZR pressure at or trending to 2235 PSIG.	11.1 Monitors PRZR pressure indicators 2RCS-PI444, 445, 455, 456, 457, or PCS for rising pressure.  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> If candidate has PRZR pressure rising, as Unit Supervisor, direct a PRZR pressure control band of 2235 psig (+/- 25 psig).         </div> COMMENTS:	
12.C Adjusts spray valves to maintain PRZR pressure 2235 psig (+/- 25 psig).	12.1C Depresses 2RCS-PCV455A OR 2RCS-PCV455B controller output pushbuttons to control PRZR pressure 2235 psig (+/- 25 psig).  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> At Evaluators discretion, inform candidate that RCS pressure is at 2235 psig, and to control pressure within +/- 25 psig.         </div> COMMENTS:	
13. Refers to 2OM-53C.4.2.4.1, Process Control Failure.	13.1 References Part B for PRZR Pressure Process Control Failure.  13.2 Verifies AOP-2.4.1 Part B IOAs.  COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> When PRZR pressure is under control, or at the Evaluators discretion, state "This JPM is complete".         </div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
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K/A REFERENCE: 006 A1.13 3.5/3.7 TASK ID: 0111-059-04-013  
0111-060-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 10 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____ _____ _____ _____			
OBSERVERS			
Name/SSN:		Name/SSN:	
Name/SSN:		Name/SSN:	
EVALUATOR			
Evaluator (Print): _____		Date: _____	
Evaluator Signature: _____			

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** Accumulator "A" level restored to clear the low pressure alarm.

**RECOMMENDED  
STARTING LOCATION:** Simulator

**INITIAL CONDITIONS:** Excessive sampling has caused a lower than desired level and a low pressure alarm on "A" SI Accumulator.

**INITIATING CUE:** The Unit Supervisor directs you to fill 2SIS\*TK21A to clear the low pressure alarm by using 2OM-11.4.D steps IV.A.9 through 18. 2SIS-41 is being continuously manned. You are responsible for all alarms on Annunciator panel A1.

**REFERENCES:** 2OM-11.4.D, Makeup To A Safety Injection Accumulator, Rev. 26

**TOOLS:** None

**HANDOUT:** 2OM-11.4.D, Makeup To A Safety Injection Accumulator, Rev. 26

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>SIMULATOR SETUP:</b> Start with any Mode 1 thru 3 IC, lower "A" Accumulator level and pressure until A1-4A alarms due to low pressure. Open 2SIS-38 and 2SIS-41, Turn on Hydro Test Pump breaker DC, freeze and SNAP.</p> <p>LOA-LOV065 LOA-SIS002 Open 2SIS-38 LOA-SIS003 Open 2SIS-41</p> <p><b>EVALUATOR NOTE:</b> Provide copy of 2OM-11.4.D marked complete to step 9.</p>	
	START TIME: _____	
1. Reviews copy of procedure	<p>1.1 Reviews procedure 2OM-11.4.D.</p> <p>COMMENTS:</p>	
	<p><b>EVALUATOR NOTE:</b> When 2SIS*MOV851A, is open in modes 1, 2 or 3 (RCS pressure above 1000 psig), the accumulator shall be declared inoperable per TS 3.5.1.</p>	
2. Informs Shift Manager of inoperable SI Accumulator.	<p>2.1 Informs Shift Manager that 'A' SI Accumulator will be inoperable per TS 3.5.1 when 2SIS*MOV851A is OPEN.</p> <p><b>EVALUATOR CUE:</b> Inform candidate that the SM/US will refer to the Technical Specifications.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3.C Open SI Accumulator Water Makeup Isolation Valve [2SIS*MOV851A]. (BB-A)	3.1C Places CS for 21A SI Accumulator Water Makeup Vlv 2SIS*MOV851A to OPEN.  3.2 Verifies RED Light – LIT and GREEN Light – NOT LIT.  COMMENTS:	
4. Log starting level and pressure for 2SIS-TK21A.	4.1 Records level (2SIS-LI920/922) and pressure (2SIS-PI921/923) indicator readings.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>EVALUATOR CUE:</b> Inform candidate that logging will be performed by another operator.         </div> COMMENTS:	
5. Place [2SIS-SOV947] Hydro Test Pump speed control station to zero percent output. (BB-A)	5.1 Adjusts (verifies) SI Acc Hydro Test Pump Speed Control 2SIS-SOV947 controller to zero percent output.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>EVALUATOR NOTE:</b> Candidate may request another operator to monitor Hydro Test Pump flow. Instructor may perform this function.         </div> COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6.C Start [2SIS-P22], Hydro Test Pump. (BB-A)	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b>            If asked, inform candidate that Hydro Test Pump prestart checks have been completed.         </div> <p>6.1C Places CS for Hydro Test Pump 2SIS-P22 to the START position.</p> <p>6.2 Verifies RED Light – LIT and WHITE Light – NOT LIT.</p> <p>COMMENTS:</p>	
7.C Operate [2SIS-SOV947] as necessary to regulate pump speed.	<p>7.1C Adjusts SI Acc Hydro Test Pump Speed Control [2SIS-SOV947] controller to greater than 0% output, but less than 50%.</p> <p>7.2 Verifies flow is less than or equal to 15 gpm on Hydro Test PP Disch Flow 2SIS-FI990.</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR NOTE:</b>            Hydro Test PP Disch Flow 2SIS-FI990 is located inside vertical board C. Normally 2 operators are assigned to perform this task.         </div> <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b>            If necessary, inform the candidate that another operator will monitor the Hydro Test pump while they obtain the Hydro Test PP Disch Flow 2SIS-FI990.         </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
--	-----------------------------------

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR CUE:</b> When the Low pressure alarm is clear, as Shift Manager, inform candidate to secure filling the accumulator.	
8. Verify venting of accumulator is not necessary.	8.1 Verifies 21A Acc Press 2SIS-PI921 and 923 have remained less than 667 PSIG  COMMENTS:	
9.C When [2SIS*LI920, 922] 21A Acc Level is 6% to 96%, Stop [2SIS-P22], Hydro Test Pump. <ul style="list-style-type: none"> <li>• Check [2SIS-P22], Hydro Test Pump, white stop light ON.</li> <li>• Place [2SIS-P22], Hydro Test Pump, control switch to PULL-TO-LOCK.</li> </ul>	9.1 Verifies "A" Accumulator low pressure alarm, A1-4A, has reset.  9.2C Places CS Hydro Test Pump 2SIS-P22 to STOP position.  9.3 Verifies WHITE Light – LIT and RED Light is – NOT LIT.  9.4C Places CS Hydro Test Pump 2SIS-P22 to PTL position.  <b>EVALUATOR NOTE:</b> Pump has a delayed stop.  <b>EVALUATOR CUE:</b> If requested, another operator will perform the Independent Verification.  COMMENTS:	
10. Place [2SIS-SOV947] SI Acc Hydro Test Pump, Speed Control to ZERO percent output.	10.1 Adjusts SI Acc Hydro Test Pump Speed Control 2SIS-SOV947 controller to zero percent output.  COMMENTS:	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-044 JPM REVISION: 7	JPM TITLE: Fill SIS Accumulator A
--	-----------------------------------

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. Record final level and pressure for the accumulator being filled in the Narrative Log.	11.1 Records level (2SIS-LI920/922) and pressure (2SIS-PI921/923) indicator readings.  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> Inform candidate that logging will be performed by another operator.         </div> COMMENTS:	
12.C Close [2SIS*MOV851A], 21A SI Accumulator Water Makeup Vlv.	12.1 Waits at least 30 seconds from securing the Hydro Test Pump prior to closing 2SIS*MOV851A.  12.2C Places CS for 21A SI Accumulator Water Makeup Vlv 2SIS*MOV851A to CLOSE.  12.3 Verifies GREEN Light – LIT and RED Light – NOT LIT.  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> If requested, another operator will perform the Independent Verification.         </div> COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> This completes the JPM.         </div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542 JPM REVISION: 1	JPM TITLE: Nuclear Power Generation / ATWS
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K/A REFERENCE: 007 EA2.04 4.4 / 4.6 TASK ID: 0533-001-05-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform	<input type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input type="checkbox"/> Simulate	<input checked="" type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes	Allotted Time: 15 Minutes	Actual Time:	minutes
Critical: <input checked="" type="checkbox"/> No			
JPM RESULTS: <input type="checkbox"/> SAT			
<input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

OBSERVERS	
Name/SSN:	Name/SSN:
Name/SSN:	Name/SSN:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

### EVALUATOR DIRECTION SHEET

TASK STANDARD:	The immediate actions of FR-S.1 are completed and verified by procedure. Then alternate emergency boration flowpath is established at >30 gpm Boric Acid flow, for a minimum of 1000 gallons.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none"><li>• The plant is in the process of shutting down.</li><li>• Reactor power is approximately 23%.</li><li>• Control Rods are in Manual.</li><li>• The Main Generator is on-line.</li><li>• 4KV buses are energized from off-site power.</li><li>• The steam generators are being fed on the feedwater bypass valves.</li><li>• A failure of the 21C bypass feedwater control valve causes 21C SG level to decrease below the reactor trip setpoint, but no automatic reactor trip occurs.</li><li>• A manual Rx Trip attempt has also failed.</li></ul>
INITIATING CUE:	Your supervisor directs you to perform FR-S.1, Response to Nuclear Power Generation – ATWS.
REFERENCES:	2OM-53A.1.FR-S.1, Response to Nuclear Power Generation - ATWS, Issue 2, Revision 0
TOOLS:	None
HANDOUT:	2OM-53A.1.FR-S.1, Response to Nuclear Power Generation - ATWS, Issue 2, Revision 0

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542

JPM REVISION: 1

JPM TITLE: Nuclear Power Generation / ATWS

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>SIMULATOR SETUP:</b>            Insert Malf PPL01A &amp; PPL01B to fail Rx Trip breakers in auto and manual.            Insert VLV-CFW039A to zero to fail closed 2FWS-FCV499.            Insert failure EHC08B to fail the turbine trip PB's.            Set CB 'C' group counter at 168 steps to trip Rx.            TRG 4 = 'MCRFNS(37) &lt;=168' DMF PPL01A            TRG 5 = 'MCRFNS(38) &lt;=168' DMF PPL01B            Insert VLV-BAT014 to 2 to fail closed 2CHS-MOV350.            Allow simulator to run until LoLo level in 21C S/G.            Freeze simulator and Snap IC.</p> <p><b>EVALUATOR NOTE:</b> Allow the candidate to perform the Immediate Operator Actions from memory, then evaluate the actions as the steps are verified by procedure.</p>	
	START TIME: _____	
	<p><b>FAULT STATEMENT:</b>            Turbine will not trip via the turbine trip pushbuttons.</p>	
1.C Manually trip the turbine.	<p>1.1 Depresses both Main Turbine Trip push buttons, and recognizes that the turbine fails to trip.</p> <p>1.2C Depresses the DOWN pushbutton for the Valve Position Limiter and verifies all 4 Governor Valves CLOSE.</p> <p style="text-align: center;"><b>OR</b></p> <p>Manually initiates Steam Line Isolation by depressing the Main Stm Line Isol Actuation Train A <b>OR</b> B pushbuttons and verifies the MSLI Valves CLOSE.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542

JPM REVISION: 1

JPM TITLE: Nuclear Power Generation / ATWS

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR NOTE:</b> When CB 'C' group counter indicates 168 steps, the reactor will trip.	
<b>2.C</b> Insert control rods.	<b>2.1C</b> Manually inserts control rods to lower reactor power. OR Places the control rods to AUTO and monitors the control rods inserting.  <b>EVALUATOR NOTE:</b> If rods are taken to Auto for rod insertion, they may have to place rod control back to manual to continue inserting due to Tavg-Tref deviation.  COMMENTS:	
<b>3.</b> Locates the FR-S.1 procedure.	<b>3.1</b> Locates the FR-S.1 procedure.  <b>3.2</b> Verifies the appropriate immediate operator actions were taken in accordance with step 1.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542

JPM REVISION: 1

JPM TITLE: Nuclear Power Generation / ATWS

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>4. Verify AFW Status</p> <ul style="list-style-type: none"> <li>• Motor-driven AFW Pumps – RUNNING</li> <li>• Turb Driven AFW Pump Stm Supply Isol Valves – OPEN</li> <li>• AFW Throttle Valves – FULL OPEN</li> </ul>	<p>4.1 Checks 2FWE-23A and B both RUNNING, RED lights – LIT, GREEN lights – NOT LIT.</p> <p>4.2 Checks 2MSS*SOV105A-F OPEN, RED lights – LIT, GREEN lights – NOT LIT.</p> <p>4.3 Checks 2FWE*HCV100A-F OPEN, RED lights – LIT, GREEN lights – NOT LIT.</p> <p>COMMENTS:</p>	
<p>5. Initiate Emergency Boration Of RCS</p> <ul style="list-style-type: none"> <li>• Verify Charging Pumps – AT LEAST ONE RUNNING</li> <li>• Check Safety Injection – ACTUATED</li> </ul>	<p>5.1 Checks 2CHS-P21A or 2CHS-P21B RUNNING, RED light – LIT, GREEN light – NOT LIT.</p> <p>5.2 Recognizes that Safety Injection has not actuated by observing Annunciator A12-1D NOT LIT. Other available indications are permissible to use.</p> <p>5.3 Goes to Step 3.e based on the RNO.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542

JPM REVISION: 1

JPM TITLE: Nuclear Power Generation / ATWS

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div>FAULT STATEMENT: In the next step 2CHS*MOV350 will fail to open requiring the alternate emergency boration flowpath to be established.</div>	
6. Align boration path: <ul style="list-style-type: none"><li>• Open [2CHS*MOV350]</li><li>• Start in-service boric acid transfer pump.</li><li>• Verify Emergency Boration Flow – GREATER THAN 30 GPM</li></ul>	6.1 Places control switch for 2CHS*MOV350 to OPEN, GREEN light – LIT, RED light – NOT LIT.  6.2 Recognizes the failure to open, and performs RNO steps for establishing alternate emergency boration.  COMMENTS:	
7.C Establish alternate emergency boration path.  Open [2CHS*SOV206]	7.1C Places control switch for 2CHS*SOV206 to OPEN.  7.2 Verifies RED light – LIT, GREEN light – NOT LIT.  COMMENTS:	
8.C Place the makeup Mode Selector to BORATE.	8.1C Places the Mode Selector Switch to BORATE.  COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542 JPM REVISION: 1	JPM TITLE: Nuclear Power Generation / ATWS
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
9.C Adjust [2CHS*FCV113A] to a rate of greater than 30 GPM.	9.1C Adjusts 2CHS*FCV113A to >30 gpm, >750 units.  COMMENTS:	
10.C Set Boric Acid Flow to Blender Flow Totalizer to greater than 1000 GALLONS.  Reset [2CHS-FQIS113].	10.1C Adjusts 2CHS-FQIS113 Boric Acid Flow to >1000 gallons. (GREEN LED)  10.2C Depresses "RESET" on 2CHS-FQIS113.  COMMENTS:	
11. Verify the in-service boric acid transfer pump is in AUTO.	11.1 Verifies 2CHS-P22A is in AUTO.  11.2 Control switch has GREEN Target, and GREEN light – LIT  COMMENTS:	
12.C Place the Boric Acid Makeup Blender Control to START.	12.1C Places Boric Acid Makeup Blender Control switch to START.  12.2 Verifies 2CHS-P22A starts, RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542 JPM REVISION: 1	JPM TITLE: Nuclear Power Generation / ATWS
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
13. Verify [2CHS-FCV113A] opens.	13.1 Verifies 2CHS-FCV113A OPEN.  13.2 RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	
14. Verify [2CHS-FR113] Boric Acid To Blender Total M/U Flow from Blender – GREATER THAN 30 GPM	14.1 Observes 2CHS-FR113 to verify >30 gpm Boric Acid flow.  COMMENTS:	
15.C Align charging flow path: <ul style="list-style-type: none"> <li>Adjust [2CHS*FCV122] to establish Charging Flow – GREATER THAN 40 GPM</li> </ul>	15.1C Adjust 2CHS*FCV122 by placing in MANUAL, RED MAN light – LIT and RED AUTO light – NOT LIT.  15.2C Depresses ▼ OUTPUT push button until flow is >40 gpm as indicated on 2CHS-FI122A or PCS.  COMMENTS:	
16. Check PRZR pressure – LESS THAN 2330 PSIG	16.1 Checks PRZR pressure is < 2330 psig on 2RCS-PI455, 456, 457, or PCS.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542 JPM REVISION: 1	JPM TITLE: Nuclear Power Generation / ATWS
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
17. Alert Plant Personnel <ul style="list-style-type: none"> <li>• Sound the standby alarm.</li> <li>• Announce the Unit 2 reactor trip without a SCRAM.</li> <li>• Locally trip reactor (Rod Control Bldg – 755') <ul style="list-style-type: none"> <li>• Open reactor trip breakers</li> <li>• Open rod drive MG sets output breakers</li> </ul> </li> </ul>	17.1 Sounds standby alarm and makes plant announcement.  17.2 N/A's step to open Rx Trip and Output breakers due to Rx previously tripping.  COMMENTS:	
18. Verify Turbine Trip And Reheat Steam Isolation <ul style="list-style-type: none"> <li>• Turbine – TRIPPED</li> <li>• Verify [2MSS MOV100A,B] CLOSED</li> <li>• Reset reheater controller.</li> </ul>	18.1 Verifies Turbine is tripped by all Turbine Throttle and Governor valves CLOSED. GREEN lights – LIT and RED lights – NOT LIT.  18.2 Verifies 2MSS MOV100A,B CLOSED by checking GREEN lights – LIT and RED lights – NOT LIT.  18.3 Depresses reheater controller RESET pushbutton, and verifies RED pushbutton light – LIT.  COMMENTS:	
19. Check SI Signal Status <ul style="list-style-type: none"> <li>• Safety Injection – ACTUATED</li> <li>• Check if the first nine steps of E-0, "Reactor Trip Or Safety Injection", have been performed.</li> </ul>	19.1 Recognizes that Safety Injection has not actuated by observing Annunciator A12-1D NOT LIT. Other available indications are permissible to use.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-542 JPM REVISION: 1	JPM TITLE: Nuclear Power Generation / ATWS
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
20. Check If Reactor Is Subcritical <ul style="list-style-type: none"> <li>• Power range channels – LESS THAN 5%</li> <li>• Intermediate range channels – NEGATIVE STARTUP RATE</li> <li>• Continue boration, as necessary, to obtain adequate shutdown margin during subsequent actions.</li> <li>• RETURN TO procedure and step in effect.</li> </ul>	20.1 Checks Power Range NI channels are <5 %.  20.2 Checks negative SUR on 2NMI-NI35D/36D.  20.3 Informs Unit Supervisor that steps of FR-S.1 are complete, and recommends returning to E-0.  COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> After candidate recommends returning to procedure and step in effect, or at the discretion of the evaluator, state "This JPM is complete".         </div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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K/A REFERENCE: 025 AA1.01 3.6/3.7 TASK ID: 0101-008-01-043

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 30 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)			
Comments: _____			
_____			
_____			
_____			

OBSERVERS	
Name/SAP:	Name/SAP:
Name/SAP:	Name/SAP:

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

### **EVALUATOR DIRECTION SHEET**

<b>TASK STANDARD:</b>	RHS Train B is in service and RHS Train A is in standby.
<b>RECOMMENDED STARTING LOCATION:</b>	Simulator
<b>INITIAL CONDITIONS:</b>	<ul style="list-style-type: none"><li>• The plant is in Mode 4</li><li>• RHS Train 'A' is in service providing RCS cooling</li><li>• RHS Train 'B' is in standby</li><li>• Both Pumps and Trains are Filled &amp; Vented</li><li>• All P&amp;L's and initial conditions are met</li><li>• 2OST-10.4 has been completed</li></ul>
<b>INITIATING CUE:</b>	Your supervisor directs you to place the 'B' train of RHS in service IAW 2OM-10.4.B, Residual Heat Removal System Running step IV.D, and then place the 'A' train of RHS in standby IAW step IV.E.
<b>REFERENCES:</b>	2OM-10.4.B, Residual Heat Removal System Running, Rev. 33
<b>TOOLS:</b>	None
<b>HANDOUT:</b>	2OM-10.4.B, Residual Heat Removal System Running, Rev. 33

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>SIMULATOR SETUP:</b> Start with IC-24 Place/remove caution tags as needed. Shutdown 'B' Train RHS and place in standby IAW 2OM-10.4.B Part F. Stabilize plant with slight C/D and snap IC.</p> <p><b>EVALUATOR NOTE:</b> Provide candidate a copy of 2OM-10.4.B. Place simulator in run when candidate is ready to begin.</p>	
	START TIME: _____	
1. Reviews 2OM-10.4.B.	<p>1.1 Reviews Section D, "To Place RHS Train B in Service from a Standby Condition".</p> <p><b>EVALUATOR CUE:</b> If asked, inform the candidate that ASME valve testing is not required. RHS Train B has been filled and vented, and 2OST-10.4 has been completed per the initial conditions.</p> <p>COMMENTS:</p>	
2. Verify CCP is greater than 50F on [2CCP-TI100A(100B)(100C)], [2CCP-P21A(21B)(21C)] Pri Comp Cooling Hx Disch Temp, Vertical Board-Section C, for the inservice CCP Hxs.	<p>2.1 Checks temperature on 2CCP-TI100A(100B)(100C) &gt;50°F.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3. If RCS temperature > 120F, Open [2CCP*MOV112B] RHR PP Seal Clr 22B and Hx 21B.	3.1 Determines RCS/RHS temperature > 120F.  3.2 Verifies 2CCP*MOV112B is OPEN, RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	
4.C Align RHS valves.	4.1 Verifies 2RHS*MOV701B OPEN, RED light – LIT and GREEN light – NOT LIT.  4.2 Verifies 2RHS*MOV702B OPEN, RED light – LIT and GREEN light – NOT LIT.  4.3C CLOSES 2RHS*FCV605B by verifying controller is in MAN, and depressing ▼ output pushbutton until demand is at zero.  4.4 Verifies 2CHS*HCV142 OPEN, demand not at zero. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> Role play Unit Supervisor and direct that 2CHS*HCV142 be left at current position.</div> 4.5 Verifies 2RHS*MOV750B CLOSED, GREEN light – LIT and RED light – NOT LIT.  4.6C CLOSES 2RHS*HCV758B by depressing ▲ output pushbutton until demand is at 100%.  4.7 Verifies 2RHS*MOV720B OPEN, RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5. Monitor RHS 21B HX Inlet temperature using one of the following:</p> <ul style="list-style-type: none"> <li>• [2RHS*TR604B], RHR Hx Diff Temp recorder (inlet) (VB-A)</li> <li>• T0630A, RHR HX 21B INLET TEMP</li> </ul>	<p>5.1 Monitors RHR Hx Diff Temp on 2RHS*TR604B and/or (T0630A).</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR NOTE:</b> Candidate may use computer PID to determine differential temperature. Computer point (T0630A) is only the heat exchanger inlet temperature.</p> </div> <p>COMMENTS:</p>	
<p>6. If desired, Vent [2RHS*P21B] RHR Pump using Attachment 1. (Otherwise N/A)</p>	<p>6.1 Determines step is N/A based on Initial Conditions.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR NOTE:</b> Initial Conditions state both pumps are filled &amp; vented.</p> </div> <p>COMMENTS:</p>	
<p>7. If containment is at atmospheric pressure AND the dose rate in the area is acceptable, Monitor the 21B RHR pump seal for leakage during the pump start. (Otherwise N/A)</p>	<p>7.1 Determines containment is NOT at atmospheric pressure by observing 2LMS-PI950, 951, 952, 953, or the PCS.</p> <p>7.2 Marks step as N/A.</p> <p>COMMENTS:</p>	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8.C When the RCS and RHS temperature differential is <math>\leq 50^{\circ}\text{F}</math> OR the rate of RHS temperature increase is <math>&lt; 5^{\circ}\text{F}</math> per hour (<math>&lt; 1^{\circ}\text{F}/12</math> mins.), THEN Start [2RHS*P21B] RHR Pump from Benchboard Section A.</p>	<p>8.1 Verifies RCS and RHS temperature indications on PCS or recorders that temperature differential is <math>\leq 50^{\circ}\text{F}</math> or RHS temperature rate of increase is <math>&lt; 5^{\circ}\text{F}/\text{Hr}</math>.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR NOTE:</b> Candidate may have previously verified temperature is within limits.</p> </div> <p>8.2C Places 2RHS*P21B Control Switch to START.</p> <p>8.3 Verifies RED light – LIT and WHITE light – NOT LIT.</p> <p>8.4 Verifies amps increasing on 2RHS-I21B.</p> <p>COMMENTS:</p>	
<p>9. If required, Maintain PRZR pressure control between 275 and 350 psig by any or all of the following methods while performing the following steps: (otherwise N/A)</p> <ul style="list-style-type: none"> <li>• Adjust [2CHS*PCV145]</li> <li>• Adjust [2CHS*FCV122]</li> <li>• Adjust [2CHS*HCV186]</li> </ul>	<p>9.1 Verifies PRZR pressure is between 275 and 350 psig by observing 2RCS-PI440, 441, 2RCS-PR441, or PCS.</p> <p>9.2 Marks step as N/A.</p> <p>COMMENTS:</p>	
<p>10.C Slowly Throttle [2RHS*FCV605B], 21B RHR Hx Bypass Vlv, not to exceed 3500 gpm flow indicated on [2RHS*FI605B].</p>	<p>10.1C Throttles 2RHS*FCV605B OPEN by verifying controller is in MAN, and depressing ▲ output pushbutton until a flowrate of <math>&lt; 3500</math> GPM is indicated on 2RHS*FI605B OR PCS.</p> <p>COMMENTS:</p>	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11. Verify [2RHS*HCV758B] partially strokes to demonstrate heat removal capability prior to using Train B for core cooling:	<p>11.1 Verifies 2RHS*FCV605B controller is in MAN by RED MAN light – LIT.</p> <p>11.2 Records RHS flow from 2RHS-FI605B or Computer Point F0627A indication in gallons per minute.</p> <p>11.3 Depresses 2RHS*FCV758B controller output ▼ pushbutton to increase flow by 100 to 200 gpm.</p> <p>11.4 Depresses 2RHS*FCV758B controller output ▲ pushbutton to return flow to the previously recorded value.</p> <p>COMMENTS:</p>	
12. If desired to raise RHS flow, Slowly throttle [2RHS*FCV605B] not to exceed 4000 gpm flow indicated on [2RHS*FI605B]. (Otherwise N/A)	<div> <p><b>EVALUATOR CUE:</b> Role-play the Unit Supervisor and inform the candidate that it is NOT desired to raise RHS flow.</p> </div> <p>12.1 Marks step as N/A.</p> <p>COMMENTS:</p>	
Transfer [2RHS*FCV605B], 21B RHR Hx Bypass Vlv to automatic flow control.		

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
13. If RCS temperature < 120F AND CCP is not supplied to the RHR pump seal cooler, Perform the following: (otherwise N/A)	13.1 This step is N/A due to RCS temperature > 120F.  COMMENTS:	
14. Throttle [2RHS*HCV758A(758B)], 21A (21B) RHR Hx Flow Control Vlv to maintain the desired rate of cooldown or to hold the RCS at a constant temperature.	14.1 Throttles 2RHS*HCV758B to maintain RCS temperature by using output pushbuttons maintain RCS temperature stable at its current value.  <div><b>EVALUATOR CUE:</b> You are to maintain RCS temperature stable at its current value.</div> COMMENTS:	
15. Verify [2RHS*FCV605A(605B)] 21A(B) RHR Hx Bypass automatically controls RHS flow when in AUTO.	15.1 Verify 2RHS*FCV605A/605B modulate in AUTO to maintain RHS flow on 2RHS*FI605A/ B.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
--	----------------------------

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
16. If desired, Open [2RHS*MOV750B] RHS Train B Cross Conn Vlv. (otherwise N/A)	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b> Role play Unit Supervisor and direct to opening of 2RHS*MOV750B.         </div> 16.1 Places 2RHS*MOV750B Control Switch to OPEN. 16.2 Verifies RED light – LIT and GREEN light – NOT LIT.  <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b> This section of the procedure is completed and routed as required. You are now to place RHS Train 'A' in standby.         </div> COMMENTS:	
17. Reviews procedure Section E.	17.1 Transitions to procedure Section E, to place RHS Train 'A' in standby.  COMMENTS:	
18. IF desired, Verify Open [2RHS*MOV750B], RHS Train B Cross Connect Vlv (Otherwise N/A).	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b> If requested, role play US and state that it is desired to have 2RHS*MOV750B open.         </div> 18.1 Verifies 2RHS*MOV750B OPEN RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
19.C Verify Closed [2RHS*MOV750A], RHS Train A Cross Connect Vlv.	19.1C Places 2RHS*MOV750A Control Switch to CLOSED.  19.2 Verifies GREEN light – LIT and RED light – NOT LIT.  COMMENTS:	
20.C Verify stopped [2RHS*P21A] RHR Pump.	20.1C Places 2RHS*P21A Control Switch to STOP.  20.2 Verifies WHITE light – LIT and RED light – NOT LIT.  COMMENTS:	
21. If [2RHS*MOV720A], 21A RHR Return Isol Vlv is caution tagged for low boron concentration in accordance with 2OM-10.4.A, then remove the caution tag.	21.1 This Step is N/A.  COMMENTS:	
22. Verify open [2RHS*MOV720A] 21A RHR Hx Return Isol Vlv.	22.1 Verifies 2RHS*MOV720A OPEN, RED light – LIT and GREEN light – NOT LIT.  COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-136 JPM REVISION: 2	JPM TITLE: Swap RHS Trains
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
23. Open [2RHS*FCV605A] RHR Hx Bypass Vlv.	23.1 OPENS 2RHS*FCV605B by verifying controller is in MAN, and depressing ▲ output pushbutton.  COMMENTS:	
24. Throttle [2RHS*HCV758A] 21A RHR Hx Flow Control Vlv to 35% valve position indication.	24.1 Throttles 2RHS*HCV758A by depressing the controller output ▲ ▼ pushbuttons until the valve position indication is at 35%.  COMMENTS:	
25. Allow CCP flow to continue through [2RHS*E21A] RHR Hx until $\leq 120F$ on [2RHS*TR604A] RHR hx Diff Temp, THEN Close [2CCP*MOV112A] RHR PP Seal Clr 22A and Hx 21A cooling Water Inlet Vlv.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>EVALUATOR CUE:</b> If needed, report RHR hx Diff Temp, on 2RHS*TR604A is <math>&lt; 120F</math>.         </div> 25.1 Places 2CCP*MOV112A Control Switch to CLOSED.  25.2 Verifies GREEN light – LIT and RED light – NOT LIT.  COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> When candidate has temperature and flow controlled, state “This JPM is COMPLETE.”         </div>	
	STOP TIME: _____	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 2	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test
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K/A REFERENCE: 008 A4.01 3.3/3.1 TASK ID: 0151-012-01-012

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 15 Minutes	Actual Time:	minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ _____ _____			
OBSERVERS			
Name/SSN:		Name/SSN:	
Name/SSN:		Name/SSN:	
EVALUATOR			
Evaluator (Print): _____		Date: _____	
Evaluator Signature: _____			

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** Transfer 2CCP\*DCV100-1 and 100-2 between automatic and manual operation without invalidating test data. Determine acceptance criteria is met > .98 for reverse flow test of 2CCP\*4, "21A Discharge Check Valve." Restore 2CCP\*P21A operability.

**RECOMMENDED STARTING LOCATION:** Simulator

**INITIAL CONDITIONS:** The plant is in Mode 3 on hold to perform a reactor startup. [2CCP\*P21B] is running and [2CCP\*P21A] is in standby. (BOTH Pumps are OPERABLE)  
All test preparations for 2OST-15.1, Primary Component Cooling Water Pump [2CCP\*P21A] Test are completed, and the procedure is signed ready to begin at Step VII.B.1.  
An NLO has been briefed and is standing by to support this OST.

**INITIATING CUE:** The Unit Supervisor directs you to perform 2OST-15.1, steps VII.B.1 through 3, and determine if acceptance criteria in Step VII.B.3.j is met.

**REFERENCES:** 2OST-15.1, "Primary Component Cooling Water Pump [2CCP\*P21A] Test", Rev. 58

**TOOLS:** None

**HANDOUT:** 2OST-15.1, "Primary Component Cooling Water Pump [2CCP\*P21A] Test", Rev. 58, place kept up to step VII.B.1.



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 2	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test
--	---

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div><b>SIMULATOR SETUP:</b> Select any Mode 3 steady state IC. Ensure 2CCP*P21B is in operation and 2CCP*P21A is in standby. Verify 2CCP*DCV100-1 and 100-2 in AUTO.</div> <div><b>EVALUATOR NOTE:</b> After providing a marked up copy of 2OST-15.1, when candidate is ready to begin, place the simulator in RUN.</div>	
	START TIME: _____	
1.     Reviews procedure.	1.1     Candidate reviews 2OST-15.1.  COMMENTS:	
2.     Verify [2CCP*P21A], "Component Cooling Water Pump" bearing oil level is normal on local constant level oiler.	2.1     Requests NLO to verify 2CCP*P21A bearing oil level NORMAL on local constant level oiler.  <div><b>EVALUATOR CUE:</b> Role play NLO and report 2CCP*P21A local bearing oil level is NORMAL.</div> COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 2	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test
--	---

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3. If [2CCP*P21A], Pri Comp Clg Wtr P21A, is in standby, Record [2CCP-PI150A], "Primary Component Cooling Water local suction pressure.	<p>3.1 Recognizes 2CCP*P21A is in standby and requests NLO to report 2CCP-PI150A – local suction pressure reading.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>EVALUATOR CUE:</b> The NLO reports 2CCP-PI150A is reading 19.4 psig. </div> <p>3.2 Records 2CCP-PI150A in step VII.B.2.</p> <p>COMMENTS:</p>	
<p>4. If [2CCP*P21A], Pri Comp Clg Wtr P21A, is in standby AND another CCP pump is operating, Verify [2CCP*4], "Component Cooling Water Pump 21A Disch Check Vlv" CLOSED as follows:</p> <p>Record operating CCP Pump discharge pressure(s). (N/A IF NOT operating)</p> <ul style="list-style-type: none"> <li>• [2CCP-PI145B], "21B CCP Pump Disch Press ___ PSIG</li> <li>• [2CCP-PI145C], "21C CCP Pump Disch Press ___ PSIG</li> </ul>	<p>4.1 Records 2CCP-PI145B pressure in step VII.B.3.a</p> <p>4.2 N/A's 2CCP-PI145C pressure in step VII.B.3.a (pump is not running).</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 2	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Verify [2CCP*DCV100-1 AND 2CCP-DCV100-2] , "Pri Comp Cooling Pump Recirc Vlvs" are in MAN.	<p>5.1C Places 2CCP*DCV100-1 in MAN by depressing MAN pushbutton.</p> <p>5.2 Verifies RED MAN light – LIT and RED AUTO light – NOT LIT.</p> <p>5.3C Places 2CCP*DCV100-2 in MAN by depressing MAN pushbutton.</p> <p>5.4 Verifies RED MAN light – LIT and RED AUTO light – NOT LIT.</p> <p>5.5C Does <b>NOT</b> operate 2CCP*DCV100-1 or 100-2 while in MANUAL until pressure data is recorded in procedure step VII.B.3.e.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVAULATOR NOTE:</b> If 2CCP*DCV100-1 or 100-2 are operated in MANUAL prior to recording pressures in step VII.B.3.e, this will invalidate the data and will be considered UNSAT.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A]
JPM REVISION: 2	Test

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. If in MODEs 1-4, perform either of the following:</p> <ul style="list-style-type: none"> <li>Station an operator at [2CCP*7], "Component Cooling Pump P21A Disch Isol." with specific instructions to open [2CCP*7] if directed by control room staff.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>Record date and time below AND in narrative log that 2CCP*P21A is to be declared unavailable for documentation of Maintenance Rule Unavailability.</li> </ul>	<p>6.1 Determines Mode 3 applies and either directs an operator stationed at 2CCP*7 with specific instructions to open 2CCP*7 if directed by control room staff OR make a narrative log entry that 2CCP*P21A is to be declared unavailable for documentation of Maintenance Rule Unavailability.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> Role play either the NLO or SM/US based on which choice is taken by the candidate and acknowledge the request.</p> </div> <p>COMMENTS:</p>	
<p>7.C Close [2CCP*7], "Component Cooling Pump P21A Disch Isol.".</p>	<p>7.1C Directs the NLO stationed in the Aux Building to CLOSE 2CCP*7.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR NOTE:</b> 2CCP*7 is not modeled therefore 2CCP*151 will be closed. Coordinate with the simulator operator and CLOSE 2CCP*151 by selecting Primary Component Cooling Water Drawing (CCP2), clicking on 2CCP*151, Enter 0 into remote value with a 10 second ramp time and ensure 2CCP*151 CLOSES.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> Once valve is closed, Role Play the NLO and report 2CCP*7 is CLOSED.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A]
JPM REVISION: 2	Test

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8. Record operating CCP Pump discharge pressures. (N/A IF NOT operating)</p> <ul style="list-style-type: none"> <li>• [2CCP-PI145B], 21B CCP Pump Disch Press ____ PSIG</li> <li>• [2CCP-PI145C], 21C CCP Pump Disch Press ____ PSIG</li> </ul>	<p>8.1 Records 2CCP-PI145B pressure in Step VII.B.3.e.</p> <p>8.2 N/A's 2CCP-PI145C pressure in Step VII.B.3.e. (Pump is NOT operating).</p> <p>COMMENTS:</p>	
<p>9.C Open [2CCP*7], "Component Cooling Pump P21A Disch Isol."</p>	<p>9.1C Directs the NLO stationed in the Aux Building to OPEN 2CCP*7.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR NOTE:</b> Coordinate with the simulator operator and REOPEN 2CCP*151 by clicking on 2CCP*151. Enter 1 into remote value with a 10 second ramp time and ensure 2CCP*151.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> Once valve is opened, Role Play the NLO and report 2CCP*7 is OPEN.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A]
JPM REVISION: 2	Test

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10. IF [2CCP*P21A] was declared unavailable in Step VII.B.3.c AND IF desired to return pump to "available", record date and time below in the Narrative Log AND declare [2CCP*P21A] available for operation.	<p>10.1 If 2CCP*P21A was declared unavailable in previous step AND IF desired to return pump to "available", record date and time below in the Narrative Log AND declare 2CCP*P21A available for operation. If NOT applicable, mark step N/A.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR CUE:</b> If applicable, it is desirable to return 2CCP*P21A to available status. Narrative Log entries will be made.</p> </div> <p>COMMENTS:</p>	
11. IF manual operation of [2CCP*DCV100-1 AND 100-2] is desired, adjust valves as necessary UNTIL [2CCP-DI100-1 AND 2] indicate 93 to 97 psid.	<div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR CUE:</b> It is NOT desirable to maintain 2CCP*DCV100-1 and 100-2 in MANUAL.</p> </div> <p>11.1 This step will be marked N/A</p> <p>COMMENTS:</p>	
12.C IF automatic operation of [2CCP*DCV100-1 and 100-2] is desired, place valves in AUTO.	<p>12.1C Places 2CCP*DCV100-1 in AUTO by depressing AUTO pushbutton.</p> <p>12.2 Verifies RED AUTO light – LIT and RED MAN light – NOT LIT.</p> <p>12.3C Places 2CCP*DCV100-2 in AUTO by depressing AUTO pushbutton.</p> <p>12.4 Verifies RED AUTO light – LIT and RED MAN light – NOT LIT.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A]
JPM REVISION: 2	Test

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
13.C Calculate the ratio between operating pump discharge pressure with standby pump discharge valve closed and open	<p>13.1C Calculates the ratio between operating pump discharge pressure with standby pump discharge valve closed and open as follows:</p> <p>RATIO = <u>Indicated press with 2CCP*7 open (step VII.B.3.a)</u>  <u>Indicated press with 2CCP*7 shut (step VII.B.3.e)</u></p> <p>13.2C Determines that the ratio for 2CCP*P21B is &gt;.98 acceptance criteria and records ratio in step VII.B.3.j.</p> <p>13.3 N/A's ratio for 2CCP*P21C.</p> <p>13.4 Requests a second check for acceptance criteria.</p> <p>COMMENTS:</p>	
14. Verify 2CCP*P21A pump shaft is <b>NOT</b> rotating backwards.	<p>14.1 Requests on station NLO to verify 2CCP*P21A pump shaft is NOT rotating backwards.</p> <div style="border: 1px solid black; padding: 5px;"> <p><b>EVALUATOR CUE:</b> Field operator reports that 2CCP*P21A pump is NOT rotating backwards.</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px;"> <p><b>TERMINATING CUE:</b> Upon calculating acceptance criteria and after getting field report of pump status, inform the candidate, "This JPM is COMPLETE".</p> </div>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Containment Spray Manual Actuation – QSS Pump and CCP Valve Malfunctions
--	--

K/A REFERENCE: 026 A2.03 4.1/4.4 TASK ID: 0011-066-01-013  
026 A2.04 3.9/4.2

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING  
☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate	<input type="checkbox"/> Plant Site <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom	<input type="checkbox"/> Annual Requal Exam <input type="checkbox"/> Initial Exam <input type="checkbox"/> Training <input type="checkbox"/> Other:	<input type="checkbox"/> BVT <input type="checkbox"/> NRC <input type="checkbox"/> Other:

EVALUATION RESULTS			
Performer Name:		Performer SAP#:	
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 10 Minutes	Actual Time: minutes	
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation) Comments: _____ _____ _____ _____			
OBSERVERS			
Name/SSN:		Name/SSN:	
Name/SSN:		Name/SSN:	
EVALUATOR			
Evaluator (Print): _____		Date: _____	
Evaluator Signature: _____			



## OPERATIONS JOB PERFORMANCE MEASURE

### EVALUATOR DIRECTION SHEET

TASK STANDARD:	Manually initiate CIB, start 2QSS*P21B, close 2CCP-MOV151-1 and 2CCP-MOV151-2, and stop the RCP's.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none"><li>• A reactor trip and safety injection have occurred due to a large break LOCA.</li><li>• The actions of E-0 are being performed.</li></ul>
INITIATING CUE:	The Unit Supervisor directs you to perform Attachment A-0.11, Verification of Automatic Actions, Step 9 to check CIB and Containment Spray status.
REFERENCES:	2OM-53A.1.A-0.11, Verification of Automatic Actions, Rev. 9 2OM-53A.1.A-0.5, Containment Isolation Phase B Checklist, Rev. 3
TOOLS:	None
HANDOUT:	2OM-53A.1.A-0.11, Verification of Automatic Actions, Rev. 9 2OM-53A.1.A-0.5, Containment Isolation Phase B Checklist, Rev. 3

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Containment Spray Manual Actuation – QSS Pump and CCP Valve Malfunctions	
STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>SIMULATOR SETUP:</b> Insert MALF RCS03A (Large break LOCA) Insert MALF PPL07B = 6-7 (for 2QSS-P21B)  Fail auto CIB from actuating. Fail open 2CCP-MOV151-1 Fail open 2CCP-MOV151-2	
	<b>EVALUATOR CUE:</b> When the candidate is ready to begin the JPM, place the simulator to RUN.	
	START TIME: _____	
1. Reviews procedure.	1.1 Reviews 2OM-53A.1.A-0.11, Verification of Automatic Actions.  COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Containment Spray Manual Actuation – QSS Pump and CCP Valve Malfunctions
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2. Containment pressure - HAS REMAINED LESS THAN 11 PSIG.	<p>2.1 Determines that containment pressure has NOT remained less than 11 psig by checking any of the following:</p> <ul style="list-style-type: none"> <li>• A1-2H, “CONTAINMENT ISOLATION PHASE B” in alarm.</li> <li>• 2LMS*PR950, Containment Pressure Recorder indicates greater than 11 psig.</li> <li>• Panel 464, High 3 CHM 1 Pressure CH I – IV Lights – LIT.</li> <li>• 2LMS-PI950, 951, 952, and 953 indicate greater than 11 psig.</li> </ul> <p>COMMENTS:</p>	
3. Check BLUE CIB marks - LIT.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><b>EVALUATOR NOTE:</b> It is acceptable that the candidate completes this step out of order and may choose to perform 2OM-53A.1.A-0.5, “Containment Isolation Phase B Checklist”.</p> </div> <p>3.1 Checks components properly aligned and determines CIB components not positioned as required, and CIB <b>NOT</b> actuated.</p> <p>COMMENTS:</p>	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Containment Spray Manual Actuation – QSS Pump and CCP Valve Malfunctions
--	--

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4. IF NOT, THEN manually initiate CIB (both switches for both trains).	<p><b>EVALUATOR NOTE:</b> Either train may be actuated first followed by the opposite train.</p> <p>4.1C Simultaneously ROTATES (Clockwise) both Train "A" CIB switches to ACTUATE position.</p> <p>4.2C Simultaneously ROTATES (Clockwise) both Train "B" CIB switches to ACTUATE position.</p> <p>COMMENTS:</p>	
	<p><b>FAULT STATEMENT:</b> 2QSS*P21B failed to start, and 2CCP-MOV151-1 and 2CCP-MOV151-2 failed to close.</p>	
5. Check BLUE CIB marks - LIT.	<p>5.1 Candidate checks all indicating lights with BLUE CIB marks LIT.</p> <p>5.2 Determines that 2QSS*P21B failed to start, and 2CCP-MOV151-1 and 2CCP-MOV151-2 failed to close.</p> <p><b>EVALUATOR NOTE:</b> If requested, provide Candidate a copy of Attachment A-0.5.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-new JPM REVISION: 0	JPM TITLE: Containment Spray Manual Actuation – QSS Pump and CCP Valve Malfunctions	
STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6.C IF CIB NOT actuated, THEN manually align equipment. If necessary, refer to Attachment A-0.5, "Containment Isolation Phase B Checklist".	6.1C Places 2QSS*P21B control switch in START. 6.2 Verifies RED light – LIT and WHITE light – NOT LIT, and pump amps indicate on 2QSS-II21B. 6.3C Places 2CCP-MOV151-1 control switch to CLOSE. 6.4 Verifies GREEN light – LIT and RED light – NOT LIT. 6.5C Places 2CCP-MOV151-2 control switch to CLOSE 6.6 Verifies GREEN light – LIT and RED light – NOT LIT. COMMENTS:	
7.C Stop all RCP's.	7.1C Places control switches for 2RCS*P21A, 21B and 21C to STOP. 7.2 Verifies WHITE lights – LIT and RED lights – NOT LIT for 2RCS*P21A, 21B and 21C. 7.3 Verifies 2RCS-FI414 (415)(416); 2RCS-FI424 (425)(426); 2RCS-FI434 (435)(436) flow is lowering. 7.4 Verifies 2RCS-II21A(B)(C) amps zero. COMMENTS:	
	EVALUATOR CUE: That completes this JPM.	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172 JPM REVISION: 2	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven Auxiliary Feed Pump Suction
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K/A REFERENCE: 061 K1.07 3.6/3.8      TASK ID: 0241-054-04-012  
061 A1.04 3.9/3.9      0532-010-05-043

JPM APPLICATION: ☒ REQUALIFICATION      ☒ INITIAL EXAM      ☐ TRAINING  
☐ SRO ONLY      ☐ ALTERNATE PATH JPM      ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input type="checkbox"/> Perform	<input checked="" type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input checked="" type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

EVALUATION RESULTS		
Performer Name:		Performer SAP#:
Time <input type="checkbox"/> Yes Critical: <input checked="" type="checkbox"/> No	Allotted Time: 15 Minutes	Actual Time: minutes
JPM RESULTS: <input type="checkbox"/> SAT <input type="checkbox"/> UNSAT (Comments required for UNSAT evaluation)		
Comments: _____ _____ _____ _____		
OBSERVERS		
Name/SSN:		Name/SSN:
Name/SSN:		Name/SSN:
EVALUATOR		
Evaluator (Print): _____		Date: _____
Evaluator Signature: _____		

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** Service water vented and aligned to 2FWE\*P23B Motor Driven Auxiliary Feed Pump suction.

**RECOMMENDED  
STARTING LOCATION:** In-Plant

**INITIAL CONDITIONS:**

- The Control Room has responded to an Inadequate Core Cooling Accident and is now in E-1, "Loss of Reactor or Secondary Coolant".
- Containment Isolation Phase B (CIB) actuation has occurred.
- PPDWST level has decreased to the low-level alarm setpoint.
- PPDWST level indicators 2FWE\*LI104A1 and 2FWE\*LI104A2 both indicate 20".
- Both Demineralized Water Pumps 2WTD-P23A and B, are unavailable, and the Demin Water Storage Tank, 2WTD-TK23 is also unavailable.
- 2SWS\*MOV103B, Recirc. Spray HXs Service Water Sup "B" Isolation Valve has been verified OPEN.
- S/G Pressure is approximately 400 psig.

**INITIATING CUE:** Your supervisor directs you to supply 2FWE\*P23B Motor Driven Auxiliary Feed Pump suction from Service Water by completing EOP Attachment A-1.8 beginning with step 9.

**REFERENCES:** 2OM-53A.1.A-1.8 Revision 7

**TOOLS:** Keys (simulated)  
Proper PPE

**HANDOUT:** 2OM-53A.1.A-1.8 Revision 7

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172 JPM REVISION: 2	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven Auxiliary Feed Pump Suction
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR CUE:</b> Provide candidate a copy of 2OM-53A.1.A-1.8.	
	START TIME: _____	
1. Review 2OM-53A.1.A-1.8.	1.1 Reviews 2OM-53A.1.A-1.8.  COMMENTS:	
2. IF PPDWST Level Drops to 25 inches, THEN align Service Water to the Auxiliary Feedwater Pumps by performing the following:  If Containment Isolation Phase B has NOT occurred, then perform the following:  Close [2SWS*MOV104B] Close [2SWS*MOV104D]	2.1 Recognized from the Initial Conditions that CIB has occurred and performance of this step is not required.  COMMENTS:	
3. Verify Open [2SWS*MOV103B], Recirc Spray HX Service Water Supply Header B Isolation.	3.1 Recognized from the Initial Conditions that the Control Room has already performed this step.  COMMENTS:	



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven Auxiliary Feed Pump Suction
JPM REVISION: 2	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<b>4.C</b> Close [2FWE*356], Service Water Supply Tell Tale Drain. (North SFGDS above 2FWE*23B – 718)	<b>4.1C</b> Closes 2FWE*356, Service Water Supply Tell Tale Drain.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE*356 is Closed.</div> COMMENTS:	
<b>5.C</b> Vent SWS to AFW pump suction as follows:  1) With Key SR/14, open [2FWE*98], Service Water Isolation, (North SFGDS, above 2FWE*P23B - 718').  2) Remove pipe cap at [2FWE-122], Service Water Supply Vent Isol Vlv. (North SFGDS – 718')  3) Open [2FWE-122] UNTIL a solid stream of water appears, THEN close [2FWE-122].	<b>5.1C</b> Simulates removing locking device and opening 2FWE*98, Service Water Isolation.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE*98 is unlocked and Open.</div> <b>5.2C</b> Removes pipe cap from 2FWE-122 vent discharge.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> Pipe cap is Removed.</div> <b>5.3C</b> Opens 2FWE-122, Service Water Supply Vent Isol Vlv.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE-122 is Open, and a solid stream of water is discharging for the vent line.</div> <b>5.4C</b> Closes 2FWE-122, Service Water Supply Vent Isol Vlv..  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE-122 is Closed.</div> COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven
JPM REVISION: 2	Auxiliary Feed Pump Suction

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. For [2FWE*P22], Turbine Driven AFW Pump, perform the following:</p> <p>Slowly Open [2FWE*90], Service Water Supply to [FWE*P22] (South Safeguards 718')</p>	<p>6.1 2FWE*P22 alignment is not required. Step is marked N/A.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> If needed, remind candidate that it is only desired to align 'B' MDAFW pump per the initiating cue.</p> </div> <p>COMMENTS:</p>	
<p>7. For [2FWE*P23A], Motor Driven AFW Pump, perform the following:</p> <p>Slowly Open [2FWE*91], Service Water Supply to [FWE*P23A] (South Safeguards 718')</p>	<p>7.1 2FWE*P23A alignment is not required. Step is marked N/A.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> If needed, remind candidate that it is only desired to align 'B' MDAFW pump per the initiating cue.</p> </div> <p>COMMENTS:</p>	
<p>8.C For [2FWE*P23B], Motor Driven AFW Pump, perform the following:</p> <p>Slowly Open [2FWE*92], Service Water Supply to [FWE*P23B] (North Safeguards 718')</p>	<p>8.1C Opens 2FWE*92, Service Water Supply to FWE*P23B.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> 2FWE*92 is Open.</p> </div> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven Auxiliary Feed Pump Suction
JPM REVISION: 2	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<b>9.C</b> With KEY CRIT/19, close [2FWE*95], Primary DWST Supply to [2FWE*P23B]. (North Safeguards 718')	<b>9.1C</b> Unlocks and Closes 2FWE*95, Primary DWST Supply to 2FWE*P23B.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE*95 is Closed.</div> COMMENTS:	
<b>10.</b> Observe AFW pump discharge pressure to ensure proper operation.	<b>10.1</b> Observe 2FWE*P23B pump discharge pressure to ensure proper operation.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 2FWE*P23B discharge pressure is normal.</div> COMMENTS:	
<b>11.</b> Locally monitor running Auxiliary Feedwater Pump suction pressure: <ul style="list-style-type: none"> <li>• [2FWE-PI156], 2FWE-P22 Suction Pressure</li> <li>• [2FWE-PI156A], 2FWE-P23A Suction Pressure</li> <li>• [2FWE-PI156B], 2FWE-P23B Suction Pressure</li> </ul>	<b>11.1</b> Monitors 2FWE-PI156B, 'B' MDAFW Suction Pressure to ensure suction pressure is >10 psig.  <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"><b>EVALUATOR CUE:</b> 'B' MDAFW Suction Pressure is &gt;10 psig.</div> COMMENTS:	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-172 JPM REVISION: 2	JPM TITLE: Align Service Water to [2FWE*P23B] Motor Driven Auxiliary Feed Pump Suction
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>12. IF any running Aux Feedwater Pump suction pressure drops less than 10 PSIG, THEN flush [2FWE-STRY200], Service Water Supply Strainer, as follows:</p> <p>1) Open [2FWE-121], 2FWE-STRY200 Blowdown Isol Vlv.</p> <p>2) Allow strainer to flush for several seconds.</p> <p>3) Close [2FWE-121].</p> <p>4) IF suction pressure remains less 10 PSIG, THEN repeat steps UNTIL suction pressure is greater than 10 PSIG.</p>	<p>12.1 Candidate recognizes that flushing the strainers is not required with suction pressure &gt;10 psig. Step is marked N/A.</p> <p>COMMENTS:</p>	
<p>13. Notify the Control Room that EOP attachment A-1.8 is complete.</p>	<p>13.1 Candidate reports to the Control Room that attachment A-1.8 is complete.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> As Unit Supervisor acknowledge the report.</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>EVALUATOR CUE:</b> This JPM is complete.</p> </div>	
	<p>STOP TIME: _____</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-086

JPM REVISION: 7

JPM TITLE: Place Instrument Air Bypass Filters in Service

K/A REFERENCE: 078 K4.02

3.2/3.5

TASK ID: 0341-034-01-043

078 A2.01

2.9/3.2

G2.1.20

4.6/4.6

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input type="checkbox"/> Perform	<input checked="" type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input checked="" type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:

Performer SAP:

Time ☐ YesCritical: ☒ No

Allotted

15 Minutes

Time:

Actual

Time:

minutes

JPM RESULTS: ☐ SAT  
☐ UNSAT (Comments required for UNSAT evaluation)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## OBSERVERS

Name/SAP:

Name/SAP:

Name/SAP:

Name/SAP:

## EVALUATOR

Evaluator (Print): \_\_\_\_\_ Date: \_\_\_\_\_

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

## OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** [2IAS-FLT37 (39)] placed in service and air dryers [2IAS-DRY23A] removed from service, with filters being blown down.

**RECOMMENDED  
STARTING LOCATION:** In-Plant

**INITIAL CONDITIONS:**

- The plant is operating normally at 100% power.
- All systems are aligned for normal operation.
- All procedure initial conditions are satisfied.

**INITIATING CUE:** Your supervisor directs you to place the Instrument Air Bypass Filters [2IAS-FLT37 & 39] in service and remove the Instrument Air Dryer [2IAS-DRY23A] from service in accordance with 2OM-34.4.F.

**REFERENCES:** 2OM-34.4.F, "Placing Instrument Air Bypass Filters In And Out of Service And Changing Cooling Water Supplies For The Station Air Compressors" Revision 11.

**TOOLS:** Proper PPE

**HANDOUT:** 2OM-34.4.F, "Placing Instrument Air Bypass Filters In And Out of Service And Changing Cooling Water Supplies For The Station Air Compressors" Revision 11.

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-086 JPM REVISION: 7	JPM TITLE: Place Instrument Air Bypass Filters in Service
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<b>EVALUATOR CUE:</b> Provide candidate with a copy of 2OM-34.4.F.	
	START TIME: _____	
1. Reviews 2OM-34.4.F, "Placing Instrument Air Bypass Filters In And Out of Service And Changing Cooling Water Supplies For The Station Air Compressors".	1.1 Reviews section IV.A of 2OM-34.4.F.  COMMENTS:	
2. Verify closed the following valves:  a. [2IAS-1244], Instrument Air Dryer Bypass Line Filter Drain Trap Bypass Isolation.  b. [2IAS-1246], Instrument Air Dryer Bypass Line Filter Drain Trap Strainer Drain Isolation.	2.1 Verifies handwheel for the following valves are CLOSED. (perpendicular to the flowpath)  <ul style="list-style-type: none"> <li>• 2IAS-1244 (Turb Bldg 730')</li> <li>• 2IAS-1246 (Turb Bldg 730')</li> </ul> <b>EVALUATOR CUE:</b> Handwheels are perpendicular to the flowpath.  COMMENTS:	

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-086 JPM REVISION: 7	JPM TITLE: Place Instrument Air Bypass Filters in Service
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3.C Open the following valves:</p> <p>a. [2IAS-1233], Instrument Air Dryer Bypass Upstream Isolation.</p> <p>b. [2IAS-1148], Instrument Air Dryer Bypass Downstream Isolation.</p>	<p>3.1C Rotates the handwheel for the following valves until they are OPEN. (parallel to the flowpath)</p> <ul style="list-style-type: none"> <li>• 2IAS-1233 (Turb Bldg 730')</li> <li>• 2IAS-1148 (Turb Bldg 730')</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> Handwheels are parallel to the flowpath.</p> </div> <p>COMMENTS:</p>	
<p>4.C Blowdown [2IAS-FLT37], Instrument Air Bypass Filter, as follows:</p> <p>a. [2IAS-1244], Instrument Air Dryer Bypass Line Filter Drain Trap Bypass Isolation.</p> <p>b. When no water is observed discharging from the blowdown line, Close [2IAS-1244], Instrument Air Dryer Bypass Line Filter Drain Trap Bypass Isolation.</p>	<p>4.1C Rotates 2IAS-1244 handwheel until it is OPEN. (parallel to the flowpath)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> Handwheel is parallel to the flowpath.</p> </div> <p>4.2 Verifies no water discharging from the blowdown line.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR NOTE:</b> No more water is discharging from the blowdown line.</p> </div> <p>4.3C Rotates 2IAS-1244 handwheel until it is CLOSED. (perpendicular to the flowpath)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>EVALUATOR CUE:</b> Handwheel is perpendicular to the flowpath.</p> </div> <p>COMMENTS:</p>	



# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-086 JPM REVISION: 7	JPM TITLE: Place Instrument Air Bypass Filters in Service
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5.C Remove [2IAS-DRY23A], Instrument Air Train A Dryer, from service as follows:</p> <p>a. Close [2IAS-1215], Instrument Air Dryer 2IAS-DRY23A Inlet Isolation.</p> <p>b. Check Instrument Air Pressure is being maintained &gt; 98 psig.</p> <p>c. Place the On-Off-Auto control switch to the OFF position.</p> <p>d. Push in the red Push Stop-Pull Start pushbutton at the dryer.</p>	<p>5.1C Rotates 2IAS-1215 handwheel until it is CLOSED. (perpendicular to the flowpath)</p> <p><b>EVALUATOR CUE:</b> Handwheel is perpendicular to the flowpath.</p> <p>5.2 Checks instrument air pressure 2IAS-PI109 is &gt; 98 psig.</p> <p><b>EVALUATOR CUE:</b> Instrument air pressure 2IAS-PI109 is 105 psig and STABLE.</p> <p>5.3C Places ON-OFF-AUTO control switch to OFF position.</p> <p><b>EVALUATOR CUE:</b> 2IAS-DRY23A control switch is OFF.</p> <p>5.4C Pushes in the RED Push Stop-Pull Start pushbutton.</p> <p><b>EVALUATOR CUE:</b> RED Push Stop-Pull Start pushbutton has been depressed.</p> <p>COMMENTS:</p>	
	<p><b>EVALUATOR CUE:</b> State "This JPM is complete."</p>	
	STOP TIME: _____	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
--	---

K/A REFERENCE: EA1.04      3.5 / 3.9      TASK ID: 0391-027-06-043

JPM APPLICATION: ☒ REQUALIFICATION      ☒ INITIAL EXAM      ☐ TRAINING☐ SRO ONLY      ☐ ALTERNATE PATH JPM      ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
<input type="checkbox"/> Perform	<input checked="" type="checkbox"/> Plant Site	<input type="checkbox"/> Annual Requal Exam	<input type="checkbox"/> BVT
<input checked="" type="checkbox"/> Simulate	<input type="checkbox"/> Simulator	<input type="checkbox"/> Initial Exam	<input type="checkbox"/> NRC
	<input type="checkbox"/> Classroom	<input type="checkbox"/> Training	<input type="checkbox"/> Other:
		<input type="checkbox"/> Other:	

## EVALUATION RESULTS

Performer Name:

Performer SAP:

Time ☐ Yes  
Critical: ☒ NoAllotted      20 Minutes  
Time:Actual  
Time:      minutesJPM RESULTS: ☐ SAT  
☐ UNSAT (Comments required for UNSAT evaluation)Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## OBSERVERS

Name/SAP:

Name/SAP:

Name/SAP:

Name/SAP:

## EVALUATOR

Evaluator (Print): \_\_\_\_\_ Date: \_\_\_\_\_

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

OPERATIONS JOB PERFORMANCE MEASURE

**EVALUATOR DIRECTION SHEET**

**TASK STANDARD:** The DC loads on [DC\*SWDB2-1 and 2-2] and [PNL-VITBS2-1D and 2D] are repositioned per the procedure.

**RECOMMENDED STARTING LOCATION:** In-Plant

**EVALUATOR NOTE:** This JPM is designed to start with Enclosure 2 of procedure FSA-11.

**INITIAL CONDITIONS:** A Loss of All AC Power has required implementation of 2OM-53E.1.FDA-11, DC/ UPS ELAP Load Shed. Assume you have all required personal protective equipment.

**INITIATING CUE:** Your supervisor directs you to continue by performing Enclosure 2, Rod Control Building Load Shed, of the procedure and complete the electrical alignments for [DC\*SWDB2-1 and 2-2] and [PNL-VITBS2-1D and 2D]. Report back to your supervisor when the steps are complete.

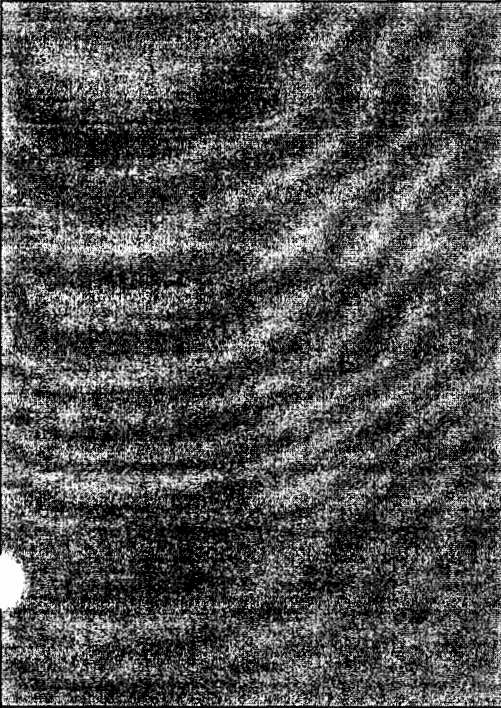

**REFERENCES:** 2OM-53E.1.FSA-11, "DC/UPS ELAP Load Shed", Issue 0 Rev. 2/1

**TOOLS:** None

**HANDOUT:** 2OM-53E.1.FSA-11, DC/UPS ELAP Load Shed, Enclosure 2

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p><b>EVALUATOR NOTE:</b> Throughout this JPM, if necessary, provide the <b>CUE</b> that the breaker alignments are as simulated. Refer to the breaker positions in the tables on the left of each step. For breakers that are <b><u>BOLD</u></b> and <b><u>UNDERLINED</u></b> provide a Cue that the as found position in <b>ON</b>. For all other breakers, the as found position will be as listed in the table.</p> <p><b>EVALUATOR CUE:</b> Provide candidate a copy of 2OM-53E.1.FSA-11, Enclosure 2.</p>	
	START TIME: _____	
	<p>1.      Reviews procedure.</p> <p>1.1    Reviews the provided copy of 2OM-53E.1.FSA-11, Enclosure 2.</p> <p>COMMENTS:</p>	

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
--	--

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
---------------------------------------	--	-----

2.C Align the following panel circuit breakers to the required position using this enclosure. [DC\*SWBD2-1]: (AE SWGR, EI 730')

SWBD BRK	LOAD (CKT)	Req Pos
1-1	Uninterruptible Pwr Supply 2-1	ON
1-2	Emer Diesel Gen 2-1	<b><u>OFF</u></b>
1-3	4,160 V Switchgear Unit 2 AE	<b><u>OFF</u></b>
1-4	480 V Unit Substation 2-8	<b><u>OFF</u></b>
1-5	125 VDC Distribution Panel 3	ON
1-6	125 VDC Distribution Panel 7	<b><u>OFF</u></b>
1-7	Reactor Trip Switchgear	<b><u>OFF</u></b>
1-8	125 VDC Distribution Panel 11	<b><u>OFF</u></b>
1-9	SPARE	OFF
1-10	125 VDC Distribution Panel 15	ON

**EVALUATOR NOTE:** Steps that require breaker positions that are their normal system alignments (NSA) will be "Verify" steps, breakers that require a position other than NSA will be "Place" steps. These components will be **bold and underlined** in the required position table. Cue the as found positions as describe in the Evaluator Note on the previous page.

2.1 Verifies breaker 1-1 in the ON position.

2.2C Places breaker 1-2 in the OFF position.

2.3C Places breaker 1-3 in the OFF position.

2.4C Places breaker 1-4 in the OFF position

2.5 Verifies breaker 1-5 in the ON position

2.6C Places breaker 1-6 in the OFF position

2.7C Places breaker 1-7 in the OFF position

2.8C Places breaker 1-8 in the OFF position

2.9 Verifies breaker 1-9 in the OFF position

2.10 Verifies breaker 1-10 in the ON position

**EVALUATOR CUE:** Breakers are in the stated position.

COMMENTS:

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
--	--

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
---------------------------------------	--	-----

3.C Align the following panel circuit breakers to the required position using this enclosure. [PNL\*VITBS2-1D]: (AE SWGR, EI 730')

SWBD BRK	LOAD (CKT)	Req Pos
1D-1	SPARE	OFF
1D-2	125 VDC ISOL TRANSducers [BAT*BKR 2-1] (CKT BYS3C)	ON
1D-3	SPARE	OFF
1D-4	SPARE	OFF
1D-5	TUNNEL SUMP LEVEL [2DAS*LT213] (CKT DAS14)	<u>OFF</u>
1D-6	RECIRC SPRAY SUMP LEVEL [2DAS*LT215] (CKT DAS15)	<u>OFF</u>
1D-7	REACTOR CNMT SUMP LEVEL [2DAS*LT220] (CKT DAS16)	<u>OFF</u>
1D-8	INCORE INSTR SUMP LEVEL [2DAS*LT221A] (CKT DASA1)	<u>OFF</u>
1D-9	SPENT FUEL POOL LEVEL [2FNC*LT102A] (CKT FNCA1)	<u>OFF</u>
1D-10	REACTOR CNMT SUMP LEVEL [2RSS*LT151A] (CKT RSSA1)	<u>OFF</u>

**EVALUATOR NOTE:** The alignments for [PNL\*VITBS2-1D continue on the following page.

- 3.1 Verifies breaker 1D-1 in the OFF position.
- 3.2 Verifies breaker 1D-2 in the ON position.
- 3.3 Verifies breaker 1D-3 in the OFF position.
- 3.4 Verifies breaker 1D-4 in the OFF position
- 3.5C Places breaker 1D-5 in the OFF position
- 3.6C Places breaker 1D-6 in the OFF position
- 3.7C Places breaker 1D-7 in the OFF position
- 3.8C Places breaker 1D-8 in the OFF position
- 3.9C Places breaker 1D-9 in the OFF position
- 3.10C Places breaker 1D-10 in the OFF position

**EVALUATOR CUE:** Breakers are in the stated position.

COMMENTS:

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX	JPM TITLE: Align DC Electrical Power Supplies during an Extended
JPM REVISION: 0	Loss of Power

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
---------------------------------------	--	-----

## 3.C CONTINUED

Align the following panel circuit breakers to the required position using this enclosure. [PNL\*VITBS2-1D]: (AE SWGR, EI 730')

SWBD BRK	LOAD (CKT)	Req Pos
1D-11	SPARE	OFF
1D-12	SPARE	OFF
1D-13	SPARE	OFF
1D-14	SPARE	OFF
1D-15	SOUTH SAFEGUARDS SUMP LEVEL [2DAS*LT209] (CKT DAS12)	<u>OFF</u>
1D-16	AUX BLDG SUMP LEVEL [2DAS*LT211] (CKT-DAS13)	<u>OFF</u>
1D-17	SPARE	OFF
1D-18	SPARE	OFF

**EVALUATOR NOTE:** The alignments for [PNL\*VITBS2-1D continue on this page.

3.11 Verifies breaker 1D-11 in the OFF position.

3.12 Verifies breaker 1D-12 in the ~~ON~~ position.

3.13 Verifies breaker 1D-13 in the OFF position.

3.14 Verifies breaker 1D-14 in the OFF position

3.15C Places breaker 1D-15 in the OFF position

3.16C Places breaker 1D-16 in the OFF position

3.17 Verifies breaker 1D-17 in the OFF position

3.18 Verifies breaker 1D-18 in the OFF position

**EVALUATOR CUE:** Breakers are in the stated position.

COMMENTS:

# OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
JPM REVISION: 0	

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
---------------------------------------	--	-----

4.C Align the following panel circuit breakers to the required position using this enclosure. [DC\*SWBD2-2]: (DF SWGR, EI 730')

SWBD BRK	LOAD (CKT)	Req Pos
2-1	Uninterruptible Pwr Supply 2-2 [UPS*VITBUS2-2]	ON
2-2	SPARE	OFF
2-3	4,160 V Switchgear Unit 2DF [4KVS*2DF]	<u>OFF</u>
2-4	480 V Unit Substation 2-9 [480 VUS*2-9]	<u>OFF</u>
2-5	125 VDC Distribution PNL-2 [PNL*DC2-02]	ON
2-6	125 VDC Distribution PNL-6 [PNL*DC2-06]	<u>OFF</u>
2-7	Reactor Trip Switchgear [REAC-2T-SWGR]	<u>OFF</u>
2-8	125 VDC Distribution PNL-10 [PNL*DC2-10]	<u>OFF</u>
2-9	2-2 Emerg D/G 2EGS*EG-2 [2EGS*EG-2]	<u>OFF</u>
2-10	125 VDC Distribution PNL-16 [PNL*DC2-16]	ON

- 4.1 Verifies breaker 2-1 in the ON position.
- 4.2 Verifies breaker 2-2 in the OFF position.
- 4.3C Places breaker 2-3 in the OFF position.
- 4.4C Places breaker 2-4 in the OFF position
- 4.5 Verifies breaker 2-5 in the ON position
- 4.6C Places breaker 2-6 in the OFF position
- 4.7C Places breaker 2-7 in the OFF position
- 4.8C Places breaker 2-8 in the OFF position
- 4.9C Places breaker 2-9 in the OFF position
- 4.10 Verifies breaker 2-10 in the ON position

**EVALUATOR CUE:** Breakers are in the stated position.

COMMENTS:



## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX	JPM TITLE: Align DC Electrical Power Supplies during an Extended
JPM REVISION: 0	Loss of Power

STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U																																	
<p>5.C Align the following panel circuit breakers to the required position using this enclosure. [PNL*VITBS2-2D]: (DF SWGR, EI 730')</p> <table border="1" style="width: 100%; margin-top: 20px;"> <thead> <tr> <th>SWBD BRK</th> <th>LOAD (CKT)</th> <th>Req Pos</th> </tr> </thead> <tbody> <tr> <td>2D-1</td> <td>SPARE</td> <td>OFF</td> </tr> <tr> <td>2D-2</td> <td>125 VDC ISOL TRANSDUCER [BAT*BKR 2-2] (CKT BYS4C)</td> <td>ON</td> </tr> <tr> <td>2D-3</td> <td>SPARE</td> <td>OFF</td> </tr> <tr> <td>2D-4</td> <td>SPARE</td> <td>OFF</td> </tr> <tr> <td>2D-5</td> <td>TUNNEL SUMP LEVEL [2DAS*LT214] (CKT DAS24)</td> <td><u>OFF</u></td> </tr> <tr> <td>2D-6</td> <td>RECIRC SPRAY SUMP LEVEL [2DAS*LT216] (CKT DAS25)</td> <td><u>OFF</u></td> </tr> <tr> <td>2D-7</td> <td>REACTOR CNMT SUMP LEVEL [2DAS*LT222] (CKT DAS26)</td> <td><u>OFF</u></td> </tr> <tr> <td>2D-8</td> <td>INCORE INSTR SUMP LEVEL [2DAS*LT221B] (CKT DASB1)</td> <td><u>OFF</u></td> </tr> <tr> <td>2D-9</td> <td>SPENT FUEL POOL LEVEL [2FNC*LT102B] (CKT FNCB1)</td> <td><u>OFF</u></td> </tr> <tr> <td>2D-10</td> <td>REACTOR CNMT SUMP LEVEL [2RSS*LT151B] (CKT RSSB1)</td> <td><u>OFF</u></td> </tr> </tbody> </table>	SWBD BRK	LOAD (CKT)	Req Pos	2D-1	SPARE	OFF	2D-2	125 VDC ISOL TRANSDUCER [BAT*BKR 2-2] (CKT BYS4C)	ON	2D-3	SPARE	OFF	2D-4	SPARE	OFF	2D-5	TUNNEL SUMP LEVEL [2DAS*LT214] (CKT DAS24)	<u>OFF</u>	2D-6	RECIRC SPRAY SUMP LEVEL [2DAS*LT216] (CKT DAS25)	<u>OFF</u>	2D-7	REACTOR CNMT SUMP LEVEL [2DAS*LT222] (CKT DAS26)	<u>OFF</u>	2D-8	INCORE INSTR SUMP LEVEL [2DAS*LT221B] (CKT DASB1)	<u>OFF</u>	2D-9	SPENT FUEL POOL LEVEL [2FNC*LT102B] (CKT FNCB1)	<u>OFF</u>	2D-10	REACTOR CNMT SUMP LEVEL [2RSS*LT151B] (CKT RSSB1)	<u>OFF</u>	<div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p><b>EVALUATOR NOTE:</b> The alignments for [PNL*VITBS2-2D continue on the following page.</p> </div> <div style="margin-top: 20px;"> <p>5.1 Verifies breaker 2D-1 in the OFF position.</p> <p>5.2 Verifies breaker 2D-2 in the ON position.</p> <p>5.3 Verifies breaker 2D-3 in the OFF position.</p> <p>5.4 Verifies breaker 2D-4 in the OFF position</p> <p>5.5C Places breaker 2D-5 in the OFF position</p> <p>5.6C Places breaker 2D-6 in the OFF position</p> <p>5.7C Places breaker 2D-7 in the OFF position</p> <p>5.8C Places breaker 2D-8 in the OFF position</p> <p>5.9C Places breaker 2D-9 in the OFF position</p> <p>5.10C Places breaker 2D-10 in the OFF position</p> </div> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p><b>EVALUATOR CUE:</b> Breakers are in the stated position.</p> </div> <p>COMMENTS:</p>	
SWBD BRK	LOAD (CKT)	Req Pos																																	
2D-1	SPARE	OFF																																	
2D-2	125 VDC ISOL TRANSDUCER [BAT*BKR 2-2] (CKT BYS4C)	ON																																	
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## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0	JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power
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STEP ( "C" Denotes CRITICAL STEP )	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
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## 5.C CONTINUED

Align the following panel circuit breakers to the required position using this enclosure. [PNL\*VITBS2-2D]: (DF SWGR, EI 730')

SWBD BRK	LOAD (CKT)	Req Pos
2D-11	SPARE	OFF
2D-12	SPARE	OFF
2D-13	SPARE	OFF
2D-14	SPARE	OFF
2D-15	NORTH SAFEGUARDS SUMP LEVEL [2DAS*LT201] (CKT DAS22)	<b>OFF</b>
2D-16	AUX BLDG SUMP LEVEL [2DAS*LT212] (CKT DAS23)	<b>OFF</b>
2D-17	SPARE	OFF
2D-18	SPARE	OFF

**EVALUATOR NOTE:** The alignments for [PNL\*VITBS2-2D continue on this page.

5.11 Verifies breaker 2D-11 in the OFF position.

5.12 Verifies breaker 2D-12 in the <sup>OFF</sup>~~ON~~ position.

5.13 Verifies breaker 2D-13 in the OFF position.

5.14 Verifies breaker 2D-14 in the OFF position

5.15C Places breaker 2D-15 in the OFF position

5.16C Places breaker 2D-16 in the OFF position

5.17 Verifies breaker 2D-17 in the OFF position

5.18 Verifies breaker 2D-18 in the OFF position

**EVALUATOR CUE:** Breakers are in the stated position.

COMMENTS:

## OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-0XX JPM REVISION: 0		JPM TITLE: Align DC Electrical Power Supplies during an Extended Loss of Power	
STEP ( "C" Denotes CRITICAL STEP )		STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ S/U	
6. Reports to the Supervisor that the breaker alignments are complete.		6.1 Notifies Supervisor that alignments on [DC*SWDB2-1 and 2-2] and [PNL-VITBS2-1D and 2D] are complete.  <div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> Acknowledge report as the supervisor.         </div> COMMENTS:	
		<div style="border: 1px solid black; padding: 5px;"> <b>EVALUATOR CUE:</b> State "This JPM is COMPLETE."         </div>	
		STOP TIME: _____	

Joe - Pato

## Appendix D

## Scenario Outline

Facility: **BVPS Unit 2** Scenario No. 1 Op Test No.: **2LOT17 NRC**  
 Examiners: \_\_\_\_\_ Candidates: \_\_\_\_\_ SRO  
 \_\_\_\_\_ ATC  
 \_\_\_\_\_ BOP

Initial Conditions: **IC-184: ~90% power, MOL, CB "D" @ 210 steps, RCS boron - 915 ppm.**

Turnover: IAW 2OM-52.4.B, Load Follow, Reduce power to remove 2HDDH-P22B from service. Control Rods are in Manual due to ongoing MSP.

Critical Tasks:

1. Initiate Feed and Bleed IAW FR-H.1 criteria
2. Restore AFW flow within 10 minutes of EDG start
3. Start SWE pump before EDG trip due to loss of cooling.
4. Dispatch operator to start EDG prior to step 28 of FR-H.1.

Event No.	Malf. No.	Event Type	Event Description
1a		(R) ATC (N) BOP, SRO	Reduce power using load follow.
1b		(N) BOP, SRO	Shutdown 2HDDH-P22B when discharge flow is zero.
2	CNH-CFW12C	(C,A) BOP, SRO	"B" SG Feedwater flow control valve, 2FWS-FCV488 controller malfunction, requires manual control.
3	SIS02B	(C,A) BOP, SRO (TS) SRO	SIS Accumulator, 2SIS-TK21B gas space leak.
4a	XMT-RCS019A	(C,A) ATC, SRO (TS) SRO	PRZR level transmitter (2RCS*LT460) fails low,
4b		(N) ATC, SRO	Let down restoration using 2OM-7.4.AB.
5	FLX-CFW07	(M) All	Loss of feedwater due to large break on condensate pump discharge header.
6a	SWD01	(M) All	Reactor trip with loss of offsite power, SG safety valves fail open.
6b	DSG01B		2-2 EDG fails to start automatically or from the Control room.
7,8	PMP-AFW001 LOA-AFW022	(M) All	AFW pump failures, requires transition to FR-H.1.
9a 9b	PMP-SWS007 PPL07B	(C) ATC, SRO (C) BOP, SRO	2-2 EDG loading failures after local start, 2SWS*P21B failure, ATC required to start 2SWE*P21B. BOP required to start 2FWE*P23B.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal

E-0 → FR-H.1

The crew will assume the shift at 90% power, MOL, with the control rods in manual due to an ongoing MSP. Additionally, the turnover instructions are to reduce power using Load Follow procedure, 2OM-52.4.B and shutdown 2HDH-P22B due to an oil leak.

After the crew has commenced a power reduction, the "B" SG feedwater flow control valve will experience a controller malfunction requiring the BOP to place the controller in manual and stabilize the SG flow IAW AOP 2.4.1, Process control failure.

A gas space leak will develop on the "B" SIS accumulator requiring the BOP to initiate nitrogen makeup. The SRO will address TS.

The controlling PRZR level channel, 2RCS\*LT460 will fail low causing letdown to automatically isolate. The crew will enter the Instrument failure procedure to address the failed channel and place the alternate channel in service. The US will determine appropriate Tech Spec action. After the alternate channel is placed in service, the ATC will restore normal letdown to service.

A large leak will develop on the discharge header of the condensate pumps, causing a main feedwater pump to trip on low suction pressure, requiring a reactor trip.

A loss of offsite power will occur after the hot bus transfer occurs, the 2-1 EDG will start and load as expected however, the "A" motor driven AFW pump will fail to start. The 2-2 EDG will fail to start either automatically or from the control room. The turbine driven AFW pump will trip immediately upon starting requiring the crew to transition from E-0 to FR-H.1.

Additionally on the reactor trip, secondary safety valves on the "A" and "B" SG's will fail open.

The plant conditions will degrade to the point that an RCS Bleed and Feed will be required IAW FR-H.1. (Critical task)

After the crew has initiated Bleed and Feed, local attempts to start the 2-2 EDG will be successful. (Critical task) However, the "B" Service water pump will fail requiring the ATC to start the "B" standby service water pump, 2SWE\*P21B. (Critical task) Also, the "B" motor driven AFW pump will fail to automatically start on the sequencer requiring the BOP to manually start 2FWE\*P23B (Critical task)

The scenario will be terminated when the crew restores AFW flow and shuts the first PORV for recovery. (Evaluator discretion on termination point dependant upon crews timing and progression thru procedures)

Expected procedure flow path is E-0 → FR-H.1.

## BEAVER VALLEY POWER STATION

**INITIAL CONDITIONS:** 90 % Power, D@210 steps, XE increasing, MOL, 915 PPM Boron, IC-184

<b><u>ADDITIONAL LINEUP CHANGES</u></b>	<b><u>STICKERS</u></b>	<b><u>VOND MARKINGS</u></b>
<b><u>EQUIPMENT STATUS</u></b>	<b><u>DATE/TIME OOS</u></b>	<b><u>TECHNICAL SPECIFICATION(S)</u></b>

### **SHIFT TURNOVER INFORMATION**

1. Due to an oil leak, 2HDH-P22B needs to be removed from service.
2. Reduce load to 85% using 2OM-52.4.B, Load Follow and secure 2HDH-P22B IAW Attachment 18.
3. Control Rods are in Manual due to an ongoing MSP, Auto rods is not available.

### **SCENARIO SUPPORT MATERIAL REQUIRED**

1. Reactivity plan – provide MOL Rapid Power Reduction reactivity plan
2. 2OM-52.4.B place kept

### **PROCEDURES NEEDED**

E-0  
FR-H.1  
Attachment A-1.24  
AOP 2.4.1  
AOP 2.7.1  
2OM-7.4.AB  
2OM-11.4.F  
6 IF, Attach 1

Insert preloads per the simulator preload section of the HTML file for this scenario:

1250 THEY HAVE WATCH

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 1 and 2:**

Reduce Load using 2OM-52.4.B and S/D 2HDDH-P22B IAW attach. 18.

SRO directs the crew to continue power decrease IAW 2OM-52.4.B and shutdown 2HDDH-P22B IAW Attachment 18 when pump flow reduces to zero

RCS temperature lowers in response to rod insertion.

IAW reactivity plan, ATC borates 75 gallons and manually inserts control rods 6 steps.

## **Event 2:**

2FWS\*FCV488 controller oscillation in automatic.

Reactor power lowers.

BOP reduces turbine load by;

- Verifying turbine control in "1<sup>ST</sup> STG OUT"
- Sets the desire turbine load by adjusting the EHC SETTER. (final setting ~770)
- Setting the LOAD RATE thumbwheel to desired rate (5%/min max).
- Depressing "GO".

## **IMF CNH-CFW12C (4 120) 20 0 0**

(preloaded to occur 2 minutes after the BOP depresses the "GO" pushbutton to reduce turbine load.)

BOP verifies/maintains the following while reducing load,

- Valve position limiter ~5% above current valve position.
- Maintains MVAR slightly to right of zero.
- Maintains generator power factor 0.9 – 1.0 lagging.

## **ROLE PLAY:**

2 minutes after being dispatched to locally investigate 2FWS\*FCV488, report back that nothing obvious identified locally at the valve.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>ROLE PLAY:</b> 1 min after being dispatched to close 2HDH-698, <b>insert</b> IMF VLV-FWH052 (0 0) 0, then report back that 2HDH-698 is closed.</p>		<p>IAW 20M-52.4.B, Attachment 18, crew establishes a trend of heater drain pump parameters.</p> <p>Crew monitors 2HDH-P22B flow via computer point F2012A. When computer point indicates zero flow, BOP shuts down 2HDH-P22B.</p>
<p><b>Event 2:</b> 2FWS*FCV488 controller malf.</p> <p><b>ROLE PLAY:</b> 2 minutes after being dispatched to locally investigate 2FWS*FCV488, report back that nothing obvious identified locally at the valve.</p>	<p>A6-10E, SG 1B Level Deviation From Setpoint</p>	<p>IAW AOP 2.4.1, BOP notes erratic automatic operation informs SRO and establishes manual control of main feed regulating valve, 2FWS*FCV488 and restores stable level at setpoint.</p> <p>SRO provides a control band of 44% ±5% and Rx trip criteria of 25% low and 85% high for operation of 2FWS*FCV488 in Manual. Crew dispatches operator to locally investigate.</p> <p>Crew notifies I&amp;C and Ops management of 2FWS*FCV488 controller auto control failure with satisfactory manual control.</p>
<p><b>EVENT 3:</b></p> <p>SIS accumulator, 2SIS*TK21B gas space leak initiates after the turbine “GO” button is depressed for the power reduction, it will take ~20 minutes for low pressure alarm to annunciate. <b>IMF SIS02B (4 120) 20</b></p> <p>Insert Event 4 malfunction at LE discretion.</p>	<p>2SIS*TK21B pressure begins to slowly lower.</p>	<p><b>NOTE:</b> It’s not likely that the crew will identify pressure trend until the low pressure alarm annunciates. The scripting for event 3 will follow event 4.</p>



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>EVENT 4:</b> 1316</p> <p>Pressurizer level transmitter 2RCS*LT460 fails low.</p> <p><b>IMF XMT-RCS020A (0 0) 0 4</b></p> <p><b>NOTE:</b> The ATC may not immediately remove 2RCS*LT460 from service if letdown isolation is immediately recognized, as IOA's of AOP 2.7.1 Part B will be higher priority.</p>	<p><b><u>IMMEDIATE PLANT RESPONSE:</u></b></p> <p><b>ALARMS:</b> A4-1B, PRZR Control Lvl High/Low, A4-1C, PRZR Control Lvl Dev High/Low, A4-1G, PRZR Control Htr Group Trouble, A4-2G, PRZR B/U Htr Group Auto On/Off, A2-3E, Charging Flowpath Trouble. 2RCS-LI460 indicates downscale. Letdown isolates, 2CHS*LCV460A and 2CHS-AOV200A &amp; B close. All PRZR heaters de-energize.</p> <p>SRO enters AOP 2.7.1 Part B, Loss of Letdown</p> <p>SRO enters 2OM-6.4.IF, attachment 1.</p>	<p>ATC reports unexpected PRZR level deviation alarm. ATC identifies 2RCS*LT460 has failed low. IAW AOP 2.41, Part C, IOA's ATC removes 2RCS*LT460 from service by placing PRZR level control channel selector to POS I/III (459/461).</p> <p>ATC reports that letdown has isolated.</p> <p>BOP refers to ARP.</p> <p>ATC performs IOA's for the loss of letdown IAW Part B of AOP 2.7.1 by:</p> <ul style="list-style-type: none"> <li>• Verifying 2CHS*AOV200A,B,C are closed.</li> <li>• Closing 2CHS*FCV122.</li> <li>• Adjusting 2CHS*HCV186 to adjust seal injection flow to just above low seal injection alarm setpoint.</li> </ul> <p>SRO verifies ATC performed IOA's. ATC checks 2CHS*FCV122 remains closed. ATC checks letdown flowpath in proper alignment, and reports that 2CHS*LCV460A is shut due to low failure of 2RCS*LT460.</p> <p>SRO transitions to Reactor Coolant System Instrument failure procedure, 2OM-6.4.IF, attachment 1.</p>

BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
		ATC places PRZR level control channel selector to POS I & III. (may have been previously performed IAW AOP 2.4.1 IOA's.)
		ATC verifies PRZR level recorder selector is positioned to record the controlling level channel.
		ATC verifies there is adequate makeup to the VCT.
		ATC verifies PRZR heaters (Control & Backup) groups have returned to normal or manually energizes heaters as necessary.
		SRO directs ATC to restore letdown IAW 2OM-7.4.AB.
		SRO contacts Operations management and notifies I&C of level transmitter failure.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENT 4:</u></b> (continued)	SRO directs ATC to restore letdown IAW 2OM-7.4.AB.	<p>ATC establishes letdown as follows:</p> <ul style="list-style-type: none"> <li>• Verifies 2CHS*FCV122 is closed in Manual.</li> <li>• Verifies 2CHS*MOV289 &amp; 310 open.</li> <li>• Verifies 2CHS*AOV200A, B, &amp; C closed.</li> <li>• Verifies 2CHS*AOV204 is open.</li> <li>• Places 2CHS*PCV145 in MAN &amp; 50% open.</li> <li>• Verifies open, 2CHS*MOV100A.</li> <li>• Opens 2CHS*LCV460A and 460B.</li> <li>• Adjusts 2CHS*FCV122; 30-50 gpm.</li> <li>• Places 1<sup>st</sup> orifice in service by opening, as desired, 2CHS*AOV200A(B)(C).</li> <li>• Increases charging flow to &gt;60 gpm.</li> <li>• Lowers LD pressure to 120 -140 psig.</li> <li>• Places 2<sup>nd</sup> orifice in service by opening, as desired, 2CHS*AOV200A(B)(C).</li> <li>• Adjusts letdown pressure to 260 psig using 2CHS*PCV145 and places PCV in AUTO.</li> <li>• Adjusts seal injection and charging flow as necessary &amp; returns FCV-1CH-122 to AUTO.</li> </ul>
	SRO references Technical Specifications:	<p>3.3.1 (RTS Instrumentation) Condition A; immediately enter the Condition referenced in Table 3.3.1-1 function 9 (PRZR level high) Condition K; trip channel in 72 hrs. or reduce power to &lt; P-7 in 78 hrs.</p> <p>SRO determines following TS are for tracking only</p> <p>3.3.3 (PAM instrumentation) Table 3.3.3-1 function 11 is met if LT459 and LT461 are operable.</p> <p>3.3.4 (Remote Shutdown System) Table B.3.3.4-1 function 4.a requirement is met if LT461 is operable.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 3:**

SIS accumulator, 2SIS\*TK21B gas space leak.

### **ROLE PLAY:**

1 minute after being dispatched to align the nitrogen header, INSERT command LOA-CAS002 1 to open 2GNS-440. Then report back that nitrogen alignment is complete.

### **ALARMS:**

A1-4A, Accumulator Level/Pressure High/Low

SRO directs crew to repressurize the "B" SIS accumulator IAW 2OM-11.4.F.

A2-1D will alarm when the nitrogen header is pressurized.

SRO references Technical Specifications:

ATC announces unexpected accumulator alarm. ATC reports "B" SIS accumulator pressure low. Crew reviews ARP.

Crew dispatches an operator to align the nitrogen header.

Crew verifies A2-1D, NITROGEN SUPPLY SYSTEM AVAILABLE is ON.

Crew adds Nitrogen to the "B" SIS accumulator by:

- Opening 2GNS\*AOV101-1 and 101-2.
- Opening either 2GNS\*SOV853B or E.
- Observing accumulator pressure increase.
- Closing 2GNS\*SOV853B(E)

3.5.1 (ECCS Accumulators) Condition B, restore accumulator to operable status within 24 hours.

Insert Event 5 malfunction at LE discretion.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b>EVENT 5:</b> Loss of feedwater due to large break on condensate pump discharge header.	<b>ALARMS:</b> A6-5E, Condensate pump disch/suct press low. A6-10B, SG Feed pump suct press low. A6-5D, Condensate pump Auto start/auto stop. Feed pump suction pressure lowers Condenser hotwell level lowers SG NR levels lower	BOP reports multiple feedwater related annunciators.  Crew recognizes loss of feedwater capability.  Due to loss of feed, SRO directs ATC to manually trip the reactor. SRO directs the crew to perform IOA's for E-0.
<b>EVENTS 6, 7, 8 &amp; 9:</b>  Malfunctions occurring upon Rx trip.  All malfunctions are preloaded.	Offsite power lost after hot bus transfer 2FWE*P22 trips after auto starting. EDG 2-2 fails to start either automatically or manually from CR. (will be recovered later) "A" MDAFW pump failed, won't start. SG "A" & "B" safety valves open and fail open upon trip. EDG 2-2 loading failures upon recovery, "B" MDAFW pump fails to auto start. "B" Service water pump fails to start, requires starting 2SWE*P21B.  SRO enters E-0.	ATC and BOP commence IOA's of E-0.  ATC verifies reactor trip: <ul style="list-style-type: none"> <li>• A5-6D – LIT.</li> <li>• Power range indication is &lt;5%.</li> <li>• Neutron flux is dropping.</li> </ul>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENTS 6, 7, 8 &amp; 9:</u></b>(continued)</p> <p><b>NOTE:</b> After E-0 IOA's are completed, the BOP will dispatch an operator to locally investigate the 2-2 EDG start failure.</p> <p><b><u>Critical Task,</u></b> Dispatch operator to locally investigate 2-2 EDG start failure before step 28 of FR-H.1.</p> <p><b>ROLE PLAY:</b> As the operator dispatched to investigate the 2-2 EDG start failure, wait 2 minutes then report back that the EDG has tripped on overspeed and you are attempting to reset the overspeed trip.</p>	<p>SI automatically actuated</p>	<p>BOP verifies turbine trip:</p> <ul style="list-style-type: none"> <li>• Throttle OR Governor valves ALL closed.</li> <li>• Main Generator output brks – open.</li> <li>• Exciter Circuit breaker – open.</li> </ul> <p>BOP verifies power to AC emergency busses</p> <ul style="list-style-type: none"> <li>• Using VB-C voltmeters, verifies either 2AE or 2DF has voltage indicated.</li> </ul> <p>BOP identifies 2AE bus is energized via the 2-1 EDG.</p> <p>BOP identifies that 2DF bus is de-energized and that the 2-2 EDG failed to auto start.</p> <p>Check SI status:</p> <p>ATC reports SI automatically actuated and manually actuates SI by turning both trains' control switches.</p> <p>ATC/BOP, sounds standby alarm, announces Unit 2 reactor trip and safety injection.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Check if HHSI flow should be secured by checking the following:

- CNMT & Secondary radiation
- CNMT pressure & sump level
- SG – pressures and levels
- RCS subcooling
- Secondary heat sink exists
- RCS pressure – stable or rising
- PRZR level – >17%
- SI occurred automatically

Due to SG pressures not being consistent with pre-event, crew determines SI is required; SI flow should not be secured at this time.

Only Train “A” has power at this time.

ATC verifies SI System status:

- 2CHS\*P21A running, 2CHS\*P21B not running.
- 2SIS\*P21A running. 2SIS\*P21B not running.
- HHSI Flow indicated on 2SIS-FI943.

BOP verifies AFW System status

- Motor-driven AFW Pumps – NONE RUNNING and won’t start from CR.
- Turb driven AFW Pump Stm Supply Isol Valves – OPEN but turbine is tripped.
- AFW Throttle Vlvs – FULL OPEN
- Total AFW Flow – < 340 GPM

BOP reports no Aux Feedwater pumps running and no aux feed water flow exists.

**ROLE PLAY:** Wait 2 minutes then respond as appropriate to the following directions/requests from the crew concerning AFW status:

-2FWE\*P23A – Overcurrent relay 51-VE218 is tripped on ACB 2E18.

-2FWE\*P23B not running, has no power.

-2FWE\*P22 – the trip/throttle valve is tripped and the latch yoke is broken.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENTS 7 &amp; 8:</u></b></p> <p><b>NOTE:</b> Due to SG safety valves failing open RCS Bleed and Feed will be required, The crew will monitor all SG WR levels while attempting to restore AFW flow until Bleed and Feed criteria is met at which time the SRO will return to step 3 of FR-H.1.</p>	<p>SRO recognizes that AFW flow cannot be established and enters FR-H.1, Response to Loss of Secondary Heat Sink.</p>	<p>ATC checks if secondary heat sink is required by:</p> <ul style="list-style-type: none"> <li>• Verifying RCS press is &gt; any non-faulted SG.</li> <li>• RCS hot leg temperatures &gt;350°F.</li> </ul> <p>Crew determines a secondary heat sink is required.</p> <p>Crew checks SG WR levels and determines if RCS bleed and feed should be initiated.</p> <ul style="list-style-type: none"> <li>• BOP verifies WR lvl in at least 2 SG's is &gt;14%.</li> </ul> <p>Crew determines bleed and feed is not required at this time and continues to monitor WR level.</p> <p>Crew continues attempting to restore AFW flow.</p> <p>When 1<sup>st</sup> SG WR level drops to &lt;14%, BOP closes the affected SG AFW throttle vlvs. (only Trn A has pwr)</p>
<p><b>Critical Task CT-46 (FR-H.1.B) –</b> Crew establishes RCS feed and bleed before PORVs open automatically.</p> <p>SAFETY SIGNIFICANCE -- Failure to initiate RCS bleed and feed before the RCS saturates at a pressure above the shutoff head of the high-head ECCS pumps results in significant and sustained core uncover. If RCS bleed is initiated so that the RCS is depressurized below the shutoff head of the high-head ECCS pumps, then core uncover is prevented or minimized</p>	<p>2 SG WR levels &lt;14%</p> <p>SRO returns to FR-H.1, step 3.</p>	<p>SRO directs ATC to stop ALL RCP's and initiate RCS Bleed and Feed by:</p> <ul style="list-style-type: none"> <li>• Actuating SI.</li> <li>• Verifying a RCS Feed path with HHSI flow indicated and at least 1 charging pump running.</li> <li>• Establish RCS Bleed path by opening all unisolated PORV's and BLOCK valves.</li> <li>• Verify at least 2 sets of PORV's and associated block valves are open.</li> </ul>



# Appendix D

## Scenario Outline

Facility: **BVPS Unit 2** Scenario No. 2 Op Test No.: 2LOT17 NRC  
 Examiners: \_\_\_\_\_ Candidates: \_\_\_\_\_ SRO  
 \_\_\_\_\_ ATC  
 \_\_\_\_\_ BOP

Initial Conditions: **IC-18: 100% power, MOL, equilibrium Xe, CB "D" @ 229 steps, RCS boron - 890 ppm.**

Turnover: **Maintain 100% power,  
 2CHS\*P21A inservice, 2CHS\*P21B in standby.  
 2CHS\*P22B inservice, 2CHS\*P22A in standby.  
 2SWS\*P21C inservice on 2DF bus due to failure of 2SWS\*P21B.**

Critical Tasks: **1. Start EDG locally and start SWS pump before EDG fails due to loss of cooling.  
 2. Closes PORV block valve prior to exiting ECA-0.0  
 3. Performs correct procedure transition from ECA-0.0  
 4. Crew manually trips the reactor from the Control room before FR-S.1 entry.**

Event No.	Malf. No.	Event Type	Event Description
1a	IMF XMT-MSS027A	(N) BOP, SRO	2MSS*PT101C fails high causing 2SVS*PCV101C to fail open, Rx power increases requiring power reduction.
1b	IMF CNH-MSS04A	(TS) SRO	During manual closure attempt, 2SVS*PCV101C fails at 90%, requires local isolation.
2a	NIS03D	(I,A) ATC, SRO	N-44 fails ↑ auto rod ↓ (AOP 2.1.3)
2b		(N) BOP, SRO (TS) SRO	Removes N-44 from service (AOP 2.2.1C)
3	HIV01E	(C,A) ATC, SRO (TS) SRO	AE 4KV bus fault, (AOP 2.36.2) requires ATC to start standby charging pump.
4		(R) ATC (N) BOP, SRO	TS required Shutdown.
5	VLV-MSS005	(M) All	Spurious closure of Main steam isolation valve.
6	PPL01A,B	(C) ATC, SRO	Automatic reactor trip failure, requires crew to manually trip the reactor from the Control Room.
7	PPL10A,B	(C) BOP, SRO	Automatic Main steam line isolation failure, requires BOP to manually isolate main steam lines.
8	SWD01 DSG01B	(M) All	Loss of all AC upon transfer to offsite power, requires entry into ECA-0.0, 2-2 EDG starts and trips on overspeed.
9	XMT-RCS030A	(C) ATC, SRO	Master Pressure Controller, 2RCS*PK444A fails high in Auto causing PORV 455C to fails open, MOV block valve is de-energized until EDG is restored.
10	PPL07B	(C) BOP, SRO	2SWS*P21C fails to auto load after EDG is restored, requires manual start.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal

E-0 → ECA-0.0 → ECA-0.2

The crew will assume the shift at 100% power, MOL, with instructions to maintain power at 100%.

After the crew has assumed the shift, 2MSS-PT101C will fail high causing "C" SG atmospheric steam dump valve, 2SVS-PCV101C, to go full open. The crew will respond IAW the alarm response procedure and attempt to manually close 2SVS-PCV101C which will fail at 90% open causing Rx power to increase. The crew will reduce turbine load using Load Following procedure, 2OM-52.4.B.1. The crew will dispatch an operator to locally isolate failed open valve and the SRO will evaluate applicable TS for failed valve.

Power Range Nuclear instrument, N-44 will then fail high causing the control rods to automatically insert. The crew will perform the IOAs for AOP 2.1.3, Unexpected Control Rod Movement. The ATC will identify the N-44 failure and place the rods in manual. The SRO will then transition to AOP 2.2.1C, Power Range Channel Malfunction, and direct the BOP to remove the failed channel from service. The SRO will address Tech Specs for the failed instrument.

4KV emergency bus 2AE will de-energize due to a bus fault, the running charging pump will lose power and the 2-1 EDG will automatically start but cannot restore power due to the bus fault. The crew will enter AOP 2.36.2, Loss of 4KV Emergency Bus. The ATC will start the "B" charging pump IAW IOA's of AOP 2.36.2. The SRO will determine appropriate Tech Spec actions.

Due to the faulted bus, the Shift Manager will request the crew to take the plant offline at 2%/minute using AOP 2.51.1 for an unplanned power reduction.

During the power reduction, the "C" Main steam Isolation valve will spuriously fail closed, the reactor will fail to automatically trip requiring the ATC to manually trip the reactor (Critical task – Manual trip from the control room before entry into FR-S.1). Additionally, automatic Main steam line isolation will fail to occur requiring the BOP to manually actuate MSLI.

A loss of offsite power will occur after the hot bus transfer, The 2-2 EDG will automatically start and then trip due to overspeed 5 seconds after starting.

The SRO will enter E-0 due to the reactor trip and then transition to ECA-0.0 following loss of AC power.

After the loss of offsite power, the Master pressure controller, 2RCS-PK444A will fail high in automatic causing PORV, 2RCS-PCV455C to open, the PORV will fail open, requiring the ATC to close the motor operated block valve after power is restored to the 2DF bus. (Critical task)

When the SRO is evaluating if AC power to at least one 4KV emergency is capable of being restored within 1 hour, and the crew has directed field actions, the 2-2 EDG overspeed will be reset and the EDG will be restored to service. (Critical task)

When the 2DF bus is recovered, 2SWS\*P21C will fail to auto start, the BOP is required to start the SWS pump and restore cooling water flow. (Critical task)

After power is restored, the crew will continue thru ECA-0.0 and transition to ECA-0.2. The crew will progress thru ECA-0.2 and restore ECCS flow (start the "B" charging/HHSI pump) (Critical task) at which point the scenario will be terminated.

Expected procedure flow path is E-0 → ECA-0.0 → ECA-0.2.

## BEAVER VALLEY POWER STATION

**INITIAL CONDITIONS:** 100 % Power, ARO, EQU XE MOL, 8900 PPM Boron, IC-185 (18)

<b><u>ADDITIONAL LINEUP CHANGES</u></b>	<b><u>STICKERS</u></b>	<b><u>VOND MARKINGS</u></b>
<b><u>EQUIPMENT STATUS</u></b>	<b><u>DATE/TIME OOS</u></b>	<b><u>TECHNICAL SPECIFICATION(S)</u></b>

### **SHIFT TURNOVER INFORMATION**

1. 100% power, MOL equilibrium conditions, shift goal is to maintain 100% power.

### **SCENARIO SUPPORT MATERIAL REQUIRED**

1. None Required

### **PROCEDURES NEEDED**

E-0, - 1 <sup>st</sup> 4 steps	AOP 2.51.1
ECA-0.0	AOP 2.51.2
ECA-0.2	2OM-7.4.AB
Attachment A-0.12	2OM-52.4.B.1
Attachment A-1.4	
Attachment A-1.5	
AOP 2.1.3	
AOP 2.2.1C	
AOP 2.4.1	
AOP 2.36.2	

Insert preloads per the simulator preload section of the HTML file for this scenario:

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 1:** 1255

2MSS-PT101C fails high

**IMF XMT-MSS027A (0 0) 1500 15**  
(preloaded)

**IMF CNH-MSS04A (4 0) 50**  
(preloaded)

**NOTE:** SRO may elect to use AOP 2.51.2, Reactor Overpower, to reduce load, the process will be the same as scripted, however, AOP specifies 5%/min rate.

## **IMMEDIATE PLANT RESPONSE:**

A6-7A, Steamline Pressure High.  
2MSS-PI101C trending offscale high.  
2SVS-PCV101C strokes open 95%.  
RCS temperature decreases.  
Reactor power increases.

ADV will NOT close from BB control.

Reactor power slowly rising.

SRO directs the crew to lower Rx power using 2OM-52.4.B.1

Reactor power lowers.

Crew recognizes that 2MSS-PT101C is failing high and that 2SVS-PCV101C has opened in response.

ATC monitors RCS temperature and reactor power, informs SRO that power is rising.

IAW AOP 2.4.1, SRO directs ATC to take manual control of open ADV, (2SVS-PCV101C) and close it.

ATC places controller for 21C SG ADV in manual and attempts to close ADV.

Crew recognizes Rx power is slowly rising.

BOP reduces turbine load by;

- Verifying turbine control in "1<sup>ST</sup> STG IN"
- Sets the desire turbine load by adjusting the EHC SETTER.
- Setting the LOAD RATE thumbwheel to desired rate (5%/min max).
- Depressing "GO"

BOP verifies/maintains the following while reducing load,

- Valve position limiter ~5% above current valve position.
- Maintains MVAR slightly to right of zero.
- Maintains generator power factor.0.9 – 1.0 lagging.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 1:** (continued)

Valve requires manual isolation, valve will not close via either local manual operation or by de-energizing

## **ROLE PLAYS** (as appropriate):

If requested to de-energize 2SVS-PCV101C, insert **TRG! 7**, wait 2 minutes, After lights are off; report to CR that valve has been de-energized.

**IOR XA3O009G (7 120) 0**

**IOR XA3O009R (7 120) 0**

(preloaded)

(valve will stay at 90% open – don't actually de-energize valve – just turn off red/green lights.)

If requested to verify local position, report that valve appears to be ~90% open and you can hear flow through it.

When requested to isolate 2SVS-25, insert:

**LOA-MSS018 (0 0) 0 60** wait 2

minutes then report to the control room that 2SVS-25 is isolated.

**NOTE:** Due to scenario progression, it may be necessary to ask SRO follow up question regarding TS applicability for 2SVS-PCV101C failure.

Insert next event at LE discretion

BVPS – 2L17 NRC Scenario 2, rev 1

Crew notifies field operator to close 2SVS-PCV101C using 2OM-21.4.J

Or locally isolate via 2SVS-25 or de-energize via MCC.

SRO refers to TS 3.7.4, Condition A for inoperable atmospheric dump valve. Requires restoring within 7 days.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b>EVENT 2:</b>  N-44 fails high <b>IMF NIS03D (0 0) 200 0 ASIS</b>	Rods automatically step inward in response to N-44 failure.	ATC reports unexpected alarms and rod motion.
	Crew enters AOP 2.1.3, Unexpected Control Rod Movement.	ATC verifies no load rejection in progress and places rod control to manual to stop the rod insertion.
		ATC verifies reactor overpower has not occurred.
		BOP verifies 2MSS*PT446 and 447 are consistent with current power level and Tref.
		ATC reports N-44 indication is not consistent with other power range channels.
	SRO transitions to Power Range Channel Malfunction procedure, AOP 2.2.1C to address failed NI channel.	BOP removes N-44 from service.
		ATC reports only one PR channel (N-44) has failed, and verifies rods previously placed in manual.
		BOP turns "Rod Stop Bypass Switch" for N44 on NIS Rack N50 to BYPASS.
		ATC verifies status light for Overpower Rod Stop Bypass for N44 is lit. (status pnl 308, D-14)
		BOP turns "Comparator Channel Defeat Switch" on NIS rack N37/N46 to N44 position.
		Within 1 hr, verifies P-8, P-9, & P-10 interlocks in required state for 100% power.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 2:** (continued)

**NOTE:** Crew may initiate performance of 2OST-2.4A, however next event will occur before completion of OST.

ATC verifies reactor power is > 50%.  
BOP determines all PR channel upper and lower detector inputs to QPTR are operable.  
SRO directs BOP to perform 2OST-2.4A, QPTR Manual calculation, after completion of AOP 2.2.1C.

BOP determines all detector inputs to AFD monitor alarm are operable.

Within 72 hrs, trips nuclear bistables by removing control power fuses from Drawer A for N44 or directing I&C to remove the failed ch from service.

ATC ensures VB recorders are selected to operable detectors.

After removing rod block, ATC withdraws control rods to restore Tavg.

SRO addresses TS for N-44 failure:

3.3.1, Function 2.a, PR high flux, Condition D, trip ch w/in 72 hrs and QPTR every 12 hours.  
3.3.1, Function 3, PR Hi flux rate, Condition E, trip ch w/in 72 hrs.  
3.3.1, Functions 17.c, d, Rx trip interlocks, Condition P, verify in required state w/in 1 hr.  
3.3.1, Function 17.e, Rx trip interlocks, Condition O, verify in required state w/in 1 hr.  
3.3.3, for PAM instrumentation – for Info Only.  
3.4.1 DNB Condition A, Restore DNB parameters to within limits within 2 hours.  
INFO ONLY, 3.3.1, Function 2.b, PR low flux, Conditions E, R, & S.

Proceed with next event at LE discretion

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 4: 3**

Loss of 2AE 4kv emergency bus with an auto start failure of 2-1 EDG.

**IMF BKR-HIV01 (0 0) 0**

### **IMMEDIATE PLANT RESPONSE:**

4KV ACB 2A10 trips open

4KV bus 2AE voltage reduces to zero (VB-C)

Multiple electrical related annunciators.

SRO enters AOP 2.36.2 for Loss of 4KV Emergency Bus.

BOP reports multiple unexpected electrical alarms. BOP identifies 4kv Bus 2AE is de-energized and that the 2-1 EDG has failed to start. BOP reports that 4kv Bus 2DF is energized. ATC reports that 2CHS\*P21A is NOT running.

SRO directs the crew to perform IOA's for Loss of 4KV Emergency Bus.

BOP verifies at least 1 4KV Emergency bus is energized. ( 2DF Bus)

ATC responds to no charging pumps running by:

- Closing 2CHS\*FCV122
- Closing 2CHS\*HCV186
- Starting 2CHS\*P21B
- Restore charging and seal injection by throttling open 2CHS\*FCV122 and 2CHS\*HCV186.

BOP identifies 2AE as the de-energized bus and verifies ACB-2E7 and ACB-2A10 are both OPEN.

BOP reports A8-2B, Orange Bordered alarm is lit indicating an Overcurrent trip for ACB-2E7.

### **ROLE-PLAY:**

As operator dispatched to switchgear, wait 3 minutes then report that there are OC relays flagged on ACB-2E7.

As electrical maint, report that you expect it to take at least 4 hours for repairs.



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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SRO evaluates TS for emergency bus and EDG 2-1.

3.7.4 ADW,

3.8.3 SW?

ATC verifies Component Cooling Water flow to All RCP thermal barriers.

BOP sounds the standby alarm and announces Unit 2 Loss of 4KV Emergency Bus.

3.8.1, AC sources; Conditions A & B, perform SR 3.8.1.1 in 1 hr., Condition D, restore offsite circuit or EDG to OPERABLE within 12 hours.  
3.8.4, DC sources, Condition A, restore in 2 hrs.  
3.8.9, Distribution systems, Condition A, restore 8 hrs.

SRO determines 2OST-36.7 is required within 1 hour to verify operability of remaining sources per TS 3.8.1, Conditions A and B.

## **EVENT 4: TS Shutdown.**

### **If necessary Role-play:**

Plant Management directs a power reduction to Mode 3 IAW AOP 2.51.1 Unplanned Power Reduction, at 2%/minute, since it isn't likely that power will be restored to the AE bus in the next 2 hours.

SRO enters AOP 2.51.1, Unplanned Power Reduction

BOP initiates turbine load reduction

- Depress 1<sup>st</sup> STG IN pushbutton.
- Set EHC SETTER to desired load.
- Set LOAD RATE thumbwheel to 2%.
- Depress GO.
- Maintain power factor within limits.

ATC determines required Boration using the "Reactivity Plan for Rapid Power Reduction Activities".

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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ATC initiates boration IAW Attachment 1;  
(2% per minute power reduction).

- Places boric acid makeup blender control switch to STOP.
- Places mode selector switch to BORATE.
- Sets 2CHS\*FCV113A to flow rate desired.
- Sets 2CHS-FQIS113, BA totalizer, to total volume of BA to be added per reactivity plan.
- Resets 2CHS\*FQIS113
- Ensures 2CHS\*FQIS168 is set to "zero", then depresses reset.
- Places boric acid makeup blender control switch to START, then verifies inservice BA pump starts, 2CHS\*FCV113B opens and boric acid flow is indicated on 2CHS-FR113.
- Adjusts 2CHS\*FCV113A setpoint as desired to control boration flowrate.

Crew sounds the standby alarms and announces a Unit 2 Unplanned power reduction.

ATC places all available PRZR heaters to ON.

ATC adjusts rods in MANUAL and maintains Tavg within  $\pm 5F$  of Tref.

Insert next event at LE discretion.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENT 5:</u></b>            Spurious closure of "C" Main Steam Isolation Valve  <b>IMF VLV-MSS005 (0 0) 2</b></p>	<p>A1-3A, Stmline Stop Vlv Not Fully Open            Reactor trip and SLI (signals only).            A12-1D, Safety Injection actuation            "C" MSLI valve closes            A6-11F, Loop C Feedflow &gt; Steam Flow            "A" &amp; "B" SG pressures dropping.</p>	<p>ATC reports Safety Injection has actuated and 1<sup>st</sup> out annunciator is in without an automatic reactor trip.</p>
<p><b><u>EVENTS 6, 7, 8, &amp; 9:</u></b>            Malfunctions occurring upon MSLI valve closure.</p> <p>All malfunctions are preloaded.</p>	<p>Automatic Rx trip failure.            Automatic MSLI actuation failure.            Offsite power lost after hot bus transfer            Master Pressure controller failure causes PORV 2RCS*PCV455C to fail open.</p> <p>SRO enters E-0, Reactor Trip or Safety Injection.</p>	<p>SRO directs ATC to manually trip the reactor</p> <p>ATC and BOP commence IOA's of E-0.</p>
<p><b><u>CRITICAL TASK: CT-1 (E-0.A)</u></b>            Crew manually trips the reactor from the Control Room before performing the mitigation strategy of FR-S.1.</p>	<p>Automatic reactor trip failure.</p>	<p>ATC verifies reactor is not tripped:</p> <ul style="list-style-type: none"> <li>• A5-6D – is not LIT.</li> <li>• Power range indication is &gt; 5%.</li> <li>• Neutron flux is not dropping.</li> </ul>
<p>SAFETY SIGNIFICANCE -- Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions.</p> <p>Additionally, it constitutes an "incorrect performance that necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates the inability by the crew to recognize a failure of the automatic actuation of the RPS."</p>		<p>IAW E-0, step 1, Immediate operator action RNO, ATC manually trips the reactor from BB-B or BB-A.</p> <p>ATC verifies reactor trip.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENTS 5, 6 & 7:(continued)

SRO enters ECA-0.0

BOP verifies turbine trip:

- Throttle OR Governor valves ALL closed.
- Main Generator output brks – open.
- Exciter Circuit breaker – open.

BOP verifies power to AC emergency busses

- Using VB-C voltmeters, verifies either 2AE or 2DF has voltage indicated.

BOP identifies that 2DF bus is de-energized and that the EDG auto started and tripped immediately.

BOP identifies that 2AE bus was previously de-energized.

BOP performs CR actions to start EDG 2-2.

BOP reports that both emergency busses are de-energized and EDG 2-2 will not start from the control room.

ATC and BOP commence IOA's of ECA-0.0.

ATC verifies reactor trip:

- A5-6D – LIT.
- Power range indication is <5%.
- Neutron flux is dropping.

BOP manually initiates SLI:

- Verifies all MSLI & bypass valves are closed.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 5, 6 & 7:**(continued)

RCP's will be off due to LOOP in progress.

ATC/BOP, sounds standby alarm, announces "Unit 2 reactor trip and loss of emergency power."

Checks if RCS is isolated:

- ATC closes 2CHS\*AOV200A and B.
- ATC closes 2CHS\*LCV460A and B.
- ATC verifies PORV's closed.
- ATC reports PORV 455C is open with RCS pressure decreasing.
- ATC manually attempts to close open PORV.
- ATC reports PORV 455C will not close and block valve is de-energized.
- ATC verifies 2CHS\*HCV137 is closed.
- ATC verifies all RCP's are stopped.

Verifies total AFW flow >340 gpm:

- BOP verifies AFW flow >340 gpm.

BOP verifies Primary Plant Demineralized Water Storage Tank Level is > 85 inches.

BOP verifies generator trip:

- Main Generator output brks – open.
- Exciter Circuit breaker – open.

If not previously performed, BOP verifies no electrical fault alarms are in and attempts start of EDG 2-2.

Crew dispatches operator with Attachment A-1.5 to attempt local start EDG 2-2.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## ROLE PLAY:

5 minutes after being dispatched to check the status of the EDGs, report that the 2-2 EDG has tripped on overspeed and will not reset, maintenance assistance needed.

## ROLE PLAY:

When contacted as system operator, report the cause of the loss of offsite power to BVPS Unit 2 is unknown and that a traveling operator has been dispatched to investigate, ETA is ~45 minutes.

**NOTE:** This is a continuous action step, when power comes back, the SRO will return to this step to expedite exiting from ECA-0.0.

## ROLE PLAY:

When asked, as SM report that Unit 1 is also in ECA-0.0.

Crew requests maintenance and system engineering assistance to investigate EDGs.

Crew attempts to restore offsite power using Attachment A-1.4 prior to continuing with procedure.

Crew recognizes offsite power is not available and contacts system operator for status.

SRO determines offsite power is not available and continues in ECA-0.0.

Check power restored to an AC emergency bus:

- BOP verifies no voltage on AE or DF busses.

Select cross-tie path:

- SRO determines that No Unit 1 4KV SBO power sources are available and continues with ECA-0.0 step 14.

Crew dispatches operators to stage 3FP-P-7 IAW Attachment A-1.22.

ATC/BOP places 4kv and 480v equipment in PTL.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**ROLE PLAY:** After being dispatched to locally isolate valves, wait 5 minutes then insert commands IAW HTML then report back that the RCP seals are isolated.

Close valves to isolate RCP seals:

- ATC closes 2CCP-AOV107A, B, C
- BOP dispatches an operator to locally close, 2CHS-178, 179, 180 and 2CHS\*MOV381

Check SG status:

- BOP verifies Blowdown isolation vlvs closed.
- BOP verifies Main and Bypass Feed Reg vlvs are in MANUAL with ZERO DEMAND.

Check PRZR PORV's closed:

- ATC reports 2RCS\*PCV455C remains stuck open with block valve de-energized.
- 

Crew checks power is not restored to any AC Emergency Bus.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 5, 6 & 7:**(continued)

### **ROLE PLAY:**

When the SRO is evaluating if power to at least one emergency bus is capable of being restored within 1 hour (ECA-0.0 step 21), provide the following role play.

### **ROLE PLAY:**

As the operator at the 2-2 EDG, report that the overspeed trip has been reset and, at the crew's discretion, EDG engine start selector switch can be returned to the auto start position (was taken to local start to disable EDG during overspeed trip repairs).

When directed to select auto start, insert:

**DMF DSG01B**

**IRF LOA-HIV002 (0 0) RESET**

2-2 EDG starts, output breaker closes, loads sequentially load on the 2DF bus. (except for 2SWS\*P21C)

BOP verifies EDG 2-2 is running and 2DF bus indicates voltage.

Crew recognizes power restored to 2DF Bus.  
Crew checks power restored to AC Emergency Bus.  
Verifies at least 1 AC emergency bus is energized from a BV-2 source. (EDG 2-2)



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 8 & 9:**

SWS pump auto start failure  
**IMF PPL07B (1 180) 3**  
 (preloaded)

### **Critical Task CT-25 (ECA-0.0.F)**

Crew manually starts the SWS(SWE) pump such that the EDG does not fail because of damage caused by engine overheating.

**Critical Task** Crew manually closes the open PRZR PORV Block valve when power is restored.

BOP verifies 2SWS\*P21C auto started on EDG sequencer.

BOP reports 2SWS\*P21C failed to auto start.

BOP waits until discharge valve travels to full closed position and manually starts 2SWS\*P21C.

ATC recognizes power is restored to 455C PORV block valve, 2RCS-MOV535.

ATC closes PORV 455C MOV block valve, 2RCS-MOV535.

When power is restored, SRO returns to continuous action step 10 then proceeds to step 39.

Stabilize SG pressures:

- BOP manually controls SG ADV's to stabilize SG pressures.
- ATC checks SI has actuated.
- ATC resets SI – both trains.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENTS 8 &amp; 9:</u></b> (continued)</p> <p><b><u>Critical Task CT-25 (ECA-0.0.F)</u></b> Crew manually starts the SWS pump such that the EDG does not fail because of damage caused by engine overheating.</p> <p>Due to PORV being stuck open, conditions will not support recovery without SI.</p>		<p>Crew verifies “B” train equipment has loaded onto 2DF bus.</p> <ul style="list-style-type: none"> <li>• 2FWE*P23B, AFW pump</li> <li>• 2CCP*P21B, Primary component cooling pp.</li> <li>• 2CHS*P21B, Charging / HHSI pump</li> <li>• 2SIS*P21B, LHSI pump</li> </ul> <p>Crew verifies “B” Train Emergency Motor Control Centers have energized. MCC*2-E02, MCC*2-E04, MCC*2-E06, MCC*2-E08, MCC*2-E10, MCC*2-E12, MCC*2-E14</p> <p>Verify service water system in service:</p> <ul style="list-style-type: none"> <li>• BOP checks 2SWS*MOV107A,B,C &amp; D all closed .(valves closed due to CIA signal, however “A” train (A&amp;C) remains open due to loss of power.)</li> <li>• BOP verifies 2SWS*P21C running.</li> </ul> <p>If not previously started, BOP starts 2SWS*P21C.</p> <ul style="list-style-type: none"> <li>• BOP verifies SWS header press &gt;55psig.</li> <li>• BOP verifies 2SWS*MOV113D open.</li> </ul> <p>Select recovery procedure;</p> <ul style="list-style-type: none"> <li>• RCS subcooling &gt; attachment A-5.1.</li> <li>• PRZR level &gt; 17% (38%)</li> <li>• Check HHSI and LHSI flow not indicated.</li> </ul> <p>SRO determines recovery cannot be accomplished without SI.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**Critical Task** Crew transitions to correct recovery procedure for current plant conditions.(ECA-0.2)

SRO transitions to ECA-0.2 Loss of All AC Power Recovery With SI.

Crew verifies SI has been RESET.  
Crew verifies RWST level is > 369 inches.

BOP performs Attachment A-0.12 to manually align components to establish SI injection alignment.

Check RCP seal isolation status:

- ATC verifies all CCP pumps are stopped.
- ATC verifies 2CCP\*AOV107A,B,C –closed.
- Crew confirms report that RCP seal local isolation valves were closed.

ATC starts “B” charging pump.  
ATC verifies HHSI flow on 2SIS-FI943.

Terminate scenario when the crew starts a charging pump and re-establishes HHSI flow.

*pair*

**Appendix D**

**Scenario Outline**

**2L17N3**

Facility: **BVPS Unit 2** Scenario No. 3 Op Test No.: 2LOT17 NRC  
 Examiners: \_\_\_\_\_ Candidates: \_\_\_\_\_ SRO  
 \_\_\_\_\_ ATC  
 \_\_\_\_\_ BOP

Initial Conditions: **IC-17: 75% power, MOL, equilibrium Xe, CB "D" @ 189 steps, RCS boron - 980 ppm.**

Turnover: **Maintain 75% power,**

- Critical Tasks:
- 1. Crew manually trips the Turbine before entry into ECA-2.1 (CT-13)**
  - 2. Crew manually opens high head SI isolation valves. (CT-6)**
  - 3. Crew isolates feed flow into and steam flow from ruptured SG (CT-18)**

Event No.	Malf. No.	Event Type	Event Description
1	XMT-MSS047A	(I,A) BOP, SRO (TS) SRO	2MSS*PT476 drifts low, "A" SG steam pressure.
2	RCS04B	(C, A) ATC, SRO (TS) SRO	B SG Tube Leak (AOP 2.6.4).
3		(R) ATC BOP, SRO	Shift Manager cues crew to shut down the plant, if crew does not make determination.
4	EHC08	(C,A) BOP, SRO	Turbine Vibrations require turbine trip. Crew trips Reactor and Turbine fails to automatically trip, requiring manual turbine trip. (CT-13)
5	IMF CRF08-H14 IMF CRF08-P8	(C, A) ATC	Two stuck rods, requiring emergency boration
6	RCS04B	(M) All	B SGTR 550 occurs after emergency boration flow
7	VLV-SIS025 VLV-SIS070	(C, A) ATC	2SIS*MOV867A and 2SIS*MOV867B fail to open on SI signal, requiring manual operation to ensure high head SI flow (CT-6)
8	VLV-AFW025 VLV-AFW028	(C) BOP, SRO	"B" SG steam supply to 2FWE*P22 failed open, (2MSS*SOV105B and 105E) (CT-18)
9	MSS02B	(M) All	Break occurs between MSIVs and Containment (Fault) when MSIV close, requires transition to E-2 → E-3 → ECA-3.1.

(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (A)bnormal

E-0 → ES-0.1 → E-0 → E-3 → E-2 → E-3 → ECA-3.1

The crew will assume the shift at 75% power, MOL, with instructions to maintain power at 75%.

2MSS\*PT476 will then drift low causing indicated steam flow to reduce, feed flow will reduce in an attempt to match steam flow causing SG level to lower. IAW AOP 2.4.1, The BOP will place the "A" main feed regulating valve in manual and control SG level. The SRO will enter AOP 2.4.1 then transition to Attachment 4 of the Instrument Failure procedure. The SRO will address TS.

A steam generator tube leak (20 gpm) will then occur on the "B" steam generator, the crew will identify the conditions and enter AOP 2.6.4 to quantify the leakage. The SRO will address TS for the SG tube leak.

Based on the steam generator tube leak size, the crew will initiate an unplanned reactor shutdown in accordance with AOP 2.51.1. If necessary, the Shift Manager will provide a **cue** to initiate the shutdown.

After reactor power has been reduced to <70%, a high turbine vibration will occur. The SRO will direct the crew to manually trip the reactor, but the automatic trip of the turbine will fail. As a result, the BOP will depress the manual turbine trip pushbuttons (**CT**), and enter E-0.

The crew will transition to ES-0.1, "Reactor Trip Response", step 1 after determining SI is NOT required.

The crew will recognize that 2 stuck control rods did not insert, requiring emergency boration and a shutdown margin calculation. After establishing a flowpath to emergency borate, a SGTR on the B SG is inserted.

The crew will identify the degrading plant conditions, initiate SI, and enter E-0, step 1.

2SIS\*MOV867A and 2SIS\*MOV867B fail to open on SI signal, requiring the ATC to manually open those valves (**CT**).

The crew will continue through E-0 and transition to E-3 due to the SGTR. The crew will isolate the ruptured SG (**CT**) which is complicated by a failure of the "B" SG steam supply to the turbine driven AFW pump failing open. The crew will take contingency action by manually tripping 2FWE\*P22, Turbine Driven AFW pump (**CT**). When the crew closes 2MSS\*AOV101B Main Steam Isolation Valve, insert B SG fault upstream of MSIVs and the crew will transition to E-2.

The crew will evaluate ruptured SG on step 7, and the crew will transition back to E-3, step 1.

After the crew completes a cooldown of the RCS, the fault will cause ruptured SG pressure to drop to < 250 psig above the intact SGs, requiring the crew to transition to ECA-3.1

The scenario will be terminated after the crew transitions to ECA-3.1.

Expected procedure flow path is E-0 → ES-0.1 → E-0 → E-3 → E-2 → E-3 → ECA-3.1

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**INITIAL CONDITIONS:** IC-17: 75% power, MOL, equilibrium Xe, CB "D" @ 189 steps, RCS boron - 980 ppm.

<b><u>ADDITIONAL LINEUP CHANGES</u></b>	<b><u>STICKERS</u></b>	<b><u>MONITOR SETUP</u></b>
		Normal Splash w/ Mid Power Screen, on VB-A
<b><u>EQUIPMENT STATUS</u></b>	<b><u>DATE/TIME OOS</u></b>	<b><u>TECHNICAL SPECIFICATION(S)</u></b>

## **SHIFT TURNOVER INFORMATION**

1. 75% power for the past week, MOL equilibrium conditions, shift goal is to maintain current power.

## **SCENARIO SUPPORT MATERIAL REQUIRED**

1. MOL Reactivity Placard

## **PROCEDURES NEEDED**

E-0  
 ES-0.1  
 E-2  
 E-3  
 Attachment A-0.11  
 AOP 2.4.1  
 AOP 2.6.4  
 2OM-24.4.IF Attach 4  
 AOP 2.51.1

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Insert the following per the simulator preload section of the HTML file for this scenario:

Insert all pre-loads required to support the scenario.

Assign shift positions

SRO: \_\_\_\_\_

ATC: \_\_\_\_\_

BOP: \_\_\_\_\_

Conduct a shift turnover with oncoming operators.

Simulator frozen until after shift turnover unless it needs to be run momentarily for an alignment change.

When the shift turnover is completed, place the simulator to RUN and commence the scenario.

Simulator running.

Crew assumes control of the unit.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENT 1: 0750

SG Steam Pressure  
2MSS\*PT476 drifts low

**IMF XMT-MSS047A**

### **NOTE:**

The steam flow signal is compensated by the steam pressure signal. The loss of a steam pressure transmitter has the same effect on feedwater control as if a steam flow transmitter has failed, therefore the steam flow signal selector switch has to be used to regain control.

2MSS\*PT476 slowly lowering.  
“A” SG Steam flow and feed flow slowly lowering.  
21A SG main feedwater control vlv slowly closing.

SRO enters AOP 2.4.1, Process Control Failure.

A6-9G, Loop A Steamline Pressure Low  
A6-9C, Loop A Steamline High Rate of Press Change  
A6-9F, Loop A Feedwater Flow > Steam Flow

SRO transitions to the Feedwater Instrument Failure procedure, 2OM-24.4.IF, Attachment 4, section F.

**NOTE:** IAW the IF procedure, the crew will place the alternate CH in service within 24 hours or request a BCO be written.

BOP diagnoses 2MSS\*PT476 failing low.

IAW AOP 2.4.1, BOP places 2FWS\*FCV478, in MAN and adjust feed flow to restore proper SG level.

SRO establishes a control band of  $44 \pm 5\%$  and transient Rx trip criteria of 25% low and 85% high for manual SG level control.

ATC reviews ARPs.  
BOP identifies 2MSS\*PT476 failed low.

BOP places 2FWS-FR478, 21A SG Feedwater Flow Signal Selector, in Position FT 474.



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**EVENT 1:** (continued)

SRO references Tech. Specs. for 2MSS\*PT476.

SRO declares 2MSS\*PT476 inoperable.

Tech Spec 3.3.2 Table 3.3.2-1 functions: 1.e, 4.d.1 and 4.d.2, Condition D, Place channel in trip condition within 72 hrs.

Tech Spec 3.3.4 Table B 3.3.4-1 function 3c, Condition A, Restore in 30 days.

Proceed with next event at LE discretion

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENT 2:

20 gpm S/G tube leak –  
Insert **IMF RCS04B (0 0) 30**  
(preloaded)

### IMMEDIATE PLANT RESPONSE:

Rad Monitor alarms

A4-5A; Radiation Monitoring Sys Trouble - LIT

A4-5C, Radiation Monitoring Level High - LIT

VCT level decreases (~0.5%/min)

SRO enters AOP 2.6.4

Estimate initial pri-sec leakrate

ATC reports alarms to the SRO.

BOP checks DRMS panel and determines that 2MSS-RQ102B is indicating a 10,000 gpd tube leak in the "B" S/G.

ATC reports VCT level decreasing.

BOP refers to the ARP and determines entry to AOP 2.6.4 is necessary.

SRO determines that the leak rate is > 75 gpd.

SRO monitors S/G Tube leak by performing ATTACHMENT 1 of AOP 2.6.4 and continues with procedure.

Check if PZR level can be maintained

ATC determines value and trend for PZR level

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
		<p>Crew identifies "B" S/G as the affected S/G due to radiation monitor alarms. (N-16 monitor 2075)</p> <p>ATC verifies VCT level can be maintained by normal makeup.</p> <p>ATC verifies RCS temperature is stable at ~566 F</p> <p>ATC places 2CHS*FCV122 and 2CHS*HCV186 is manual and adjusts them to maintain constant PRZR level.</p>
<p><b><u>EVENTS 2 &amp; 3: (continued)</u></b></p> <p><b><u>ROLE PLAY:</u></b> As chemistry, acknowledge need to identify S/G and quantify leakrate.</p> <p>As RP acknowledge need to perform surveys and analysis. Wait 5 minutes then report back that the "B" Steam line has elevated radiation levels.</p>	<p>SRO monitors S/G Tube leak by performing ATTACHMENT 1 of AOP 2.6.4.</p>	<p>SRO notifies Chemistry of entry into AOP-2.6.4, requests them to obtain grab samples and identify S/G, and quantify leakrate.</p> <p>SRO notifies RP of entry into AOP-2.6.4, requests surveys and analysis to identify and quantify leakrate.</p> <p>SRO determines leak rate is &gt; 30 gpd and proceeds to ACTION LEVEL 1 of Attachment 1.</p>
	<p>ATC determines leak rate to be approximately 20 gpm</p>	<p>SRO enters ACTION LEVEL 3 of Attachment 1 and determines the requirement to be less than 50% in 1 hour AND in MODE 3 in the next 2 hours.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENTS 2 &amp; 3: (continued)</u></b>  <b><u>CUE: IF the crew does NOT initiate the shutdown, inform the SRO that "Shift Manager instructs you to commence a shutdown to MODE 3 at 2%/min"</u></b>	SRO enters AOP 2.51.1, "Unplanned Power Reduction"	BOP depresses the 1 <sup>st</sup> STG UB pushbutton and sets EHC setter to the desired load
	BOP sets EHC setter to desired load	BOP sets LOAD RATE thumbwheel per SM/US direction, NOT to exceed 5%.
		BOP depresses "GO"
<b><u>CUE: Event 4 will automatically insert after Reactor power is lowered to &lt;70%.</u></b>	Alert Plant Personnel Of Rapid Power Reduction	BOP sounds standby alarm and announces "Unit 2 Rapid Power Reduction."
	Place All PRZR Heaters to ON	ATC Places All PRZR Heaters to ON
		ATC will verify automatic rod control and that TAVG is within +/-5F of TREF.
	SRO directs BOP to perform Attachment 4, "Hot Bus Transfer Of Normal 4KV Busses To Offsite Power".	ATC performs Attachment 4, "Hot Bus Transfer Of Normal 4KV Busses To Offsite Power".
	SRO notifies FE Asset Utilization And Duquesne Light Sysytem Control Center As Soon As Practical During Or Following The Load Adjustment.	SRO notifies them and provides a reason.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 4&5: Turbine Vibrations +2 stuck rods**

Main turbine bearings #4 & #5 high vibration.

IMF TUR01D (5 0) 15 30 0  
IMF TUR01E (5 30) 150 30 0

### **NOTE:**

ARP directs an immediate turbine trip if bearing vibration exceeds 14 mils

Bearing #4 & #5 vibrations at 15 mils, adjacent bearings also indicate abnormally high vibration.

A7-3H, Turbine Supervisory Instrument Power Off/Trouble

A5-5H, Manual Reactor Trip

SRO enters E-0, "Reactor Trip or Safety Injection"

BOP acknowledges and reports bearing vibration indications.

ATC reviews ARP.

Crew determines that a manual turbine trip is warranted.

SRO directs the ATC to manually trip the reactor.  
SRO directs the crew to perform the IOA's of E-0 and report when ready to read.

ATC and BOP commence IOA's of E-0.

ATC verifies reactor trip:

- A5-6D - LIT.
- Power range indication is < 5%.
- Neutron flux is dropping.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>Critical Task: CT-13 (E-0.Q)</b></p> <p>Crew manually trips the main turbine before a Severe (orange path) challenge develops to either the Sub-criticality or the Integrity CSF or before transition to ECA-2.1, whichever occurs first.</p> <p>SAFETY SIGNIFICANCE -- Failure to trip the main turbine under the postulated plant conditions causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Additionally, such an omission constitutes a demonstrated inability by the crew to "take an action...that would prevent a challenge to plant safety."</p>	<p>Automatic turbine trip failure.</p>	<p>BOP verifies Turbine trip did NOT occur:</p> <ul style="list-style-type: none"> <li>• Throttle OR Governor valves NOT closed.</li> <li>• Main Generator output brks – Not open.</li> <li>• Exciter Circuit breaker – not open.</li> </ul> <p>BOP manually trips the turbine, then verifies:</p> <ul style="list-style-type: none"> <li>• Throttle OR Governor valves ALL closed.</li> <li>• Main Generator output brks – open.</li> <li>• Exciter Circuit breaker – open.</li> </ul>
<p><b>NOTE:</b> SI may automatically actuate depending on the timing of tripping the Turbine</p>	<p>SI is NOT actuated nor required at this time.</p>	<p>BOP verifies power to AC emergency busses:</p> <ul style="list-style-type: none"> <li>• Using VB-C voltmeters, verifies either 2AE or 2DF has voltage indicated.</li> </ul> <p>BOP identifies that both 2AE and 2DF busses are energized from offsite power.</p> <p>Check SI Status to determine if SI is required:</p> <ul style="list-style-type: none"> <li>• ATC checks CNMT press &gt; 5psig</li> <li>• ATC checks PRZR press &lt; 1860 psig</li> <li>• ATC or BOP checks Steamline pressure &lt; 500 psig</li> </ul> <p>Crew determines SI is NOT required.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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SRO transitions to ES-0.1

## NOTE:

It is likely that letdown flow automatically isolated due to low PRZR level caused by the cooldown due to turbine trip failure. The crew may recognize reason for loss of letdown and AOP 2.7.1 actions are not required.

RCS temperature maintained by condenser steam dumps:

CREW DETERMINES SI IS NOT REQUIRED, TRANSITIONS TO ES-0.1 STEP 1.

Crew alerts plant personnel of reactor trip.

Crew monitors RCS temperature for proper response:

- RCS Temp – STABLE AT OR TRENDING TO 547F:
- Using Tavg since RCPs are running.

ATC verifies letdown flow is indicated.

Crew maintains RCS temperature by verifying:

- Station instrument air press >90 psig.
- MSIV's at least 1 open.
- Condenser available.
- Condenser steam dump mode selector in TAVG.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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SRO directs BOP to place Condenser Steam Dumps into Steam Pressure Mode by;

- Set stm hdr press slightly above existing press.
- Place controller in MAN.
- Verify demand - ZERO.
- Place in STM PRESS Mode.
- Verify TAVG defeat not required OR defeats the TAVG interlock.
- Place controller in AUTO.
- Adjusts setpoint as necessary to maintain temp.

Crew checks feedwater status:

- STOPS one feedwater pump
- Verifies A5-2C(3C)(4C) 'SG 21A(21B)(21C) Level Low-Low Reactor Trip' – NONE LIT AS FIRST OUT
- RCS Tavg – <554F
- ALL main feed reg valves – CLOSED
- Total feed flow to SGs – >340 GPM (available, may be throttled if NR >12%)

BOP controls feedwater flow to maintain NR level between 12% and 50%.

**NOTE:**  
**EVENT 6: SGTR event will be triggered as soon as emergency boration valve OPENS.**

All Control Rods – FULLY INSERTED

ATC verifies control and shutdown rods fully inserted in the core.

DETERMINES 2 RODS ARE STUCK OUT AND INITIATES EMERGENCY BORATION.



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Once Emergency Boration is initiated, 550 gpm "B" SGTR occurs.

## **IMF RCS04B (3 0 ) 550**

(Triggered on 2CHS\*MOV350 opening or SI actuation)

The crew will continue in ES-0.1 until plant parameters degrade to SI actuation. Further ES-0.1 actions are not scripted.

"B" SG level begins to rise  
RCS level and press reduce

ATC initiates emergency boration flow by:

- Verifying at least 1 charging pump running.
- Opens 2CHS\*MOV350.
- Starts in-service boric acid pump.
- Verifies emergency boration flow is >30gpm on VB-A.
- Verifies charging flow is >40 gpm on VB-A.
- Continues boration until adequate SDM verified IAW OST 2.49.2.

## **EVENTS 6, 7, 8**

550 gpm "B" steam generator tube rupture after emergency boration flow is established requiring the crew to initiate SI.

BOP initiates SI.

SRO enters E-0, "Reactor Trip or Safety Injection."

ATC and BOP commence IOA's of E-0.

ATC verifies reactor trip:

- A5-6D - LIT.
- Power range indication is < 5%.
- Neutron flux is dropping.

BOP verifies turbine trip:

- Throttle OR Governor valves ALL closed.
- Main Generator output brks – open.
- Exciter Circuit breaker – open.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 6, 7, 8** (Continued)

SI is actuated and was manually actuated

BOP verifies power to AC emergency busses:

- Using VB-C voltmeters, verifies both 2AE and 2DF busses have voltage indicated.

Check SI status:

ATC reports SI manually actuated by turning both trains' control switches as directed by SRO

ATC/BOP, sounds standby alarm, announces Unit 2 reactor trip and safety injection

Check if HHSI flow should be secured by checking the following:

- CNMT & Secondary radiation
- CNMT pressure & sump level
- SG – pressures and levels
- RCS subcooling
- Secondary heat sink exists
- RCS pressure – stable or rising
- PRZR level – >17%
- SI occurred automatically

Due to “B” SGWL increasing due to “B” SGTR, crew determines that SI should not be secured and goes to step 8.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENTS 6, 7, 8</u></b> (Continued)</p> <p><b><u>EVENT 7: MOV Failure</u></b></p> <p><b>VLV-SIS069</b> <b>VLV-SIS070</b></p> <p><b>CRITICAL TASK 6: Crew manually opens high head SI isolation valves by the completion of A-0.11.</b></p>	<p>2SIS*MOV867A and 2SIS*MOV867B fail to open on SI signal.</p> <p><u>List of Attachment A-0.11 Discrepancies:</u> 2SIS*MOV867A and 2SIS*MOV867B fail to open on SI signal.</p>	<p>ATC verifies SI status:</p> <ul style="list-style-type: none"> <li>• 2CHS*P21A &amp; 2 CHS*P21C running</li> <li>• 2SIS*P21A &amp; 2SIS*P21B running.</li> <li>• HHSI Flow <b>NOT</b> indicated on 2SIS-FI943. <ul style="list-style-type: none"> <li>○ Notices 2SIS*MOV867A and 2SIS*MOV867B fail to open on SI signal.</li> </ul> </li> </ul> <p><b>ATC opens 2SIS*MOV867A and 2SIS*MOV867B.</b></p> <p>BOP verifies AFW status:</p> <ul style="list-style-type: none"> <li>• Both motor-driven pumps running.</li> <li>• Turb driven pump, all stm supply SOV's open.</li> <li>• AFW throttle valves all FULL OPEN.</li> <li>• Total AFW flow is <b>NOT</b> &gt;340 gpm. (may have been preemptively reduced if NR level adequate.)</li> <li>• However, SGWL in "B" SG is &gt;12%</li> </ul> <p>SRO directs BOP verify automatic actions by performing Attachment A-0.11, in a timely manner.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENTS 6, 7, 8 (Continued)

RCS Temperature < 547°F, but trending to 547°F

Crew checks RCS Tav<sub>g</sub> stable at or trending to 547°F.

ATC verifies PRZR isolated:

- PORVs – CLOSED.
- Spray Valves – CLOSED.
- Safety relief valves – CLOSED (use PSMS).
- PRT conditions – CONSISTENT WITH EXPECTED VALUES.
- Power to at least one block valve – ALL AVAILABLE.
- Block valves – AT LEAST ONE OPEN (All).

ATC checks if RCPs should be stopped:

- D/P between RCS pressure and highest SG pressure – <205 PSID.

Crew determines criteria for stopping RCPs is not met.

ATC/BOP checks if any SGs are faulted:

- Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER  
OR
- ANY SG COMPLETELY DEPRESSURIZED

Crew determines no SG's are faulted.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENTS 6, 7, 8</u></b> (Continued)		<p>Crew checks if SG tubes are intact:</p> <ul style="list-style-type: none"> <li>• Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER</li> <li>• Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES</li> </ul>
	SRO transitions to E-3, Steam Generator Tube Rupture.	<p>Crew determines “B” SG level is rising in an uncontrolled manner and verifies HHSI valves, 2SIS*MOV867A,B,C,D all open &amp; transitions to E-3, “Steam Generator Tube Rupture”, Step 1.</p> <p>SRO directs STA to commence control room ventilation actions. Refer to Attachment A-2.5.</p>
	“B” SG ruptured	<p>ATC checks if RCPs should be stopped:</p> <ul style="list-style-type: none"> <li>• D/P between RCS pressure and highest SG pressure – &lt;205 PSID.</li> </ul> <p>Crew determines criteria for stopping RCPs is not met.</p> <p>Crew notes that “B” SG was previously identified as the ruptured SG based upon unexpected NR level rise.</p> <ul style="list-style-type: none"> <li>• BOP verifies “B” SG NR level &gt;12%.</li> <li>• SRO directs BOP to isolate feed flow to ruptured SG.</li> </ul>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>EVENTS 6, 7, 8</b> (Continued)</p> <p><b>Critical Task: CT-18 (E-3.A)</b> Crew isolates feed flow into and steam flow from the ruptured SG and directs operator to close isolation valve(s) operated from outside of the control room before a transition to ECA-3.1 occurs.</p> <p>SAFETY SIGNIFICANCE -- Failure to isolate the ruptured SG causes a loss of differential pressure between the ruptured SG and the intact SGs. Upon a loss of differential pressure, the crew must transition to a contingency procedure that constitutes an incorrect performance that necessitates the crew taking compensating action which complicates the event mitigation strategy.</p> <p><b>ROLE PLAY:</b> 5 minutes after being dispatched to locally isolate 2SVS*28, insert <b>IRF LOA-MSS010 (0 0) 0 0</b> then report back that 2SVS*28 has been closed.</p> <p><b>EVENT 8: VLV-AFW025 &amp; VLV-AFW028 (2MSS*SOV105B and E) are preloaded malfunctions</b></p>	<p>2SVS*28 NOT CLOSED</p> <p>SRO directs ATC/BOP to Trip the turbine-driven AFW pump</p> <p>SG pressure ~850 psig</p>	<p>ATC/BOP isolates flow from the ruptured SG.</p> <p><u>BOP verifies "B" SG atmospheric steam dump, 2SVS*PCV101B, closed and raises setpoint to 100%.</u></p> <p><u>SRO dispatches operator to locally close 2SVS*28.</u> <u>BOP verifies residual heat removal valve – CLOSED.</u></p> <p>Isolate ruptured SG to turbine driven AFW pump.</p> <ul style="list-style-type: none"> <li>• BOP reports 2 motor driven AFW pps running.</li> <li>• <u>BOP reports 2MSS*SOV105B and 105E will NOT close</u></li> </ul> <p><u>ATC/BOP trips turbine-driven AFW pump.</u></p> <p>Verify closed ruptured SG blowdown isolation valve.</p> <ul style="list-style-type: none"> <li>• BOP verifies 2BDG*AOV100B1 is closed.</li> </ul> <p>Close main steamline drain from ruptured SG.</p> <ul style="list-style-type: none"> <li>• <u>BOP closes 2SDS*AOV111B1.</u></li> </ul> <p>Close 2SDS*AOV129A, RHR piping drain isolation.</p> <ul style="list-style-type: none"> <li>• <u>BOP closes 2SDS*AOV129A.</u></li> </ul> <p>Close ruptured SG main steam isol &amp; bypass vlvs.</p> <ul style="list-style-type: none"> <li>• <u>BOP closes 2MSS*AOV101B.</u></li> <li>• BOP verifies 2MSS*AOV102B closed.</li> </ul> <p>BOP checks ruptured SG pressure – &gt;240 PSIG</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 6, 7, 8, & 9** (continued)

### **EVENT 9: MSL Break**

Main Steam Line Break occurs between MSIVs and Containment when the MSIVs close.

SRO transitions to E-2, "Faulted Steam Generator Isolation", Step 1.

**ROLE PLAY:** Outside Operator heard loud noise in MS valve area and exited the area immediately after closing 2SVS\*28

"A" & "C" SG pressures are stable  
"B" SG pressure is lower than "A" and "C"  
AND is lowering

SRO transitions to E-2

Verify CREVS actuated.  
ATC/BOP reports CREVS not actuated.

SRO directs ATC/BOP to actuate both trains of CREVS using the CONTROL ROOM EMERG AIR SUP ACTUATION pushbuttons,

- Verifies the control room air intake and exhaust dampers are CLOSED.
- Verifies 2HVC\*FN241A running after time delay.

SRO requests a BV-1 operator to verify proper CREVS actuation and place CR air intake and exhaust dampers control switches in CLOSE.

SRO directs STA to commence Control Room ventilation actions. Refer to Attachment A-2.4.

ATC/BOP manually initiates steamline isolation  
Checks all indicating lights with YELLOW SLI mark – LIT

Crew identifies "B" as the faulted SG

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
	<p>2SVS*28 was closed previously</p> <p>PPDWST should be &gt;300 inches</p> <p>SG Tubes are not intact on "B" SG</p>	<p>Isolate Faulted SGs</p> <p>BOP checks Feedwater Isolation (GREEN FWI marks) – PREVIOUSLY VERIFIED</p> <ul style="list-style-type: none"> <li>• <u>Closes AFW throttle valves on "B" SG 2FWE*HCV100C, D.</u></li> <li>• Checks Residual Heat Release Valve—CLOSED</li> <li>• Checks 2SVS*28 is closed</li> <li>• <u>Recognizes that Turbine-driven AFW Pump Steam Supply Isolation Valve 2MSS*SOV105B and E is NOT closed</u> <ul style="list-style-type: none"> <li>○ Understands that the AFW pump was tripped and will NOT close 2MSS*16</li> </ul> </li> <li>• Atmospheric Steam Dump was already closed.</li> <li>• BOP verifies SG Blowdown Isolation Valve, 2BDG*AOV100B1 is closed</li> <li>• BOP verifies closed 2SSR*AOV117A,B,C SG Blowdown Sample Outside CNMT Isol Vlvs</li> </ul> <p>BOP/ATC checks 2FWE-TK210 PPDWST Level is Greater Than 150 inches.</p> <p>SRO determines "B" SG tubes are NOT intact due to secondary radiation NOT CONSISTENT WITH PRE-EVEN VALUES.</p>
<p><b>EXAMINER NOTE:</b> Procedural Steps 1-5, the crew is re-checking everything performed previously. No actions. See page 19 of this scenario.</p>	<p>SRO Transitions to E-3, "Steam Generator Tube Rupture," Step 1.</p>	<p>SRO Transitions to E-3.</p>



4

**EXAMINER NOTE:**  
Step 6.j is NOT a HOLD step.

**EXAMINER CUE: Terminate the scenario after the SRO successfully transitions to ECA-3.1 or when they brief their intentions and expectations of going to ECA-3.1.**

PNCP

# Appendix D

# Scenario Outline

2L17N4

Facility: **BVPS Unit 2** Scenario No.: 4 Op-Test No.: 2LOT17 NRC

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_ SRO  
 \_\_\_\_\_ ATC  
 \_\_\_\_\_ BOP

Initial Conditions: **IC (172)** 4.9% power, BOL, CB "D" @ 110 steps, RCS Boron – 1750 ppm

Turnover: Raise power to 10-14% and load the turbine generator in accordance with procedure for plant startup

Critical Tasks:

1. **Start the Turbine Driven AFP before transition out of E-0 (CT-4)**
2. **Manually initiating containment isolation phase A (CT-11)**
3. **Manually trip the RCPs (CT-16)**

Event No.	Malf. No.	Event Type*	Event Description
1		(R) ATC (N) SRO	Raise power 10-14%
2	XA4i028L	(C,A) ATC	Blender fails to stop after dilution is complete.
3	VLV-CFW022	(I, A) BOP	Hotwell level high dump valve, 2CNS-MOV105 spuriously opens, requires closing valve.
4	NIS07B	(I,A) ATC (TS) SRO	N36, Intermediate Range power fuse blows
5	RCS02A	(C,A) ATC (TS) SRO	"A" Loop RCS Leak, AOP 2.6.7, TS
6	CNH-CHS01A VLV-CHS013	(C,A) ATC	2CHS*FCV122 fails to fully close, requires closing of 289 & use of 2CHS*HCV186
7	RCS02A	M	"A" loop, SBLOCA ramps in, requires manual reactor trip
8	VLV-AFW024 thru VLV-AFW029	(C,A) BOP	Turbine driven AFW pump auto start failure
9	PPL08B VLV-SEA015 VLV-CAS002, 004	(C,A), BOP	Containment Isolation phase A Train B fails to actuate. Various Train A valves fail to automatically close

\* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Procedure Flowpath: E-0 → E-1 → ES-1.2

The crew will take the shift at 4.9% power with instructions to raise power to 10-14% to place the Turbine in service IAW the reactivity plan and 2OM-52.4A. The ATC will initiate a dilution and withdraw the rods. No malfunctions will occur until the desired power increase is observed.

## Appendix D

## Scenario Outline

2L17N4

After power raise is initiated, a blender malfunction will occur such that a dilution will STILL be occurring after it is supposed to stop. The ATC will stop the blender malfunction by placing the Boric Acid Makeup Blender Control Switch in STOP.

2CNS-MOV105, Condensate Spill Bypass valve, fails open, sending condensate to 2WTD-TK211, Turbine Plant Demineralized Water Day Tank, causing hotwell level to drop. The BOP will close the valve.

An Intermediate Range blown power fuse blows N36, requiring the crew to enter AOP, take the channel out of service and evaluate the TS.

The 8 gpm reactor leak on the "A" Loop inside containment is inserted. The crew will balance the inventory and determine leak rate size IAW 2OM-53C.4.2.6.7, Excessive Primary Plant leakage. They will check PRT conditions and rad monitors. The crew will instruct chemistry to take samples and a radiation protection survey. The crew will adjust steam dumps and rods to stabilize  $T_{avg}$ .

The crew will then isolate letdown and charging flow, but 2CHS\*FCV122 will fail to close, requiring 2CHS\*MOV289 to be closed. 2CHS\*HCV186 will be adjusted to obtain NET RCS input (seal injection- seal leakoff) of 10 GPM. 2CHS\*MOV289 will be reopened and PRZR level will be maintained by controlling 2CHS\*FCV122 and 2CHS\*HCV186. The crew will restore charging and letdown to service.

At Chief Examiner's discretion the leak ramps up to a 1400 gpm SBLOCA where the reactor will trip on/requiring a manual reactor trip on low PRZR pressure. The crew will enter E-0.

The motor driven AFP, 2FWE\*P23A fails to start. 2FWE\*P23B starts with sheared shaft. The Turbine driven AFW Pump, 2FWE\*P22, will fail to start, requiring the BOP to start it (CT)

RCP trip criteria will be met in E-0, requiring the ATC to trip the RCPs (CT). This is a symptomatic response/unexpected condition action for both E-0/E-1. This is required to be performed prior to transition out of E-0.

At step 10 of E-0, crew will perform A-0.11, "Verification of Automatic Actions." Phase A CI train B, will fail to actuate, requiring the crew to manually actuate train B. Several valves on train A will fail to close, also requiring manual closure to prevent a potential radiation release. Refer to A-0.2, Containment Isolation Phase A Checklist (CT). This has to be done before attachment is reported as complete.

The crew will have to energize the Source Range detectors due to previous intermediate range blown power fuse.

At step 16 in E-0, crew transitions to E-1, "Loss of Reactor or Secondary Coolant", step 1.

The crew will continue through E-1, where they will transition to ES-1.2 "Post LOCA Cooldown AND Depressurization."

After the crew initiates a cooldown IAW ES-1.2 step 12 and at the Chief Examiner's discretion, terminate the scenario.

The expected procedural flowpath is: E-0 → E-1 → ES-1.2

## BEAVER VALLEY POWER STATION

**INITIAL CONDITIONS:** IC (172) 4.9% power, BOL, CB "D" @ 110 steps, RCS Boron – 1750 ppm

<b><u>ADDITIONAL LINEUP CHANGES</u></b>	<b><u>STICKERS</u></b>	<b><u>MONITOR SETUP</u></b>
		Normal Splash w/ Hi Power Screen, on VB-A
<b><u>EQUIPMENT STATUS</u></b>	<b><u>DATE/TIME OOS</u></b>	<b><u>TECHNICAL SPECIFICATION(S)</u></b>

### **SHIFT TURNOVER INFORMATION**

1. Raise power to 10-14% to place turbine online.

### **SCENARIO SUPPORT MATERIAL REQUIRED**

1. EOL Reactivity Placard

### **PROCEDURES NEEDED**

E-0  
E-1  
ES-1.2  
Attachment A-0.6  
Attachment A-0.11  
2OM-7.4.L, Blender Dilution Operation  
IAW 2OM-22A.4.AAE, Condensate Spill Valve Bypass Valve  
AOP 2.6.7  
AOP 2.2.1B, Intermediate Range Channel Malfunction  
Attachment A-1.27

## BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Insert the following per the simulator preload section of the HTML file for this scenario:

Insert all pre-loads required to support the scenario.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Assign shift positions

SRO: \_\_\_\_\_

ATC: \_\_\_\_\_

BOP: \_\_\_\_\_

Conduct a shift turnover with oncoming operators.

Simulator frozen until after shift turnover unless it needs to be run momentarily for an alignment change.

When the shift turnover is completed, place the simulator to RUN and commence the scenario.

Simulator running.

Crew assumes control of the unit.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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1010

## **EVENT 1:** Raise power to 10-14%

Normal Plant Startup, reactor power increase to 15% to support turbine startup.

### **NOTE:**

Reactivity plan requires 200 gallons dilution and 7 rod steps to raise power to 10%. Crew may elect to add total dilution volume in multiple steps.

SRO opens 2OM-52.4.A

Startup procedure, Raising Power from 5% to Full Load Operation, 2OM-52.4.A, step 7.a is in progress.

IAW reactivity plan, ATC dilutes and withdraws rods to raise reactor power to > 15%.

When Rx power is >5%, crew identifies and announces entry into Mode 1.

ATC initiates control rod withdrawal and dilution IAW the reactivity plan.

- Places Boric Acid Makeup CS to STOP.
- Verifies 2CHS\*FCV114A set to desired flow rate.
- Set 2CHS-FQIS168A, Total M/U from Blender Flow Totalizer, to desired dilution quantity.
- Reset 2CHS-FQIS168A.
- Verify 2CHS-FQIS113, Boric Acid Flow to Blender Flow Totalizer, is set to zero.
- Places Mode Selector switch in DIL or ALT DIL.
- Places Boric Acid Makeup CS to START.
- Verify 2CHS\*FCV114A opens.
- Verify correct flow rate on 2CHS-FR113.
- When 2CHS-FQIS168A reaches preset value, verify dilution automatically stops.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 2:**

**XA4i028L:** Blender fails to stop

When the dilution is supposed to stop, the blender keeps running. → thereby still diluting the boron concentration in the RCS and inserting positive reactivity.

ATC places the Boric Acid Makeup Blender Control Switch in STOP IAW 2OM-7.4.L

## **EVENT 3:**

(Preloaded) occurs at 7% Rx power  
**VLV-CFW022**

Condensate Spill Valve Bypass Valve, 2CNS-MOV105 spuriously opens. A6-5F, Condenser Hotwell Level High/Low comes in.

SRO directs BOP to close 2CNS-MOV105, Condensate Spill Valve Bypass Valve IAW 2OM-22A.4.AAE, Condenser Hotwell High/Low.

**ROLE PLAY:** Turbine Plant Operator to check for leaks.

**NOTE:** At LE discretion, insert event 4 after Rx power is >10% AND the crew has inserted Rx Trip Blocks



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENT 4:</u></b></p> <p><b>NIS07B:</b> N36 instrument power range fuse blows</p> <p><b>NOTE:</b> May have already blocked IR train A &amp; B</p>	<p>SRO enters AOP 2.2.1B, Intermediate Range Channel Malfunction, Step 5.</p> <p>A4-4E: NIS Compensator Comparator Trouble</p>	<p>BOP performs:</p> <ul style="list-style-type: none"> <li>• Check reactor power – GREATER THAN P-10</li> <li>• Momentarily Place Intermediate Range Block Train A and Train B switches to INTERRANGE BLOCK.</li> <li>• Place caution tags on Source Range Trip Block/Reset Train A and Train B switches, <b>“Manually unblock source range during plant shutdown”</b>.</li> <li>• Verify NR-45 recorder selected to OPERABLE channels</li> <li>• Place Level Trip switch for N36 to BYPASS               <ul style="list-style-type: none"> <li>○ Verify Annunciator A4-5E, “NIS Source/Int Range High Flux Trip Bypass” in alarm due to failed channel.</li> <li>○ Verify status light “Level Trip Bypass” on drawer – LIT.</li> </ul> </li> </ul> <p>SRO evaluates T.S. and enters T.S. 3.3.3. condition A. and determines T.S. 3.3.1 condition F.(1 OR 2 ) is N/A</p>
<p><b><u>EVENT 5:</u></b></p> <p>8 gpm unisolable “A” loop RCS leak inside CNMT.</p> <p><b>IMF RCS02A (0 0) 8 0 0</b></p>	<p><b><u>IMMEDIATE PLANT RESPONSE:</u></b></p> <p>PRZR pressure begins decreasing.</p> <p>PRZR spray valves close.</p> <p>A4-5A/5C, DRMS Trouble(Alert)/ High Alarms</p> <p>CNMT Radiation monitors;</p> <p>2RMR-RQ303A, ALERT/HIGH alarms</p> <p>CNMT humidity increasing.</p> <p>VCT level slowly decreasing.</p>	<p>ATC reports indications of a RCS leak inside CNMT.</p>

*Block  
pr 8 ER*

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b>EVENT 5:</b> (continued)		BOP reviews ARPs. BOP verifies valid Rad monitor indication using ARP.
	SRO enters AOP 2.6.7, Excessive Primary Plant Leakage	ATC checks if PRZR level can be maintained >5%.
		ATC checks if leakage is RCS/CVCS leakage by: <ul style="list-style-type: none"> <li>• Checking CNMT, PAB and safeguards conditions are consistent with pre-event.</li> </ul>
	SRO transitions from AOP 2.6.7, step 2 to step 6	Crew determines CNMT conditions are NOT consistent with pre-event based upon rising sump levels and CNMT radiation levels.
		Crew verifies RCS temperature is stable.
		ATC determines 2CHS*FCV122 is not maintaining constant PRZR level in AUTO and places 2CHS*FCV122 in MANUAL to stabilize PRZR level.
		Crew checks VCT level trend and determines that VCT level is DROPPING at < 0.7%/min. and reports to SRO that leakrate is <10 gpm but may be isolable.
<b>NOTE:</b> Due to dynamic nature of event, a followup question regarding applicable TS may be necessary.		SRO recognizes TS 3.4.13 Condition A, is applicable for unidentified leakage.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENT 6:**

ATC recognizes that 2CHS\*FCV122 fails to FULLY close.

ATC quantifies leakage & checks for CVCS leakage by:

- Isolating charging/letdown by closing valves:
- 2CHS\*AOV200A, B, C Letdown orifice isol.
- 2CHS\*LCV460A & B Regen Ht Ex inlet.
- Reports 2CHS\*FCV122, charging flow control vlv does not close fully.
  - Closes 2CHS\*MOV289
- ATC adjusts RCP seal injection flow to obtain NET RCS input of 10 gpm.
- Crew determines PRZR level is rising.
- Adjusts 2CHS\*HCV186 to obtain 6-9 gpm per RCP

SRO informs Shift Manager to evaluate EPP due to RCS leakrate being < 10 gpm and is not isolated by charging and letdown.

ATC determines VCT level can be maintained with normal makeup.

ATC determines PRZR level is being maintained in AUTO. ATC opens 2CHS\*MOV289 and controls 2CHS\*FCV122 and 2CHS\*HCV186 as necessary to maintain at approximately programmed PRZR level

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENT 6:</u></b> (continued)</p> <p>At LE discretion, insert <b>EVENT 7: SBLOCA</b>, before restoring letdown and charging.</p>		<p>Crew restores charging and letdown to service by:</p> <ul style="list-style-type: none"> <li>• Adjusting 2CHS*FCV122 to obtain 30-50 gpm,</li> <li>• Verifying PRZR level is &gt;14%.</li> <li>• Placing 2CHS*PCV145 in MAN and at 50%.</li> <li>• Opening 2CHS*LCV460A, B.</li> <li>• Opening 2CHS*AOV200A, B as desired.</li> <li>• Adjusting 2CHS*PCV145 until backpressure is ~260 psig.</li> <li>• Placing 2CHS*PCV145 in AUTO.</li> </ul>
<p><b><u>EVENT 7: SBLOCA</u></b></p> <p><b>IMF RCS02A (0 0) 1400 60 0</b></p>	<p>Pressurizer level and pressure decreases rapidly.            CNMT sump level rises.            CNMT sump alarms actuate.            A2-2B, UIL trouble            A1-2G, Incore Instru RM/CNMT sump lvl high</p> <p>SRO instructs ATC to manually trip the Reactor and transitions to E-0, Reactor Trip or Safety Injection</p>	<p>Placing 2CHS*FCV122 in AUTO.</p> <p>ATC reports dropping pressurizer level and pressure along with CNMT sump alarms.</p> <p>ATC manually trips the reactor</p> <p>ATC and BOP commence IOA's of E-0.</p> <p>ATC verifies reactor is tripped:</p> <ul style="list-style-type: none"> <li>• A5-6D, "Turbine Trip Due to Reactor Trip" – is LIT.</li> <li>• Power range indication is LESS THAN 5%.</li> <li>• Neutron flux is DROPPING.</li> </ul>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)		<p>BOP verifies turbine trip:</p> <ul style="list-style-type: none"> <li>• Throttle OR Governor valves ALL CLOSED.</li> <li>• Main Generator output bkrs – OPEN.</li> <li>• Exciter Circuit breaker – OPEN.</li> </ul> <p>BOP verifies power to AC emergency busses:</p> <ul style="list-style-type: none"> <li>• Using VB-C voltmeters, verifies both 2AE and 2DF busses have voltage indicated.</li> </ul> <p>Check SI status:</p> <p>ATC reports SI automatically actuated and manually actuates SI by turning both trains' control switches.</p> <p>ATC/BOP, sounds standby alarm, announces Unit 2 reactor trip and safety injection.</p>
<b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)	HHSI Flow Should NOT be SECURED	<p>Check if HHSI flow should be secured by checking the following:</p> <ul style="list-style-type: none"> <li>• CNMT &amp; Secondary radiation</li> <li>• CNMT pressure &amp; sump level</li> <li>• SG – pressures and levels</li> <li>• RCS subcooling</li> <li>• Secondary heat sink exists</li> <li>• RCS pressure – stable or rising</li> <li>• PRZR level – 17%</li> <li>• SI occurred automatically</li> </ul> <p>Based on NOT meeting the CNMT parameters, crew determines NOT to secure HHSI flow and proceeds to step 8.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)	SRO instructs the ATC to TRIP RCPs	ATC Verify SI Status:
<b><u>EXAMINER NOTE:</u></b>		<ul style="list-style-type: none"> <li>• Charging pumps – TWO RUNNING</li> <li>• LHSI – BOTH RUNNING</li> <li>• HHSI Flow – INDICATED</li> </ul>
<b>CT-16: Trip the RCPs before exiting E-0</b>		Based on meeting RCP trip criteria, ATC will trip the RCPs.
<b>trip criteria will be met about this time based on the D/P and having indicated HHSI flow</b>		
SAFETY SIGNIFICANCE -- Failure to trip the RCPs under the postulated plant conditions leads to core uncover and to fuel cladding temperatures in excess of 2200°F, which is the limit specified in the ECCS acceptance criteria. Thus, failure to perform the task represents "mis-operation or incorrect crew performance which leads to degradation of the fuel cladding barrier to fission product release" and to "violation of the facility license condition."		
<b><u>ROLE PLAY:</u></b> AFW PUMPS		<u>Verify AFW Status</u>
Terry Turbine: No obvious damage 2FWE-P23A: Overcurrent trip 2FWE-P23B: Sheared shaft		<ul style="list-style-type: none"> <li>• NO Motor Driven AFW Pump is RUNNING and cannot be manually started</li> <li>• TDAFW Pump Stm Supply Isol Valves – NOT FULL OPEN</li> <li>• Manually opens steam supply valves</li> <li>• AFW Throttle Valves – FULL OPEN</li> <li>• Total AFW Flow – GREATER THAN 340 GPM</li> </ul>
<b>CT-4: Start TDAFW pump before transitioning out of E-0</b>		

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)</p>	<p>SRO instructs the BOP to Perform A-0.11, "Verification of Automatic Actions", In A Timely Manner</p> <p><u>List of Attachment A-0.11 Discrepancies:</u></p> <p>TDAFW Pump required manual start. Both motor driven AFW pumps failed to start SR required manual energization due to N36 failure. CIA Train B failed to actuate CIA Train A valves fail to actuate: 2CHS-MOV378 2IAC*MOV133 2IAC*MOV130</p> <p>RCS COLD LEG Temperature is lower than 547 F AND trending DOWN</p>	<p>BOP performs Attachment A-0.11, Verification of Automatic Actions.</p> <p>A-0.11 actions are attached at the end of the scenario.</p> <p>ATC verifies</p> <ul style="list-style-type: none"> <li>• steam dumps are CLOSED</li> <li>• reheat steam isolation <ul style="list-style-type: none"> <li>○ 2MSS-MOV100A,B – CLOSED</li> <li>○ Resets Reheater Controller</li> <li>○ Reduces BUT MAINTAINS AFW flow &gt; 340 GPM until NR level is &gt; 31% in at least one SG</li> </ul> </li> <li>• May initiate SLI</li> </ul> <p>ATC verifies PRZR PORVs and Spray Valves Closed</p> <ul style="list-style-type: none"> <li>• PORVs – CLOSED</li> <li>• Spray Valves – CLOSED</li> <li>• PRZR Safety Relief Valves – CLOSED</li> <li>• Power to at least one block valve – AVAILABLE (3)</li> <li>• Block valves – AT LEAST OPEN (3)</li> </ul>

**Examiner Note:** RCS C/D will be occurring due to SI flow. If crew recognizes this, they may not initiate SLI

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENTS 7, 8 & 9: (continued)

NO S/Gs are Faulted  
All S/Gs Tubes are intact

RCS loop "A" is NOT intact

1055  
SRO transitions to E-1, "Loss Of Reactor Or  
Secondary Coolant", Step 1

Crew determines no S/Gs are Faulted  
Crew determines all S/G tubes are intact

Check if RCS is Intact:

- Crew determines the following is **NOT** consistent with pre-event values
  - CNMT Pressure
  - CNMT Sump Level
  - CNMT Radiation

ATC performs the following:

- Verify High Head SI Cold Leg Isol Vlvs (downstream) – BOTH OPEN
  - 2SIS\*MOV867C,D
- Verify High Head SI Cold Leg Isol Vlvs (upstream) – BOTH OPEN
  - 2SIS\*MOV867A,B

Crew checks if CREVS should be actuated:

- Control Room Radiation Monitor 2RMC\*RQ201,202, - NOT IN HIGH ALARM
- CIB - HAS NOT OCCURRED

Crew determines CREVS does not need to be actuated.



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## **EVENTS 7, 8 & 9:** (continued)

### **ROLE PLAY:**

When dispatched to perform Attach A-0.6, wait 5 minutes, insert following commands then report complete.

**IRF LOA-LOV093 (0 0) RACKIN**  
**IRF LOA-LOV102 (0 0) RACKIN**  
**IRF LOA-LOV094 (0 0) RACKIN**  
**IRF LOA-LOV103 (0 0) RACKIN**  
**IRF LOA-LOV095 (0 0) RACKIN**  
**IRF LOA-LOV104 (0 0) RACKIN**  
**IRF LOA-LOV096 (0 0) RACKIN**  
**IRF LOA-LOV105 (0 0) RACKIN**

ATC checks if RCPs should be stopped:

- D/P between RCS pressure and highest SG pressure – <205 PSID
- Criteria for stopping will be met.

RCPs previously TRIPPED.

SRO dispatches An operator to Energize Valves IAW A-0.6

ATC/BOP dispatches an operator to energize valves IAW Attachment A-0.6, “Cold Leg Recirculation Component Verification.”

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u><b>EVENTS 7, 8 &amp; 9:</b></u> (continued)	CIB Not actuated	<p>WHEN CIB is actuated Then Perform step 4.b and continue with Step 5.</p>
		<p>Crew may not get to 4.b</p>
		<p>4.b-d</p>
		<ul style="list-style-type: none"> <li>Recirc spray HXs – SERVICE WATER FLOW TO ALL 4 HXS</li> </ul>
		<ul style="list-style-type: none"> <li>RWST Level – LESS THAN OR EQUAL TO 381 INCHES</li> </ul>
		<ul style="list-style-type: none"> <li>Verfiy Recirc Spray Pumps – NOT CAVITATING</li> </ul>
	SGs are NOT faulted	<p>ATC/BOP checks if any SGs are faulted:</p>
		<ul style="list-style-type: none"> <li>Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER</li> </ul>
		<p>OR</p>
		<ul style="list-style-type: none"> <li>ANY SG COMPLETELY DEPRESSURIZED</li> </ul>
		<p>Crew determines NO SGs are faulted.</p>
		<p>BOP checks intact SG levels:</p>
		<ul style="list-style-type: none"> <li>NR levels – &gt;12% [31% ADVERSE CNMT]</li> </ul>
		<p>Controls feed flow to maintain NR level between 12% [31% ADVERSE CNMT] and 50%.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENTS 7, 8 & 9: (continued)

SI FLOW CANNOT BE REDUCED.

Crew checks if SG tubes are intact:

- Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER.
- Check secondary radiation – CONSISTENT WITH PRE-EVENT VALUES.

Crew determines no SG levels are rising in an uncontrolled manner and secondary radiation is consistent with pre-event values, therefore all SG tubes are intact.

ATC checks PORV's and block valves:

- Power to block valves – AVAILABLE.
- PORVs – CLOSED.
- Block valves – All open.

ATC/BOP checks if SI flow can be reduced:

- RCS subcooling based on core exit TCs >41F [59F ADVERSE CNMT]
- Secondary heat sink is available.
- RCS pressure is not stable or rising.

Based on RCS pressure trend and subcooling, crew determines SI termination conditions are not satisfied, SRO remains in E-1.

ATC/BOP checks if CNMT spray should be stopped. Determines CIB has not occurred at this time therefore no quench or recirc spray pumps are running.

ATC resets SI and CIA.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)		ATC checks if LHSI pumps should be stopped.
<b>NOTE:</b> RCS pressure trend at this point is dependent upon crew procedural progression, pressure trend may not support S/D of LHSI at this time.	RCS pressure is dropping	ATC determines RCS pressure >225 psig BUT is NOT stable or rising therefore the running LHSI pump is NOT to be STOPPED.
		BOP checks if EDGs should be stopped.
		SRO directs the BOP to stop unloaded EDGs using Attachment A-1.27.
	SRO directs ATC/BOP to perform Attachment A-0.6 and verify cold leg recirculation capability.	ATC/BOP verifies all components in Attachment A-0.6 are available.
		Crew recognizes Aux building and Safeguards radiation – CONSISTENT WITH PRE-EVENT and leak is not outside containment.
<b>ROLE PLAY:</b> If SRO requests TSC status – report TSC not yet activated.	SM consults with TSC staff to determine whether samples can be obtained.	SRO determines TSC is not activated: <ul style="list-style-type: none"> <li>• ATC monitors nuclear instrumentation to confirm adequate shutdown margin.</li> </ul>
		SRO dispatches an operator to perform Attachment A-1.1 to start additional equipment to support recovery.
		ATC checks if cooldown and depressurization is required: <ul style="list-style-type: none"> <li>• Determines RCS pressure is &gt;225 psig.</li> </ul>
	SRO transitions to ES-1.2, “Post LOCA Cooldown And Depressurization”, Step 1.	Crew determines transition to ES-1.2 is appropriate at this time.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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## EVENTS 7, 8 & 9: (continued)

ATC resets SI, CIA and CIB.  
(all signals were previously reset in E-1).

ATC checks LHSI pumps – no signs of cavitation.  
Establish Domestic Water System Cooling to Station Air Compressors:

- BOP opens 2CCS-AOV118, Domestic Water to Station Air Compressor Valve.
- Orders Plant Operator to CLOSE 2CCS-78,83,84, Station Air Compressor Isol Vlvs

Orders Plant Operator to OPEN 2CCS-229,230, Station Air Compressors Discharge Drain Vlvs.

BOP verifies Station Instrument air is available;

- Station Instrument Air > 90 psig

Establishes Instrument Air to CNMT

- Cross Connet station air to CNMT air by opening
- 2IAC-MOV131
- 2IACMOV130
- Check instrument air header pressure > 85 psig

BOP verifies all AC busses energized by offsite pwr.

ATC places all PRZR heaters in PTL.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
		<p>ATC checks if LHSI pumps should be stopped;</p> <ul style="list-style-type: none"> <li>• LHSI pumps – 2 RUNNING</li> <li>• RCS pressure is &gt; 225 PSIG (250 PSIG ADVERSE CNMT)</li> <li>• Check RCS pressure – DROPPING</li> </ul> <p>ATC determines LHSI should NOT be stopped</p> <p>BOP checks intact SGWLs</p> <ul style="list-style-type: none"> <li>• NR level – GREATER THAN 12% [31% ADVERSE CONTAINMENT]</li> <li>• Control feed flow to maintain NR level to btwn 12% [31%] and 50%.</li> </ul>
<p><b><u>EVENTS 7, 8 &amp; 9:</u></b> (continued)</p>		<p>Monitor Shutdown Margin during RCS cooldown.</p> <ul style="list-style-type: none"> <li>• Requests liquid samples hourly</li> <li>• CNMT sump; pH, boron concentration, etc</li> <li>• CNMT atm; radioactivity and hydrogen.</li> <li>• Verify boron concentration &gt; 200F boron concentration</li> </ul>
	<p>Initiate Cooldown to MODE 5</p>	<p>Maintain cooldown rate in RCS cold legs – LESS THAN 100F/HR</p> <ul style="list-style-type: none"> <li>• Intiate trend of RCS cold leg temp and press</li> <li>• Initial every half hour</li> <li>• Refer to attach A-4.1</li> </ul>
	<p>Press will be &lt;2000 psig</p>	<p>ATC; Press &lt;2000#, BLOCK low steamline pressure SI</p> <p>Check Station Air pressure &gt; 90 PSIG</p>

BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**Terminate Scenario:** Terminate scenario at LE discretion AND after establishing a stable cooldown less than 100F/HR.

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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**Attachment A-0.11** 'Verification of Automatic Actions' performed in a timely manner.

BOP performs Attachment A-0.11, 'Verification of Automatic Actions' as follows:

Checks both EDGs running with SWS valve alignment and ventilation in service.

Verifies power to both AC emergency busses.

Checks 2HVS\*FN204A or 2HVS\*FN204B running.

Ensure reheat steam isolation:

- Verify 2MSS-MOV100A and B – closed.
- Reset reheater controller.
- Verify 2GSS-MOV204, spillover vlv, closed

Check if main steamline isolation required:

- CNMT pressure – >7 PSIG  
-OR-
- Steamline pressure – <500 PSIG  
-OR-
- Steamline pressure high rate of change – 100 PSIG DROP IN 50 SECONDS.

If steamline isolation is required, verifies SLI by checking all YELLOW SLI marks – LIT.

If steamline isolation is not required continues on.



# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>Attachment A-0.11</b> – (continued)</p> <p><b>NOTE:</b> BOP may have already pre-emptively opened 2CCS-AOV118 to provide cooling to the station air compressors.</p>	<p>SR require manual energization.</p>	<p>Establish domestic water system cooling to station air compressors:</p> <ul style="list-style-type: none"> <li>• Opens 2CCS-AOV118.</li> <li>• Verifies at least 1 air compressor is running.</li> </ul> <p>Verifies at least 1 CCP pump is running unless a CIB has occurred.</p> <p>Align neutron flux monitoring for shutdown:</p> <ul style="list-style-type: none"> <li>• Verifies SR CHs energized when IR &lt;1E-10.</li> <li>• Transfer 2NME-NR45, nuclear recorder, to operable SR and IR displays.</li> </ul> <p>Check CIB and CNMT spray status:</p> <ul style="list-style-type: none"> <li>• CNMT pressure – has remained &lt;11 PSIG.</li> </ul> <p>Verify service water system in service:</p> <ul style="list-style-type: none"> <li>• SWS pumps - TWO RUNNING.</li> <li>• Check SWS header pressure – &gt;55 psig.</li> <li>• SWS pump seal water pressure – NOT LOW.</li> </ul> <p>Verify both CNMT hydrogen analyzers running: 2HCS*SOV100A1, B1 – CNMT sample amber lights – LIT.</p>

# BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><b>Attachment A-0.11 – (continued)</b>  <b>Critical Task: CT-4 (E-0.F)</b>  Crew establishes the minimum required AFW flow rate to the SGs before transition out of E-0, unless the transition is to FR-H.1, in which case the task must be initiated before RCPs are manually tripped in accordance with FR-H.1.</p>	<p>2FWE*P23A tripped &amp; 2FWE*P23B had a sheared shaft</p>	<p>Verify ESF equipment status:</p> <ul style="list-style-type: none"> <li>• Verify SI status by checking all RED SIS marks – LIT.</li> <li>• Verify CIA by checking all ORANGE CIA marks – LIT.</li> <li>• Verify FWI by checking all GREEN FWI marks – LIT.</li> </ul>
<p><b>Attachment A-0.11 – COMPLETE</b></p>	<p><u>Discrepancies:</u>  2FWE*P23A tripped &amp; 2FWE*P23B had a sheared shaft  2FWE-P22 required manual start  CIA Train B failed to actuate  CIA Train A valves failed to actuate:  2CHS-MOV378  2IAC*MOV133  2IAC*MOV130  SR required manual energization.</p>	<p>Verify source range channels energized with audible indication functioning properly, adjusts multiplier switch and volume as necessary.</p> <p>Upon completion, report any discrepancies to SRO.</p>