

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-030 JPM REVISION: 2	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 10M-6.4.Q, "Response To Void In Reactor Vessel")
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K/A REFERENCE: 2.1.7 4.4/4.7 TASK ID: 0061-016-01-013

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 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 ☐ 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

TASK STANDARD:	Calculated RCS Initial Void Volume is 3996.5 FT ³ (3990 – 4000 FT ³) AND Final Void Volume is 3836.6 FT ³ (3830 – 3840 FT ³)
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<ul style="list-style-type: none">• A Reactor trip from 100% power has occurred• SI has NOT been actuated• Power was lost to all RCPs• Both Trains of RVLIS are inoperable• Normal Charging and Letdown are in operation• A plant cooldown was in progress per ES-0.4 Natural Circulation Cooldown with Steam Voids in Vessel (Without RVLIS)• RCS Hot Leg temperature is 550 F and STABLE• A Void potentially exists in the Reactor Coolant System as indicated by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure
INITIATING CUE:	Using the data recorded in 1OM-6.4.Q, the Unit Supervisor directs you to Calculate The RCS Initial Void Volume AND Final Void Volume IAW 1OM-6.4.Q, Response To Void In Reactor Vessel beginning at step IV.A.8a up through and including step IV.A.11.b. Based on your calculations, determine if a Void exists in the RCS. Report your results in the space provided.
REFERENCES:	1OM-6.4.Q, "Response To Void In Reactor Vessel", Rev. 5
TOOLS:	Calculator
HANDOUT:	1OM-6.4.Q, "Response To Void In Reactor Vessel", Rev. 5 filled out up to step IV.A.8.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-030 JPM REVISION: 2	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div>EVALUATOR NOTE: Provide candidate a place kept copy of 1OM-6.4.Q filled out with data provided up to step IV.A.8.</div> <div>EVALUATOR NOTE: Evaluator discretion may be required to determine satisfactory performance on this JPM. Refer to Key Provided.</div>	
	START TIME: _____	
<p>1. Calculate the initial AND final PRZR vapor space volumes in Step 8a, b, & c.</p> $V_1 = (1 - (L_1/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3$ $V_1 = (1 - (\text{____}/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3$ $V_1 = \text{_____} \text{ ft}^3$ $\Delta L = L_1 - L_2$ $\Delta L = \text{_____} \% - \text{_____} \%$ $\Delta L = \text{_____} \%$ $V_2 = V_1 - (\Delta L/100 \times 528 \text{ ft}^3)$ $V_2 = \text{_____} \text{ ft}^3 - ((\text{____}/100) \times 528 \text{ ft}^3)$ $V_2 = \text{_____} \text{ ft}^3$	<p>1.1 Enters 50 in L_1.</p> <p>1.2 Calculates $V_1 = 464 \text{ ft}^3$.</p> <p>1.3 Enters 50% - 55% and calculates $\Delta L = -5\%$.</p> <p>1.4 Enters 464 in V_1.</p> <p>1.5 Enters 5 in ΔL.</p> <p>1.6 Calculates $V_2 = 437.6 \text{ ft}^3$.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-030 JPM REVISION: 2	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 10M-6.4.Q, "Response To Void In Reactor Vessel")
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2. Determine the total volume of water charged to the RCS in Step 9a & 9b.</p> <p>$ET = t_2 - t_1$</p> <p>$ET = \underline{\hspace{1cm}} - \underline{\hspace{1cm}}$</p> <p>$ET = \underline{\hspace{1cm}} \text{ minutes}$</p> <p>$V_c = CF \times (F_c + F_1 - F_L) \times ET \times 0.133 \text{ ft}^3/\text{gal}$</p> <p>$V_c = \underline{\hspace{1cm}} \times (\underline{\hspace{1cm}} \text{ gpm} + \underline{\hspace{1cm}} \text{ gpm} - \underline{\hspace{1cm}} \text{ gpm}) \times \underline{\hspace{1cm}} \text{ min} \times 0.1333 \text{ ft}^3/\text{gal}$</p> <p>$V_c = \underline{\hspace{1cm}} \text{ ft}^3$</p>	<p>2.1 Enters Now in T_2 and 10 minutes ago in T_1.</p> <p>2.2 Calculates $ET = 10$ minutes.</p> <p>2.3 Enters 1.34 in CF from correction factor chart based on $Thot$ from initial plant conditions at 550 F.</p> <p>2.4 Enters 89 gpm in F_c.</p> <p>2.5 Enters 24 gpm in F_1.</p> <p>2.6 Enters 8.75 gpm in F_L.</p> <p>2.7 Enters 10 min in ET.</p> <p>2.8 Calculates $V_c = 186.21 \text{ ft}^3$.</p> <p>COMMENTS:</p>	
<p>3. Calculate the expected change in PRZR level from the volume charged as determined in Step IV.A.9.</p> <p>$L = V_c / 528 \text{ ft}^3 \times 100$</p> <p>$L = \underline{\hspace{1cm}} \text{ ft}^3 / 528 \text{ ft}^3 \times 100$</p>	<p>3.1 Enters 186.21 in V_c.</p> <p>3.2 Calculates expected change to be 35.27%.</p> <p>3.3 Determines Step IV.A.8.b value (5%) is less than IV.A.10 value (35.27%) and based on the note preceding step 11, continues in the procedure.</p> <p>COMMENTS:</p>	

JPM NUMBER: 1AD-030 JPM REVISION: 2	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 10M-6.4.Q, "Response To Void In Reactor Vessel")
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>4.C Calculate the size of the RCS initial void volume (G_1) as follows:</p> $G_1 = (V_c + V_2 - V_1) / (1 - P_1 / P_2)$ $G_1 = \left(\frac{\text{ft}^3 + \text{ft}^3 - \text{ft}^3}{(1 - \text{psi} / \text{psi})} \right)$ $G_1 = \text{ft}^3$	<p>4.1C Calculates the size of the RCS initial void volume (G_1).</p> $G_1 = (V_c + V_2 - V_1) / (1 - P_1 / P_2)$ $G_1 = (186.21 \text{ ft}^3 + 437.6 \text{ ft}^3 - 464 \text{ ft}^3) / (1 - 1800 \text{ psi} / 1875 \text{ psi})$ $G_1 = (159.81 \text{ ft}^3) / (1 - .96)$ $G_1 = (159.81 \text{ ft}^3) / (.04)$ $G_1 = 3995.25 \text{ ft}^3 \text{ (3990 - 4000 ft}^3 \text{ allowable band)}$ <p>COMMENTS:</p>	
<p>5.C Calculate the size of the RCS final void volume (G_2) from the initial RCS void volume (Step A.11.a) as follows:</p> $G_2 = G_1 (P_1 / P_2)$ $G_2 = (\text{ft}^3) (\text{psi} / \text{psi})$	<p>5.1C Calculates the size of the RCS final void volume (G_2) from the initial RCS void volume.</p> $G_2 = G_1 (P_1 / P_2)$ $G_2 = (3995.25 \text{ ft}^3) (1800 \text{ psi} / 1875 \text{ psi})$ $G_2 = (3995.25) \times (.96)$ $G_2 = 3835.44 \text{ ft}^3 \text{ (3830 - 3840 ft}^3 \text{ allowable band)}$ <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-030 JPM REVISION: 2	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")	
STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6. Records Initial and Final Calculated Void Volume in the space provided on the candidate direction sheet.	6.1 Provides Initial and Final Void Volume calculated in the space provided on the candidate direction sheet. COMMENTS:	
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> EVALUATOR CUE: State "This JPM is complete" </div>	
	STOP TIME: _____	

ANSWER KEY

DO NOT Provide to Candidate

8 Calculate the initial **AND** final PRZR vapor space volumes as follows:

a. Initial Pressurizer Vapor Volume

$$\begin{aligned} V_1 &= (1 - (L_1/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3 \\ V_1 &= (1 - (\underline{50}/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3 \\ V_1 &= \underline{464} \text{ ft}^3 \end{aligned}$$

Where: V_1 = Initial Pressurizer Vapor Volume
 L_1 = Initial Pressurizer Level (Step **Error! Reference source not found.**)
 528 ft^3 = Pressurizer Volume covered by span of Level Instruments
 200 ft^3 = Pressurizer Volume above Level Instruments

b. Change in Pressurizer level:

$$\begin{aligned} \Delta L &= L_1 - L_2 \\ \Delta L &= \underline{50} \% - \underline{55} \% \\ \Delta L &= \underline{-5} \% \end{aligned}$$

Where: ΔL = Change in Pressurizer Level
 L_1 = Initial Pressurizer Level (Step **Error! Reference source not found.**)
 L_2 = Final Pressurizer Level (Step **Error! Reference source not found.**)

Note: The absolute value of the change in Pressurizer Level should be used in the following equation.

c. Final Pressurizer Vapor Volume

$$\begin{aligned} V_2 &= V_1 - (\Delta L/100 \times 528 \text{ ft}^3) \\ V_2 &= \underline{464} \text{ ft}^3 - (\underline{5}/100 \times 528 \text{ ft}^3) \\ V_2 &= \underline{437.6} \text{ ft}^3 \end{aligned}$$

Where: V_1 = Initial Pressurizer Vapor Volume (Step I.A.1.a)
 V_2 = Final Pressurizer Vapor Volume
 ΔL = Change in Pressurizer Level (Step I.A.1.b)

ANSWER KEY

DO NOT Provide to Candidate

9 Determine the total volume of water charged to the RCS as follows:

a. Determine Elapse time:

$$\begin{aligned} ET &= t_2 - t_1 \\ ET &= \text{NOW} - \text{10 Minutes Ago} \\ ET &= \text{10 minutes} \end{aligned}$$

Where: ET = Elapse time
 t_1 = Start time (Step Error! Reference source not found.)
 t_2 = Stop time (Step Error! Reference source not found.)

b. RCS Volume change:

$$\begin{aligned} V_c &= CF \times (F_c + F_i - F_L) \times ET \times 0.133 \text{ ft}^3/\text{gal} \\ V_c &= 1.34 \times (89 \text{ gpm} + 24 \text{ gpm} - 8.75 \text{ gpm}) \times 10 \text{ min} \times 0.1333 \text{ ft}^3/\text{gal} \\ V_c &= 186.21 \text{ ft}^3 \end{aligned}$$

Where: V_c = Volume of water charged to RCS
 CF = Correction Factor from Correction Factor chart for current RCS temperature
 F_c = Charging Flow (Step Error! Reference source not found.)
 F_i = Total Seal Injection Flow (Step Error! Reference source not found.)
 F_L = Total Seal Leakoff Flow (Step Error! Reference source not found.)
 ET = Elapsed time (Step 0)
 Correction Factor Chart (CF):

RCS Temp (F)	CF
550	1.34
500	1.26
450	1.20
400	1.15
350	1.11
300	1.08
250	1.05
200	1.03

10 Calculate the expected change in PRZR level from the volume charged as determined in Step 0

$$\begin{aligned} L &= V_c / 528 \text{ ft}^3 \times 100 \\ L &= 186.21 \text{ ft}^3 / 528 \text{ ft}^3 \times 100 \end{aligned}$$

Where: L = Expected change in Pressurizer Level due to charging
 V_c = Volume of water charge to RCS (Step 0)

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐

Read:

INITIAL CONDITIONS:

- A Reactor trip from 100% power has occurred
- SI has NOT been actuated
- Power was lost to all RCPs
- Both Trains of RVLIS are inoperable
- Normal Charging and Letdown are in operation
- A plant cooldown was in progress per ES-0.4 Natural Circulation Cooldown with Steam Voids in Vessel (Without RVLIS)
- RCS Hot Leg temperature is 550 F and STABLE
- A Void potentially exists in the Reactor Coolant System as indicated by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure

INITIATING CUE:

Using the data recorded in IOM-6.4.Q, the Unit Supervisor directs you to Calculate The RCS Initial Void Volume **AND** Final Void Volume IAW IOM-6.4.Q, Response To Void In Reactor Vessel beginning at step IV.A.8a up through and including step IV.A.11.b. Based on your calculations, determine if a Void exists in the RCS. Report your results in the space provided.

NAME: _____

RESULTS:

RCS Initial Void Volume: _____

RCS Final Void Volume: _____

Does a Void Exist in the Reactor Coolant System?

YES / NO
(circle one)

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

ANSWER KEY

DO NOT Provide to Candidate

Note: If the actual PRZR level change (Step I.A.1.b) is less than the expected level change, (Step 0), **THEN** a gaseous void exists in the RCS. Perform the following step to determine the RCS void Volume.

- 11 Calculate the initial and final RCS gaseous void volumes using the following equations:

- a. Initial Void Volume:

$$G_1 = (V_c + V_2 - V_1) / (1 - P_1/P_2)$$

$$G_1 = (186.21 \text{ ft}^3 + 437.6 \text{ ft}^3 - 464 \text{ ft}^3) / (1 - 1800 \text{ psi} / 1875 \text{ psi})$$

$$G_1 = 3995.25 \text{ ft}^3 \text{ (Allowable Band is 3990-4000 ft}^3 \text{)}$$

Where: G_1 = Initial Void Volume
 V_c = Volume of water charged to RCS (Step 0)
 V_1 = Initial Pressurizer Vapor Volume (Step I.A.1.a)
 V_2 = Final Pressurizer Vapor Volume (Step I.A.1.c)
 P_1 = Initial RCS Pressure (Step **Error! Reference source not found.**)
 P_2 = Final RCS Pressure (Step **Error! Reference source not found.**)

- b. Final Void Volume

$$G_2 = G_1(P_1/P_2)$$

$$G_2 = 3996.25 \text{ ft}^3 (1800 \text{ psi} / 1875 \text{ psi})$$

$$G_2 = 3835.44 \text{ ft}^3 \text{ (Allowable Band is 3830 to 3840 ft}^3 \text{)}$$

Where: G_2 = Final Void Volume (Step a)
 P_1 = Initial RCS Pressure (Step **Error! Reference source not found.**)
 P_2 = Final RCS pressure (Step **Error! Reference source not found.**)

- B. If a gaseous void is indicated by performance of Step **Error! Reference source not found.**, THEN attempt to condense a steam void as follows:

CAUTION: DO NOT STOP ANY RUNNING RCPS OR START ANY STOPPED RCPS UNTIL COMPLETION OF THIS PROCEDURE.

1. Record RCS pressure as indicated by trend recorder, ([YR-760,761], VB-B):

RCS Pressure _____psig

Note: Stable RCS conditions must be achieved prior to proceeding with this procedure.

2. Verify that the RCS is in STABLE condition by ensuring that:

- a. PRZR level is between 40% and 60% as indicated on [LI-RC-459A, 460 or 461], (BB-B).

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023 JPM REVISION: 2	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 ☐ Yes
Critical: ☒ No

Allotted Time: 20 Minutes

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:	Determines active license status is maintained, and evaluates whether each shift meets the requirements.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<p>Today is 9/3/18. 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. Assume all shifts begin and end with a turnover meeting. Your work history is as follows:</p> <p>4/12/18 Worked 12 hours as BOP (day shift).</p> <p>4/13/18 Worked 4 hours as BOP (day shift).</p> <p>4/17/18 Worked 6 hours as ATC and 2 hours ATC doing Crew JIT training on Simulator (day shift).</p> <p>5/1/18 Worked 12 hours as BOP (night shift).</p> <p>5/5/18 Worked 8 hours as the 3rd RO in the Control Room (day shift).</p> <p>5/21/18 Worked 12 hours as BOP (night shift).</p> <p>6/2/18 Worked 12 hours as BOP (night shift).</p> <p>6/7/18 Worked 8 hours as WEC Clearance RO (night shift).</p> <p>6/10/18 Worked 12 hours as ATC (night shift)</p>
INITIATING CUE:	<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>(Provide copies of the references)</p>
REFERENCES:	NOBP-TR-1271, Operator License Administration, Rev 6 10CFR-55_53 Conditions of Licenses
TOOLS:	Calculator
HANDOUT:	NOBP-TR-1271, Operator License Administration, Rev 6

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023
JPM REVISION: 2

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

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Provide the candidate a copy of NOBP-TR-1271. </div>	
	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.C Evaluates 4/12/18 work period of 12 hours.	2.1C Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift. COMMENTS:	
3. Evaluates 4/13/18 work period of 4 hours.	3.1 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. Evaluates 4/17/18 work period of 8 hours.	4.1 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: 2	

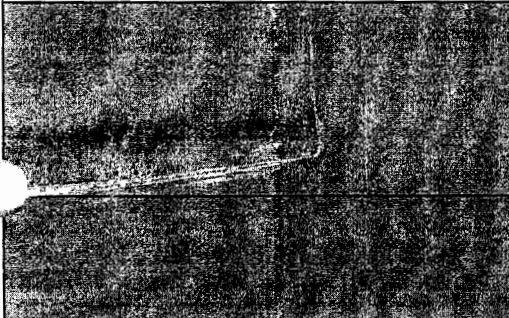
STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Evaluates 5/1/18 work period of 12 hours.	5.1C Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift. COMMENTS:	
6. Evaluates 5/5/18 work period of 8 hours.	6.1 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:	
7.C Evaluates 5/21/18 work period of 12 hours.	7.1C Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift. COMMENTS:	
8.C Evaluates 6/2/18 work period of 12 hours.	8.1C Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-023

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

JPM REVISION: 2

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
9.C Evaluates 6/7/18 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 6/10/18 work period of 12 hours.	10.1C Determines requirement for working the 12 hour shift is credited towards active license. This counts as one shift. COMMENTS:	
11.C Evaluates work history and determines if the license IS Active.	11.1C Determines that the License is ACTIVE due the requirements to work five 12-hour shifts (has been met). OR 11.2 Seven 8-hour shifts (not met), OR 11.3 A combination of 8 & 12 hour shifts totaling >56 hours in the quarter (not met). COMMENTS:	
	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: When the applicant makes a recommendation regarding Active or Inactive License, state that "The evaluation for this JPM is complete". </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***



Read:

INITIAL CONDITIONS:

Today is 9/3/18. 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. Assume all shifts begin and end with a turnover meeting. Your work history is as follows:

4/12/18 Worked 12 hours as BOP (day shift).

4/13/18 Worked 4 hours as BOP (day shift).

4/17/18 Worked 6 hours as ATC and 2 hours ATC doing Crew JIT training on Simulator (day shift).

5/1/18 Worked 12 hours as BOP (night shift).

5/5/18 Worked 8 hours as the 3rd RO in the Control Room (day shift).

5/21/18 Worked 12 hours as BOP (night shift).

6/2/18 Worked 12 hours as BOP (night shift).

6/7/18 Worked 8 hours as WEC Clearance RO (night shift).

6/10/18 Worked 12 hours as ATC (night shift)

INITIATING CUE:

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.

NAME: _____

ANSWER:

License is ACTIVE INACTIVE (Circle one)

SHIFT CREDITED?
(Circle one)

BASIS

4/12/18	YES / NO	_____
4/13/18	YES / NO	_____
4/17/18	YES / NO	_____
5/1/18	YES / NO	_____
5/5/18	YES / NO	_____
5/21/18	YES / NO	_____
6/2/18	YES / NO	_____
6/7/18	YES / NO	_____
6/10/18	YES / NO	_____

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-027 JPM REVISION: 1	JPM TITLE: JPM TITLE: Complete Surveillance of RHR Pump (RO)
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K/A REFERENCE: 2.2.37

3.6

TASK ID: 0101-017-06-013

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 ☐ 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: 1RH-P-1A ΔP is calculated and a determination is made that the ΔP does **NOT** meet the acceptance Criteria. A determination is made that the pump vibrations do **NOT** meet the acceptance criteria.

**RECOMMENDED
STARTING LOCATION:** Classroom

INITIAL CONDITIONS: Surveillance test, 1OST-10.1, "Residual Heat Removal Pump Performance Test" is being performed.

- Unit 1 is in Mode 5 with RCS CET temperatures at 110°F.
- The Surveillance is being performed on pump [1RH-P-1A] only.
- This is a **COMPREHENSIVE** Pump Test.
- Independent verifications of the calculations on Data Sheet 1 are required.

INITIATING CUE: Complete the required independent verifications of the calculations on Data Sheet 1 of 1OST-10.1, "Residual Heat Removal Pump [1RH-P-1A] Performance Test" **AND** Determine if the Pump meets **ALL** of the Applicable Acceptance Criteria specified in step III A. (disregard Data Sheet 3 & 4 which are for 1RH-P-1B)

DOCUMENT the results of your Acceptance Criteria Determination in the comments section of the cover page or OST Problem Sheet (if applicable).

REFERENCES: 1OST-10.1, "Residual Heat Removal Pump Performance Test", Rev. 29

TOOLS: None

HANDOUT: 1OST-10.1, "Residual Heat Removal Pump Performance Test", Rev. 29 completed **With unacceptable ΔP and vibrations.**

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-027 JPM REVISION: 1	JPM TITLE: Complete Surveillance of RHR Pump (RO)
--	---

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR NOTE: Provide the candidate a partially completed copy of 1OST-10.1.	
	START TIME: _____	
1. Reviews 1OST-10.1 and Data Sheet information provided.	EVALUATOR CUE: Provide the candidate with the Handout Materials. Criteria/steps may be checked/verified in any order. 1.1 Reviews 1OST-10.1 and verifies calculations/data to determine if acceptance criteria (III.A) met. COMMENTS:	
2. Reviews 1RH-P-1A Pump Flowrate data provided.	2.1 4050 gpm - 0 gpm = 4050 gpm. 2.2 Determines 4050 gpm is within Acceptable range of 4000-4100 gpm on Data Sheet 1. (No information will be recorded in the comments section) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-027 JPM REVISION: 1	JPM TITLE: JPM TITLE: Complete Surveillance of RHR Pump (RO)
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3.C [1RH-P-1A] Residual Heat Removal Pump: Operates within the limits of BVPS IST Program as follows: Differential Pressure (Data Sheet 1)	<p>3.1 Calculates 1RH-P-1A Pump ΔP and determines acceptance criteria. $110 \text{ psig} - 20 \text{ psig (90 psig)} + 48/12 (4) + 15 - 65/12 (5.417) / 2.31 (5.88) = 95.88 \text{ psid}$.</p> <p>3.2C Determines 95.88 psid is GREATER THAN acceptable range of 85.2- 94.7 psid (Comprehensive Pump Test) by comparing calculated Delta P on Data Sheet 1 to Acceptable Range (III.A).</p> <p>COMMENTS:</p>	
4.C [1RH-P-1A] Residual Heat Removal Pump: Operates within the limits of BVPS IST Program as follows: Motor Vibration (Data Sheet 2)	<p>4.1 Compares Actual Motor Vibrations on Data Sheet 2 to Acceptable and Alert range.</p> <p>4.2C Determines Motor Inboard (2) Axial (A) vibrations are GREATER THAN Acceptable and Alert Range.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-027 JPM REVISION: 1	JPM TITLE: JPM TITLE: Complete Surveillance of RHR Pump (RO)
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Complete the front cover sheet.	5.1C Lists the following problems on OST problem or cover sheet: <ul style="list-style-type: none"> • C Motor Inboard (2) Axial(A) vibration is GREATER THAN Acceptable and Alert Range • C Calculated Delta P is GREATER THAN Acceptable Range. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> EVALUATOR NOTE: Grader discretion may be required. </div> COMMENTS:	
	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> EVALUATOR CUE: When the applicant makes a determination of the surveillance status state that "The JPM is complete". </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

INITIAL CONDITIONS:

Surveillance test, 1OST-10.1, "Residual Heat Removal Pump Performance Test" is being performed.

- Unit 1 is in Mode 5 with RCS CET temperatures at 110°F.
- The Surveillance is being performed on pump [1RH-P-1A] only.
- This is a **COMPREHENSIVE** Pump Test.
- Independent verifications of the calculations on Data Sheet 1 are required.

INITIATING CUE:

Complete the required independent verifications of the calculations on Data Sheet 1 of 1OST-10.1, "Residual Heat Removal Pump [1RH-P-1A] Performance Test" **AND** Determine if the Pump meets **ALL** of the Applicable Acceptance Criteria specified in step III A. (disregard Data Sheet 3 & 4 which are for 1RH-P-1B)

DOCUMENT the results of your Acceptance Criteria Determination in the comments section of the cover page or OST Problem Sheet (if applicable).

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-010
JPM REVISION: 4

JPM TITLE: Determine GW Storage Tank Discharge Bleed Flow Rate

K/A REFERENCE: 2.3.11 3.8/4.3 TASK ID: 0191-010-01-013

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 checked="" type="checkbox"/> Annual Requal Exam	<input checked="" 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: 10 Minutes

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:	GW Storage Tank Discharge Bleed Flow rate is calculated to be GREATER than 2 SCFM and the candidate determines that the discharge MUST BE TERMINATED .
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<ul style="list-style-type: none">• The plant is in Mode 5, making preparations to enter Mode 6• Unit 1 Gaseous Waste Decay Tank 1GW-TK-1A is being discharged to the Unit 1 Process Vent, IAW 1OM-19.4.E, Decay Tank Discharge• The initial pressure of the tank was 64.2 psig• The discharge has been ongoing for 2 hours• The current pressure of the tank is 34.8 psig• The Shift chemist has completed proper tritium sampling• Assume independent verifications are completed in sequence
INITIATING CUE:	Determine the GW Storage Tank Discharge Bleed Flow rate by completing <u>ALL</u> of Step IV.K.16 of 1OM-19.4.E, AND document your results in the box below. (Provided on the candidate direction sheet)
REFERENCES:	1OM-19.4E, Decay Tank Discharge, Rev. 11 1/2-ENV-05.05.F01 rev. 1 RWDA-G
TOOLS:	Calculator
HANDOUT:	1OM-19.4.E, Decay Tank Discharge, Rev. 11 place kept up to step IV.K.15. 1/2-ENV-05.05.F01 RWDA-G filled out with a MAXIMUM undiluted discharge rate of 2 SCFM.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-010
JPM REVISION: 4

JPM TITLE: Determine GW Storage Tank Discharge Bleed Flow Rate

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
1. Reviews procedure step.	1.1 Reviews 1OM-19.4E, Decay Tank Discharge, Step IV.K.16 COMMENTS:	
	EVALUATOR NOTE: Pi=Initial Decay Tank pressure in PSIG from [PR-1GW-103] Pf=Current Decay Tank pressure in PSIG from [PR-1GW-103] Ti=Time the discharge started Tf=Current time (Tf-Ti) shall have units of minutes	
2.C Two hours after the discharge has been initiated, perform the following steps: Confirm the bleed flow rate using the following equation: Bleed flow rate (SCFM) = $\frac{(132 \text{ ft}^3)(P_i - P_f)}{(14.7 \text{ psi})(T_f - T_i)}$	2.1C Inserts the numbers from the initial conditions and determines bleed flow: Bleed flow rate (SCFM) = $\frac{(132)(64.2 - 34.8)}{(14.7)(120)}$ Bleed flow rate (SCFM) = 2.2 SCFM COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-010
JPM REVISION: 4

JPM TITLE: Determine GW Storage Tank Discharge Bleed Flow Rate

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3.C If the bleed flow rate exceeds 2 SCFM, THEN Stop the discharge by performing Steps IV.K.17 thru IV.N.2 AND Notify Radiation Protection of the problem. (Otherwise N/A)</p>	<p>3.1C Determines that the discharge MUST be Terminated.</p> <p>3.2 Notifies Supervisor that the discharge must be terminated.</p> <p>3.3 Notifies Radiation Protection (Supervisor) of the problem.</p> <p>COMMENTS:</p>	
	<p>EVALUATOR CUE: When the candidate determines the flowrate, and makes recommendations on the Candidate Direction Sheet, the evaluation for this JPM is complete.</p>	
	<p>STOP TIME: _____</p>	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

- The plant is in Mode 5, making preparations to enter Mode 6
- Unit 1 Gaseous Waste Decay Tank 1GW-TK-1A is being discharged to the Unit 1 Process Vent, IAW 1OM-19.4.E, Decay Tank Discharge
- The initial pressure of the tank was 64.2 psig
- The discharge has been ongoing for 2 hours
- The current pressure of the tank is 34.8 psig
- The Shift chemist has completed proper tritium sampling
- Assume independent verifications are completed in sequence

INITIATING CUE:

Determine the GW Storage Tank Discharge Bleed Flow rate by completing **ALL** of Step IV.K.16 of 1OM-19.4.E, AND document your results in the box below. (Provided on the candidate direction sheet)

Name:

RECOMMENDED ACTIONS:

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

RWDA-G: Part 1, Summary of Discharge Data**RWDA-G-99999****Beaver Valley Power Station - 1**

This permit authorizes the discharge of 288 cu. ft. of gaseous radioactivity at a maximum undiluted discharge rate of 2 cfm from gaseous waste decay tank: 1GW-TK-1A to the environment via the process vent

Monitor alarm setpoints shall be adjusted to the default values shown below on this permit. This permit valid until: Tomorrow 2359

Monitor Alarms Adjusted	(cpm)	HI-HI	HI	Prerequisites of ODCM Procedure 1/2-ODC-3.03, Attachment F, Table 3.3-13 are met.
	RM-1GW-108B	2.36E+05	1.18E+05	
	(cpm)	High	Alert	Initials: <u>JS</u>
	RM-1GW-109(5)	3.60E+05	1.20E+05	
HI <u>RR</u> HI-HI <u>RR</u> Initials Initials				
Prepared By <u>Steve Baska Today</u> Signature Date	Reviewed BY <u>Tom Rood Today</u> Peer Review Signature Date		Chemistry Notified to obtain H-3 sample <u>Anna Chaud Today</u> Chem Signature Date	
Sample ID: Test	Approved By <u>Bob M... Today</u> Unit 1 Shift Manager Sig Date		Approved By <u>SM J... Today</u> Unit 2 Shift Manager Sig Date	
Sample Date/Time: Today 2 hours ago				

Discharge Record

Discharge Start							Discharge Stop						
mo	day	yr	hr	min	psig/psia	init	mo	day	yr	hr	min	psig/psia	init
	Today		2 Hrs ago		64.2	<u>RO</u>							

Monitor Alarms Reset	(cpm)	Hi	Hi	Hi	Total Discharge _____ minutes
	RM-1GW-108B	2.77E+05	1.80E+05		
	RM-1GW-109(5)	3.82E+05	2.30E+05		
HI _____ HI-HI _____ Initials Initials					
Reviewed By	Reviewed By		Post Review		
Unit 1 Shift Mgr Sig Date	Unit 2 Shift Mgr Sig Date		Signature Date		
File Update: _____/_____ init. date					

EXERCISE USE ONLY

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-032 JPM REVISION: 0	JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")
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K/A REFERENCE: 2.1.7 4.7 TASK ID: 0061-016-01-013

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 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: 40 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:	Corrects the Calculated RCS Initial Void Volume to 3995 FT ³ (3990 – 4000 FT ³) AND Final Void Volume is 3835 FT ³ (3830 – 3840 FT ³) then determines the RCS vent time is 3.38 Minutes. (3.27 – 3.50)
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<ul style="list-style-type: none">• A Reactor trip from 100% power has occurred• SI has NOT been actuated• Power was lost to all RCPs• Both Trains of RVLIS are inoperable• Normal Charging and Letdown are in operation• A plant cooldown was in progress per ES-0.4 Natural Circulation Cooldown with Steam Voids in Vessel (Without RVLIS)• Voids are indicated in the Reactor Coolant System by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure• An operator has calculated the size of the RCS void using 1OM-6.4.Q• RCS Hot Leg temperature is 550 F and STABLE• Attempts to reduce the RCS void have been unsuccessful• Containment Pressure is (-1.0 PSIG) on (PI-LM-100A, B, C & D)• Containment Temperature is 101 °F• Containment Hydrogen Concentration is 2.3% on H2I-1HY-101A and 2.2% on H2I-1HY-101B
INITIATING CUE:	<p>Using the data recorded in 1OM-6.4.Q, review the completed procedure to Calculate The RCS Initial Void Volume AND Final Void Volume IAW 1OM-6.4.Q, beginning at step IV.A.8a up through and including step IV.A.11.b. Correct any discrepancies identified.</p> <p>Then Determine the Maximum Allowable Venting Period in accordance with step IV.D of the procedure.</p>
REFERENCES:	<p>Report your results in the space provided.</p> <p>1OM-6.4.Q, "Response To Void In Reactor Vessel", Rev. 5</p>
TOOLS:	<p>Calculator</p> <p>Ruler</p>
HANDOUT:	1OM-6.4.Q, "Response To Void In Reactor Vessel", Rev. 5 filled out up to step IV.A.8.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-032
JPM REVISION: 0

JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div data-bbox="674 541 1422 674"> <p>EVALUATOR NOTE: Provide candidate a completed copy of 1OM-6.4.Q filled out with data provided and calculations</p> </div> <div data-bbox="674 688 1422 863"> <p>EVALUATOR NOTE: Evaluator discretion may be required to determine satisfactory performance on this JPM. Refer to Key Provided.</p> </div>	
	START TIME: _____	
<p>1. Calculate the initial AND final PRZR vapor space volumes in Step 8a, b, & c.</p> <p>$V_1 = (1 - (L_1/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3$</p> <p>$V_1 = (1 - (\text{____}/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3$</p> <p>$V_1 = \text{____} \text{ ft}^3$</p> <p>$\Delta L = L_1 - L_2$</p> <p>$\Delta L = \text{____} \% - \text{____} \%$</p> <p>$\Delta L = \text{____} \%$</p> <p>$V_2 = V_1 - (\Delta L/100 \times 528 \text{ ft}^3)$</p> <p>$V_2 = \text{____} \text{ ft}^3 - ((\text{____}/100) \times 528 \text{ ft}^3)$</p> <p>$V_2 = \text{____} \text{ ft}^3$</p>	<p>1.1 Verifies 50 in L_1.</p> <p>1.2 Verifies the Calculation of $V_1 = 464 \text{ ft}^3$.</p> <p>1.3 Checks 50% - 55% and $\Delta L = -5\%$.</p> <p>1.4 Verifies 464 in V_1.</p> <p>1.5 Verifies 5 entered in ΔL.</p> <p>1.6 Verifies $V_2 = 437.6 \text{ ft}^3$.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-032 JPM REVISION: 0	JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2.C Determine the total volume of water charged to the RCS in Step 9a & 9b.</p> <p>ET = $t_2 - t_1$</p> <p>ET = _____</p> <p>ET = _____ minutes</p> <p>$V_c = CF \times (F_c + F_1 - F_L) \times ET \times 0.133 \text{ ft}^3/\text{gal}$</p> <p>$V_c = \text{_____} \times (\text{_____} \text{ gpm} + \text{_____} \text{ gpm} - \text{_____} \text{ gpm}) \times \text{_____} \text{ min} \times 0.1333 \text{ ft}^3/\text{gal}$</p> <p>$V_c = \text{_____} \text{ ft}^3$</p>	<p>2.1 Verifies Time Now in T_2 and 10 minutes ago in T_1.</p> <p>2.2 Calculates ET = 10 minutes.</p> <p>2.3C Corrects 1.34 in CF from correction factor chart based on T_{hot} from initial plant conditions at 550 F, not 500 F and a CF of 1.26.</p> <p>2.4 Verifies 89 gpm in F_c.</p> <p>2.5 Verifies 24 gpm in F_1.</p> <p>2.6 Verifies 8.75 gpm in F_L.</p> <p>2.7 Verifies 10 min in ET.</p> <p>2.8C Calculates corrected $V_c = 186.21 \text{ ft}^3$ not 175.10 ft^3</p> <p>COMMENTS:</p>	
<p>3. Calculate the expected change in PRZR level from the volume charged as determined in Step IV.A.9.</p> <p>$L = V_c / 528 \text{ ft}^3 \times 100$</p> <p>$L = \text{_____} \text{ ft}^3 / 528 \text{ ft}^3 \times 100$</p>	<p>3.1 Enters 186.21 in V_c.</p> <p>3.2 Calculates expected change to be 35.27%, not 33.16%.</p> <p>3.3 Determines Step IV.A.8.b value (5%) is less than IV.A.10 value (35.27%) and based on the note preceding step 11, continues in the procedure.</p> <p>COMMENTS:</p>	

COMMENTS:

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-032

JPM REVISION: 0

JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. Records Initial and Final Calculated Void Volume in the space provided on the candidate direction sheet.</p>	<p>6.1 Provides Initial and Final Void Volume calculated in the space provided on the candidate direction sheet.</p> <p>$G_1 = 3995.25 \text{ ft}^3$ (3990 - 4000 ft^3 allowable band)</p> <p>$G_2 = 3835.44 \text{ ft}^3$ (3830 - 3840 ft^3 allowable band)</p> <p>6.2 Routes to section D of the procedure to determine the Maximum Allowable Vent Time.</p> <p>COMMENTS:</p>	
<p>7.C Convert the CNMT free-volume to CNMT Volume at Standard temperature and Pressure.</p> <p>$V_{\text{CNMT}} = 1,890,000 \text{ ft}^3 (P_{\text{CNMT}} + 14.17 / 14.7 \text{ psia}) \times (492 / (T_{\text{CNMT}} + 460^\circ))$</p> <p>$V_{\text{CNMT}} = 1,890,000 \text{ ft}^3 (P_{\text{_____}} + 14.17 / 14.7 \text{ psia}) \times (492 / (T_{\text{_____}} + 460^\circ))$</p>	<p>7.1 Obtains P_{CNMT} from the initial conditions as (-1.0 psig).</p> <p>7.2 Obtains T_{CNMT} from the initial conditions as (101 F).</p> <p>7.3C Calculates V_{CNMT} as 1544782 ft^3 (1544750-1544800 ft^3 allowable band).</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE



JPM NUMBER: 1AD-032

JPM REVISION: 0

JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8.C Record the Containment Hydrogen concentration from initial conditions.</p> <p>a. H2I-1HY-101A is 2.3 % b. H2I-1HY-101A is 2.2 %</p>	<p>8.1 Obtains Containment Hydrogen readings from the initial conditions.</p> <p>8.2 Uses the highest Hydrogen concentration of 2.3 %.</p> <p>COMMENTS:</p>	
<p>9.C Calculate the maximum Hydrogen Volume that can be vented to the CNMT which will result in a CNMT Hydrogen Concentration of \leq 3% Volume.</p> <p>$V_H = ((3.0\% - H_C) / 100) \times V_{CNMT}$</p> <p>$V_H = ((3.0\% - ___\%) / 100) \times ___\text{ft}^3$</p>	<p>9.1 Obtains V_{CNMT} from the previous calculation.</p> <p>9.2C Calculates V_H as 10813.47 ft³ (10813.40-10813.50 ft³ allowable band)</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-032 JPM REVISION: 0	JPM TITLE: Review The RCS Initial Void Volume And Final Void Volume Calculation and Then Determine the RCS Vent Time (IAW 1OM-6.4.Q, "Response To Void In Reactor Vessel")	
STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>10.C From Figure 1, RCS Pressure vs H2 Flow Rate, determine the allowable venting period which will limit the Containment Hydrogen Concentration to 3% volume.</p> <p>$T_V = V_H / F_H$</p> <p>$T_V = \text{___ ft}^3 / \text{___ scfm}$</p> <p>$T_V = \text{___ minutes}$</p>	<p>10.1 Obtains V_H from the previous calculation.</p> <p>10.2 Obtains 3200 SCFM value from Figure 1 with RCS Pressure at 1875 psig.</p> <p>10.2C Calculates T_V as 3.38 minutes (3.27-3.50 minutes allowable band)</p> <p>COMMENTS:</p>	
	<div data-bbox="652 1234 1417 1339" style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: Once a venting time is determined, State "This JPM is complete" </div>	
	STOP TIME: _____	

ANSWER KEY

DO NOT Provide to Candidate

8 Calculate the initial **AND** final PRZR vapor space volumes as follows:

a. Initial Pressurizer Vapor Volume

$$\begin{aligned} V_1 &= (1 - (L_1/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3 \\ V_1 &= (1 - (\underline{50}/100)) \times 528 \text{ ft}^3 + 200 \text{ ft}^3 \\ V_1 &= \underline{464} \text{ ft}^3 \end{aligned}$$

Where: V_1 = Initial Pressurizer Vapor Volume
 L_1 = Initial Pressurizer Level
 528 ft^3 = Pressurizer Volume covered by span of Level Instruments
 200 ft^3 = Pressurizer Volume above Level Instruments

b. Change in Pressurizer level:

$$\begin{aligned} \Delta L &= L_1 - L_2 \\ \Delta L &= \underline{50} \% - \underline{55} \% \\ \Delta L &= \underline{-5} \% \end{aligned}$$

Where: ΔL = Change in Pressurizer Level
 L_1 = Initial Pressurizer Level
 L_2 = Final Pressurizer Level

Note: The absolute value of the change in Pressurizer Level should be used in the following equation.

c. Final Pressurizer Vapor Volume

$$\begin{aligned} V_2 &= V_1 - (\Delta L/100 \times 528 \text{ ft}^3) \\ V_2 &= \underline{464} \text{ ft}^3 - ((\underline{5})/100) \times 528 \text{ ft}^3 \\ V_2 &= \underline{437.6} \text{ ft}^3 \end{aligned}$$

Where: V_1 = Initial Pressurizer Vapor Volume (Step I.A.1.a)
 V_2 = Final Pressurizer Vapor Volume
 ΔL = Change in Pressurizer Level (Step I.A.1.b)

ANSWER KEY

DO NOT Provide to Candidate

9 Determine the total volume of water charged to the RCS as follows:

a. Determine Elapse time:

$$\begin{aligned} ET &= t_2 - t_1 \\ ET &= \text{NOW} - \text{10 Minutes Ago} \\ ET &= \text{10 minutes} \end{aligned}$$

Where: ET = Elapse time
 t_1 = Start time
 t_2 = Stop time

b. RCS Volume change:

$$\begin{aligned} V_c &= CF \times (F_c + F_l - F_L) \times ET \times 0.133 \text{ ft}^3/\text{gal} \\ V_c &= \text{1.26} \times (89 \text{ gpm} + 24 \text{ gpm} - 8.75 \text{ gpm}) \times 10 \text{ min} \times 0.1333 \text{ ft}^3/\text{gal} \\ V_c &= \text{175.10} \text{ ft}^3 - \text{INCORRECT VALUE WAS 175.10 - incorrect CF used} \end{aligned}$$

Where: V_c = Volume of water charged to RCS
 CF = Correction Factor from Correction Factor chart for current RCS temperature
 F_c = Charging Flow
 F_l = Total Seal Injection Flow
 F_L = Total Seal Leakoff Flow
 ET = Elapsed time (Step 0)
 Correction Factor Chart (CF):

RCS Temp (F)	CF
550	1.24
500	1.26
450	1.20
400	1.15
350	1.11
300	1.08
250	1.05
200	1.03

10 Calculate the expected change in PRZR level from the volume charged as determined in Step 0

$$\begin{aligned} L &= V_c / 528 \text{ ft}^3 \times 100 \\ L &= \text{175.10} \text{ ft}^3 / 528 \text{ ft}^3 \times 100 \\ L &= \text{33.16} \% \end{aligned}$$

Where: L = Expected change in Pressurizer Level due to charging
 V_c = Volume of water charge to RCS (Step 0)

ANSWER KEY

DO NOT Provide to Candidate

Note: If the actual PRZR level change (Step I.A.1.b) is less than the expected level change, (Step 0), **THEN** a gaseous void exists in the RCS. Perform the following step to determine the RCS void Volume.

- 11 Calculate the initial and final RCS gaseous void volumes using the following equations:

- a. Initial Void Volume:

$$G_1 = (V_c + V_2 - V_1) / (1 - P_1/P_2)$$

$$G_1 = (\underline{188.24} \text{ ft}^3 + \underline{437.6} \text{ ft}^3 - \underline{464} \text{ ft}^3) / (1 - \underline{1800} \text{ psi} / \underline{1875} \text{ psi})$$

$$G_1 = \underline{3996.25} \text{ ft}^3 \text{ (Allowable Band is 3990-4000 ft}^3 \text{)}$$

Where:

- G_1 = Initial Void Volume
- V_c = Volume of water charged to RCS (Step 0)
- V_1 = Initial Pressurizer Vapor Volume (Step I.A.1.a)
- V_2 = Final Pressurizer Vapor Volume (Step I.A.1.c)
- P_1 = Initial RCS Pressure
- P_2 = Final RCS Pressure

- b. Final Void Volume

$$G_2 = G_1(P_1/P_2)$$

$$G_2 = \underline{3996.25} \text{ ft}^3 (\underline{1800} \text{ psi} / \underline{1875} \text{ psi}) \text{ CORRECTED for transposed } P_1/P_2$$

$$G_2 = \underline{3833.33} \text{ ft}^3 \text{ (Allowable Band is 3830 to 3840 ft}^3 \text{)}$$

Where:

- G_2 = Final Void Volume
- G_1 = Initial Void Volume (Step IV.A.11.a)
- P_1 = Initial RCS Pressure (Step IV.A.3.a)
- P_2 = Final RCS pressure (Step IV.A.6.a)

- B. If a gaseous void is indicated by performance of Step, THEN attempt to condense a steam void as follows:**

CAUTION: DO NOT STOP ANY RUNNING RCPS OR START ANY STOPPED RCPS UNTIL COMPLETION OF THIS PROCEDURE.

1. Record RCS pressure as indicated by trend recorder, ([YR-760,761], VB-B):
- RCS Pressure 1875 psig

Note: Stable RCS conditions must be achieved prior to proceeding with this procedure.

2. Verify that the RCS is in STABLE condition by ensuring that:
- a. PRZR level is between 40% and 60% as indicated on [LI-RC-459A, 460 or 461], (BB-B).
 - b. RCS pressure is stable as indicated on [PI-1RC-403, 402A or 402B], (BV-A).
 - c. RCS Hot Leg temperatures are stable as indicated on [TR-1RC-413], (VB-A).

ANSWER KEY

DO NOT Provide to Candidate

D Determine Maximum Allowable Venting Period as follows:

- 1 Convert the CNMT free-volume to CNMT volume at standard temperature and pressure conditions.

$$V_{cnmt} = 1,890,000 \text{ ft}^3 \times (P_{cnmt} + 14.7 / 14.7 \text{ psia}) \times (492^\circ \text{R} / (T_{cnmt} + 460^\circ))$$

$$V_{cnmt} = 1,890,000 \text{ ft}^3 \times ((P_{-1} + 14.7) / 14.7 \text{ psia}) \times (492^\circ \text{R} / (T_{101} + 460^\circ))$$

$$V_{cnmt} = \mathbf{1544782 \text{ ft}^3}$$

Where:

V_{cnmt}	= Free volume of the Containment at Standard
1,890,000 ft ³	= Containment Volume
P_{cnmt}	= Containment Pressure, ([PI-1LM-100A,B,C,D], VB-A)
14.7 psia	= Standard Atmospheric pressure
T_{cnmt}	= Containment Temperatures
492°R	= Standard Temperature (32°F)
460°	= Conversion for °F to °R

- 2 Record the Containment Hydrogen concentration, (VB-A).

1. H2I-1HY-101A 2.3 %

2. H2I-1HY-101B 2.2 %

- 3 Calculate the maximum Hydrogen Volume that can be vented to the CNMT which will result in a CNMT Hydrogen Concentration of $\leq 3\%$ Volume.

$$V_H = ((3.0\% - H_c) / 100) \times V_{cnmt}$$

$$V_H = ((3.0\% - \mathbf{2.3\%}) / 100) \times \mathbf{1544782 \text{ ft}^3}$$

$$V_H = \mathbf{10813.47 \text{ ft}^3}$$

Where:

V_H	= Maximum Hydrogen Volume that may be vented
H_c	= Highest Hydrogen Concentration (Step 2)
V_{cnmt}	= Free volume of the Containment at Standard Temperature and Pressure (STP) (Step 1)

- 4 From Figure 1, RCS Pressure vs H2 Flow Rate, determine the allowable venting period which will limit the Containment Hydrogen Concentration to 3% volume.

$$T_v = V_H / F_H$$

$$T_v = \mathbf{10813.47 \text{ ft}^3 / 3200 \text{ scfm (From Figure 1 at 1875 psig)}$$

$$T_v = \mathbf{3.38 \text{ min (allowable band 3.27 -3.50)}}$$

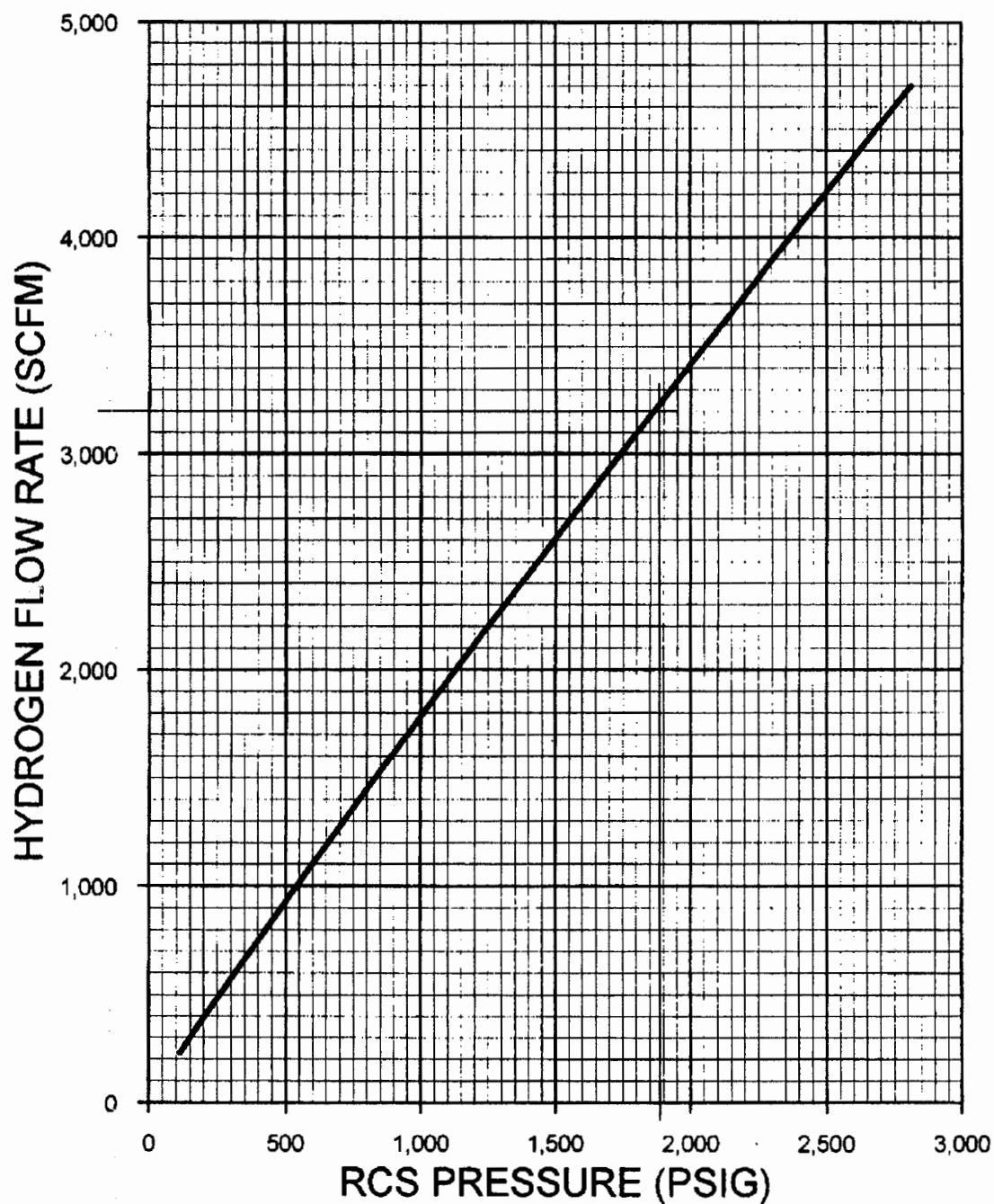
Where:

T_v	= Venting Time
V_H	= Maximum Hydrogen Volume that may be vented (Step 3)
F_H	= Hydrogen Flow Rate From Figure 1 (RCS Pressure vs H ₂ Flow Rate)

Response to Void In Reactor Vessel

FIGURE 1

RCS Pressure vs H2 Flowrate



CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *



Read:

INITIAL CONDITIONS:

- A Reactor trip from 100% power has occurred
- SI has NOT been actuated
- Power was lost to all RCPs
- Both Trains of RVLIS are inoperable
- Normal Charging and Letdown are in operation
- A plant cooldown was in progress per ES-0.4 Natural Circulation Cooldown with Steam Voids in Vessel (Without RVLIS)
- Voids are indicated in the Reactor Coolant System by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure
- An operator has calculated the size of the RCS void using 1OM-6.4.Q
- RCS Hot Leg temperature is 550 F and STABLE
- Attempts to reduce the RCS void have been unsuccessful
- Containment Pressure is (-1.0 PSIG) on (PI-LM-100A, B, C & D)
- Containment Temperature is 101 °F
- Containment Hydrogen Concentration is 2.3% on H2I-1HY-101A and 2.2% on H2I-1HY-101B

INITIATING CUE:

Using the data recorded in 1OM-6.4.Q, review the completed procedure to Calculate The RCS Initial Void Volume **AND** Final Void Volume IAW 1OM-6.4.Q, beginning at step IV.A.8a up through and including step IV.A.11.b. Correct any discrepancies identified.

Then Determine the Maximum Allowable Venting Period in accordance with step IV.D of the procedure.

Report your results in the space provided.

NAME: _____

RESULTS:

RCS Initial Void Volume _____

RCS Final Void Volume _____

RCS Maximum Allowable Vent Period _____

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024

JPM TITLE: Evaluate Operators Work History to Determine if License Status
is Active (SRO)

JPM REVISION: 2

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/SAP:

Name/SAP:

Name/SAP:

Name/SAP:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:

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

RECOMMENDED

Classroom

STARTING LOCATION:

INITIAL CONDITIONS:

Today is 9/3/18. Four Senior Reactor Operators have the following work history for the second quarter of 2018 (Plant was in Mode 1 the entire quarter):

SRO 1	Entered second quarter with active license	
	5/01/18	Worked 0700-1900 as Command SRO
	5/02/18	Worked 0700-1900 as Command SRO
	5/03/18	Worked 0700-1900 as Command SRO
	5/07/18	Worked 0700-1500 as Command SRO. Was relieved for 3 hours to obtain required biennial License Physical at the Health Center
	5/08/18	Worked 0700-1900 as Command SRO
	5/17/18	Worked 0700-1500 as Command SRO
	5/16/18	Worked 0700-1900 as Command SRO
SRO 2	NRC Initial License was received in the second quarter	
	6/23/18	Worked 0700-1500 as Command SRO
	6/24/18	Worked 0700-1500 as Command SRO
	6/28/18	Worked 0700-1500 as Shift Technical Advisor
SRO 3	Entered second quarter with active license	
	5/10/18	Worked 0700-1500 as Shift Manager
	5/11/18	Worked 0700-1500 as Shift Manager
	5/18/18	Worked 0700-1500 as Shift Manager
	5/19/18	Worked 0700-1900 as Shift Technical Advisor
	5/20/18	Worked 0700-1900 as Shift Manager
	6/01/18	Worked 0700-1900 as Shift Technical Advisor
	6/02/18	Worked 0700-1900 as Shift Manager
SRO 4	Entered second quarter with active license	
	6/01/18	Worked 0700-1900 as Shift Manager
	6/02/18	Worked 0700-1900 as Command SRO
	6/03/18	Worked 0700-1500 as Shift Manager
	6/09/18	Worked 0700-1900 as Command SRO
	6/10/18	Worked 0700-1500 as WEC Supervisor
	6/25/18	Worked 0700-1300 as Command SRO, relieved due to personal issue
	6/26/18	Worked 0700-1500 as Command SRO

INITIATING CUE:

Based on the previous quarters work history determine the license status as of today, 9/3/18, for each Senior Reactor Operator and document as ACTIVE or INACTIVE on this form, include the basis for your determination. Assume all 8 hour and 12 hours shifts included a turnover meeting at the beginning and end of the shift.

OPERATIONS JOB PERFORMANCE MEASURE

REFERENCES: NOBP-TR-1271, Operator License Administration, Rev 6

TOOLS: Calculator

HANDOUT: NOBP-TR-1271, Operator License Administration, Rev 6

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024 JPM REVISION: 2	JPM TITLE: Evaluate Operators Work History to Determine if License Status is Active (SRO)
--	---

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div> EVALUATOR NOTE: Provide a copy of NOBP-TR-1271. </div>	
	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.	2.1C Determines requirement for working five 12 hours shifts is met, (seven 8 hour shifts is not met) and credited towards active license. The time for the License Physical is not credited toward the watch. COMMENTS:	
3.C Evaluates SRO 2 work history.	3.1C Determines requirement for obtaining an active license is met by receiving the NRC initial license in the quarter. The requirement to perform seven 8 hours shifts or five 12 hour shifts is not required until the end of the third quarter. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 3AD-024

JPM TITLE: Evaluate Operators Work History to Determine if License Status

JPM REVISION: 2

is Active (SRO)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4.C Evaluates SRO 3 work history.	4.1C 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. COMMENTS:	
5.C Evaluates SRO 4 work history.	5.1C Determines requirement for maintaining an active license is NOT met by working the required seven 8 hour or five 12 hour shifts in a licensed position, Shift Manager or Command SRO. The total hours meets the minimum quarterly requirement of 56 hours however one watch was truncated prior to turnover. COMMENTS:	
6. Reports SROs 1 and 2 are Active SROs 3 and 4 are NOT active.	6.1 Determines that the SRO 1 and 2 Licenses are active due to not working seven 8 hour shifts or five 12 hour shifts in the previous quarter, SRO 3 and 4 are NOT active. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> EVALUATOR CUE: When the applicant makes a decision regarding Active or Inactive License, the evaluation for this JPM is complete. </div> COMMENTS:	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

* **THIS SHEET TO BE GIVEN TO CANDIDATE** *



Read:

INITIAL CONDITIONS:

Today is 9/3/18. Four Senior Reactor Operators have the following work history for the second quarter of 2018 (Plant was in Mode 1 the entire quarter):

SRO 1	Entered second quarter with active license	
	5/01/18	Worked 0700-1900 as Command SRO
	5/02/18	Worked 0700-1900 as Command SRO
	5/03/18	Worked 0700-1900 as Command SRO
	5/07/18	Worked 0700-1500 as Command SRO. Was relieved for 3 hours to obtain required biennial License Physical at the Health Center
	5/08/18	Worked 0700-1900 as Command SRO
	5/17/18	Worked 0700-1500 as Command SRO
	5/16/18	Worked 0700-1900 as Command SRO
SRO 2	NRC Initial License was received in the second quarter	
	6/23/18	Worked 0700-1500 as Command SRO
	6/24/18	Worked 0700-1500 as Command SRO
	6/28/18	Worked 0700-1500 as Shift Technical Advisor
SRO 3	Entered second quarter with active license	
	5/10/18	Worked 0700-1500 as Shift Manager
	5/11/18	Worked 0700-1500 as Shift Manager
	5/18/18	Worked 0700-1500 as Shift Manager
	5/19/18	Worked 0700-1900 as Shift Technical Advisor
	5/20/18	Worked 0700-1900 as Shift Manager
	6/01/18	Worked 0700-1900 as Shift Technical Advisor
	6/02/18	Worked 0700-1900 as Shift Manager
SRO 4	Entered second quarter with active license	
	6/01/18	Worked 0700-1900 as Shift Manager
	6/02/18	Worked 0700-1900 as Command SRO
	6/03/18	Worked 0700-1500 as Shift Manager
	6/09/18	Worked 0700-1900 as Command SRO
	6/10/18	Worked 0700-1500 as WEC Supervisor
	6/25/18	Worked 0700-1300 as Command SRO, relieved due to personal issue
	6/26/18	Worked 0700-1500 as Command SRO

INITIATING CUE:

Based on the previous quarters work history determine the license status as of today, **9/3/18**, for each Senior Reactor Operator and document as **ACTIVE** or **INACTIVE** on this form, include the basis for your determination. Assume all 8 hour and 12 hours shifts included a turnover meeting at the beginning and end of the shift.

NAME: _____

ANSWER:

SRO 1: **ACTIVE** **INACTIVE** **(Circle 1)**
Basis:

SRO 2: **ACTIVE** **INACTIVE** **(Circle 1)**
Basis:

SRO 3: **ACTIVE** **INACTIVE** **(Circle 1)**
Basis:

SRO 4: **ACTIVE** **INACTIVE** **(Circle 1)**
Basis:

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-026 JPM REVISION: 2	JPM TITLE: Review/Approve Completed Surveillance of RHR Pump (SRO ONLY)
--	--

K/A REFERENCE: 2.2.37 4.6 TASK ID: 1320-011-03-023

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 ☐ Yes
Critical: ☒ No

Allotted Time: 20 Minutes

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: 1RH-P-1A is declared inoperable based on unacceptable ΔP **AND** Motor Inboard Axial vibration **NOT** meeting the acceptance criteria.

**RECOMMENDED
STARTING LOCATION:** Classroom

INITIAL CONDITIONS:

- Unit 1 is in Mode 5
- Core Exit Thermocouple temperatures are 110°F
- 1OST-10.1, "Residual Heat Removal Pump Performance Test" has been completed by the RO, and reviewed by the STA
- A **Comprehensive** and **Shutdown Panel Test** was performed

INITIATING CUE: **Review and Approve** the completed Surveillance of RHR Pump 1RH-P-1A to determine operability as defined by **ALL** of the acceptance criteria in step III.A **ONLY**.
Document the results of your review in the comments section of the cover page.

REFERENCES: 1OST-10.1, Residual Heat Removal Pump Performance Test, Rev. 28

TOOLS: None

HANDOUT: 1OST-10.1, Residual Heat Removal Pump Performance Test, Rev. 28, completed **with unacceptable Motor Inboard Axial vibration, and ΔP .**

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-026	JPM TITLE: Review/Approve Completed Surveillance of RHR Pump
JPM REVISION: 2	(SRO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: Provide the candidate with the Handout Materials. Criteria/steps may be checked/verified in any order. </div>	
	START TIME: _____	
1. Refers to IOST-10.1 and associated data provided.	1.1 Consults Acceptance Criteria in step III.A for acceptable performance. COMMENTS:	
2.C [1RH-P-1A], Residual Heat Removal Pump: Operates within the limits of BVPS IST Program (T.S.5.5.4) as specified in the Data Sheets for: Motor Vibration (Data Sheet 2)	2.1 Compares Actual Motor Vibrations on Data Sheet 2 to Acceptable and Alert range. 2.2C Determines Motor Inboard Axial vibration is GREATER THAN Acceptable and Alert Range. COMMENTS:	
3.C [1RH-P-1A], Residual Heat Removal Pump: Operates within the limits of BVPS IST Program (T.S.5.5.4) as specified in the Data Sheets for: Delta-P (Data Sheet 1)	3.1 Compares calculated Delta P on Data Sheet 1 to Acceptable Range. 3.2C Determines calculated Delta P is GREATER THAN Acceptable Range for the Comprehensive Test. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-026	JPM TITLE: Review/Approve Completed Surveillance of RHR Pump
JPM REVISION: 2	(SRO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4.C Complete the front cover sheet.	<p>4.1C Lists the following problems on OST problem sheet:</p> <ul style="list-style-type: none"> • C Motor Inboard Axial vibration is GREATER THAN Acceptable and Alert Range. • C Calculated Delta P is GREATER THAN Acceptable Range for the Comprehensive test. • C Determines that 1RH-P-1A is INOPERABLE. <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: When the Candidate completes the JPM, state "This JPM is complete". </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

INITIAL CONDITIONS:

- Unit 1 is in Mode 5
- Core Exit Thermocouple temperatures are 110°F
- IOST-10.1, "Residual Heat Removal Pump Performance Test" has been completed by the RO, and reviewed by the STA
- A **Comprehensive and Shutdown Panel Test** was performed

INITIATING CUE:

Review and Approve the completed Surveillance of RHR Pump 1RH-P-1A to determine operability as defined by **ALL** of the acceptance criteria in step III.A **ONLY**.

Document the results of your review in the comments section of the cover page.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-023 JPM REVISION: 1	JPM TITLE: Review/Approve LW Discharge (SRO ONLY)
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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"/> 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 ☐ YesCritical: ☒ No

Allotted

Time:

35 Minutes

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:	RWDA-L-TRG is NOT approved for the following reasons: <ol style="list-style-type: none">1. Incorrect tank volume.2. Incorrect alternate radiation monitor alarm setpoint calculation.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<ul style="list-style-type: none">• Unit 1 is at 100% power.• RWDA-L-TRG has been prepared for discharging Coolant Recovery Tank (1BR-TK-4B) to U1 Cooling Tower Blowdown.• Coolant Recovery Tank (1BR-TK-4B) level is 12 feet.• 1OM-17.4.AN, "Discharging A Coolant Recovery Tank To Cooling Tower Blowdown", has been completed up to step IV.D.1
INITIATING CUE:	<ul style="list-style-type: none">• Review/Approve RWDA-L-TRG IAW 1OM-17.4.AN, "Discharging A Coolant Recovery Tank To Cooling Tower Blowdown" and COMPLETE Step IV.D.1 (includes steps 1a & 1b)• Document the results of your approval in appropriate steps of 1OM-17.4.AN, AND in the block below. (Located on candidate direction sheet) ENSURE <u>ALL</u> RESULTS ARE DOCUMENTED.
REFERENCES:	1OM-17.4.AN, "Discharging A Coolant Recovery Tank To Cooling Tower Blowdown", Rev. 9 RWDA-L-TRG with Incorrect Data Tank Curve for BR-TK-4A, 4B
TOOLS:	Calculator
HANDOUT:	1OM-17.4.AN, "Discharging A Coolant Recovery Tank To Cooling Tower Blowdown", Rev. 9 RWDA-L-TRG with incorrect Data Tank Curve for BR-TK-4A, 4B

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-023

JPM REVISION: 1

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

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Provide the candidate a copy of Procedure and Handouts. </div>	
	START TIME: _____	
<p>1.C After the RWDA-L has been generated by Radiation Protection, have the SM OR US review the RWDA-L to confirm the following:</p> <p>The tank data is correct.</p>	<p>1.1C Refers to Tank Curve Book and 1OM-17.4.AN and determines that the tank data is INCORRECT on RWDA-L-TRG. The correct volume for 12 feet should be 78,000 gals. NOT 72,000 gals.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> EVALUATOR NOTE: Candidate may also refer to recirculation time of the tank. The recirculation time is more than the minimum required. </div> <p>COMMENTS:</p>	
<p>2. Confirm the RWDA-L has been Peer Reviewed by Radiation Protection or Environmental/Chemistry.</p>	<p>2.1 Verifies Rad Pro has signed the Peer Reviewed Signature on the RWDA-L</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-023

JPM REVISION: 1

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 Confirms all hand calculations are correct.</p>	<p>3.1C Determines that the alternate radiation Alarm setpoint calculation is INCORRECT.</p> <div data-bbox="662 625 1405 821" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: $10000/35 \times 542$ should equal 1.54E^{-5} NOT 1.54E^{-6} AND this also makes $1.54\text{E}^{-6} \times .7$ INCORRECT. (should be $1.54\text{E}^{-5} \times .7 = 1.08\text{E}^{-5}$)</p> </div> <p>COMMENTS:</p>	
<p>4. Verify the effective period for the RWDA-L has NOT expired.</p>	<p>4.1 Determines RWDA-L is still effective.</p> <div data-bbox="640 1125 1422 1268" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: IAW P&L G on page 4 the RWDA-L is effective for 72 hours from the time the sample was drawn.</p> </div> <p>COMMENTS:</p>	

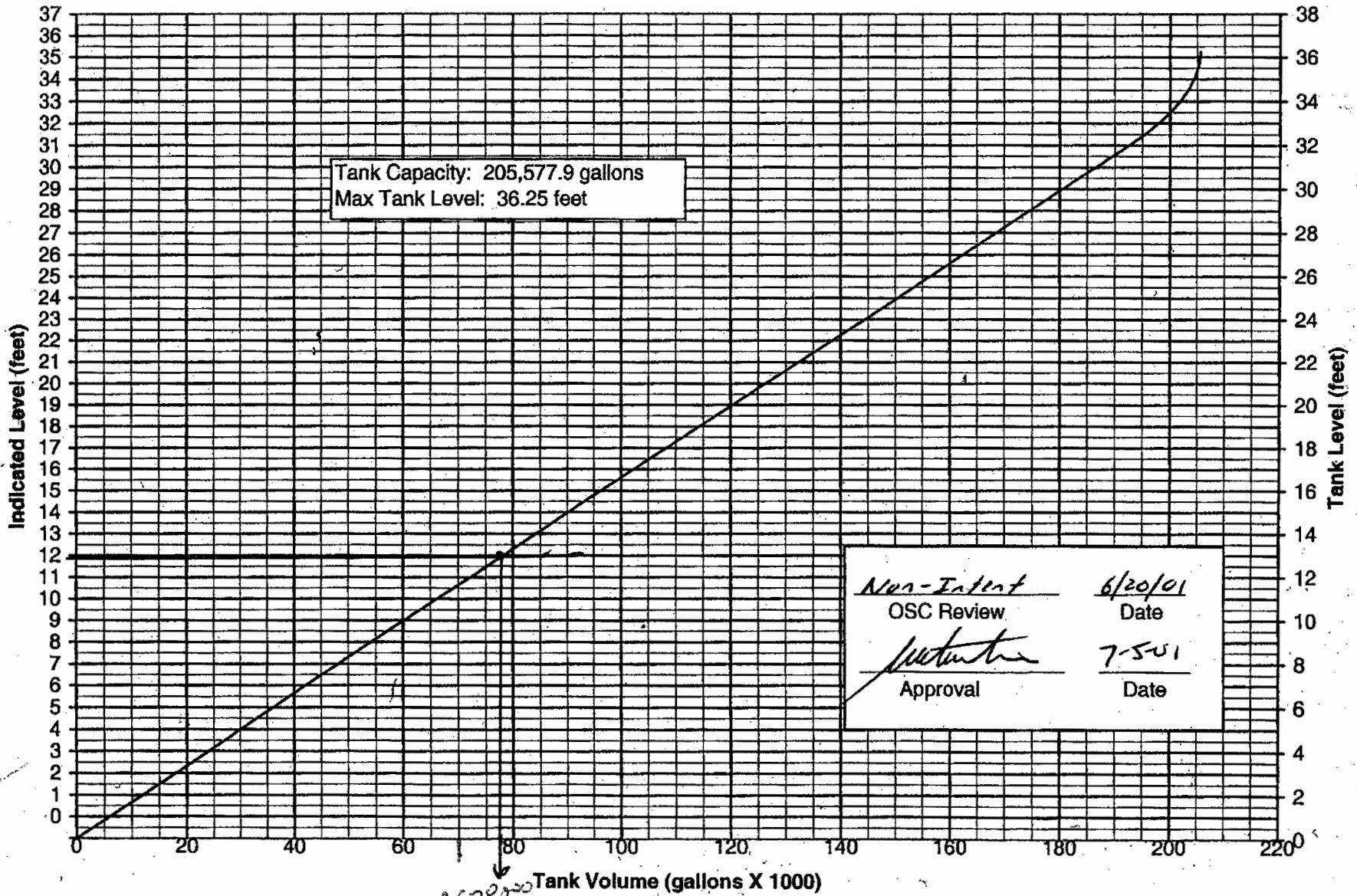
OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-023 JPM REVISION: 1	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 <u>NOT</u> acceptable for discharge, an approval signature is <u>NOT</u> 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: Mark the RWDA-L VOID</p> <p>C Tank volume is incorrect. C Radiation monitor alarm setpoint calculation is incorrect Candidate initials</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>EVALUTOR NOTE: 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> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>EVALUATOR CUE: <u>If necessary remind the candidate to perform ALL of Step IV.D.1.</u> (this cue is necessary only if they think they should go no further after finding first issue)</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>EVALUATOR CUE: That completes this JPM</p> </div>	
	STOP TIME: _____	

**[IBR-TK-4A, 4B]
Coolant Recovery Tanks**

**CONTROLLED
BYPASS UNIT 1**



Prepared By: *[Signature]* Date: 6/19/01 Verified By: *[Signature]* Date: 6/20/01

Revision 2

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

Read:

INITIAL CONDITIONS:

- Unit 1 is at 100% power.
- RWDA-L-TRG has been prepared for discharging Coolant Recovery Tank (1BR-TK-4B) to U1 Cooling Tower Blowdown.
- Coolant Recovery Tank (1BR-TK-4B) level is 12 feet.
- 10M-17.4.AN, "Discharging A Coolant Recovery Tank To Cooling Tower Blowdown", has been completed up to step IV.D.1

INITIATING CUE:

- Review/Approve RWDA-L-TRG IAW 10M-17.4.AN, “Discharging A Coolant Recovery Tank To Cooling Tower Blowdown” and COMPLETE Step IV.D.1 (includes steps 1a & 1b)
- Document the results of your approval in appropriate steps of 10M-17.4.AN, **AND** in the block below. (Located on candidate direction sheet) **ENSURE ALL RESULTS ARE DOCUMENTED.**

RESULTS:

RESULTS:

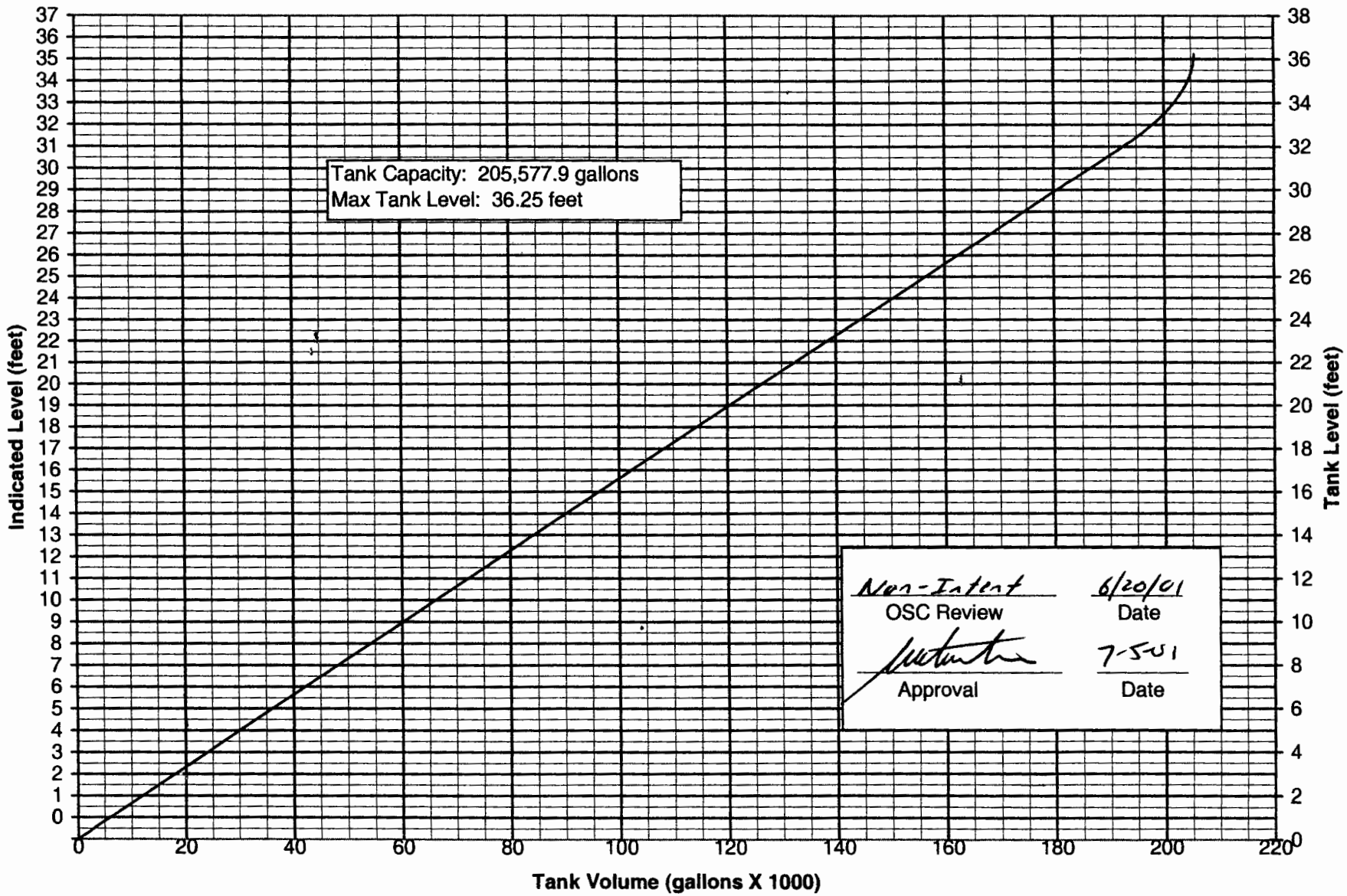
At this time, ask the evaluator any questions you have on this JPM.

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

After determining the Task has been met announce "I have completed the JPM". Then hand this sheet to the evaluator.

**[1BR-TK-4A, 4B]
Coolant Recovery Tanks**



Prepared By: *[Signature]* Date: *6/19/01* Verified By: *[Signature]* Date: *6/20/01*

Revision 2

CONTROLLED
PAGE 1 OF 1

RWDA-L: Part 1, Summary of Discharge Data
Beaver Valley Power Station - 1

RWDA-L- TRG

This permit authorizes the discharge of a maximum of 72000.0 gallons from tank BR-TK-4B at a maximum discharge rate of 35.0 gpm to the environment via U1 blowdown with a minimum total cooling tower blowdown of 10000.0 gpm at Unit 1 and Unit 2 with a monitor High alarm setpoint of $4.9E+02$ cpm and a monitor High-High alarm setpoint of $7.00E+02$ cpm on RM-1LW-104.

(See Below for Alternate Alarm Setpoints)

CAR Today

This tank was recirculated from 4 DAYS AGO at 08:00 to TODAY at 08:00, (at which time it was sampled) for a total of 5760 minutes.

Prepared By <i>Ima Radpro</i> Today Signature _____ Date _____	Reviewed By <i>Peer Checker</i> Today Peer Review Signature _____ Date _____	Remarks:
Cooling Tower Flow Set Unit 1 <i>RAC</i> U1&U2 _____ Init _____ Init _____	Monitor Source Check <i>RAC</i> Init _____	
Monitor Alarms Adjusted HI <i>CAR</i> HI-HI <i>CAR</i> Init _____ Init _____	Approved By U1 Shift Mgr Signature _____ Date _____	Approved By U2 Shift Mgr Signature _____ Date _____
Alternate Alarm Setpoints Refer to 1/2-ENV-05.04		
(Alarm CT B/D) (10000 gpm)		
----- = ----- X 542 = HI - HI = ($1.54E+06$ cpm)		
(Max Exp Disch) (35 gpm)		
HI - HI X 0.70 = HI = ($1.08E+06$ cpm)		

Discharge Record

Discharge Start							Discharge Stop							Vol.	CT Flow, gpm
mo	dy	yr	hr	mn	level	init	mo	dy	yr	hr	mn	level	init	gal.	TOTAL
Discharge Time, min =							Discharge Volume, gal =								
Monitor Alarms Reset HI _____ HI-HI _____ Init _____ Init _____							Reviewed By U1 Shift Mgr Signature _____ Date _____							Reviewed By U2 Shift Mgr Signature _____ Date _____	

Post Release Review

(C.T. Flow (gpm) X (Discharge Time (min) = (Dilution Volume (gal)	
(Discharge Vol (gal) / (C.T. Flow (gpm) = (Post Time (min) / 1.97E+00 = (Dose Corr	
Composite Size _____ ml init _____ date _____	File Update _____ init _____
Post Review Signature _____ Date _____	

EXERCISE USE ONLY

RWDA-L: Part 2, Tank Analysis**RWDA-L- TRG****Beaver Valley Power Station - 1**

Tank: 1BR-TK-4B Tank Volume: 78000.0 gallons = 2.95E+08 ml, Level: 12.0 ft
 Sample Identification: TRG SAMPL Total C.T. Blowdown: 10000.0 gpm

Nuclide	Concentration uCi/ml	OEC Fraction*	Count Rate	EPA-RQ Fraction
Cr-51	1.02E-06	2.04E-04	1.20E+01	5.33E-07
Co-57	4.14E-08	6.90E-05	3.30E+00	2.16E-07
Co-58	2.92E-06	1.46E-02	3.39E+02	1.53E-04
Co-60	1.44E-06	4.80E-02	2.49E+02	7.52E-05
Ag-110m	1.39E-07	2.32E-03	3.88E+01	7.26E-06
CS-137	1.84E-06	1.84E-01	1.25E+02	9.61E-04
SB-125	2.47E-05	8.23E-02	2.15E+03	1.29E-03
H-3	1.11E-01	1.11E+01		5.80E-01
Sum Total	1.11E-01	1.14E+01	2.92E+03	5.82E-01

Total Activity = 5.80E+07 uCi

Maximum Discharge Flow Rate = 3.50E+01 gpm *** SET TO MAXIMUM***

Dilution Factor = 2.87E+02

Noble Gas Concentration in River = 0.00E+00 uCi/ml

EXERCISE USE ONLY

RWDA-L: Part 3, Pre-Release Dose Projections**RWDA-L- TRG****Beaver Valley Power Station - 1**

	uCi/ml	mrem	mrem	mrem	mrem	mrem	mrem	mrem
Nuclide	Concentration	Bone Dose	Liver Dose	Total Body Dose	Thyroid Dose	Kidney Dose	Lung Dose	GI-LLI Dose
Cr-51	1.020E-06	0.000E+00	0.000E+00	9.970E-08	5.950E-08	2.200E-08	1.320E-07	2.510E-05
Mn-54	1.000E-06	0.000E+00	0.000E+00	8.000E-08	5.000E-08	2.000E-08	1.000E-07	2.000E-05
Co-58	2.920E-06	0.000E+00	2.000E-05	4.470E-05	0.000E+00	0.000E+00	0.000E+00	4.000E-04
Fe-59	2.470E-05	9.510E-06	1.060E-07	2.270E-06	9.680E-09	0.000E+00	7.360E-06	1.050E-04
Co-60	1.440E-06	0.000E+00	2.840E-05	6.260E-05	0.000E+00	0.000E+00	0.000E+00	5.330E-04
Zn-65	1.000E-06	5.000E+00	7.000E-02	4.000E-02	0.000E+00	2.000E-02	8.000E-02	1.000E-03
Zr/Nb-95	2.000E-05	9.000E-06	1.000E-07	2.000E-06	9.000E-09	0.000E+00	7.000E-06	1.000E-04
Zr/Nb-97	1.000E-06	0.000E+00	0.000E+00	8.000E-08	5.000E-08	2.000E-08	1.000E-07	2.000E-05
Ag-110m	1.000E-06	5.000E+00	7.000E-02	4.000E-02	0.000E+00	2.000E-02	8.000E-02	1.000E-03
Sb-124	2.000E-05	9.000E-06	1.000E-07	2.000E-06	9.000E-09	0.000E+00	7.000E-06	1.000E-04
Sb-125	2.470E-05	9.510E-06	1.060E-07	2.270E-06	9.680E-09	0.000E+00	7.360E-06	1.050E-04
Cs-134	1.000E-06	5.000E+00	7.000E-02	4.000E-02	0.000E+00	2.000E-02	8.000E-02	1.000E-03
Cs-137	1.840E-06	5.380E+00	7.360E-02	4.820E-02	0.000E+00	2.500E-02	8.300E-02	1.420E-03
Fe-55	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-89	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
H-3	1.110E-01	0.000E+00	2.300E-03	2.300E-03	2.300E-03	2.300E-03	2.300E-03	2.300E-03
Gross Alpha	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Projected Release Dose =		2.038E+01	2.859E-01	1.706E-01	2.300E-03	8.730E-02	3.253E-01	8.128E-03
Unit 1/2 Projected Release Dose =		1.019E+01	1.430E-01	8.531E-02	1.150E-03	4.365E-02	1.627E-01	4.064E-03
Unit 1 Current Month Dose =		6.340E-08	6.530E-05	6.770E-05	6.340E-05	6.340E-05	6.340E-04	6.350E-05
Unit 1 Projected Month Dose =		1.019E+01	1.430E-01	8.538E-02	1.213E-03	4.371E-02	1.633E-01	4.128E-03
Unit 2 Current Month Dose =		6.340E-08	6.530E-05	6.770E-05	6.340E-05	6.340E-05	6.350E-05	1.030E-04
Unit 2 Projected Month Dose =		1.019E+01	1.430E-01	8.538E-02	1.213E-03	4.371E-02	1.627E-01	4.167E-03
Unit 1 Current Quarter Dose =		6.340E-08	6.530E-05	6.770E-05	6.770E-05	6.340E-05	6.340E-05	1.030E-04
Unit 1 Projected Quarter Dose =		1.019E+01	1.430E-01	8.538E-02	1.218E-03	4.371E-02	1.627E-01	4.167E-03
Unit 2 Current Quarter Dose =		6.340E-08	6.530E-05	6.770E-05	6.770E-05	6.340E-05	6.340E-05	1.030E-04
Unit 2 Projected Quarter Dose =		1.019E+01	1.430E-01	8.538E-02	1.218E-03	4.371E-02	1.627E-01	4.167E-03
Unit 1 Current Year Dose =		1.980E-03	3.420E-03	2.570E-03	6.330E-04	1.550E-03	9.380E-04	2.250E-03
Unit 1 Projected Year Dose =		1.019E+01	1.464E-01	8.788E-02	1.783E-03	4.520E-02	1.636E-01	6.314E-03
Unit 2 Current Year Dose =		1.980E-03	3.420E-03	2.570E-03	6.330E-04	1.550E-03	9.380E-04	2.250E-03
Unit 2 Projected Year Dose =		1.019E+01	1.464E-01	8.788E-02	1.783E-03	4.520E-02	1.636E-01	6.314E-03

The sum of the RQ's is < 1; this is not a Reportable Quantity**EXERCISE USE ONLY**

RWDA-L: Part 4, Checklist, Pre-Release Data and Alternate Alarm Setpoint Determination
Beaver Valley Power Station - 1 / 2

RWDA-L- TRG

Initials <u>CAR</u>	: Pre-Release Data obtained from Operations [Ref: procedure 1/2-ENV-05.04]
Initials <u>CAR</u>	: Samples obtained & Valve Verifications performed [Ref: procedure 1/2-HPP-3.06.001]
Initials <u>CAR</u>	: Samples analyzed [Ref: procedure 1/2-ENV-05.25]
Initials <u>CAR</u>	: Sample bottles marked with the RWDA-L number [Ref: procedure 1/2-HPP-3.06.001]
Initials <u>CAR</u>	: RWDA-L prepared via the LIQDIS computer Code [Ref: procedure 1/2-ENV-05.04]
Initials <u>CAR</u>	: Alarm Setpoints adjusted [Form 1-HPP-4.02.001 & 1-HPP-4.02.F01 or 2-HPP-4.02.022.F01 & 2-HPP-4.02.037.F01]
Initials <u>CAR</u>	: RWDA-L turned-over to Control Room Shift Manager or Unit Supervisor [Ref: procedure 1/2-ENV-05.04]
Initials <u>CAR</u>	: Effluent Monitor Readings obtained during discharge [Ref: Form 1/2-ENV-05.04.F01 (page 5 of 5)]

RWDA-L Pre-Release Data: Complete this portion of the form PRIOR to entrance into the LIQDIS Computer Code

Source of Discharge:	<input type="checkbox"/> <U1> Unit 1	<input type="checkbox"/> <U2> Unit 2
Tank	<input type="checkbox"/> <1> for 1LW-TK-6A, or <input type="checkbox"/> <2> for 6B	<input type="checkbox"/> <1> for 2LWS-TK21A, or <input type="checkbox"/> <2> for 21B
Identification:	<input type="checkbox"/> <3> for 1LW-TK-3A, or <input type="checkbox"/> <4> for 3B	<input type="checkbox"/> <3> for 2SGC-TK21A, or <input type="checkbox"/> <4> for 21B
	<input type="checkbox"/> <5> for 1LW-TK-5A, or <input type="checkbox"/> <6> for 5B	<input type="checkbox"/> <5> for 2SGC-TK23A, or <input type="checkbox"/> <6> for 23B
	<input type="checkbox"/> <7> for 1LW-TK-7A, or <input type="checkbox"/> <8> for 7B	<input type="checkbox"/> <7> for 1BR-TK-4A, or <input type="checkbox"/> <8> for 4B
Note #1: Use <input type="checkbox"/> <7> for Other Releases (e.g.: Chemical Waste Sump)		Note: Use <input type="checkbox"/> <1> for Other Releases (e.g.: Fire Sump)
Note #2: Use Unit 2 for Releases from Coolant Recovery Tanks 1BR-TK-4A/B		

Tank Volume:	78,000 gallons	Tank Level:	[12] feet, or [] inches
Recirculation Start:	4 DAYS AGO 0800 hours	Sample Time:	TODAY at 08:00 hours -- -- --
	Day Month Year Hr Min		Day Month Year Hr Min
Sample ID: <input type="checkbox"/> Unit 1 Sample ID No. TRG SAMPL, or <input type="checkbox"/> Unit 2 Sample ID No.			
Minimum CT Flow from Unit 1 and Unit 2: 10,000 gpm (As a Guide, Operations will provide this value based on the "Low Alarm Setpoint" minus ~ 500 gpm)			
Discharge Path: <input type="checkbox"/> <U1> Send Liquid Waste to Unit 1 CT Blowdown, or <input type="checkbox"/> <U2> Send Liquid Waste to Unit 2 CT Blowdown			

Sample Concentrations	NOTE: For independent sampling, record the highest nuclide concentration from each sample	
Particulates	uCi/ml	Noble Gas
Na-24		Ar-41
Cr-51 1.02E-6		Kr-85
Mn-54		Xe-131m
Co-57 4.14E-8		Xe-133
Co-58 2.92E-6		Xe-133m
Co-60 1.44E-6		Xe-135
Fe-59		Xe-135m
Zn-65		
Zr-97 / Nb-97		
Mo-99 / Tc-99m		
Ag-110m 1.39E-7		
Sb-124		
Sb-125 2.47E-5		
I-131		
Zr-95 / Nb-95		If >1E-4, reprocess, or obtain Administrative Guide Relief, as shown >>>>
Cs-134		If >3E-6, reprocess, or obtain Administrative Guide Relief, as shown >>>>
Cs-137 1.84E-6		If >4E-6, reprocess, or obtain Administrative Guide Relief, as shown >>>>
Total Particulate 3.21E-5		If >1E-4, reprocess, or obtain Administrative Guide Relief, as shown >>>>

Independent / Replicate Sample Comparison:
<input type="checkbox"/> No radiation monitor available for the discharge path: (See ODCM procedure 1/2-ODC-3.03, Table 3.3-12, Action 23)
<input type="checkbox"/> Replicate sample was requested by Chemistry supervision: (See NRC Regulatory Guide 4.15, Section C.5)
uCi/ml = Total gamma concentration from 1st Sample
uCi/ml = Total gamma concentration from 2nd Sample
% Diff = $\frac{100}{(1st - 2nd)}$ (2nd)
The total gamma concentration of the 1st & 2nd samples shall agree within a factor of 2 (i.e.: % Diff is between -50% to +100%).

ADMINISTRATIVE GUIDE RELIEF:
Reprocessing is not practical per Shift Manager
IF Administrative Guide Relief is obtained from Shift Manager, THEN
CR _____ was generated
to address the need to reduce existing Administrative Guide values for future discharges during the applicable calendar month, quarter(s), and year.

Prepared By: <u>Chuck A Reda</u>	SAP ID No.: 12345	Date: TODAY
Peer Review Signature: <u>Imdaa Peer</u>	SAP ID No.: 67890	Date: TODAY

Alternate Alarm Setpoint Determination: Complete this portion of the form AFTER exit from the LIQDIS Computer Code

<input type="checkbox"/> RM-1LW-104: Is Total Particulate >3.14E-3 uCi/ml ?	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> IF YES, THEN Alternate Alarm Setpoints SHALL NOT be used
<input type="checkbox"/> RM-1LW-116: Is Total Particulate >7.33E-3 uCi/ml ?	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> IF NO, THEN Alternate Alarm Setpoints MAY be used
<input type="checkbox"/> 2SGC-RQ100: Is Total Particulate >1.14E-3 uCi/ml ?	<input type="checkbox"/> YES <input type="checkbox"/> NO	See procedure 1/2-ENV-05.04 for additional guidance
Prepared By: <u>Chuck A Reda</u>	SAP ID No.: 12345	Date: TODAY
Peer Review Signature: <u>Imdaa Peer</u>	SAP ID No.: 67890	Date: TODAY

RWDA-L: Part 5, Effluent Radiation Monitor Tracking
Beaver Valley Power Station - 1 / 2

RWDA-L- TRG

Tank Identification: 1BR-TK-4B

Discharge Period		See RWDA Cover Sheet for Actual Times
Initial Start Date/Time: _____ / _____	Final Stop Date/Time: _____ / _____	

Effluent Radiation Monitor & Determination of Predicted Range of Readings During Discharge:	
[v] Unit 1 Liquid Waste Tank Discharge via [RM-1LW-104]:	
RWDA-L Count Rate: Form 1/2-ENV-05.04.F01 (page 2 of 5) = <u>2920</u> net cpm	RM-1LW-104 bkgd = _____ cpm
NOTE: MDCR = Minimum Detectable Count Rate	RM-1LW-104 Gross HSP = _____ cpm
	RM-1LW-104 Gross HHSP = _____ cpm
[] IF the RWDA-L Count Rate is $\leq 1,141$ net cpm (MDCR), THEN the discharge is controlled by the alarm setpoints (No further calculations required).	
[v] IF the RWDA-L Count Rate is $> 1,141$ net cpm, THEN determine the Predicted Range of Readings for control of the discharge, as follows:	
Maximum = (RWDA-L Count Rate <u>2920</u> cpm) \times (2) + (bkgd _____ cpm) = _____ cpm	
Minimum = (RWDA-L Count Rate <u>2920</u> cpm) \div (2) + (bkgd _____ cpm) = _____ cpm	
[] Unit 1 Laundry & Shower Drain Tank Discharge via [RM-1LW-116]:	
RWDA-L Count Rate: Form 1/2-ENV-05.04.F01 (page 2 of 5) = _____ net cpm	RM-1LW-116 bkgd = _____ cpm
NOTE: MDCR = Minimum Detectable Count Rate	RM-1LW-116 Gross HSP = _____ cpm
	RM-1LW-116 Gross HHSP = _____ cpm
[] IF the RWDA-L Count Rate is ≤ 236 net cpm (MDCR), THEN the discharge is controlled by the alarm setpoints (No further calculations required).	
[] IF the RWDA-L Count Rate is > 236 net cpm, THEN determine the Predicted Range of Readings for control of the discharge, as follows:	
Maximum = (RWDA-L Count Rate _____ cpm) \times (2) + (bkgd _____ cpm) = _____ cpm	
Minimum = (RWDA-L Count Rate _____ cpm) \div (2) + (bkgd _____ cpm) = _____ cpm	
[] Unit 2 Liquid Waste Tank Discharge via [2SGC-RQ100]:	
RWDA-L Count Rate: Form 1/2-ENV-05.04.F01 (page 2 of 5) = _____ net cpm	2SGC-RQ100 bkgd = _____ uCi/ml
NOTE: MDCR = Minimum Detectable Count Rate	2SGC-RQ100 Gross ASP = _____ uCi/ml
	2SGC-RQ100 Gross HSP = _____ uCi/ml
[] IF the RWDA-L Count Rate is ≤ 247 net cpm (MDCR), THEN the discharge is controlled by the alarm setpoints (No further calculations required).	
[] IF the RWDA-L Count Rate is > 247 net cpm, THEN determine the Predicted Range of Readings for control of the discharge, as follows:	
Maximum = (RWDA-L Count Rate _____ cpm) \times (5.61E-9 uCi/ml/cpm) \times (2) + (bkgd _____ uCi/ml) = _____ uCi/ml	
Minimum = (RWDA-L Count Rate _____ cpm) \times (5.61E-9 uCi/ml/cpm) \div (2) + (bkgd _____ uCi/ml) = _____ uCi/ml	

Gross Effluent Radiation Monitor Readings:		NOTE: Record actual reading (ie: Do Not Round Down)
Obtain At Least 2 Effluent Monitor Readings Per Discharge, AND At Least 1 Per 8 hr Shift For the Applicable Monitor:		
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____
Date / Time _____ / _____	Reading _____	Is reading within range? Yes [] No [] RT Initials _____ : SAP No. _____

Final Review of all Monitor Readings by Chemistry Supervision:	
Gross Calculated Monitor Reading = _____ [] cpm, [] uCi/ml	
% Difference = (Max Obs Reading - Calc Reading) / Calc Reading = _____ % [] Sat [] Unsat	
NOTES: Sat = SATISFACTORY: % Difference is Within a Factor of 2 (-50% to +100%) Unsat = UNSATISFACTORY: % Difference is Outside the "Sat" Range.	
Reviewed By: _____ SAP No: _____ Date: _____	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-020 JPM REVISION: 2	JPM TITLE: Determine Reporting Requirements for an Event (SRO Only)
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K/A REFERENCE: 2.4.30

4.1

TASK ID: 1330-026-03-023

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 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:	Identifies by 1400 hours, RPS Actuation <u>AND</u> by 1415 hours, ECCS Actuation must be reported to the NRC.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<p>Plant Conditions:</p> <ul style="list-style-type: none">• A Reactor Trip from 100% power occurred at 1000.• Due to excessive Reactor Coolant System cooldown, Safety Injection actuated at 1015.• Emergency Plan has NOT been implemented.• All equipment functioned as designed.
INITIATING CUE:	Using NOP-OP-1015 and NOBP-OP-1015, you are to determine the <u>latest</u> time that each event must be communicated to the NRC for the stated plant initial conditions <u>AND</u> record the time(s), specific event(s), and Notification Number(s). in the "DETERMINATION" section of the Candidate Direction Sheet.
REFERENCES:	<p>NOP-OP-1015, "Event Notifications", Rev. 6 NOBP-OP-1015, "Event Notifications", Rev. 11 10CFR50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors", Latest Rev. 10CFR50.73, "Licensee Event Report System", Latest Rev. NUREG 1022, "Event Report Guidelines 10CFR 50.72 and 50.73", Rev. 3</p>
TOOLS:	None
HANDOUT:	<p>NOP-OP-1015, "Event Notifications", Rev. 6 NOBP-OP-1015, "Event Notifications", Rev. 11</p>

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-020 JPM REVISION: 2	JPM TITLE: Determine Reporting Requirements for an Event (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;"> EVALUATOR NOTE: Provide the candidate a copy of NOP-OP-1015 and NOBP-OP-1015. </div>	
	START TIME: _____	
1.C Refers to NOP-OP-1015, "Event Notifications", NOBP-OP-1015, "Event Notifications" to determine which events are reportable.	1.1 Reviews NOP-OP-1015 and NOBP-OP-1015, may use Attachment 2 Operations Event Decision Tree to aid in determining the Notification Numbers. 1.2C Determines that the Reactor Trip is Reportable. 1.3C Determines that the Safety Injection is Reportable 1.4 Determines that the Auxiliary Feedwater system actuation is reportable. <div style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Candidate may also state that the NRC Resident would also be notified of these events. </div> COMMENTS:	
2.C Determines RPS actuation (Reactor Trip) requires a notification to the NRC within 4 hours.	2.1C Determines that the NRC must be notified by 1400 (4 hours from 1000) for the RPS Actuation (Reactor Trip). 2.2 Notification number is O1.11 RPS Actuation (Attachment 18) from NOBP-OP-1015. COMMENTS:	

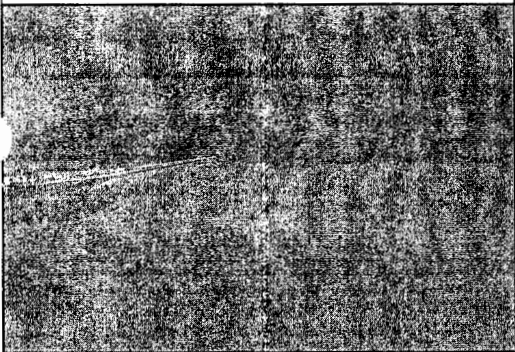



OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-020 JPM REVISION: 2	JPM TITLE: Determine Reporting Requirements for an Event (SRO Only)
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3.C Determines ECCS actuation (Safety Injection) requires a notification to the NRC within 4 hours.	3.1C Determines that the NRC must be notified by 1415 (4 hours from 1015) for the ECCS Actuation (SIS). 3.2 Notification number is O1.10 ECCS Injection / Actuation (Attachment 17) from NOBP-OP-1015. COMMENTS:	
4. Determines ECCS actuation (Safety Injection) requires a notification to the NRC within 4 hours.	4.1 Determines that the NRC must be notified by 1815 (8 hours from 1015) for the AFW Actuation (if based on the start signal from the SIS). 4.2 Notification number is O1.14 System Actuation Not Including RPS (Attachment 21) from NOBP-OP-1015. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> EVALUATOR NOTE: This notification would typically be made with the ECCS Actuation notification. </div> COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-020 JPM REVISION: 2	JPM TITLE: Determine Reporting Requirements for an Event (SRO Only)
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5. Documents the Notification Time, Event and Notification Number on the candidate direction sheet.	5.1 Documents the reporting information on the candidate direction sheet. COMMENTS:	
	<div> EVALUATOR CUE: Grader discretion may be required. When the candidate documents findings in Candidate Comments section of Candidate Direction Sheet, state that "The evaluation for this JPM is complete". </div>	
	STOP TIME: _____	

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Identifies by 1400 hours, RPS Actuation <u>AND</u> by 1415 hours, ECCS Actuation must be reported to the NRC.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	<p>Plant Conditions:</p> <ul style="list-style-type: none">• A Reactor Trip from 100% power occurred at 1000.• Due to excessive Reactor Coolant System cooldown, Safety Injection actuated at 1015.• Emergency Plan has NOT been implemented.• All equipment functioned as designed.
INITIATING CUE:	Using NOP-OP-1015 and NOBP-OP-1015, you are to determine the <u>latest</u> time that each event must be communicated to the NRC for the stated plant initial conditions <u>AND</u> record the time(s), specific event(s), and Notification Number(s). in the "DETERMINATION" section of the Candidate Direction Sheet.
REFERENCES:	<p>NOP-OP-1015, "Event Notifications", Rev. 6 NOBP-OP-1015, "Event Notifications", Rev. 11 10CFR50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors", Latest Rev. 10CFR50.73, "Licensee Event Report System", Latest Rev. NUREG 1022, "Event Report Guidelines 10CFR 50.72 and 50.73", Rev. 3</p>
TOOLS:	None
HANDOUT:	<p>NOP-OP-1015, "Event Notifications", Rev. 6 NOBP-OP-1015, "Event Notifications", Rev. 11</p>

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640 JPM REVISION: 4	JPM TITLE: Raise Reactor Power To 10 ⁻⁸ Amps
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K/A REFERENCE: 001 A2.11 4.4/4.7 TASK ID: 0011-014-01-013
001 AA1.05 4.3/4.2 0535-008-04-013

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: 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:	<p>Raises Reactor Power to > P-6.</p> <p>Blocks source range hi flux trip by placing the Block Source Range Trip Train A and Train B control switches to BLOCK.</p> <p>Trips the reactor in response to inappropriate continuous control rod motion.</p>
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<p>A reactor startup is in progress in accordance with 1OM-50.4.D2, "Reactor Startup From Mode 3 To Mode 2" following a reactor trip from 100% power.</p> <p>The following conditions exist:</p> <ul style="list-style-type: none">• All shutdown bank rods are fully withdrawn• Control Bank "D" is at 91 steps• The estimated critical position is 100 steps on Control Bank "D"
INITIATING CUE:	The Unit Supervisor directs you to withdraw control rods to criticality in accordance with 1OM-50.4.D2 beginning at Step IV.D.14.b.
REFERENCES:	<p>1OM-50.4.D2, "Reactor Startup From Mode 3 To Mode 2", Rev 2</p> <p>1OM-50.4.F, "Performing an Estimated Critical Position Calculation", Rev 9</p> <p>1OM-53C.4.1.1.3, "Unexpected Control Rod Movement", Rev. 15</p>
TOOLS:	None
HANDOUT:	<p>1OM-50.4.D2, "Reactor Startup From Mode 3 To Mode 2", Rev 2 place kept up to step IV.D.14.b.</p> <p>1OM-50.4.F, "Performing an Estimated Critical Position Calculation", Rev 9. Have ECP and partial 1/M plot completed.</p> <p>Have copies of AOP-1.1.3 Rev. 15 available to replace simulator copy, if necessary.</p>

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640 JPM REVISION: 4		JPM TITLE: Raise Reactor Power To 10^{-8} Amps	
STEP ("C" Denotes CRITICAL STEP)		STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
		SIMULATOR SETUP: Start with IC-4, drive rods in to clear P-6, reset SR Block, and put SR HV Manual ON/OFF switches to HV ON. Set trg1 = 'xs03b11.and.x07i075o' Overridr – x07i085d (inhibits auto rods) Insert MALF crf05b (1 0) on trg 1 Ensure CB-D is at 91 steps. Monitor FNISIR, adjust boron until FNISIR \approx -10.05 Snap and save IC.	
		EVALUATOR NOTE: <ul style="list-style-type: none"> • Ensure Control Bank D rods are at 91 steps and Bank C at 219, all other banks are set at 230. • Ensure SR & IR NI Trend is setup on PC Screen (from trend menu) 	
		START TIME: _____	
1. Reviews 1OM-50.4.D2, "Reactor Startup From Mode 3 To Mode 2", 1OM-50.4.F, "Performing an Estimated Critical Position Calculation", Data Sheet 3 & associated 1/M Plots.		1.1 Reviews 1OM-50.4.D, 1OM-50.4.F (Data Sheet 3), and 1/M Plot. EVALUATOR CUE: After candidate has reviewed paperwork and is ready to continue the procedure, place the simulator in RUN. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640 JPM REVISION: 4	JPM TITLE: Raise Reactor Power To 10 ⁻⁸ Amps
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2.C Initiate control rod withdrawal.	<p>EVALUATOR CUE: Role play Shift Manager and inform the candidate the ICRR is less than 0.25, and to withdraw control rods at 5 step increments.</p> <p>2.1C Withdraws control rods at less than 25 step increments.</p> <p>COMMENTS:</p>	
3. WHEN BB-B, Status Light D-11, "P-6", turns ON at 1E-10 amps, Perform the following: Verify both source ranges HV Manual ON/OFF switches are in the NORMAL position.	<p>EVALUATOR NOTE: This step is performed when P-6 actuation occurs.</p> <p>EVALUATOR CUE: If asked, state that another Operator will monitor the reactor when candidate goes to the NI panel.</p> <p>3.1 Places both source ranges HV Manual ON/OFF switches are in the NORMAL position after verifying on Status Light Panel 176 that P-6 Light – LIT.</p> <p>COMMENTS:</p>	
4. Record Source Range Neutron Level indications:	<p>4.1 Records source range indication for N31 and N32 in step 15.b of 1OM-50.4.D2.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640
JPM REVISION: 4

JPM TITLE: Raise Reactor Power To 10^{-8} Amps

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5. Verify annunciators A4-85 and A4-87, "NIS SOURCE RANGE CH 1(2) DETECTOR VOLTAGE TROUBLE" are ON.	5.1 Verifies annunciators A4-85 and A4-87 are in alarm. COMMENTS:	
6. Select both IR channels to indicate on recorder NR45.	6.1 Places NI SYS RECORDER SEL SW 1N45 and 2N45 to record IR channels N35 and N36. COMMENTS:	
7.C Block source range hi flux trip.	7.1C Places BLOCK SOURCE RANGE TRIP TRAIN A AND TRAIN B control switches to BLOCK. COMMENTS:	
<div data-bbox="664 1419 1427 1562" data-label="Text"> <p>FAULT STATEMENT Following the block of the source range trip, rods will step out continuously upon next rod withdrawal.</p> </div>		
8. Verify the Source Range High Voltage is de-energized.	8.1 Verifies Source Range DETECTOR VOLTS indicate zero. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640 JPM REVISION: 4	JPM TITLE: Raise Reactor Power To 10 ⁻⁸ Amps
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
9. Verify annunciators A4-85 AND A4-87, "NIS SOURCE RANGE CH 1(2) DETECTOR VOLTAGE TROUBLE" are OFF.	9.1 Verifies annunciators A4-85 AND A4-87 are NOT in alarm. COMMENTS:	
10. Continue incremental rod withdrawal (at a rate determined by the SM, but NOT to exceed 25 step increments) UNTIL the reactor is critical as indicated by a stable positive startup rate, with no rod motion, on the intermediate range instrumentation once the prompt jump has receded.	<div> EVALUATOR CUE: Role play Shift Manager and remind the candidate the ICRR is less than 0.25, and to withdraw control rods at no more than 5 step increments to either take the reactor critical. </div> 10.1 Continues rod withdrawal to either take the reactor critical. COMMENTS:	
11. Determine that rods are withdrawing with NO demand signal.	11.1 Candidate determines from ROD STEP COUNTER CONTROL BK D GROUP 1 and GROUP 2 ROD POSITION indication that rods are withdrawing with NO demand signal. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-640 JPM REVISION: 4	JPM TITLE: Raise Reactor Power To 10^{-8} Amps
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR NOTE: Candidate may refer to AOP-1.1.3, Unexpected Control Rod Movement, prior to performing the following Immediate Operator Actions.	
12. Places Control Rod Bank Sel Switch to AUTO in accordance with AOP-1.1.3 IOAs.	12.1 Places the Control Rod Bank Sel Switch to AUTO. 12.2 Determines that the rods are continuing to withdraw. COMMENTS:	
13.C Trip the reactor in response to unexpected continuous rod motion step 1 RNO.	13.1C Trips the reactor by placing the Reactor Trip control switch to the TRIP position. 13.2 Verifies Rx Trip breakers open. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete"	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

A reactor startup is in progress in accordance with 1OM-50.4.D2, "Reactor Startup From Mode 3 To Mode 2" following a reactor trip from 100% power.

The following conditions exist:

- All shutdown bank rods are fully withdrawn
- Control Bank "D" is at 91 steps
- The estimated critical position is 100 steps on Control Bank "D"

INITIATING CUE:

The Unit Supervisor directs you to withdraw control rods to criticality in accordance with 1OM-50.4.D2 beginning at Step IV.D.14.b.

☐ At this time, ask the evaluator any questions you have on this JPM.

☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570 JPM REVISION: 5	JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation
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K/A REFERENCE: 006A4.07 4.4/4.4 TASK ID: 0111-019-01-013

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: 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:

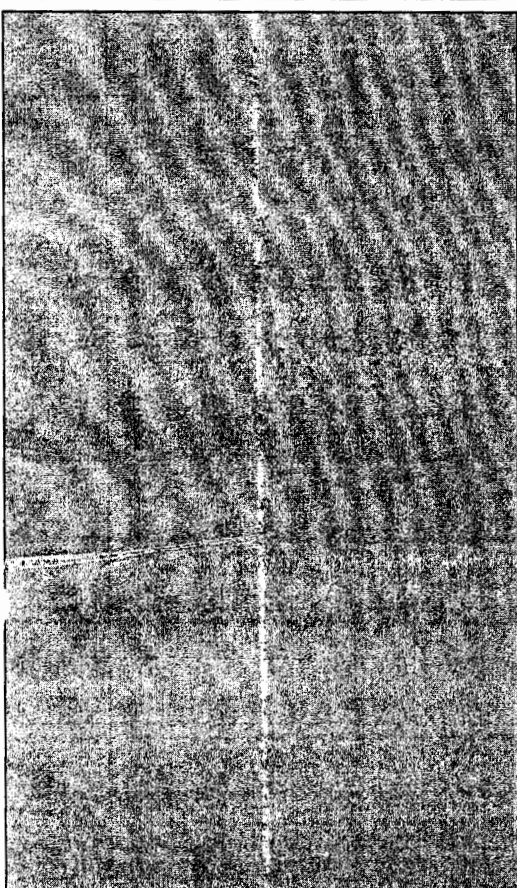

EVALUATOR	
Evaluator (Print): _____	Date: _____
Evaluator Signature: _____	

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	LHSI Pumps are aligned for simultaneous cold leg and hot leg recirculation.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none">• It has been approximately 6.5 hours since the plant experienced a Loss of Coolant Accident.• All required procedures have been performed to this point with the plant currently on cold leg recirculation.• The TSC has recommended aligning to simultaneous cold leg and hot leg recirculation.
INITIATING CUE:	Your supervisor directs you to align simultaneous cold leg and hot leg recirculation in accordance with ES-1.4.
REFERENCES:	1OM-53A.1.ES-1.4 Issue 3 Revision 0
TOOLS:	Shorting Bar(s) (keep in pocket until requested by candidate) (will need only 1 shorting bar)
HANDOUT:	1OM-53A.1.ES-1.4 Issue 3 Revision 0

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570 JPM REVISION: 5	JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation	
STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p>SIMULATOR SETUP: Initialize to any at power IC Set. Insert VLV-SIS24 to prevent MOV-1SI-864A from closing. (JPM FAULT) Insert MALF RCS02D and SIS1 to 1000. Perform E-0 to E-1 to ES-1.3 back to E-1 then to ES-1.4 at E-1 step 29. This will include tripping RCPs, Resetting Reheat Controller, Aligning NR-NI-45 to operable SR & IR displays, Resetting SI & CIA & CIB, Stopping Quench Spray Pumps and placing in AUTO, Closing MOV-1QS-101A & B, Reducing AFW flow when NR S/G level are between 31% – 65%, Closing MOV-1SI-865A, B, C, and Opening MOV-1SI-863 at the appropriate times as directed by the EOPs. Freeze & Snap.</p> <p>EVALUATOR CUE: Ensure shorting bar is available. Keep them in your pocket until requested. Shorting bar removal is NOT critical.</p>	
	START TIME: _____	
1. Review ES-1.4, "Transfer To Simultaneous Cold Leg And Hot Leg Recirculation".	<div data-bbox="645 1457 1409 1551" style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR CUE: Provide copy of ES-1.4. </div> 1.1 Reviews ES-1.4 and begins at step 1. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570 JPM REVISION: 5	JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2. Check 4KV Emergency Busses- Energized from Offsite Source.	2.1 Checks 1AE and 1DF busses voltmeters indicate normal voltage. 2.1 Busses 1AE and 1DF are energized from SSSTs 1A and 1B. COMMENTS:	
3. LHSI Pumps - NO SIGNS OF CAVITATION.	3.1 Checks flow indicators and pump ammeters for both LHSI pumps. 3.2 Determines flow and amps are stable and that there are NO indications of LHSI Pump cavitation. COMMENTS:	
<div style="border: 1px solid black; padding: 10px; text-align: center;"> FAULT STATEMENT: Alternate path starts here, MOV-1SI-864A will <u>NOT</u> close. </div>		

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570 JPM REVISION: 5	JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation
--	--

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
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<p>4.C Align 1A LHSI pump for Hot Leg Recirculation.</p> <p>a. Check 1A LHSI Pump – RUNNING.</p> <p>b. Close [MOV-1SI-864A], 1A LHSI To RCL Cold Leg.</p> <p>Step 3.b. RNO actions; Perform the following:</p> <p>1) Insert shorting bar into jacks for [MOV-1SI-890C], LHSI to RCS Hot Legs</p> <p>2) Close [MOV-1SI-890C]</p> <p>3) Remove shorting bar.</p> <p>4) Close [MOV-1SI-864B], 1B LHSI To RCL Cold Leg.</p>	<p>4.1 Checks flow indicator, pump ammeter and breaker position for 1A LHSI pump.</p> <p>4.2 Places [MOV-1SI-864A] to CLOSE.</p> <p>4.3 Observes RED Light – remains LIT and GREEN Light – NOT LIT.</p> <p>4.4 Determines [MOV-1SI-864A] failed to CLOSE and RNO step actions are applicable.</p> <p>4.5C Obtains shorting bar and inserts it into the VB-A jack for [MOV-1SI-890C].</p> <p>4.6 Verifies Red inservice or Ground Light LIT.</p> <p>4.7C Places [MOV-1SI-890C] to CLOSE.</p> <p>4.8 Verifies GREEN Light – LIT and RED Light – NOT LIT.</p> <p>4.9. Removes shorting bar from the VB-A jack for [MOV-1SI-890C].</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR NOTE: There are NO failures on MOV-1SI-864B, Valve has long stroke time.</p> </div> <p>4.10C Places [MOV-1SI-864B] to CLOSE.</p> <p>4.11 Verifies GREEN Light – LIT and RED Light – NOT LIT.</p> <p>COMMENTS:</p>	
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OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570	JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation
JPM REVISION: 5	

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
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<p>5.C Align 1A LHSI pump for Hot Leg Recirculation. (continued)</p> <p>c. Insert shorting bar into jacks for [MOV-1SI-890A], 1A LHSI to RCS Hot Legs</p> <p>d. Open [MOV-1SI-890A]</p> <p>e. Remove shorting bar.</p> <p>f. Check proper operation of the following pumps:</p> <ul style="list-style-type: none"> ▪ 1A LHSI Pump ▪ Operating HHSI Pumps 	<p>5.1C Obtains shorting bar and inserts it into the VB-A jack for [MOV-1SI-890A].</p> <p>5.2 Verifies Red inservice or Ground Light LIT.</p> <p>5.3C Places [MOV-1SI-890A] to OPEN.</p> <p>5.4 Verifies RED Light – LIT and GREEN Light – NOT LIT.</p> <p>5.5 Removes shorting bar from the VB-A jack for [MOV-1SI-890A].</p> <p>5.6 Checks flow indicator and pump ammeter for 1A LHSI pump.</p> <p>5.7 Determines flow and amps are stable and that 1A LHSI pump is operating properly.</p> <p>5.8 Checks flow indicators and pump ammeters for 1A and 1B HHSI pumps.</p> <p>5.9 Determines flow and amps are stable and that both HHSI pumps are operating properly.</p> <p>COMMENTS:</p>	
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OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570
JPM REVISION: 5

JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. Align 1B LHSI pump for Hot Leg Recirculation</p> <p>a. Check 1B LHSI Pump – RUNNING.</p> <p>b. Close [MOV-1SI-864B], 1B LHSI To RCL Cold Leg.</p>	<p>6.1 Checks flow indicator, pump ammeter and breaker position for 1B LHSI pump.</p> <p>6.2 Determines flow and amps are stable for the 1B LHSI pump.</p> <p>6.3 Verifies RED Light – LIT and WHITE Light – NOT LIT.</p> <p>6.4 Verifies that 1B LHSI pump is running.</p> <div data-bbox="690 919 1367 1031" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR NOTE: Valve was closed in previous step as part of Alternate Path actions.</p> </div> <p>6.5 Verifies GREEN Light – LIT and RED Light – NOT LIT for [MOV-1SI-864B]</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570

JPM REVISION: 5

JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>7.C Align 1B LHSI pump for Hot Leg Recirculation. (continued)</p> <p>c. Insert shorting bar into jacks for [MOV-1SI-890B], 1B LHSI to RCS Hot Legs</p> <p>d. Open [MOV-1SI-890B]</p> <p>e. Remove shorting bar.</p> <p>f. Check proper operation of the following pumps:</p> <ul style="list-style-type: none"> ▪ 1B LHSI Pump ▪ Operating HHSI Pumps 	<p>7.1C Obtains shorting bar and inserts it into the VB-A jack for [MOV-1SI-890B].</p> <p>7.2 Verifies Red inservice or Ground Light LIT.</p> <p>7.3C Places [MOV-1SI-890B] to OPEN.</p> <p>7.4 Verifies RED Light – LIT and GREEN Light – NOT LIT.</p> <p>7.5 Removes shorting bar from the VB-A jack for [MOV-1SI-890B].</p> <p>7.6 Checks flow indicator and pump ammeter for 1B LHSI pump.</p> <p>7.7 Determines flow and amps are stable and that 1B LHSI pump is operating properly.</p> <p>7.8 Checks flow indicators and pump ammeters for 1A and 1B HHSI pumps.</p> <p>7.9 Determines flow and amps are stable and that both HHSI pumps are operating properly.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-570 JPM REVISION: 5		JPM TITLE: Align SI Pumps for Hot/Cold Leg Recirculation	
STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U	
8. RETURN to Procedure And Step In Effect.	8.1 Indicates that a transition back to the previous procedure would now occur. COMMENTS:		
	<div style="border: 1px solid black; padding: 5px; width: fit-content;">EVALUATOR CUE: State "This JPM is complete"</div>		
	STOP TIME: _____		

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

- It has been approximately 6.5 hours since the plant experienced a Loss of Coolant Accident.
- All required procedures have been performed to this point with the plant currently on cold leg recirculation.
- The TSC has recommended aligning to simultaneous cold leg and hot leg recirculation.

INITIATING CUE:

Your supervisor directs you to align simultaneous cold leg and hot leg recirculation in accordance with ES-1.4.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554 JPM REVISION: 7	JPM TITLE: Depressurize the RCS During Natural Circulation Cooldown
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K/A REFERENCE: 010 A4.03 4.0/3.8 TASK ID: 0061-009-01-013
E09 EA1.1 3.7/3.5

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

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

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD: Safety Injection (Low PRZR Pressure and Low Steam-Line Pressure) is blocked and NOT actuated and NOT subsequently UNBLOCKED.

RECOMMENDED STARTING LOCATION: Simulator

INITIAL CONDITIONS: A natural circulation cooldown is in progress. The crew is proceeding through ES-0.2, "Natural Circulation Cooldown", and have reached Step 9. The cooldown is being performed by the BOP using the condenser steam dumps.

INITIATING CUE: Your supervisor directs you as RO to depressurize the RCS, Block Safety Injection Actuation signals, and maintain RCS pressure less than the unblock setpoint in accordance with ES-0.2, beginning with step 9.

REFERENCES: 1OM-53A.1.ES-0.2, "Natural Circulation Cooldown", Iss. 3, Rev. 0

TOOLS: None

HANDOUT: 1OM-53A.1.ES-0.2, "Natural Circulation Cooldown", Iss. 3, Rev. 0 place kept up to step 9.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554 JPM REVISION: 7		JPM TITLE: Depressurize the RCS During Natural Circulation Cooldown	
STEP ("C" Denotes CRITICAL STEP)		STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒ S/U	
		SIMULATOR SETUP: Select a 100% Power IC. Set VLV-CHS16 to 0 to prevent opening MOV-1CH-311. (This forces alternate path for depressurization via PORV). Trip the plant and secure RCPs and transition through the EOP E-0, thru ES-0.1, and up to step 9 of ES-0.2, freeze and snap. Ensure That is < 550F.	
		EVALUATOR NOTE: Provide candidate with a place kept copy of ES-0.2. When candidate is ready to begin this JPM, place the simulator in RUN.	
		START TIME: _____	
1. Review procedure.		1.1 Reviews copy of ES-0.2 provided. COMMENTS:	
2. Check Station Instrument Air Header Pressure – Greater than 100 psig.		2.1 Verifies that PI-IA-106 is >100 psig. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554 JPM REVISION: 7	JPM TITLE: Depressurize the RCS During Natural Circulation Cooldown
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
3. Verify CNMT Instrument Air -AVAILABLE	3.1 Checks Station Instrument Air is available by verifying PI-IA-106 is >100 psig. 3.2 Verifies TV-1IA-400 Train A & B RED lights – LIT and GREEN lights - NOT LIT. 3.3 Checks CNMT instrument air header pressure on PI-1IA-106A is >85 psig. COMMENTS:	
4. Checks letdown – in service.	4.1 Checks letdown flow greater than ZERO gpm on FI-1CH-150. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554 JPM REVISION: 7	JPM TITLE: Depressurize the RCS During Natural Circulation Cooldown
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
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		FAULT STATEMENT In the next step, MOV-1CH-311 will not open, so a PORV must be used to depressurize the RCS.	
5.	Use [MOV-1CH-311], PRZR Aux Spray Isol Vlv. to depressurize the RCS to 1950 psig.	EVALUATOR CUE: When stated, acknowledge delta T temporary log is required when MOV-1CH-311 is open, another operator will take log readings on Attachment 2-AG.	
	5.1 Places MOV-1CH-311 control switch to OPEN. 5.2 Determines MOV-1CH-311 did NOT OPEN by GREEN light – LIT and RED light – NOT LIT.	EVALUATOR CUE: If asked to use the PORV, then Role Play US and provide permission. If asked about the status of MOV-1CH-311 from step 3.b, state that Maintenance is investigating the issue.	
		COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554	JPM TITLE: Depressurize the RCS During Natural Circulation
JPM REVISION: 7	Cooldown

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6.C Depressurize RCS by using ONE PORV.	<p>6.1 Verifies MOV-1RC-535, 536, or 537 PORV Block valve for associated PORV to be opened; RED light – LIT and GREEN light – NOT LIT.</p> <p>6.2C Places EITHER PCV-1RC-456, 455D, OR 455C control switch to OPEN.</p> <p>6.3 Verifies PORV RED light – LIT and GREEN light – NOT LIT, and RCS pressure is lowering to 1950 psig.</p> <p>6.4 As RCS pressure approaches approximately 1950 psig, places the PORV control switch to AUTO/CLOSE.</p> <p>6.5 Verifies PORV used to depressurize is closed by GREEN light – LIT and RED light – NOT LIT.</p> <p>COMMENTS:</p>	
7. Maintain RCS pressure – WITHIN 20 PSI OF 1950 PSIG.	<p>7.1 Maintains RCS pressure within 20 psig of 1950 psig by reopening PORV if pressure is rising, or turns on PZR heaters to raise pressure if lowering.</p> <p>COMMENT:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-554	JPM TITLE: Depressurize the RCS During Natural Circulation
JPM REVISION: 7	Cooldown

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
8.C Block SI Actuation – PZR Pressure SI and Steamline Pressure SI.	EVALUATOR NOTE: SI actuation circuits will automatically unblock if PZR pressure is not maintained < 2000 psig.	
	8.1C Places BLOCK PZR SI TRAIN A AND BLOCK PZR SI TRAIN B control switches momentarily to BLOCK position.	
	8.2 Observes on STATUS LIGHT PANEL 176 that the PZR SI BLK (D3) black light – LIT.	
	8.3C Places BLOCK STEAMLINE SI TRAIN A AND BLOCK STEAMLINE SI TRAIN B control switches momentarily to BLOCK position.	
	8.4 Observes on STATUS LIGHT PANEL 623 that the STM LINE ISOLA S INJ BLK (D10) black light – LIT. COMMENTS:	
9. Maintain RCS conditions: <ul style="list-style-type: none"> RCS pressure – at 1950 psig PZR level – 22% - 60% Cooldown rate in RCS cold legs - < 25F/hr RCS temperature and pressure – within limits of Attachment 5-C if any CRDM fans are running.	9.1 Maintains RCS pressure in a manner which precludes RCS pressure from rising above 2000 psig and unblocking SI automatic actuation circuits. (reopens PORV if pressure is rising or turns on PZR heaters to raise pressure if lowering) COMMENTS:	
EVALUATOR CUE: State “This JPM is complete”		
STOP TIME: _____		

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

A natural circulation cooldown is in progress. The crew is proceeding through ES-0.2, "Natural Circulation Cooldown", and have reached Step 9. The cooldown is being performed by the BOP using the condenser steam dumps.

INITIATING CUE:

Your supervisor directs you as RO to depressurize the RCS, Block Safety Injection Actuation signals, and maintain RCS pressure less than the unblock setpoint in accordance with ES-0.2, beginning with step 9.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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K/A REFERENCE: 035 A2.01 4.5/4.6 TASK ID: 0531-003-05-013
040 AA1.10 4.1/4.1
035 A4.06 4.5/4.6
040 AA1.13 4.2/4.2

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: 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: _____	

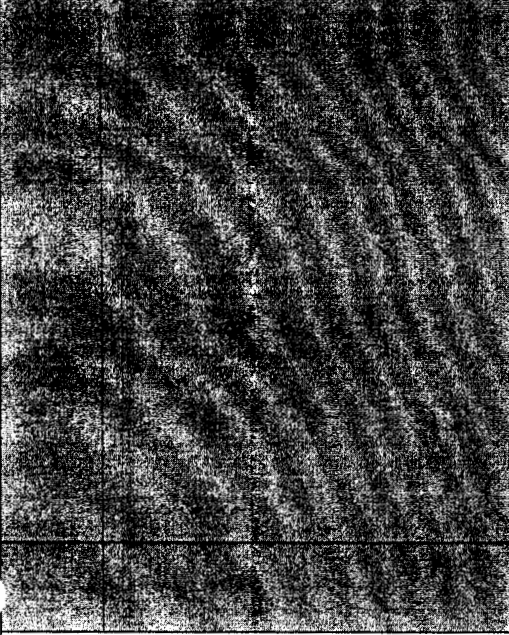

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	The faulted steam generator is isolated, and 'B' Auxiliary Feedwater pump is running and capable of feeding the intact steam generators.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none">• The reactor tripped from 100% power• The crew has progressed through the EOPs, and is now at step 2 of E-2, "Faulted Steam Generator Isolation"• EOP Attachment 1-K, "Verification of Automatic Actions", is in progress• All EOP steps to this point have been completed satisfactorily
INITIATING CUE:	The US directs you to isolate the faulted steam generator starting at step 2 of E-2.
REFERENCES:	1OM-53A.1.E-2, "Faulted Steam Generator Isolation", Iss. 3 Rev. 0 1OM-53A.1.2-Y, AFW Throttle Valve Failure, Rev. 0
TOOLS:	None
HANDOUT:	1OM-53A.1.E-2, "Faulted Steam Generator Isolation", Iss. 3 Rev. 0, place kept up to step 2. 1OM-53A.1.2-Y, AFW Throttle Valve Failure, Rev. 0 DO NOT Provide until referenced by candidate.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p>SIMULATOR SETUP: Use 100% power IC. Insert MALF VLV-AFW02 to fail MOV-1FW-151B 12.5% OPEN when closing is attempted. Insert MSS01C (2E6 Steam Leak on 'C' SG). Allow reactor to trip and complete E-0 actions up to step 1 of E-2 (trip RCPs and depress reheater reset). DO NOT throttle AFW flow to 'C' SG. Freeze and snap IC.</p> <p>EVALUATOR NOTE: Provide candidate a place kept copy of E-2. Place simulator in RUN when candidate is ready to begin.</p>	
	START TIME: _____	
1. Review procedure.	1.1 Candidate reviews procedure provided. COMMENTS:	
2. Verify Steamline Isolation. <ul style="list-style-type: none"> TV-1MS-101A, B, C MOV-1MS-101A, B, C TV-1MS-111A, B, C 	2.1 Verifies 'A', 'B', & 'C' SG YELLOW SLI marks; GREEN lights – LIT and RED lights – NOT LIT (BB-A & C) COMMENTS:	
3. Check For Any Non-Faulted SG.	3.1 Determines 'A' and 'B' Steam Generator pressure indicators are STABLE or RISING. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4. Identify Faulted SGs.	<p>4.1 Determines the 'C' steam generator is the only faulted SG based upon 'C' SG Pressure dropping in an uncontrolled manner OR is completely depressurized.</p> <div style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: The candidate may consult steam tables and check Tc relative to SG pressure to determine 'A' and 'B' are intact. Also, if asked as the STA, report 'A' and 'B' SGs are not faulted.</p> </div> <p>COMMENTS:</p>	
<p>5. Isolate Faulted SG's.</p> <p>Check FWI – PREVIOUSLY VERIFIED.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: FWI has NOT been previously verified.</p> </div> <p>5.1 Verifies HYV-1FW-100C is CLOSED. GREEN light – LIT and RED light – NOT LIT.</p> <p>5.2 Verifies FCV-1FW-498 is CLOSED by taking manual control, verifying RED MANUAL light – LIT and WHITE AUTO light – NOT LIT, and depresses ▼ pushbutton until 0% demand <u>or</u> verifies Status Panel 623 A-1, GREEN light –LIT and A-2, RED light – NOT LIT.</p> <p>5.3 Verifies FCV-1FW-499 in MANUAL position indicating 0% output, or GREEN light – LIT and RED light – NOT LIT. (BB-B)</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p align="center">FAULT STATEMENT</p> <p>MOV-1FW-151B fails open, and cannot be operated from the Control Room. Candidate must transition to Att. 2-Y to isolate AFW to the 'C' SG.</p>	
<p>6.C Close AFW throttle valves on faulted SG's.</p>	<p>EVALUATOR NOTE: The candidate may have performed the following step as a pre-emptive action when it was recognized that 'C' was the only faulted SG.</p> <p>6.1C Places and HOLDS MOV-1FW-151A AND 151B control switches to CLOSE.</p> <p>6.2 Verifies MOV-1FW-151A is CLOSED. GREEN light – LIT and RED light – NOT LIT</p> <p>6.3 Recognizes that MOV-1FW-151B did not close. RED light – LIT and GREEN light – LIT, and/or flow still indicated on FI-1FW-100C. (VB-B)</p> <p>6.4 Refers to Attachment 2-Y per the RNO.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
7. Reviews Attachment 2-Y.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR CUE: If asked, role play as Unit Supervisor and report that the TDAFW pump is aligned to the 'A' AFW header. </div> 7.1 Determines 1FW-P-2, TDAFW pump is aligned to the 'A' AFW header by observing the BB-C placard. 7.2 References step 1 table for MOV-1FW-151B failure to close, and progresses to step 7. COMMENTS:	
8. IF [MOV-1FW-151B], 1C SG AFW Throttle Valve, Is The Affected Valve, THEN Perform The Following: <ul style="list-style-type: none"> Verify [1FW-P-3B], AFW 3B Pump, running. 	8.1 Verifies 1FW-P-3B, AFW 3B Pump is running. RED light – LIT and WHITE light – NOT LIT. COMMENTS:	
9.C IF desired to stop flow from "A" Train, THEN perform the following: <ol style="list-style-type: none"> Secure [1FW-P-3A], AFW 3A Pump, AND place control switch in PULL-TO-LOCK. 	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR CUE: If asked to locally operate MOV-1FW-151B, cue that no local operators are available. </div> 9.1C Places Control Switch for 1FW-P-3A to PULL-TO-LOCK. 9.2 Verifies RED light – NOT LIT and WHITE light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-715 JPM REVISION: 0	JPM TITLE: Isolate a Faulted Steam Generator
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10.C Verify Closed [MOV-1MS-105], AFW Turb Steam Isol Vlv.	<p>10.1C Place and hold the Control Switch for MOV-1MS-105 to CLOSED.</p> <p>10.2 Verifies GREEN light – LIT and RED light – NOT LIT.</p> <p>COMMENTS:</p>	
11. IF [MOV-1MS-105] does NOT Close, THEN locally Trip [1FW-P-2], Turbine-Driven AFW Pump.	<p>11.1 This step is N/A.</p> <p>COMMENTS:</p>	
12. Dispatch an operator to West Cable Vault to Open [MCC1-E5] Cub AG, [MOV-1FW-151B].	<p>12.1 Directs Operator to open MCC1-E5 Cub AG for MOV-1FW-151B.</p> <div style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Role play the Local Operator and acknowledge direction to open MCC1-E5 Cub AG.</p> </div> <p>COMMENTS:</p>	
	<div style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: State "This JPM is complete"</p> </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐

Read:

INITIAL CONDITIONS:

- The reactor tripped from 100% power
- The crew has progressed through the EOPs, and is now at step 2 of E-2, "Faulted Steam Generator Isolation"
- EOP Attachment 1-K, "Verification of Automatic Actions", is in progress
- All EOP steps to this point have been completed satisfactorily
-

INITIATING CUE:

The US directs you to isolate the faulted steam generator starting at step 2 of E-2.

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045 JPM REVISION: 7	JPM TITLE: Verify C.I.B. Valve Alignment
--	--

K/A REFERENCE: 011 EA1.07 4.4/4.4 TASK ID: 0531-201-01-011
026 A3.01 4.3/4.5 0531-202-01-011

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:	Containment Isolation Phase B components are verified per Attachment 1-E with realignment of the following components: TV-11A-400 CLOSED 1VS-D-40-1B CLOSED 1VS-D-4-11A identified as OPEN versus CLOSED
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none">• The plant was operating at 100% power when a Large Break LOCA occurred• During the performance of EOP Attachment 1-K, "Verification of Automatic Actions", it was identified that Train B of CIB failed to actuate• Both trains of CIB were manually actuated• The supervisor directed another Operator to verify the component alignment using EOP Attachment 1OM-53A.1.1-E, "Containment Isolation Phase B Checklist"
INITIATING CUE:	Your supervisor directs you to finish the CIB verifications, by performing the remaining sections of EOP Attachment 1-E, "Containment Isolation Phase B Checklist".
REFERENCES:	EOP Attachment 1-E, "Containment Isolation Phase B Checklist", Rev 6
TOOLS:	None
HANDOUT:	EOP Attachment 1-E, "Containment Isolation Phase B Checklist", Rev 6 with Benchboard section A signoffs completed.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045
JPM REVISION: 7

JPM TITLE: Verify C.I.B. Valve Alignment

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p>SIMULATOR SETUP: Start with 100% IC. Insert the following malfunctions to fail components to actuate on the CIB signal: MALF VLV-CAS01 100, TV-11A-400 fails to close MALF VLV HVA02 100, 1VS-D-40-1B fails to close Safeguards Damper 1VS-D-4-11A fails to close. (NOTE: locally controlled) Insert MALF IMF RCS02E so that a LARGE Break LOCA occurs. Stop all RCPs. Allow the plant to stabilize and perform the Benchboard Section A CIB verifications.</p>	
	<p>START TIME: _____</p>	
	<p>EVALUATOR NOTE: Refer to the tables in the left column for expected component positions in the Attachment. Component positions will be verified by checking the individual indicating light status. Pump status may be verified by lights, flow or amps.</p>	
<p>1. Review procedure.</p>	<p>EVALUATOR CUE: Provide candidate a partially completed copy of EOP Attachment 1-E. When candidate is ready to begin JPM, PLACE the simulator in RUN.</p> <p>1.1 Candidate reviews EOP Attachment 1-E.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045

JPM REVISION: 7

JPM TITLE: Verify C.I.B. Valve Alignment

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U																					
<p>2. Verifies the following Benchboard Section B components are in their required position.</p> <table border="1"> <thead> <tr> <th>COMPONENT</th> <th>NAME</th> <th>REQUIRED</th> </tr> </thead> <tbody> <tr> <td>PZR-HTR-D</td> <td>PRZR Heater 2D Backup (PRZR Heater Bank D Trips When [1QS-P- 1A] Quench Spray Pump Starts)</td> <td>OFF</td> </tr> <tr> <td>PZR-HTR-E</td> <td>PRZR Heater 2E Backup (PRZR Heater Bank D Trips When [1QS-P- 1B] Quench Spray Pump Starts)</td> <td>OFF</td> </tr> <tr> <td>1CC-P-1A</td> <td>CCR 1A Pump</td> <td>STOPPED</td> </tr> <tr> <td>1CC-P-1B</td> <td>CCR 1B Pump</td> <td>STOPPED</td> </tr> <tr> <td>1CC-P-1C</td> <td>CCR 1C Pump 1AE Sup</td> <td>STOPPED</td> </tr> <tr> <td>1CC-P-1C</td> <td>CCR 1C Pump 1DF Sup</td> <td>STOPPED</td> </tr> </tbody> </table>	COMPONENT	NAME	REQUIRED	PZR-HTR-D	PRZR Heater 2D Backup (PRZR Heater Bank D Trips When [1QS-P- 1A] Quench Spray Pump Starts)	OFF	PZR-HTR-E	PRZR Heater 2E Backup (PRZR Heater Bank D Trips When [1QS-P- 1B] Quench Spray Pump Starts)	OFF	1CC-P-1A	CCR 1A Pump	STOPPED	1CC-P-1B	CCR 1B Pump	STOPPED	1CC-P-1C	CCR 1C Pump 1AE Sup	STOPPED	1CC-P-1C	CCR 1C Pump 1DF Sup	STOPPED	<p>2.1 Candidate locates and verifies the components are in their required positions.</p> <p>2.2 Places their initials next to each component verified.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR NOTE: Refer to the table in the left column for components and required positions.</p> </div> <p>COMMENTS:</p>	
COMPONENT	NAME	REQUIRED																					
PZR-HTR-D	PRZR Heater 2D Backup (PRZR Heater Bank D Trips When [1QS-P- 1A] Quench Spray Pump Starts)	OFF																					
PZR-HTR-E	PRZR Heater 2E Backup (PRZR Heater Bank D Trips When [1QS-P- 1B] Quench Spray Pump Starts)	OFF																					
1CC-P-1A	CCR 1A Pump	STOPPED																					
1CC-P-1B	CCR 1B Pump	STOPPED																					
1CC-P-1C	CCR 1C Pump 1AE Sup	STOPPED																					
1CC-P-1C	CCR 1C Pump 1DF Sup	STOPPED																					

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045
JPM REVISION: 7

JPM TITLE: Verify C.I.B. Valve Alignment

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U												
3.C Verifies the following Benchboard Section C components are in their required position.	<p>3.1 Candidate locates and verifies the components are in their required positions.</p> <p>3.2 Places their initials next to each component verified.</p> <p>3.3 Determines that TV-1IA-400 has failed to close.</p> <p>3.4C Places the Control Switches for TV-1IA-400 in CLOSE.</p> <p>3.5 Verifies the GREEN Lights are lit, RED lights not lit for TV-1IA-400.</p>													
<table border="1"> <thead> <tr> <th>COMPONENT</th> <th>NAME</th> <th>REQUIRED</th> </tr> </thead> <tbody> <tr> <td>ACB 1E5</td> <td>1AE Stub Bus</td> <td>OPEN</td> </tr> <tr> <td>ACB 1F5</td> <td>1DF Stub Bus</td> <td>OPEN</td> </tr> <tr> <td>TV-1IA-400</td> <td>CNMT Inst Air Hdr Isol Viv</td> <td>CLOSED</td> </tr> </tbody> </table>	COMPONENT	NAME	REQUIRED	ACB 1E5	1AE Stub Bus	OPEN	ACB 1F5	1DF Stub Bus	OPEN	TV-1IA-400	CNMT Inst Air Hdr Isol Viv	CLOSED	<div style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: Refer to the table in the left column for components and required positions. </div>	
COMPONENT	NAME	REQUIRED												
ACB 1E5	1AE Stub Bus	OPEN												
ACB 1F5	1DF Stub Bus	OPEN												
TV-1IA-400	CNMT Inst Air Hdr Isol Viv	CLOSED												
	<p>COMMENTS:</p>													

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045
JPM REVISION: 7

JPM TITLE: Verify C.I.B. Valve Alignment

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
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4.C Verifies the following Building Service Control Panel components are in their required position.

COMPONENT	NAME	REQUIRED
1VS-F-1A	CNMT Air 1A Recirc Fan	STOPPED
1VS-F-1C (A)	CNMT Air 1C (A) Recirc Fan	STOPPED
1VS-F-2A	CRDM Shroud 2A Fan	STOPPED
1VS-F-2C (A)	CRDM Shroud 2C (A) Fan	STOPPED
1VS-F-41A	41A Control Room Emerg Sup Fan	STOPPED
1VS-D-40-1C	Control Room Air Exhaust Dmpr (1)	CLOSED (CS in Close)
1VS-D-40-1A	Control Room Air Intake Dmpr (1)	CLOSED (CS in Close)
1VS-D-4-4A	Chg Pump Cubicle Emerg Exhaust Dmpr	OPEN
1VS-D-4-3A	Chg Pump Cubicle Norm Exhaust Dmpr	CLOSED
1VS-D-4-11A	Safeguards Pit Isol Dmpr	CLOSED
1VS-F-1B	CNMT Air 1B Recirc Fan	STOPPED
1VS-F-1C (B)	CNMT Air 1C (B) Recirc Fan	STOPPED
1VS-F-2B	CRDM Shroud 2B Fan	STOPPED
1VS-F-2C (B)	CRDM Shroud 2C (B) Fan	STOPPED
1VS-F-41B	41B Control Room Emerg Sup Fan	STOPPED
1VS-D-40-1D	Control Room Air Exhaust Dmpr (1)	CLOSED (CS in Close)
1VS-D-40-1B	Control Room Air Intake Dmpr (1)	CLOSED (CS in Close)
1VS-D-4-4B	Chg Pump Cubicle Emerg Exhaust Dmpr	OPEN
1VS-D-4-3B	Chg Pump Cubicle Norm Exhaust Dmpr	CLOSED
1VS-D-4-11B	Safeguards Pit Isol Dmpr	CLOSED

4.1 Candidate locates and verifies the components are in their required positions.

4.2 Places their initials next to each component verified.

EVALUATOR NOTE: The Safeguards Pit damper below only has a local control switch. If asked to locally operate the damper acknowledge the direction.

4.3C Determines that Safeguards Pit Isolation Damper 1VS-D-4-11A has failed to close.

4.4 Reports failed damper position to the supervisor.

4.5 Determines that Control Room Air Intake Damper 1VS-D-40-1B has failed to close.

4.6C Places the Control Switch for 1VS-D-40-1B in CLOSE.

4.7 Verifies the GREEN Light is lit, Red light not lit for 1VS-D-40-1B

EVALUATOR NOTE: Refer to the table in the left column for components and required positions.

COMMENTS:

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-045 JPM REVISION: 7	JPM TITLE: Verify C.I.B. Valve Alignment
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5. Reports to the supervisor the status of the components.	5.1 Candidate reports that components were verified to be in their required position except for: <ul style="list-style-type: none"> • TV-11A-400 CNMT Inst Air Header Isolation Valve • 1VS-D-4-11A Safeguards Pit Isolation Damper • 1VS-D-40-1B Control Room Air Intake Damper COMMENTS:	
	<div> EVALUATOR CUE: After the status report is made, state "This JPM is complete" </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

- The plant was operating at 100% power when a Large Break LOCA occurred
- During the performance of EOP Attachment 1-K, "Verification of Automatic Actions", it was identified that Train B of CIB failed to actuate
- Both trains of CIB were manually actuated

The supervisor directed another Operator to verify the component alignment using EOP Attachment 1OM-53A.1.1-E, "Containment Isolation Phase B Checklist".

INITIATING CUE:

Your supervisor directs you to finish the CIB verifications, by performing the remaining sections of EOP Attachment 1-E, "Containment Isolation Phase B Checklist".

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024
JPM REVISION: 12

JPM TITLE: Synchronize and Load EDG No. 2

K/A REFERENCE: 064A4.06 3.9/3.9

TASK ID: 0362-005-06-013

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 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 ☐ Yes
Critical: ☒ No

Allotted Time: 15 Minutes

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: No. 2 Diesel Generator synchronized and running at minimum load.

**RECOMMENDED
STARTING LOCATION:** Simulator

INITIAL CONDITIONS: 1OST-36.2, Diesel Generator No. 2 Monthly Test is in progress.
You are to Synchronize and Load Diesel Generator No. 2.

INITIATING CUE: The Unit Supervisor directs you to synchronize and load Diesel Generator No. 2 in accordance with 1OST-36.2, Diesel Generator No. 2 Monthly Test, steps VII.E.3 through VII.E.9.b. All steps up to this point have been completed satisfactorily.

REFERENCES: 1OST-36.2, Diesel Generator No. 2 Monthly Test, Rev. 81

TOOLS: None

HANDOUT: 1OST-36.2, Diesel Generator No. 2 Monthly Test, Rev. 81 place kept up to step VII.E.3.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024 JPM REVISION: 12	JPM TITLE: Synchronize and Load EDG No. 2
---	---

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	SIMULATOR SETUP: Use a Mode 1 or 2 IC with the #2 EDG in EXERCISE and running; DG voltage at ~122 volts. IRF EPS289 (0 0) 1 IMF XN11082 1, to turn on A11-82, CO2 in Lockout.	
	START TIME: _____	
1. Obtain EDG voltage and frequency readings.	1.1 Records EMERG GEN 2 VOLTS. 1.2 Records EMERG GEN 2 FREQUENCY. EVALUATOR CUE: Role-play the Unit Supervisor and inform candidate that Digital voltmeter readings are NOT required.	
2.C Close Emerg Gen 2 Motor Operated Ground Switch (BBC).	2.1C Places EMERG GEN 2 MOTOR OPERATED GND SW DS 2 C.S. to the CLOSE position. 2.2 Verifies RED light - LIT and WHITE light - NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024
JPM REVISION: 12

JPM TITLE: Synchronize and Load EDG No. 2

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3. Check Annunciator A9-10, "DIESEL GENERATOR NO. 2 M.O. GROUND SWITCH NOT FULLY OPEN" in alarm.</p>	<p>3.1 Verifies annunciator A9-10 in alarm.</p> <p>COMMENTS:</p>	
<p>4.C Place Emerg Gen 2 Synchronizing Sel Sw to 1F9 position. (BBC)</p>	<p>4.1C Places EMERG GEN 2 SYNCHRONIZING SEL SW in the ACB 1F9 position.</p> <p>4.3 Compares diesel generator frequency to bus 1DF frequency, monitors Sync Scope operation.</p> <div data-bbox="670 1041 1422 1220" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE: The Synchroscope rotating in the FAST direction indicates that EDG frequency is greater than the DF Bus frequency.</p> </div> <p>COMMENTS:</p>	
<p>5. When switch is repositioned from OFF, Check annunciator A9-16, "ACB 1F7 or 1F9 IN SYNCHRONIZING MODE" alarms.</p>	<p>5.1 Verifies A9-16 ACB 1F7 or 1F9 IN SYNCHRONIZING MODE in Alarm.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024 JPM REVISION: 12	JPM TITLE: Synchronize and Load EDG No. 2
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6. Compare DG No. 2 frequency and indication on 4KV Bus 1DF Frequency.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR NOTE: There is no frequency indication that is representative of the 1DF bus since the Main Generator is not in service. </div> 6.1 Checks DG No. 2 frequency indication. COMMENTS:	
7.C Using the No. 2 Diesel Generator Governor Control Switch, adjust generator speed until Synchroscope needle is rotating very slowly in the FAST direction.	7.1C Uses EMERG GEN 2 GOVERNOR control switch to raise or lower speed until the Synchroscope is rotating very slowly in the fast direction. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024
JPM REVISION: 12

JPM TITLE: Synchronize and Load EDG No. 2

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8.C Using the No. 2 Diesel Generator Voltage Adjust Switch, match generator voltage (Incoming) with the voltage on bus 1DF (Running).</p>	<p>8.1C Adjusts EMERG GEN 2 VOLT ADJUST control switch to match voltages.</p> <p>8.2 Verifies incoming and running voltages indicate approximately 120 - 122 volts.</p> <div data-bbox="665 720 1417 961" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>EVALUATOR NOTE: To determine voltages for this step, the candidate is to use the INCOMING and RUNNING meters located on the kickup section of the benchboard, above the synchroscope.</p> </div> <p>COMMENTS:</p>	
<p>9.C When both synchronizing lights are completely dark AND the synchroscope needle is at 12 o'clock, then place ACB-1F9 Emer Gen 2 Circuit Breaker in CLOSE. (BB-C.)</p>	<p>9.1C Places EMERG GEN 2 CIRCUIT BREAKER ACB 1F9 to Close with Sync Scope at 12 o'clock position</p> <p>9.3 Verifies RED light - LIT and WHITE light - NOT LIT and releases switch.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-024 JPM REVISION: 12	JPM TITLE: Synchronize and Load EDG No. 2
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10.C Pick up a small amount of load by moving the Emerg Gen 2 Governor switch, intermittently, to the RAISE position.	10.1C Places EMERG GEN 2 GOVERNOR control switch in the Raise position. 10.2 Verifies EMERG GEN 2 WATTS indicates increasing load. 10.3 Maintains load less than 300 KW. COMMENTS:	
11. Turn Emerg Gen 2 Synchronizing selector switch to OFF.	11.1 Places EMERG GEN 2 SYNCHRONIZING SELECTOR SW in Off. 11.2 Verifies A9-16 clears and resets alarm. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete"	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS: 1OST-36.2, Diesel Generator No. 2 Monthly Test is in progress.
You are to Synchronize and Load Diesel Generator No. 2.

INITIATING CUE: The Unit Supervisor directs you to synchronize and load Diesel Generator No. 2 in accordance with 1OST-36.2, Diesel Generator No. 2 Monthly Test, steps VII.E.3 through VII.E.9.b. All steps up to this point have been completed satisfactorily.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106
JPM REVISION: 6

JPM TITLE: Respond to an Intermediate Range Malfunction

K/A REFERENCE: 033AA2.09 3.4/3.7

TASK ID: 0535-010-04-013

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 ☐ Yes
Critical: ☒ No

Allotted
Time: 15 Minutes

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: _____

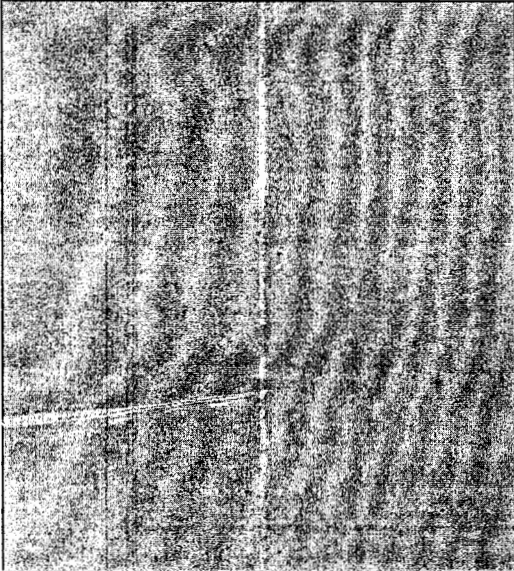
OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Identifies failed N35 channel. Select NI Recorder to N-36. Remove Intermediate Range Channel N-35 from service. Determine Technical Specification Condition(s), Required Action(s), and Completion Time(s). (SRO candidate ONLY)
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none">• A startup is in progress.• The reactor is stable at approximately 1×10^{-8} amps.• All other conditions are normal for present plant status.
INITIATING CUE:	You are to respond to annunciator(s) and take action in accordance with Plant Procedure(s).
REFERENCES:	1OM-2.4.AAV, "NIS Intermediate Range Loss of CH I Compensation Voltage", Issue 3, Rev. 0. 1OM-53C.4.1.2.1B, "Intermediate Range Channel Malfunction", Revision 5.
TOOLS:	None
HANDOUT:	(Do <u>NOT</u> initially provide to candidate) 1OM-2.4.AAV, 'NIS Intermediate Range Loss of CH I Compensation Voltage', Issue 3, Rev. 0 1OM-53C.4.1.2.1B, 'Intermediate Range Channel Malfunction', Rev 5

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106 JPM REVISION: 6	JPM TITLE: Respond to an Intermediate Range Malfunction
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	SIMULATOR SETUP: Initialize to IC-4. Fail N-35 HIGH by inserting MALF NIS04A at 0.0001 amps severity value with a 60 second delay. Ensure N-35 and N-41 are selected for VB recorders. Freeze and snap IC.	
	EVALUATOR NOTE: Ensure Control Bank Rods are at 100 steps. Do NOT place simulator in RUN until candidate is ready to begin. (Malfunction is set to actuate ~60 seconds after the simulator is taken to RUN.	
	START TIME: _____	
1.C Acknowledges receipt of A4-94, NIS INTERMEDIATE RANGE LOSS OF CH I COMEPENSATION VOLTAGE, validates this alarm and refers to procedural guidance.	EVALUATOR NOTE: Candidate may go directly to AOP-1.2.1B and may verify any combination of indications to validate N-35 failure which is acceptable.	
	1.1 Acknowledges receipt of A4-94, NIS INTER RANGE LOSS OF CH I COMPEN VOLTAGE. 1.2C Identifies N35 has failed HIGH by observing NI-1NI-35B meter on BB-B and/or NI-35 indication on NI cabinet is abnormally upscale high or LOSS OF COMP VOLT status light – LIT on IR N35 drawer. 1.3 Obtains and reviews 1OM-2.4.AAV, "NIS INTERMEDIATE RANGE LOSS OF CH I COMPENSATION VOLTAGE". COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106

JPM REVISION: 6

JPM TITLE: Respond to an Intermediate Range Malfunction

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U								
2. Obtain and review 1OM-53C.4.1.2.1B, “Intermediate Range Channel Malfunction”.	2.1 Candidate obtains and reviews 1OM-53C.4.1.2.1B. COMMENTS:									
3.C Refer to step for existing Power level: <table><tr><td>THERMAL POWER</td><td>STEP</td></tr><tr><td>MODE 2 Below P-6</td><td>2</td></tr><tr><td>Between P-6 And P-10</td><td>3</td></tr><tr><td>≥P-10</td><td>5</td></tr></table>	THERMAL POWER	STEP	MODE 2 Below P-6	2	Between P-6 And P-10	3	≥P-10	5	3.1C Determines the plant is in Mode 2 > P-6 but < P-10, and proceeds to Step 3. COMMENTS:	
THERMAL POWER	STEP									
MODE 2 Below P-6	2									
Between P-6 And P-10	3									
≥P-10	5									
4. Perform Actions For Reactor Power Level Greater Than P-6 And Less Than P-10 Check power level – GREATER THAN P-6 AND LESS THAN P-10.	4.1 Checks Power > P-6 but < P-10. COMMENTS:									
5.C Intermediate Range Channels – ONE CHANNEL ONLY OPERABLE	5.1C Verifies N-35 has failed HIGH, and N-36 is at ~1X10 ⁻⁸ amps and is OPERABLE. COMMENTS:									

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106
JPM REVISION: 6

JPM TITLE: Respond to an Intermediate Range Malfunction

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. Within 24 hours, Reduce THERMAL POWER to <P-6.</p> <p>OR</p> <p>Within 24 hours, Raise THERMAL POWER to >P-10.</p>	<div data-bbox="662 491 1430 590" style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: If asked, Role Play the US and state that power movement will not occur at this time. </div> <p>6.1 This step is N/A at this time, but may be performed later.</p> <p>COMMENTS:</p>	
<p>7.C Place Level Trip switch for inoperable channel in BYPASS.</p>	<p>7.1C Repositions LEVEL TRIP switch to BYPASS on N-35 drawer.</p> <p>7.2 Observes LEVEL TRIP BYPASS neon light – LIT.</p> <p>7.3 Acknowledges “NIS SOURCE INTER RANGE NEUTRON FLUX HI TRIP BYPASS” annunciator A4-81 – alarms.</p> <p>COMMENTS:</p>	
<p>8. Refer to the following:</p> <ul style="list-style-type: none"> • T. S. 3.3.1, Table 3.3.1-1, Function No. 4. • T. S. 3.3.3, Post Accident Monitoring 	<p>8.1 Acknowledges Tech Spec determination is required.</p> <div data-bbox="662 1627 1430 1726" style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: Role Play the US and state that the T.S. determination will be made at a later time. </div> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106 JPM REVISION: 6	JPM TITLE: Respond to an Intermediate Range Malfunction
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>9. IF THERMAL POWER reduced below P-6, Verify both source range detectors energized.</p> <p>1) IF necessary, place Block Source Range Trip Train A and Train B switch(es) to RESET.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR CUE: If asked, Role Play the US and state that power movement will not occur at this time. </div> <p>9.1 This step is N/A.</p> <p>COMMENTS:</p>	
<p>10. Verify NR-45 recorder selected to OPERABLE channels. (VB-B)</p>	<p>10.1 Places NI SYS RECORDER SEL SW (1N 45) to the N-36 position.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-106
JPM REVISION: 6

JPM TITLE: Respond to an Intermediate Range Malfunction

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>11.C Tech Spec determination (SRO Candidate Only)</p>	<div data-bbox="662 489 1433 667" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR NOTE/CUE (For SRO Only): Prompt the SRO candidate to make TS determinations at this time if this has not been previously performed since it is critical to the SRO candidate success.</p> </div> <p>11.1 SRO candidate reviews Tech Specs to determine applicability.</p> <p>11.2C References T.S 3.3.1, Table 3.3.1-1, Function 4 and determines T.S.3.3.1 Condition A and F, with required action F.1 Reduce THERMAL POWER to < P-6 within 24 hours OR Increase THERMAL POWER to > P-10 within 24 hours is required.</p> <p>11.3C References T.S. 3.3.3 and determines Condition A is applicable and Required Action A.1 "Restore required channel (N-35) to OPERABLE status within 30 days" is required.</p> <p>COMMENTS:</p>	
	<div data-bbox="662 1476 1433 1581" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: State "That completes this JPM".</p> </div>	
	<p>STOP TIME: _____</p>	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

- A startup is in progress.
- The reactor is stable at approximately 1×10^{-8} amps.
- All other conditions are normal for present plant status.

INITIATING CUE:

You are to respond to annunciator(s) and take action in accordance with Plant Procedure(s).

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557 JPM REVISION: 0	JPM TITLE: Respond to a Loss of Secondary Component Cooling Water
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K/A REFERENCE: 008 A2.01 3.3/3.6 TASK ID: 0535-091-04-011

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:	Main Turbine is tripped after the Secondary Coolant Cooling pump current begins to fluctuate with a low surge tank condition and Exciter Circuit Breaker is manually opened after the turbine trip.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	<ul style="list-style-type: none">• Annunciator A6-61, Secondary Comp Cool Water Surge Tank Level Low has just alarmed.• An operator reports that there is leakage from the CCT system in the Turbine Building.• The operator is attempting to determine if the leak can be isolated.
INITIATING CUE:	Your supervisor directs you implement procedure AOP 1.28.1, Loss of Secondary Component Cooling Water, while attempts to isolate the leak are in progress.
REFERENCES:	1OM-53C.4.1.28.1, Loss of Secondary Component Cooling Water, Rev 3 1OM-53C.4.1.26.1, Turbine and Generator Trip, Rev 21
TOOLS:	None
HANDOUT:	1OM-53C.4.1.28.1, Loss of Secondary Component Cooling Water, Rev 3 DO NOT PROVIDE THIS PROCEDURE UNTIL CANDIDATE LOCATES IT 1OM-53C.4.1.26.1, Turbine and Generator Trip, Rev 21

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557
JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p>SIMULATOR SETUP: Start with IC-7 (less than P9, reactor should not trip after Turbine is tripped.) Ensure CC-P-3A is Running. Ensure Control Rods are in AUTO. Insert MALF CCT1B to fail CC-P-3B to start, Auto or Manual. Insert MALF EPS19 to fail Exciter Breaker ACB-41 to AUTO Open (Manual will work). Use command CCT4 to lower CCT Surge tank level to <5 inches. Inhibit CCT Pump Trip Due to Cavitation by setting, Trg 1 = "gcccav1o <= 115", with trg 1 command at "Set gcccav1o=600". Set a trigger to insert 1000 gpm CCT leak (malf CCT4) on command from evaluator, leak will cause 1CC-P-3A to cavitate within 5 seconds.</p> <p>Snap IC.</p> <p>EVALUATOR CUE: Provide candidate a copy of AOP 1.28.1 for Loss of Component Cooling water. DO NOT Provide AOP 1.26.1 Turbine and Generator Trips until the Candidate references the procedure.</p> <p>When candidate is ready to begin JPM, PLACE the simulator in RUN.</p>	
	START TIME: _____	
1. Review procedure.	<p>1.1 Candidate reviews AOP 1.28.1.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557 JPM REVISION: 0	JPM TITLE: Respond to a Loss of Secondary Component Cooling Water
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2. CCT Pumps – One or More Running. • [1CC-P-3A, 3B] CCT Pumps	2.1 Checks Red light lit, White light not lit for 1CC-P-3A. 2.2 Checks for running current on pump ammeter. COMMENTS:	
3. Alert Plant Personnel. a. Sound Standby Alarm b. Announce “Loss of Secondary Component Cooling Water” over page party.	3.1 Sounds the Standby Alarm by pulling the switch. 3.2 Announces the Loss of Secondary Component Cooling Water. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557
JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>4. Plant – Mode 1.</p> <p>a. Check the following parameters:</p> <p>1) Turbine Bearing Oil Discharge Temperature Less than 180 F (T2054A)</p> <p>2) Turbine Journal & Thrust Bearing Metal Temperature Less than 225 F [T2061A thru T2069A] and [T2071A thru T2074A]</p> <p>3) Main Generator Cold Gas Temperatures - Less than 56C [T2811A thru 2814A]</p> <p>4) Turbine Vibrations Less than 14 Mils on bearings 1-9 [VR-TR-001, 002 and 003]</p>	<p>4.1 Checks Reactor Power is greater than 5% on NIS.</p> <p>4.2 References Computer point [T2054A] and verifies Turbine Bearing Discharge Temperature is less than 180 F.</p> <p>4.3 References Computer points [T2061A -T2069A] and [T2071A -T2074A], verifies Turbine Journal and Thrust Bearing Metal Temperatures less than 225 F.</p> <p>4.4 References Computer point [T2811A thru T2814A] and verifies Generator Cold Gas Temperature is less than 56 C.</p> <p>4.5 References Turbine Vibration Monitor VR-TR-001, 002 and 003, verifies vibrations are less than 14 Mils.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557
JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5. Check the Following Parameters:</p> <p>a. Main Bearing Lube Oil Temperatures - Less than 195 F.</p> <p>1) Turbine Bearing Oil Temperature [T2041A thru T2046A]</p> <p>2) Main Gen Bearing Oil Temperature [T2047A and T2048A]</p> <p>3) Exciter Bearing #9 Oil Temperature T/C-1TB-211A [T2049A]</p> <p>4) LP Turbine Thrust Bearing Oil Temperature [T2051A and T2052A]</p> <p>b. Check at least one Condensate Pump Running [1CN-P-1A, 1B]</p>	<p>5.1 Checks Main Bearing Lube Oil Temperatures – Less than 195F.</p> <p>5.2 References Computer points Turbine Bearing Oil Temperature [T2041A thru T2046A]</p> <p>5.3 References Computer points Main Gen Bearing Oil Temperature [T2047A and T2048A]</p> <p>5.4 References Computer point Exciter Bearing #9 Oil Temperature T/C-1TB-211A [T2049A]</p> <p>5.5 References Computer points LP Turbine Thrust Bearing Oil Temperature [T2051A and T2052A]]</p> <p>5.6 Checks at least one Condensate Pump Running, [1CN-P-1A or 1B] Red light lit.</p> <p>COMMENTS:</p>	
	<p>FAULT STATEMENT</p> <p>In the next step, 1CC-P-3A motor current will begin to fluctuate after Simulator command (CCT4) is entered. This will require the turbine to be tripped and AOP entered.</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557
JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>6. CCT System - INTACT.</p> <p>Running CCT Pumps – Stable Current</p> <p>AND</p> <p>Annunciator A6-61, “Sec Comp Cool Water Surge Tank Level Low”, NOT in Alarm.</p>	<div data-bbox="662 489 1433 583" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Ensure Simulator command to cause 1CC-P-3A motor amps to fluctuate entered.</p> </div> <p>6.1 Identifies the motor current on Component Cooling Water Pump 1CC-P-3A is NOT stable.</p> <p>6.2 Verifies Annunciate A6-61 is still in alarm.</p> <p>6.3 Transitions to Response Not Obtained Column.</p> <p>COMMENTS:</p>	
<p>7.C If surge tank level low AND pump current consistent with loss of suction, perform the following.</p> <p>If power is >P9, trip the reactor, Go To E-0. When IOAs are complete, secure CCT pump(s) and continue with this procedure in parallell with EOPs.</p> <p>If power is <P9, trip the turbine, Go To AOP 1.26.1. When IOAs are complete, secure CCT pump(s) and continue with this procedure in parallell with AOPs.</p>	<p>7.1 Determines that the loss of CCT is causing the pump to cavitate.</p> <p>7.2C Checks Reactor Power is less than P9 (49%).</p> <p>7.3C Trips the Turbine by depressing at least one Turbine Trip Pushbutton.</p> <p>7.4 Transitions to AOP 1.26.1 “Turbine and Generator Trip” and performs the immediate Operator Actions.</p> <div data-bbox="662 1602 1417 1696" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Once the Turbine is tripped, provide a copy of AOP 1.26.1.</p> </div> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557

JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>8.C Verify Turbine Trip</p> <p>a. Check the following:</p> <p style="padding-left: 40px;">Throttle Valves - ALL CLOSED -OR- Governor Valves - ALL CLOSED</p> <p>b. Main Generator Output Breakers – OPEN</p> <p>c. Exciter Circuit Breaker – OPEN</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> EVALUATOR NOTE: Generator Exciter Circuit Breaker will fail to open on the Turbine Trip. </div> <p>8.1 Checks TV1, TV2, TV3 and TV4 all closed or GV1, GV2, GV3 and GV4 have Green lights lit.</p> <p>8.2 Checks Main Generator output breakers 331 and 341 are open with White lights lit, Red lights not lit.</p> <p>8.3 Recognizes the Exciter Circuit Breaker is closed with Red light lit.</p> <p>8.3C Manually opens the Checks Exciter Circuit Breaker open, verifies the White light lit, Red light not lit.</p> <p>COMMENTS:</p>	
<p>9. Check Rod Control System</p> <p>d. Check Control Rod Bank Sel Sw in AUTO</p> <p>e. Check control rods inserting and reactor power dropping</p>	<p>9.1 Checks Control Rod Selector Switch is in the Auto position.</p> <p>9.2 Verifies control rods are inserting and reactor power is lowering.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-557
JPM REVISION: 0

JPM TITLE: Respond to a Loss of Secondary Component Cooling Water

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10. Check Reactor Power Level f. Reactor power – LESS THAN OR EQUAL TO 15% g. Verify Control Rod Bank Sel Sw in MAN h. Verify rod motion stopped	<div data-bbox="645 499 1414 621" style="border: 1px solid black; padding: 5px;"> EVALUATOR NOTE: The Control Rods may have stopped inserting depending on the timing of step performance. </div> 10.1 Checks reactor power is less than or equal to 15%. 10.2 Places Control Rod selector switch to Manual position. 10.3 Verifies Control Rod motion has stopped. COMMENTS:	
	<div data-bbox="645 1138 1430 1234" style="border: 1px solid black; padding: 5px;"> EVALUATOR CUE: After the Control Rods are placed in Manual, state "This JPM is complete" </div>	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS:

- Annunciator A6-61, Secondary Comp Cool Water Surge Tank Level Low has just alarmed.
- An operator reports that there is leakage from the CCT system in the Turbine Building.
- The operator is attempting to determine if the leak can be isolated.

INITIATING CUE:

Your supervisor directs you implement procedure AOP 1.28.1, Loss of Secondary Component Cooling Water, while attempts to isolate the leak are in progress.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-047 JPM REVISION: 11	JPM TITLE: Startup the Wide Range Hydrogen Analyzer
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K/A REFERENCE: 028 A1.01 3.4/3.8 TASK ID: 0461-002-01-043
028 A4.01 4.0/4.0

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"/> Simulate	<input checked="" type="checkbox"/> Plant Site <input 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:
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Time <input checked="" type="checkbox"/> Yes Critical: <input type="checkbox"/> No	Allotted Time: 25 Minutes	Actual Time: minutes
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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:	<p>The Hydrogen Analyzer is in service and Pressurizer Cubicle Hydrogen concentration is reported to be 1.3% ($\pm 0.2\%$).</p> <p>(NOTE: If the Analyzer is not started within 25 min, then the UFSAR 6.5.2 assumption that the analyzers will be in service within 30 min of an SI will not be met and the JPM is UNSAT.)</p>
RECOMMENDED STARTING LOCATION:	Control Room or In-Plant, as desired.
INITIAL CONDITIONS:	A reactor trip and safety injection occurred 5 minutes ago due to a LOCA. 'A' ('B') Wide Range Hydrogen Analyzer is to be placed in service. All electrical distribution systems are operable.
INITIATING CUE:	<p>Your Supervisor directs you to place the 'A' ('B') Train wide range hydrogen monitoring system in service and obtain a pressurizer cubicle hydrogen sample.</p> <p>Containment Pressure is 20 psia.</p> <p>Your Supervisor also informs you that Cable Vault temperature is 85°F as taken by a calibrated Fluke.</p> <p>This JPM contains time critical elements.</p>
REFERENCES:	1OM-46.4.G, Revision 4, Placing Wide Range Containment Hydrogen Monitoring System in Operation
TOOLS:	None
HANDOUT:	1OM-46.4.G, Revision 4, Placing Wide Range Containment Hydrogen Monitoring System in Operation, with steps 1-3 completed.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-047 JPM REVISION: 11	JPM TITLE: Startup the Wide Range Hydrogen Analyzer
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR NOTE: Provide candidate a marked-up copy of IOM-46.4.G showing steps 1-3 are complete for the 'A' ('B') Hydrogen Analyzer	
	START TIME: _____	
1.C Startup the 'A' ('B') Wide Range Hydrogen Analyzer. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> EVALUATOR NOTE: If the ON/OFF Switch is not placed to ON within 25 minutes, then the UFSAR 6.5.2 assumption of placing the analyzer in service within 30 minutes of an SI has not been met and the JPM is UNSAT. </div>	1.1 Locates [PNL-H2-101A] ([PNL-H2-101B]) and opens the cabinet door. (Service Building West Wall 713') 1.2C Verifies the STANDBY/OFF switch is in STANDBY. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> EVALUATOR CUE: STANDBY/OFF switch is in STANDBY. </div> 1.3C Places the ON/OFF switch in ON. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> EVALUATOR CUE: The ON/OFF switch is ON. </div> Record Time Critical Stop Time: _____ 1.4 Verifies Amber STANDBY indicator is On. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> EVALUATOR CUE: The Amber STANDBY indicator is ON. </div> 1.5 Verifies Blue READY indicator is On. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> EVALUATOR CUE: The Blue READY indicator is ON. </div> 1.6 Verifies Green ON indicator is On. <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> EVALUATOR CUE: The Green ON indicator is ON. </div> COMMENTS:	

JPM TITLE: Startup the Wide Range Hydrogen Analyzer

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>2. Within 4 minutes of the green ON indicator illuminating, verifies the following indications.</p>	<p>2.1 Red H2 indicator is OFF.</p> <p>EVALUATOR CUE: The Red H2 Indicator is Off.</p> <p>2.2 Yellow CAUTION indicator is OFF.</p> <p>EVALUATOR CUE: The Yellow Caution indicator is Off.</p> <p>2.3 Red HI indicator is OFF.</p> <p>EVALUATOR CUE: The Red HI Indicator is Off.</p> <p>2.4 Green SAFE indicator is ON.</p> <p>EVALUATOR CUE: The Green Safe Indicator is On.</p> <p>2.5 Percent hydrogen meter is <1%.</p> <p>EVALUATOR CUE: The Percent Hydrogen meter indicates 1.6%.</p> <p>2.6 PRESS ALARM indicator is OFF.</p> <p>EVALUATOR CUE: The Press Alarm Indicator is Off.</p> <p>2.7 FLOW ALARM indicator is OFF.</p> <p>EVALUATOR CUE: The Flow Alarm Indicator is Off.</p> <p>2.8 TEMP ALARM indicator is OFF.</p> <p>EVALUATOR CUE: The Temp Alarm Indicator is Off.</p> <p>2.9 SYSTEM STATUS ALARM is OFF.</p> <p>EVALUATOR CUE: The System Status Alarm is Off.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-047

JPM REVISION: 11

JPM TITLE: Startup the Wide Range Hydrogen Analyzer

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>EVALUATOR NOTE: If candidate attempts to determine CNMT H2 Concentration, cue to only obtain PZR Cubicle H2 Concentration.</p> <p>3.C Obtain pressurizer cubicle hydrogen concentration.</p> <p>a. Place the ON/OFF Switch in H2 PNL 101A (B) to OFF.</p> <p>b. Open Key operated valves from the Control Room:</p> <ol style="list-style-type: none"> SOV-1HY-103A1 (B1) SOV-1HY-103A2 (B2) <p>c. Close Key operated valves from the Control Room:</p> <ol style="list-style-type: none"> SOV-1HY-102A1 (B1) SOV-1HY-102A2 (B2) <p>d. Place the ON/OFF Switch in H2 PNL 101A (B) to ON.</p> <p>e. After a 4 minute wait Determine H2 Concentration as follows:</p> <ol style="list-style-type: none"> Obtain Local Cable Vault Temperature. Observe indicated H2 concentration. Subtract the correction factor as determined from Fig 1. 	<p>EVALUATOR CUE: 4 minutes have elapsed since the previous step.</p> <p>3.1C Places the ON/OFF switch in OFF.</p> <p>EVALUATOR CUE: The ON/OFF switch is OFF.</p> <p>3.2 Makes/requests the following valving manipulation: [SOV-1HY-103A1(B1) & 103A2(B2) OPEN; 102A1(B1), 102A2(B2) CLOSED].</p> <p>EVALUATOR CUE: An operator in the Control Room has made the appropriate valve manipulations.</p> <p>3.3C Places the ON/OFF switch in ON.</p> <p>EVALUATOR CUE: The ON/OFF switch is ON.</p> <p>EVALUATOR CUE: 4 minutes have elapsed since the previous step.</p> <p>3.4 Observes hydrogen concentration.</p> <p>EVALUATOR CUE: Hydrogen concentration 1.6%.</p> <p>3.5 Calculates actual hydrogen concentration by subtracting the correction factor found on figure 1 from the indicated hydrogen concentration.</p> <p>EVALUATOR CUE: Containment pressure is 20 psia.</p> <p>3.6C Candidate reports actual hydrogen concentration is 1.3% (±0.5%).</p> <p>EVALUATOR NOTE: (1.6%) – (0.3%) = (1.3%). (Ind.) - (Corr.) = (Actual)</p> <p>COMMENTS:</p>	
	<p>EVALUATOR CUE: State, "JPM is Complete"</p> <p>STOP TIME: _____</p>	

CANDIDATE DIRECTION SHEET

Use This Sheet if Protected Train "A"

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐

Read:

INITIAL CONDITIONS:

A reactor trip and safety injection occurred 5 minutes ago due to a LOCA. 'B' Wide Range Hydrogen Analyzer is to be placed in service. All electrical distribution systems are operable.

INITIATING CUE:

Your Supervisor directs you to place the 'B' Train wide range hydrogen monitoring system in service and obtain a pressurizer cubicle hydrogen sample.

Containment Pressure is 20 psia.

Your Supervisor also informs you that Cable Vault temperature is 85°F as taken by a calibrated Fluke.

This JPM contains time critical elements.

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.

Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".

Then hand this sheet to the evaluator.

CANDIDATE DIRECTION SHEET

Use This Sheet if Protected Train "B"

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐

Read:

INITIAL CONDITIONS:

A reactor trip and safety injection occurred 5 minutes ago due to a LOCA. 'A' Wide Range Hydrogen Analyzer is to be placed in service. All electrical distribution systems are operable.

INITIATING CUE:

Your Supervisor directs you to place the 'A' Train wide range hydrogen monitoring system in service and obtain a pressurizer cubicle hydrogen sample.

Containment Pressure is 20 psia.

Your Supervisor also informs you that Cable Vault temperature is 85°F as taken by a calibrated Fluke.

This JPM contains time critical elements.

☐

At this time, ask the evaluator any questions you have on this JPM.

☐

When satisfied that you understand the assigned task, announce "I am now beginning the JPM".

☐

Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.

☐

After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-148
JPM REVISION: 4

JPM TITLE: AMSAC System Trouble - FT Failure

K/A REFERENCE: 016 A2.01 3.0/3.1 TASK ID: 0452-008-04-011

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"/> Simulate	<input checked="" type="checkbox"/> Plant Site <input 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 SSN:

Time ☐ Yes
Critical: ☒ No

Allotted Time: 10 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: Failed Feedwater Transmitter (FT) channel identified and tripped.

**RECOMMENDED
STARTING LOCATION:** In-Plant

INITIAL CONDITIONS: The plant is at 100% power when annunciator A3-20, AMSAC TROUBLE actuated. 1OM-45.4.AAC, "AMSAC Trouble" is being implemented.

INITIATING CUE: Your supervisor directs you to perform actions of Probable Cause No. 2 for 1OM-45B.4.AAC, AMSAC Trouble, beginning at step #1.

REFERENCES: 1OM-45B.4.AAC, AMSAC Trouble, Rev. 4

TOOLS: Key No. 31, if cabinet is locked

HANDOUT: 1OM-45B.4.AAC, AMSAC Trouble, Rev. 4

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-148 JPM REVISION: 4	JPM TITLE: AMSAC System Trouble - FT Failure
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<div>EVALUATOR NOTE: Obtain Key No. 31 for AMSAC Panel prior to start of JPM, if cabinet is locked.</div> <div>EVALUATOR NOTE: Provide Candidate a copy of 1OM-45B.4.AAC, AMSAC Trouble.</div>	
	START TIME: _____	
1. Reviews procedure.	1.1 Candidate reviews procedure 1OM-45B.4.AAC. COMMENTS:	
2.1 Feedwater flow transmitter Test lights should be OFF: 1) TL/FW 476 2) TL/FW 486 3) TL/FW 496	<div>EVALUATOR NOTE: Provide Candidate with Key No. 31. (if needed)</div> <div>2.1 Opens [PNL-AMSAC] using Key No. 31.</div> <div>2.2 Checks TL/FW 476 Test light OFF.</div> <div>EVALUATOR CUE: Test light TL/FW 476 is NOT LIT.</div> <div>2.3 Checks TL/FW 486 Test light OFF</div> <div>EVALUATOR CUE: Test light TL/FW 486 is NOT LIT.</div> <div>2.4 Checks TL/FW 496 Test light OFF.</div> <div>EVALUATOR CUE: Test light TL/FW 496 is LIT.</div> <div>COMMENTS:</div>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-148 JPM REVISION: 4	JPM TITLE: AMSAC System Trouble - FT Failure
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3.1 Main Turbine 1st Stage Pressure Transmitter Test lights should be ON:</p> <p>1) TL/MS 446 2) TL/MS 447</p>	<p>3.1 Checks Main Turbine 1st Stage Pressure Transmitter, TL/MS 446 Test light ON.</p> <p>3.2 Checks Main Turbine 1st Stage Pressure Transmitter, TL/MS 447 Test light ON.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR CUE: Test lights TL/MS 446 and 447 are LIT.</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR NOTE: Step 2 of the procedure is N/A since both Main Turbine 1st Stage Pressure transmitter lights are ON.</p> </div> <p>COMMENTS:</p>	
<p>4.C If [TL/FW 476 (486) (496)], Test light is ON, a feedwater flow input is out of range low.</p>	<p>4.1C Identifies based on previous indications (Test light TL/FW 496 is ON) that FT-1FW-496 Feedwater Flow Transmitter has failed low.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>EVALUATOR NOTE: If the candidate does not specifically state which channel has failed then the question can be asked directly to assess whether this critical step has been completed SAT or UNSAT following the next step.</p> </div> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-148 JPM REVISION: 4	JPM TITLE: AMSAC System Trouble - FT Failure
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
5.C Place the Trip switch for the failed channel in the TRIP (UP) position to Actuate the \leq 25% FEEDWATER FLOW TRIP of the failed feedwater channel.	5.1C Places TPS/FW 496 Trip switch in the TRIP (UP) position. <div>EVALUATOR CUE: TPS/FW 496 Trip switch is in the TRIP (UP) position.</div> COMMENTS:	
6. Verify the failed feedwater channel is in a tripped condition as follows: 1) The associated Test light [TL/FW 496] is ON.	6.1 Verifies Test light [TL/FW 496] is ON. <div>EVALUATOR CUE: Test light [TL/FW 496] is LIT.</div> COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-148
JPM REVISION: 4

JPM TITLE: AMSAC System Trouble - FT Failure

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>7. Verify ANN. A3-20, AMSAC Trouble is ON.</p>	<p>7.1 Contacts Control Room to verify ANN. A3-20, AMSAC Trouble is ON.</p> <div data-bbox="700 611 1364 730" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Control Room reports ANN. A3-20, AMSAC Trouble is LIT.</p> </div> <p>COMMENTS:</p>	
<p>8. Notifies the SM/US that the associated Test Light [TL/FW 496 must be monitored on a 24 hr frequency OR as determined by System Engineering AND verified ON when the Trip switch is in the TRIP (UP) position.</p> <p>Notifies the SM/US that Licensing must be notified whenever AMSAC is expected to be out of service for greater than 48 hours.</p> <p>Contacts I&C Department, Requests assistance as necessary.</p>	<p>8.1 Contacts the SM/US to report the status of AMSAC and the requirements while the system is in this configuration.</p> <p>8.2 Contacts the I&C department or informs the SM/US to request assistance.</p> <div data-bbox="667 1293 1331 1413" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Acknowledge reports to SM/US and / or I&C.</p> </div> <p>COMMENTS:</p> <div data-bbox="678 1696 1343 1816" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: After reports are made state, "This JPM is complete".</p> </div>	
<p style="text-align: center;">STOP TIME: _____</p>		

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS: The plant is at 100% power when annunciator A3-20, AMSAC TROUBLE actuated. 1OM-45.4.AAC, "AMSAC Trouble" is being implemented.

INITIATING CUE: Your supervisor directs you to perform actions of Probable Cause No. 2 for 1OM-45B.4.AAC, AMSAC Trouble, beginning at step #1.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-028 JPM REVISION: 9	JPM TITLE: Verification of Cold Leg Recirculation Components
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K/A REFERENCE: EPE 011 EA1.11 4.2 / 4.2 TASK ID: 0531-007-05-013
006 A3.08 4.2 / 4.3

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"/> Simulate	<input checked="" type="checkbox"/> Plant Site <input 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: Power availability is verified to cold leg recirculation components MOV-1SI-860A, MOV-1SI-863B, MOV-1CH-115D, and MOV-1CH-115B in accordance with 1OM-53A.1.1-F.

RECOMMENDED STARTING LOCATION: In-Plant

INITIAL CONDITIONS: The plant has experienced a Loss of Coolant Accident. EOP E-1, Loss of Reactor or Secondary Coolant is in progress. Off-site power is available, and all busses are energized.

INITIATING CUE: The BOP Operator has verified power available to some of the Control Room components of 1OM-53A.1.1-F, "Cold Leg Recirculation Components Verification". Your supervisor has directed you to locally verify power available to MOV-1SI-860A, MOV-1SI-863B, MOV-1CH-115D, and MOV-1CH-115B, according to EOP Attachment 1-F. The indicating lights for these valves are dark. (The light bulbs have been checked and are good.) You are to report when the verification is completed.

REFERENCES: 1OM-53A.1.1-F, Cold Leg Recirculation Components Verification, Issue 1C, Revision 0

TOOLS: None

HANDOUT: 1OM-53A.1.1-F, Cold Leg Recirculation Components Verification, Issue 1C, Revision 0 marked up with all components except MOV-1SI-860A, MOV-1SI-863B, MOV-1CH-115D, and MOV-1CH-115B completed in the Control Room.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-028 JPM REVISION: 9	JPM TITLE: Verification of Cold Leg Recirculation Components
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STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	<p>EVALUATOR NOTE: Provide the operator with a place kept copy of Attachment 1-F.</p> <p>NOTE: MCC1-E5 is inside a dual "Stay Clear Zone", request permission from the Control Room to enter the zone prior to beginning this JPM. Power supply check steps may be performed in any order.</p>	
	START TIME: _____	
1. Reviews procedure.	<p>1.1 Candidate reviews Attachment 1-F.</p> <p>EVALUATOR NOTE: If asked, cue that the Shift Manager will address any potential plant tampering issues with Site Protection.</p> <p>COMMENTS:</p>	
2.C Check "RWST Disch to Chg Pumps Suct Vlv" (MOV-1CH-115B) power available.	<p>2.1 Candidate locates MCC1-E3 (P.A.B. 735 West Wall).</p> <p>2.2 Candidate locates MOV-1CH-115B Breaker (Cub. J).</p> <p>EVALUATOR CUE: The breaker handle is in the OFF position.</p> <p>2.3C Candidate places handle in the ON position.</p> <p>EVALUATOR CUE: The breaker handle is in the ON position.</p> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-028

JPM REVISION: 9

JPM TITLE: Verification of Cold Leg Recirculation Components

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>3.C Check "RWST Disch to Chg Pumps Suct Vlv" (MOV-1CH-115D) power available.</p>	<p>3.1 Candidate locates MCC1-E4 (PAB. 735 West Wall).</p> <p>3.2 Candidate locates MOV-1CH-115D Breaker (Cub. J).</p> <div data-bbox="662 646 1433 747" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the OFF position.</p> </div> <p>3.3C Candidate places handle in the ON position.</p> <div data-bbox="662 827 1433 928" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the ON position.</p> </div> <p>COMMENTS:</p>	
<p>4.C Check "1A LHSI Pump Rx CNMT Sump Suct Vlv" (MOV-1SI-860A) power available.</p>	<p>4.1 Candidate locates MCC1-E5 (West Cablevault. 735).</p> <p>4.2 Candidate locates MOV-1SI-860A breaker (Cub. R).</p> <div data-bbox="662 1318 1433 1419" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the OFF position.</p> </div> <p>4.3C Candidate places handle in the ON position.</p> <div data-bbox="662 1499 1433 1600" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the ON position.</p> </div> <p>COMMENTS:</p>	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-028
JPM REVISION: 9

JPM TITLE: Verification of Cold Leg Recirculation Components

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
<p>5.C Check "1B LHSI to Chg Pumps Sup Vlv" (MOV-1SI-863B) power available.</p>	<p>5.1 Candidate locates MCC1-E6 (East Cablevault. 735).</p> <p>5.2 Candidate locates MOV-1SI-863B breaker (Cub. U).</p> <div data-bbox="662 646 1433 751" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the OFF position.</p> </div> <p>5.3C Candidate places handle in the ON position.</p> <div data-bbox="662 827 1433 932" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: The breaker handle is in the ON position.</p> </div> <p>COMMENTS:</p>	
<p>6. Report back to supervisor that the Cold Leg Recirculation Components verification completed.</p>	<p>6.1 Candidate reports to supervisor.</p> <div data-bbox="662 1241 1433 1451" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: Role play supervisor, and acknowledge the report.</p> <p>If asked, cue that the Shift Manager will address any potential plant tampering issues with Site Protection.</p> </div> <p>COMMENTS:</p>	
	<div data-bbox="662 1709 1433 1793" style="border: 1px solid black; padding: 5px;"> <p>EVALUATOR CUE: State "This JPM is complete"</p> </div>	
	<p>STOP TIME: _____</p>	

CANDIDATE DIRECTION SHEET

*** THIS SHEET TO BE GIVEN TO CANDIDATE ***

☐ Read:

INITIAL CONDITIONS: The plant has experienced a Loss of Coolant Accident. EOP E-1, Loss of Reactor or Secondary Coolant is in progress. Off-site power is available, and all busses are energized.

INITIATING CUE: The BOP Operator has verified power available to some of the Control Room components of 1OM-53A.1.1-F, "Cold Leg Recirculation Components Verification". Your supervisor has directed you to locally verify power available to MOV-1SI-860A, MOV-1SI-863B, MOV-1CH-115D, and MOV-1CH-115B, according to EOP Attachment 1-F. The indicating lights for these valves are dark. (The light bulbs have been checked and are good.) You are to report when the verification is completed.

- ☐ At this time, ask the evaluator any questions you have on this JPM.
- ☐ When satisfied that you understand the assigned task, announce "I am now beginning the JPM".
- ☐ Simulate performance or perform as directed the required task.
Point to any indicator or component you verify or check and announce your observations.
- ☐ After determining the Task has been met announce "I have completed the JPM".
Then hand this sheet to the evaluator.

Appendix D**Scenario Outline**

Facility: **BVPS Unit 1** Scenario No. 1 Op Test No.: 1LOT18 NRC
 Examiners: _____ Candidates: _____ SRO
 _____ ATC
 _____ BOP

Initial Conditions: **IC 101 (10):** 100% power, BOL, Equ. XE Conditions, CB "D" @ 230 steps, RCS boron - 1310 ppm.

Turnover: Maintain 100% power.
 PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A
 1FW-P-3A Out of service, TS 3.7.5, Condition B

Critical Tasks: **1. CT-11 (E-0.O) Close CNMT isolation valves**
2. CT-16 (E-1.C) Stop RCP's
3. CT-52 (FR-S.1.C) Initiate negative reactivity

Event No.	Malf. No.	Event Type	Event Description
1	AUX13G (0 0)	(C,A) BOP, SRO (TS) SRO	VS-F-4A spurious trip, requires BOP to start VS-F-4B.
2	PRS06A (0 0) 100 60	(I,A) ATC, SRO (TS) SRO	LT-1RC-459 drifts high, requires ATC to place alternate channel in service.
3	TUR15 (0 0) 78 10	(C,A) ATC, SRO (TS) SRO	Turbine valve position limiter fails low, causes ~ 100 mw load reduction. ATC required to Borate RCS.
4	FWM09C (7 0) 25 0	(C,A) BOP, SRO	"C" SG Feedwater valve, FCV-1FW-498, begins oscillating, requiring BOP to manually control level.
5	TUR03E (0 0) 15 8	(C,A) BOP, SRO	Turbine high bearing vibration requires crew to manually trip the unit.
6	CRF12A CRF12B	(M) ALL	Failure of Automatic and manual Reactor trip from the control room requires entry into FR-S.1.
7	CRF02A (5 0)	(C) ATC, SRO	Control Rod automatic insertion failure, ATC must manually insert control rods.
8	INH20 INH21 INH35 INH36	(C) BOP, SRO	All Aux Feedwater pumps fail to automatically start, requires BOP to start AFW pumps.
9	SIS08	(M) ALL	1200 gpm LOCA occurs on "B" Loop
10	INH49	(C) BOP, SRO	Train "A" CIA fails to automatically actuate.
11	VLV-SEA10 (0 0) 100	(C) ATC, SRO	MOV-1CH-381 fails to automatically close on CIA signal

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

E-0 → FR-S.1 → E-0 → E-1 → ES-1.2

After taking the shift at 100% power, BOL, Leak Collection Exhaust fan, 1VS-F-4A, will trip, the crew will respond using the ARP which will direct the BOP to manually start 1VS-F-4B. The SRO will address applicable TS and License Requirements Manual.

LT-1RC-459 will then drift high. The ATC will recognize the failure and respond IAW AOP 1.4.1 IOA's to remove the failed channel from service. The SRO will transition to the Instrument Failure procedure, 1OM-6.4.IF and direct the ATC complete the removal of the 459 channel from service. and then review applicable Technical Specifications in effect for the failed level transmitter.

A malfunction will then occur with the turbine valve position limiter causing a load rejection, in response to the load rejection, control rods will auto insert bringing in the Bank D low alarm, requiring the ATC to Borate the RCS and withdraw control rods to clear the alarm.

At the same time, a malfunction will occur with the "C" main feed regulating valve, FCV-1FW-498, causing oscillations in the "C" SG level requiring the BOP to manually stabilize and control level.

The SRO will enter AOP 1.35.2, "Load Rejection," to stabilize the plant and address DNB technical specifications

A main turbine bearing #5 will exhibit high vibrations, at 15 mils the ARP for A7-104, probable cause 5 will require a unit trip.

The ATC will unsuccessfully attempt to trip the reactor from BB-B and BB-A.

The SRO will enter FR-S.1 with the ATC and BOP performing the IOA's.

1 minute after Emergency boration flow is established in FR-S.1, if the crew previously dispatched an operator to locally trip the reactor, the reactor will be locally tripped. The ATC will verify reactor power is <5% after which the SRO will return to E-0.

1 min. after the local Rx trip, a 1200 gpm LOCA will occur on the B loop resulting in an automatic SI actuation.

Additional malfunctions that occur during the ATWS condition are that all available Aux feed water pumps fail to automatically start, all can be manually started. (1FW-P3A was OOS on turnover)

The safety injection that occurred will fail to actuate the train "A" CIA signal, and MOV-1CH-381 (a train "B" CIA valve) will fail to automatically close. The crew will be required to isolate the containment penetration via either manually actuating Train "A" CIA or manually closing MOV-1CH-381.

After returning to E-0, the SRO will determine that the RCS is not intact and transition to E-1. The scenario will be terminated at the lead evaluators discretion after the crew transitions to ES-1.2 and initiates a RCS Cooldown to Cold Shutdown.

Expected procedure flow path is E-0 → FR-S.1 → E-0 → E-1 → ES-1.2.

BEAVER VALLE POWER STATION

INITIAL CONDITIONS: (IC-10) 100 % Power, BOL, Bank D @ 230 steps, Equilibrium XE, ____ PPM Boron,

<u>ADDITIONAL LINEUP CHANGES</u>	<u>STICKERS</u>	<u>MONITOR SETUP</u>
MOV-1RC-536 closed with power maintained	YCT on CS	100% power splash
1FW-P-3A in PTL	YCT on CS	
<u>EQUIPMENT STATUS</u>	<u>DATE/TIME OOS</u>	<u>TECHNICAL SPECIFICATION(S)</u>
PCV-1RC-456 isolated	Yesterday / 1200	3.4.11, Condition A
1FW-P-3A on clearance	8 hours ago	3.7.5, Condition B

SHIFT TURNOVER INFORMATION

1. Maintain 100% power.
2. PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A
3. 1FW-P-3A Out of service, TS 3.7.5, Condition B

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide BOL Rapid Power Reduction reactivity plan.
- 2.

PROCEDURES NEEDED

E-0
 E-1
 ES-1.2
 FR-S.1
 IOM-26.4.AK
 IOM-46.4.G
 6 IF, Attach 1
 Attachment 1-F
 Attachment 1-K
 Attachment 2-AD
 AOP 1.1.3
 AOP 1.4.1
 AOP 1.35.2

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

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

1VS-F-4A trips

IMF AUX13G (4 0)

ROLE PLAY:

Wait 5 minutes then report back as applicable.

SWITCHGEAR - If dispatched to breaker, report breaker 8N5 is tripped. If asked to attempt to reset, report that it will not reset.

FAN - If dispatched to fan, report that the fan housing is damaged, appears that the fan blades have failed. If started, 1VS-F-4B is running SAT.

Continue with next event at LE discretion

1VS-F-4A trips

A11-33; Leak Collection Exhaust Fan Auto Stop

SRO references Tech Specs.

BOP notes alarm, informs SRO.

BOP refers to ARP.

BOP manually starts 1VS-F-4B.

Crew dispatches operators to investigate cause of fan trip.

TS 3.7.12 (Info Only)

LR 3.7.7. Condition A, restore in 7 days.

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

Pressurizer level transmitter
LT-1RC-459 drifts high.

IMF PRS06A (0 0) 100 60

LI-1RC-459A indicates upscale.
ALARM:
A4-2, PRZR Control High Low Level Dev.

ATC reports unexpected PRZR level deviation alarm.
ATC identifies LT-1RC-459 is failing high.
IAW AOP 1.4.1, Part C, ATC removes LT-1RC-459 from service by placing PRZR level control channel selector to POS 3 (461/460).
If necessary ATC places FCV-1CH-122 in manual and restores PRZR level.

NOTE:

A control band and Rx trip criteria are not applicable if the PRZR level controls remained in AUTO.

SRO enters AOP 1.4.1, Process Control Failure, Part "C".

SRO provides a control band and Rx trip criteria of 5% low/90% high for manual PRZR level control.

BOP refers to ARP.

SRO enters the Reactor Coolant System Instrument failure procedure, 1OM-6.4.IF, attachment 1.

SRO transitions to Reactor Coolant System Instrument failure procedure, 1OM-6.4.IF, attachment 1.

SRO evaluates Technical Specifications:

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 < P-7 in 78 hrs.

SRO determines following TS are for tracking only
3.3.3 (PAM instrumentation) Table 3.3.3-1 function 11 is met if LT460 and LT461 are operable.

3.3.4 (Remote Shutdown System) Table B.3.3.4-1 function 4.a requirement is met if LT460 is operable.

Continue with next event at LE discretion

BEAVER VALLE . JWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 3 & 4:

~100 MW Turbine Runback due to Valve Position limiter failure, FCV-1FW-498 begins oscillating due to load change.

IMF TUR15 (0 0) 78 10

Following commands pre-loaded

IRF PLP-MAL07 (7 0) 180

IMF FWM09C (7 0) 25

Rods begin stepping in,
Megawatts decrease
RCS temperature and pressure rise accordingly

SRO enters AOP 1.1.3 then transitions to AOP 1.35.2, Load Rejection

SRO evaluates EPP not applicable at this time.

IAW Immediate Operator Action of AOP 1.1.3, ATC announces unexpected rod motion, verifies megawatts decreasing and announces load rejection.

ATC checks Rods are inserting in AUTO and Tavg is dropping to Tref.

ATC borates as necessary by referring to reactivity plan.

ATC/BOP, sounds standby alarm, announces Unit 1 load rejection.

Verify Normal EHC System Operation:
BOP checks the Valve Position Limit and verifies that it is NOT consistent with pre-event value and that the Valve Position Limit red light is lit.

As time permits, SRO directs BOP to perform 1OM-26.4.AK to recover the GV's from Limiter.

When the BOP notices Main Feed Regulating Valve oscillations.

A7-61, SG 1C Level Deviation From Setpoint

ROLE PLAY:

If dispatched to locally investigate feed valve, wait 2 minutes then report back that there is nothing obvious identified at the valve.

SRO enters AOP 1.4.1, Process Control Failure, Part A.

IAW AOP 1.4.1, BOP notes erratic automatic operation informs SRO and takes manual control of main feed regulating valve, FCV-1FW-498 and restores stable level at setpoint.

SRO provides a control band and Rx trip criteria of 25% low and 85% high for operation of FCV-1FW-498 in Manual.

Crew notifies I&C of FCV-1FW-498 controller auto control failure with satisfactory manual control.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 3 & 4: (continued)

NOTE: If DNB Tech Spec entry not identified by the crew at this time, ask as a follow-up question.	SRO evaluates Technical Specifications:	3.4.1 (RCS DNB Parameters, RCS press < 2218 psia) Condition A: restore RCS pressure within 2 hours.
--	---	--

Continue with next event at LE discretion

EVENT 5:

Main turbine bearing #5 high vibration.

IMF TUR03E (0 0) 15 8

Bearing #5 vibration at 15 mils, adjacent bearings also indicate abnormally high vibration.	BOP acknowledges and reports bearing vibration indications.
---	---

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

A7-104,Turbine Supervisory Instrument Trouble	ATC reviews ARP.
---	------------------

ROLE PLAY: If necessary – report in as Turbine operator that the turbine is shaking.

EVENTS 6 - 11, (all preloaded)

ATWS with Auto Rod insertion failure,
AFW pump auto start failures
1200 gpm LOCA on "B" loop
Train "A" CIA actuation failure with
failure of MOV-1CH-381 to auto close.

Crew determines that a reactor trip is warranted.

ATC attempts a manual reactor trip, reports trip failure/ ATWS condition.

SRO directs operators to perform IOA's of FR-S.1, implements FR-S.1 at step 1 of E-0.

IMF CRF12A (0 0)

SRO enters FR-S.1

IMF CRF12B (0 0)

IMF CRF02A (5 0)

(preloaded)

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 11, (continued)**Critical Task CT-52 (FR-S.1.C):**

Crew inserts negative reactivity into the core by inserting RCCAs before completing the immediate action steps of FR-S.1.

Basis for Selection:

SAFETY SIGNIFICANCE -- Failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor remains critical or returns to a critical condition. Performance of the critical task would make the reactor subcritical and provide sufficient shutdown margin to prevent (or at least minimize the power excursion associated with) any subsequent return to criticality.

Failure to insert negative reactivity constitutes "mis-operation or incorrect crew performance which leads to incorrect reactivity control (e.g., failure to initiate emergency boration or manually insert RCCAs)."

Crew performs Immediate Operator Actions of FR-S.1

BOP manually trips Turbine

ATC recognizes control rods are not automatically inserting, places rods in Manual and begins inserting rods.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 11, (continued)

Auto start of all AFW pumps.

IMF INH20

IMF INH21

IMF INH36

(preloaded)

BOP verifies AFW status, Notes there are NO AFW pumps running.

BOP manually starts 1FW-P-3B motor-driven AFW pump.

BOP manually opens TV-1MS-105A and 105B to start Turbine-driven AFW pump, 1FW-P-2 and verifies pump running by A7-7 NOT lit.

BOP verifies all AFW throttle valves are open.

BOP verifies AFW flow.

Crew initiates Emergency Boration Flow by;

Verifying at least 1 charging pump is running

Checking Safety Injection is NOT actuated.

Aligning Boration path by;

Opening MOV-1CH-350.

Starting "A" Boric Acid pump in "FAST".

Verifying Emergency Boration flow > 30 gpm.

Aligning Charging flow path by adjusting FCV-1CH-122 to establish > 75 gpm charging flow.

Verifying RCS pressure is < 2335 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 11, (continued)**ROLE PLAY:**

When requested to open the reactor trip breakers & trip the rod drive MG set output ACBs, wait until the crew has initiated emergency boration flow then insert: **TRG! 10**

Following commands are preloaded, activate Trigger 10 as soon as requested, 1st Rx trip breaker will open 1 minute after actuating Trigger 10.

IMF CRF14A (10 60)

IMF CRF14B (10 65)

IMF CRF01A (10 80) 1

IMF CRF01B (10 85) 1

ROLE PLAY:

When all breakers are open, report actions to the control room.

Crew alerts plant personnel by;

- Sounding the standby alarm
- Announcing a Unit 1 Rx trip w/o SCRAM
- Dispatching an operator to locally trip the Rx.

Crew continues in FR-S.1 after dispatching an operator.

BOP verifies turbine is tripped.
BOP verifies MOV-1MS-100A, B automatically CLOSED.
BOP depresses the RESET Pushbutton on the Reheater Controller.

ATC checks if SI is actuated.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 11, (continued)

NOTE:

This is a continuous action step, when the Rx is locally tripped, the crew will return to this step and then transition back to E-0, Step 1.

When the Rx is locally tripped.
SRO returns to E-0, step 1.

ATC checks if Rx is subcritical

- Power range channels < 5%
- IR channels – negative startup rate.

ATC verifies Reactor trip:

- Rx trip and bypass breakers open.
- 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.

BOP verifies Power to AC Emergency Busses

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

BOP identifies that both emergency busses are energized from off-site power.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><u>EVENTS 6 - 11</u>, (continued)</p> <p>NOTE: Event 9 automatically inserts 1 minute after the Rx is tripped, depending upon the crews timing through the IOA's of E-0, SI may not be actuated or required, but RCS pressure will be dropping and automatic SI will be imminent.</p> <p>If AFW pump automatic start failure was not previously identified, the crew would identify and start 1FW-P-2 and 1FW-P-3B at this step.</p>	<p>SI automatically actuated due to the SBLOCA.</p>	<p>Check SI Status.</p> <p>ATC checks if SI is required:</p> <ul style="list-style-type: none"> • ATC verifies CNMT press < 5psig. • ATC verifies PRZR press is not > 1850 psig. • ATC/BOP verifies Steamline press > 500 psig. <p>Crew determines SI is required; ATC manually actuates SI by depressing both trains' pushbuttons.</p> <p>ATC/BOP, sounds standby alarm, announces reactor trip and safety injection.</p> <p>Check if SI flow should be reduced:</p> <ul style="list-style-type: none"> • Crew verifies CNMT radiation, Pressure and Sump level are not consistent PRE-EVENT. <p>SRO determines SI flow should not be secured.</p> <p>ATC verifies SI system status:</p> <ul style="list-style-type: none"> • Charging pumps running – 2 running. • LHSI pumps running – 2 running. • BIT Flow indicated – YES. <p>BOP verifies AFW status:</p> <ul style="list-style-type: none"> • Motor-driven AFW Pumps – ONE RUNNING. • Turbine-driven pump: <ul style="list-style-type: none"> TV-1MS-105A, B open. A7-7 is NOT LIT, turbine driven pump running. • AFW Throttle Valves all FULL OPEN. • Total AFW Flow is > 370 GPM.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><u>EVENTS 6 - 11</u>, (continued)</p> <p>NOTE: Evaluation of BOP performing Attachment 1-K begins on page 23.</p> <p><u>Critical Task CT-11 (E-0.O):</u> Crew closes Cnmt isolation valves such that at least one valve is closed on each critical phase A penetration before the end of the drill.</p> <p>Basis for Selection: SAFETY SIGNIFICANCE -- Failure to close at least one containment isolation valve on each critical phase-A penetration, under the postulated plant conditions and when it is possible to do so, constitutes "mis-operation or incorrect crew performance which leads to degradation of any barrier to fission product release." In this case, the containment barrier is needlessly left in a degraded condition.</p>	<p><u>List of Attachment 1-K Discrepancies:</u></p> <ul style="list-style-type: none"> • Train "A" CIA failed to actuate. • Train "B" CIA valve, MOV-1CH-381 failed to automatically close • AFW pumps failed to automatically start. <p>RCS temperature < 547°F and dropping due to Safety Injection flow.</p>	<p>SRO directs BOP to perform Attachment 1-K.</p> <p>ATC checks RCS temp. stable at or trending to 547°F:</p> <ul style="list-style-type: none"> • ATC verifies no steam release is occurring. • ATC verifies Reheat steam is isolated. • ATC reduces total feedflow to minimize C/D.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

NOTE:

Depending upon crew timing and procedure progression, the RCP trip criteria may be met at this time.

ATC verifies PRZR isolated:

- PORVs – CLOSED (all)
- Spray Valves – CLOSED (both)
- Safety relief valves – CLOSED (all)
- Power to at least one block valve – AVAILABLE (all available)
- Block valves – AT LEAST ONE OPEN (2)

ATC checks if RCPs should be stopped:

- D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT).
- Criteria for stopping is not met – all RCPs left running.

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.

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 all SG tubes are intact.

BEAVER VALLE JWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 – 11</u> , (continued)	<p>Hi-Hi Radiation alarm is in due to containment radiation levels.</p> <p>Incore room, RM-204 and containment, RM-215A and 215B in Hi-Hi alarm.</p> <p>Containment Pressure is rising.</p> <p>Containment Sump level is rising.</p> <p>SRO transitions to E-1, Loss of Reactor or Secondary Coolant.</p>	<p>Crew checks if RCS is intact by checking CNMT conditions consistent with pre-event values:</p> <ul style="list-style-type: none"> • CNMT radiation • CNMT pressure • CNMT sump level <p>Crew determines the RCS is not intact based on CNMT conditions and verifies HHSI valves, MOV-1SI-867A,B,C,D all open & transitions to E-1.</p> <p>Crew checks if CREVS should be actuated by checking EITHER of the following:</p> <ul style="list-style-type: none"> • Control Room Radiation Monitor RM-1RM-218A,B- NOT IN HIGH ALARM. • CIB - HAS NOT OCCURRED. <p>Crew determines CREVS actuation NOT required.</p>

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11, (continued)

NOTE: If not already, the D/P criteria for stopping the RCPs will be met.

Critical Task: CT-16 (E-1.C)

Crew trips all RCPs when RCS to highest SG D/P criteria is exceeded and SI flow verified prior to exiting procedure E-1.

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."

ATC checks if RCPs should be stopped:

- D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT).
- Criteria for stopping is met – all RCPs shutdown.

ATC checks Recirc Spray Pumps – NONE RUNNING

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.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

BOP checks intact SG levels:

- NR levels > 31% (50% Adverse)

BOP controls feed flow to maintain NR level between 31% (50% adverse) and 65%.

BOP checks station Instr air hdr press > 100 PSIG.

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. (all available)
- PORVs – ALL CLOSED.
- Block valves – AT LEAST ONE OPEN. (2)

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

SI reduction criteria are not met.

Crew checks if SI flow should be reduced.

ATC verifies RCS subcooling is NOT > 46°F (54°F Adverse) based on CETC's.

ATC verifies RCS subcooling is < Attachment 6-A requirements.

Crew determines that current plant conditions for RCS subcooling, does NOT support SI reduction.

Check if CNMT spray should be stopped.

ATC verifies no Quench or Recirc Spray pumps are running.

ATC resets SI and CIA.

ATC checks if LHSI pumps should be stopped;

- RCS pressure is > 275 PSIG (400 PSIG ADVERSE CNMT)
- Check RCS pressure – STABLE
- LHSI pumps are running with RWST suction

ATC stops LHSI pumps AND places CS's in AUTO.

NOTE:

Dependant on procedure progression and timing, RCS pressure may still be dropping at this point, if so, the crew would leave the LHSI pumps in service. This is a continuous action step – therefore the crew will return to this step and secure the LHSI pumps when RCS pressure stabilizes.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

Check RCS and SG pressures.

BOP checks pressure in all SG's NOT stable or rising.
ATC checks RCS pressure is dropping.

SRO determines SG pressure dropping is NOT due to a faulted SG and continues with procedure based upon preceding note.

BOP verifies AC Emergency busses are energized by offsite power.

SRO directs BOP to stop unloaded EDG's IAW Attachment 2-AD as time permits.

BOP performs Attachment 1-F to verify power available to at least 1 train of Cold Leg Recirculation equipment.

BOP reports Attachment 1-F completed SAT with no discrepancies.

Crew evaluates radiation monitors, determines Auxiliary building and Safeguards radiation is consistent with pre-event values.

TSC is not staffed at this point.

SRO determines TSC is not activated.

SRO directs ATC to monitor nuclear instrumentation to ensure adequate shutdown margin.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

NOTE:

LHSI pumps may have previously been secured due to continuous action step in E-1.

SRO transitions to ES-1.2

Start additional plant equipment to assist in recovery.

SRO directs a field operator to perform Attachment 2-A for securing the turbine plant.

Check if RCS cooldown and depressurization is required.

ATC checks RCS pressure > 275 psig (400 PSIG ADVERSE CNMT).

SRO determines plant conditions support transition to ES-1.2.

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

ATC checks LHSI pumps – no signs of cavitation.
ATC reports LHSI pumps previously stopped.

ATC checks CNMT pressure < 8 psig.
SRO directs makeup to the RWST IAW 1OM-7.4.Q

BOP verifies 4160V and 480V stub busses energized;

- ACB-1E5 and ACB-1F5 closed.
- BA transfer pumps or CNMT vacuum pump indicating lights.

BOP verifies CNMT Instrument air is available;

- Station Instrument Air > 100 psig.
- TV-1IA-400 open.
- CNMT Instrument Air header > 85 psig.

BEAVER VALLEY POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><u>EVENTS 6 – 11;</u> (continued)</p> <p>NOTE: LHSI pumps may have previously secured due to continuous action step in E-1.</p>	<p>TSC is not staffed at this point.</p>	<p>BOP verifies all AC busses energized by offsite pwr.</p> <p>ATC places all PRZR heaters in PTL.</p> <p>ATC checks if LHSI pumps should be stopped;</p> <ul style="list-style-type: none"> • LHSI pumps are running with RWST suction • RCS pressure is > 275 PSIG (400 PSIG ADVERSE CNMT) • Check RCS pressure – STABLE <p>ATC stops LHSI pumps AND places CS's in AUTO.</p> <p>BOP checks intact SG levels;</p> <ul style="list-style-type: none"> • NR level > 31% (50% adverse) • Control SG NR levels between 31% (50% ADVERSE) and 65% <p>BOP checks station instrument air header > 100 psig.</p> <p>SRO determines TSC is not activated.</p> <p>SRO directs ATC to monitor nuclear instrumentation to ensure adequate Shutdown Margin.</p> <p>Initiate RCS cooldown to cold shutdown:</p> <ul style="list-style-type: none"> • Maintain C/D rate < 100 °F/Hr. • Block low press SI when RCS is < 1950 psig. • Check station instrument air header > 100 psig. • Check MSIVs are all open. • Check condenser available.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 – 11; (continued)

BOP verifies condenser steam dump mode selector is in Tavg mode.

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.
- Defeats TAVG interlock when required.
- Gradually raises steam dump rate.

Verifies cooldown rate in RCS Cold legs is < 100F/hr.

Terminate scenario when the crew establishes RCS cooldown in ES-1.2 and demonstrates the intent to limit C/D rate to < 100 °F/Hr.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Attachment 1-K 'Verification of Automatic Actions'

Both EDG's are running.

Ensure Reheat Steam Isolation.

BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows:

Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow.

Verifies power to both Emergency 4KV AC busses.

Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B). ("B" running, "A" previously failed)

Station instrument air header pressure > 100 PSIG.

Ensure Reheat Steam Isolation:

- Verify MOV-1MS-100A,B – CLOSED.
- Reset reheater controller.
- Close MOV-1MS-204, gland stm spillover vlv.

Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig.

Align Neutron Flux Monitoring For Shutdown:

- When operable IR channels <1E-10 amp, check SR channels energized.
- Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p>Attachment 1-K ‘Verification of Automatic Actions’ (continued)</p>		<p>Verify River Water System In Service:</p> <ul style="list-style-type: none"> • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. <p>OR (IF CIB has occurred)</p> <ul style="list-style-type: none"> • Verify RPRW flow to recirc spray hxs. <p>Check If Main Steamline isolation required:</p> <ul style="list-style-type: none"> • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57)
<p><u>Critical Task CT-11 (E-0.O)</u> Crew closes CNMT isolation valves such that at least one valve is closed on each critical phase A penetration before the end of the scenario.</p>	<p>All AFW pumps failed to auto start. Train “A” CIA failed to actuate, manual actuation successful. Train “B” CIA valve, MOV-1CH-381 failed to automatically close, manual isolation successful.</p>	<p>Determines steamline isolation is NOT required.</p> <p>Check CIB And CNMT Spray Status:</p> <ul style="list-style-type: none"> • Containment press - REMAINED < 11 PSIG. <p>Verify ESF Equipment Status:</p> <ul style="list-style-type: none"> • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT. <p>When SR’s are energized, verify Audible indication:</p> <ul style="list-style-type: none"> • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Attachment 1-K ‘Verification of Automatic Actions’ (continued)

Start CNMT Hydrogen Analyzers:

- Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service.

Attachment 1-K– COMPLETE

Discrepancies:

- Train "A" CIA auto actuation failure.
- Train "B" CIA valve, MOV-1CH-381 failed to auto close on CIA signal.
- AFW pumps failed to automatically start.

Upon completion, reports any discrepancies to SRO.

Appendix D

Scenario Outline

Facility: **BVPS Unit 1** Scenario No. 2 Op Test No.: 1LOT18 NRC
 Examiners: _____ Candidates: _____ SRO
 _____ ATC
 _____ BOP

Initial Conditions: **IC-102 (29):** 100% power, EOL, Equ. XE Conditions, CB "D" @ 230 steps, RCS boron - 100 ppm.

Turnover: Maintain 100% power.
 PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A
 1FW-P-3A Out of service, TS 3.7.5, Condition B
 Control Rods are in manual due to a circuit malfunction, I&C will be investigating the problem using work order instructions and **1MSP-6.38**, automatic rod control is not available.

Critical Tasks:

- 1. E-0.D Manually actuate 1 train of Safety Injection**
- 2. FR-H.1.A Establish feed flow to SG before Feed and Bleed is required**
- 3. E-2.A Isolate faulted SG**

Event No.	Malf. No.	Event Type	Event Description
1	PRS12 (0 0) 85 45 ASIS	(I,A) ATC, SRO (TS) SRO	Master Pressure controller drifts to 85%, requires ATC to manually control RCS pressure.
2	IOR X12I027L (12 0) ON	(TS) SRO	Auto Stop Oil Pressure Switch, PS-1TB-417, fails
3	AUX02A	(C,A) BOP, SRO	"A" Station air compressor trips, "B" fails to auto start – BOP manually starts "B" air compressor, Diesel Air compressor fails to auto start but will start locally.
4	MSS18C (0 0) 2.5E5 300 0	(R) ATC (N) BOP, SRO (TS) SRO	"C" SG Atmospheric valve fails open causes Rx overpower, requires power reduction.
5	CRF04BV (2 2) 1 CRF04BT (2 4) 1	(C,A) ATC, SRO (TS) SRO	2 Rods drop during power reduction – requires manual Rx trip.
6	TRG 3 'IMF MSS18C (0 0) 6E5'	(M) ALL	Steam Header Break in turbine building occurs on Rx trip – requires Safety Inj.
7	SIS10A SIS10B	(C) ATC, SRO	Automatic SI fails to actuate – requires manual actuation.
8	VLV-MSS18 100	(C) BOP, SRO	"C" SG Mainsteam line isolation valve fails to auto close.
9	VLV-SGB17 100 VLV-SGB18 100 VLV-SGB19 100	(C) BOP, SRO	SG Sample valves fail to auto close, TV-1SS-117A,B,C
10	FWM11C (4 30) FWM11A (0 0)	(M) ALL	Loss of all Aux Feedwater flow, requires entry into FR-H.1

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

E-0 → FR-H.1 → E-0 → E-2.

After taking the shift at 100% power, the Master Pressure controller will fail to 85% causing the PRZR spray valves to open. IAW AOP 1.4.1, the ATC will close the spray valves to stabilize RCS pressure. The ATC will manually control PRZR pressure for the remainder of the scenario. The SRO will address Technical Specifications for DNB.

An Auto Stop Oil Pressure Switch, PS-1TB-417, will then fail, the crew will identify the failure and the SRO will evaluate applicable Technical Specifications for the failure.

The "A" station air compressor will trip with an auto start failure of the "B" station air compressor. The SRO will direct activities in accordance with AOP 1.34.1, "Loss of Station Instrument Air", the BOP will manually start the "B" station air compressor.

The "C" steam generator Atmospheric steam dump valve, PCV-1MS-101C, will fail open causing the RCS temperature to decrease and an increase in Rx power. The crew will recognize the increase in power and reduce power. If necessary, Operations management will direct the crew to lower Rx power to 90% while maintenance can attempt to isolate the flow path.

The crew will identify the failed valve and attempt to close the valve from the control room. After the failed closure attempt, the crew will dispatch an operator to locally isolate or take actions to locally close the valve, all attempts to isolate the leak will not be successful.

The ATC will insert the control rods in response to the turbine load reduction, when bank D lowers to less than 215 steps, 2 rods will drop during the rod insertion, the immediate actions of AOP 1.1.8, "Rod Inoperability", will be taken and the reactor will be manually tripped due to more than 1 rod being dropped.

Upon the Rx trip, a steam header break will occur in the turbine building. An automatic steamline isolation will occur, however the "C" Mainsteam line isolation valve will fail to automatically close requiring the BOP to manually close it. The fault will also result in an SI being required, however, Safety Injection will not automatically actuate, requiring manual actuation to initiate SI flow.

Aux Feedwater malfunctions will occur such that the turbine driven pump, 1FW-P-2 trips on start, 1FW-P-3B will not start and 1FW-P-3A was OOS on turnover.

The crew will enter E-0 on the reactor trip, and then enter FR-H-1 due to no auxiliary feed water being available. After Feedwater has been established using either the dedicated Feedwater pump, 1FW-P-4 or either Main feed pump, the crew will return to E-0 and progress to diagnose the "C" SG as being faulted and enter E-2 to isolate the "C" SG.

The scenario will be terminated when the crew determines transition to ES-1.1 is appropriate.

Expected procedure flow path is E-0 → FR-H.1 → E-0 → E-2.

BEAVER VALLE POWER STATION

INITIAL CONDITIONS: IC-102 (29) 100 % Power, EOL, Bank D @ 230 steps, Equilibrium XE, 100 PPM Boron,

<u>ADDITIONAL LINEUP CHANGES</u>	<u>STICKERS</u>	<u>MONITOR SETUP</u>
MOV-1RC-536 closed with power maintained	YCT on CS	100% power splash
1FW-P-3A in PTL	YCT on CS	
Rod control in MANUAL	YCT on CS	
<u>EQUIPMENT STATUS</u>	<u>DATE/TIME OOS</u>	<u>TECHNICAL SPECIFICATION(S)</u>
PCV-1RC-456 isolated	Yesterday / 1200	3.4.11, Condition A
1FW-P-3A on clearance	8 hours ago	3.7.5, Condition B

SHIFT TURNOVER INFORMATION

1. Maintain 100% power.
2. PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A
3. 1FW-P-3A Out of service, TS 3.7.5, Condition B
4. Control rods are in MANUAL due to circuit malfunction, I&C will be investigating.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide EOL Rapid Power Reduction reactivity plan.
- 2.

PROCEDURES NEEDED

E-0
E-2
FR-H.1
1OM-46.4.G
1IF, Attachment 3
Attachment 1-K
Attachment 2-K
AOP 1.1.8
AOP 1.4.1
AOP 1.34.1
AOP 1.51.2

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

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

Master Pressurizer pressure controller drifts high.

IMF PRS12 (0 0) 85 45 ASIS

Master pressure controller demand increases in auto, opening spray valves.

RCS pressure dropping due to spray valves opening.

Alarms:

A4-10, PRZR control high pressure deviation (due to MPC high demand),

A4-11, PRZR control pressure low (due to actual RCS pressure drop).

SRO enters AOP 1.4.1, Process Control Failure, Part "B".

SRO references Tech Specs.

ATC notes PRZR pressure alarms and reports to the crew.

IAW IOA's of AOP 1.4.1, Part B, RO verifies PORV's are not open and closes spray valves PCV-1RC-455A and B.

Crew determines MPC failure and not a pressure channel failure.

US establishes Control Band of 2235 ± 15 psig and Rx Trip criteria.

TS 3.4.1 DNB parameters, Condition A – restore RCS pressure within 2 hrs.

Continue with next event at LE discretion

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

Auto Stop Oil pressure switch,
PS-1TB-417 fails

IOR X12i027L (12 0) ON

Status Panel 622, B-16 lights.
Alarm:
A7-91, Turbine Auto Stop Oil Press Low.

SRO enters 1OM-1.4.IF. attachment 3.

SRO references Tech Specs.

BOP reports unexpected secondary alarm.

Crew verifies primary and secondary plants are stable.

BOP reviews ARP.

Crew determines alarm due to instrument failure.

TS 3.3.1, Table 3.3.1-1, function 15.a, Condition L;
trip channel in 72 hrs, (by lifting leads). or reduce
power to < P-9 in 76 hrs.

Continue with next event at LE
discretion

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

SA-C-1A trips

Station air compressor 1SA-C-1A trips, 1SA-C-1B and 1SA-C-4 auto starts disabled.

IMF XN06106 (0 0) 0**IRF AUX023 (0 0) STOP****IMF AUX02B (0 0) TRUE****IMF AUX02A (0 0) TRUE**

A6-98; Station air compressor 1A local panel trouble.

BOP notes degrading conditions and informs crew.

ATC reviews Alarm response procedures.

SRO may enter AOP 1.34.1 for "Loss of Station Air".

Crew dispatches operator to air compressors.

BOP manually starts 1SA-C-1B.

Crew informs Maintenance and management of air compressor status.

ROLE PLAY:

If dispatched as plant operator, wait 2 minutes then report that SA-C-1A has tripped on motor thermal overload. You are ready to attempt a local start of the Diesel-driven air compressor.

Insert:

IRF AUX023 (0 0) START

Continue with next event at LE discretion

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENT 4:</u>		
PCV-1MS-101C fails open	“C” Atmospheric Steam Dump valve fails open.	SRO directs ATC to manually close the open ADV.
IMF MSS12C (0 0) 100	Steam Flow increases. Reactor power increases. RCS temperature and pressure decreases. Feed regulating valve opens in response.	(PCV-1MS-101C).
	ADV will NOT close from BB control. Reactor power continues to rise to > 100%	ATC unsuccessfully attempts to manually close the 1C SG ADV. SRO requests I&C assistance.
NOTE:		ATC monitors RCS temperature and reactor power, informs SRO that power is rising above 100%.
Due to slow power increase rate, crew may enter AOP 1.51.1, Unplanned Power Reduction.	SRO enters AOP 1.51.2, “Reactor Overpower”	SRO informs crew of entry into AOP 1.51.2, Reactor Overpower.
Power Reduction		BOP reduces power; <ul style="list-style-type: none"> • Depresses 1ST STG IN pushbutton. • Sets EHC setter to approximately 5% below current power level. • Sets load rate thumbwheel to 5% per minute. • Depresses GO. • Verifies power < 100% and depresses HOLD.
NOTE:	Turbine load decreases. Reactor power decreases RCS temperature increases. Rods step in as operated by ATC	ATC manually inserts control rods to match Tavg-Tref and monitors reactor power and RCS pressure.
NOTE: If the Crew borates for the power reduction, initiate dropped rod malfunctions by actuating Trigger 2		ATC verifies power level - < 100% and NOT rising; <ul style="list-style-type: none"> • LEFM/Calorimetric • ΔTs • NI channels

BEAVER VALLE POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p>EVENT 4: (continued)</p> <p>ROLE PLAY (as appropriate): When requested to isolate 1MS-25, wait 8 minutes then report that 1MS-25 is unable to be locally closed:</p> <p>NOTE: With Reactor power changing, it may be necessary to ask the Tech Specs as a follow-up question. Additionally, when Bank D control rods insert to < 215 steps, Event 5 will automatically actuate.</p>	<p>PCV-1MS-101C is failed open.</p> <p>Valve requires manual isolation.</p> <p>SRO references Tech Specs.</p>	<p>BOP checks SG Atmos Steam Dump Vlvs and RHR Valve – ALL CLOSED;</p> <ul style="list-style-type: none"> • PCV-1MS-101A • PCV-1MS-101B • PCV-1MS-101C • HCV-1MS-104 <p>Crew dispatches operator to isolate PCV-1MS-101C by closing 1MS-25.</p> <p>BOP verifies TV-1CN-100 closed by verifying Annunciator A6-88 "Not in Alarm".</p> <p>BOP checks PT-1MS-446, 447, Turbine 1st Stage Pressure, channels operating normally.</p> <p>TS 3.7.4, Condition A - inoperable atmospheric dump valve. Requires restoring within 7 days.</p> <p>TS 3.4.1 DNB parameters, Condition A – restore RCS pressure within 2 hrs.</p>

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 5

2 dropped rods/ requires manual reactor trip.	Rods K6 and F10 drop into the core.	ATC recognizes Rods dropped and reports to SRO.
IMF CRF04BV (2 2) 1 IMF CRF04BT (2 4) 1	RCS temperature and pressure drops. A4-12 , Low Pressurizer pressure alarm, followed by; A4-46, Tavg Deviation alarm.	
	SRO enters AOP 1.1.8, Rod Inoperability	ATC performs Immediate Operator Actions for Rod Drop and per the RNO action, with 2 or more rods dropped, manually trips the reactor.
NOTE: Due to required Manual Reactor trip, it may be necessary to ask the Tech Spec implications due to 2 dropped rods as a follow-up question.		TS 3.1.4, 2 Dropped Rods, (More than one rod not within alignment limit.) Condition D – Verify SDM within 1 hour OR Initiate boration to restore required SDM within 1 hour AND be in Mode 3 in 6 hours.
<u>EVENTS 6, 7, 8,9 & 10:</u> (preloaded to occur on the Rx trip)	Steam Header Break in the Turbine building with auto closure failure of "C" steamline isolation valve. Automatic SI actuation failure and auto close failure of the SG sample valves. TV-1SS-117A,B,C, along with a loss of all feedwater that will require entry in FR-H.1.	Crew determines that SI is warranted.
Multiple malfunctions occur on reactor trip.		ATC manually depresses SI actuation pushbuttons.
IMF MSS01C (0 0) 2E6 120 5E5	Steam flow rises. RCS temperature and pressure drop.	
	SRO enters E-0.	ATC and BOP commence IOA's of E-0.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

ATC verifies Reactor trip:

- Rx trip and bypass breakers open.
- 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.

BOP verifies Power to AC Emergency Busses

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

BOP identifies that both emergency busses are energized from off-site power.

Critical Task CT-2 (E-0.D)

Crew manually actuates at least one train of SIS-actuated safeguards before transition to any ORP.

SI required due to steam fault in the turbine building.

SAFETY SIGNIFICANCE -- Failure to manually actuate SI under the postulated conditions constitutes "misoperation or incorrect crew performance that leads to degraded ECCS capacity."

Check SI Status.

ATC checks if SI is required:

- ATC verifies CNMT press < 5psig.
- ATC verifies PRZR press is not > 1850 psig.
- ATC/BOP verifies Steamline press > 500 psig.

Crew determines SI is required; ATC manually actuates SI by depressing both trains' pushbuttons.

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

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

Check if SI flow should be reduced:

- Crew verifies SG Pressures are not consistent with expected values.

SRO determines SI flow should not be secured.

ATC verifies SI system status:

- Charging pumps running – 2 running.
- LHSI pumps running – 2 running.
- BIT Flow indicated – YES.

BOP verifies AFW status:

- Motor-driven AFW Pumps – NONE RUNNING.
- Turbine-driven pump:
TV-1MS-105A, B open.
A7-7 is LIT, 1FW-P-2 is NOT running.
- AFW Throttle Valves all FULL OPEN.
- Total AFW Flow is < 370 GPM.

BOP reports no Aux feed water flow exists.

SRO recognizes that AFW flow cannot be established and enters FR-H.1, Response to Loss of Secondary Heat Sink.

ATC checks if secondary heat sink is required by:

- Verifying RCS press is > any non-faulted SG.
- RCS hot leg temperatures >350°F.

Crew determines a secondary heat sink is required.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

NOTE: This is a continuous action step, if "C" WR level is not <14% at this time, the crew will return to this step for direction to isolate AFW valves to the "C" SG.

BOP checks all SG WR levels;

- Identifies WR level in "C" SG is <14%.
- Confirms no AFW flow available to "C" SG.

SRO directs BOP to close AFW valves to the "C" SG.

- Closes MOV-1FW-151A and 151B.

Crew checks SG WR levels and determines if RCS bleed and feed should be initiated.

- BOP verifies WR lvl in at least 2 SG's is >14%.

BOP reports "A" and "B" WR levels are > 14%.

Crew determines bleed and feed is not required at this time and continues to monitor WR level.

BOP checks Primary Plant Demineralized Water storage tank level is > 27.5 feet.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

ROLE PLAY:

When directed to investigate AFW pump status:

If dispatched to Emergency Switchgear, wait 2 minutes then report 1FW-P-3B; ACB 1F16 ground OC relay 50-VF116G is flagged.

If dispatched to AFW room, wait 3 minutes then report as appropriate. 1FW-P-3B, not running, nothing obvious wrong at the pump. 1FW-P-2, apparent overspeed resulted in catastrophic failure . Local Suction Press. is 10 psig, normal.

ROLE PLAY: When dispatched with attachment 2-K, actuate **TRG! 14**, wait 3.5 minutes then report in that dedicated AFW pump has been started and the discharge valve is open.

Crew tries to establish AFW flow to at least 1 SG.

ATC/BOP verifies SG Blowdown and blowdown sample lines are isolated. Reports SG blowdown is isolated but Blowdown sample lines are not isolated and manually closes TV-1SS-117A,B,C.

Crew confirms:

- “A” motor-driven pump previously OOS.
- “B” motor-driven pump not running.
- Turbine-driven pump initially started but tripped.

BOP reports that ALL AFW throttle valves are open. (unless previously isolated due to WR level < 14%)

Crew continues to try to restore AFW flow while SRO continues in FR-H.1.

BOP confirms AFW flow is not > 370 gpm.

SRO dispatches operator with attachment 2-K to establish alternate AFW flow using the Dedicated AFW pump.

Crew reports that feed flow is NOT verified. SRO directs ATC to stop ALL RCP's.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><u>EVENTS 6 - 10</u>, (continued)</p> <p>NOTE: It is expected that the crew will not wait for 1FW-P-4 field actions before continuing with procedure and restore a main feed pump.</p> <p><u>Critical Task: CT-43 (FR-H.1.A)</u> Crew establishes feedwater flow into at least one SG before RCS feed and bleed is required.</p> <p>Basis for Selection: SAFETY SIGNIFICANCE -- Failure to establish feedwater flow to any SG results in the crew's having to rely upon the lower-priority action of establishing RCS bleed and feed to minimize core uncover. This constitutes incorrect performance that "leads to degradation of any barrier to fission product release."</p>	<p>Restoration of feed using a main feed pump.</p> <p>Feedwater flow established SG levels begin rising.</p> <p>SRO returns to E-0, Step 9 IAW FR-H-1, step 8.</p>	<p>Crew takes actions to restore a main feedwater pump.</p> <ul style="list-style-type: none"> • Verifies a condensate pump is in service. • Resets SI/FWI and opens feedwater CNMT isolation valves, HYV-1FW-100A, B. • Starts and holds CS for main feedpump. <p>With either the dedicated AFW pump or a main feed pump running as a source, BOP throttles the Bypass feed regulating valves to establish flow to intact SGs.</p> <p>Crew checks at least 1 SG NR level > 31% (50%) If NR not >31%, crew verifies either CETC's are dropping OR SG WR levels are rising.</p>
<p>NOTE: Evaluation of BOP performing Attachment 1-K begins on page 19.</p>	<p><u>List of Attachment 1-K Discrepancies:</u></p> <ul style="list-style-type: none"> • Automatic SI failed to actuate. • All AFW pumps failed. • SG Blowdown sample line isolation valves failed to automatically close. • "C" Main steamline isolation valve failed to automatically close. 	<p>SRO directs BOP to perform Attachment 1-K.</p>

BEAVER VALLE JWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 - 10</u> , (continued)	RCS temperature < 547°F (Using Cold leg temperatures) and dropping due to Safety Injection flow and faulted SG.	<p>ATC checks RCS temp. stable at or trending to 547°F:</p> <ul style="list-style-type: none"> • Verifies no steam release is occurring. • Verifies Reheat steam is isolated. • Reduces total feed flow to minimize C/D. • Closes Main steam trip and bypass trip valves. <p>If not previously identified, closes the "C" Main steamline isolation valve at this time.</p> <p>ATC verifies PRZR isolated:</p> <ul style="list-style-type: none"> • PORVs – CLOSED (all) • Spray Valves – CLOSED (both) • Safety relief valves – CLOSED (all) • Power to at least one block valve – AVAILABLE (all available) • Block valves – AT LEAST ONE OPEN (2) <p>ATC checks if RCPs should be stopped:</p> <ul style="list-style-type: none"> • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). <p>All RCPs previously shutdown IAW FR-H.1.</p> <p>ATC/BOP checks if any SGs are faulted:</p> <ul style="list-style-type: none"> • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED <p>Crew determines there is a faulted SG, verifies HHSI flow is indicated and transition to E-2 is required.</p>

NOTE:

The RCP's will already be shutdown at this time due to step in FR-H.1.

BEAVER VALLE. JWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 - 10,</u> (continued)	SRO transitions to E-2, Faulted Steam Generator Isolation.	ATC/BOP recognizes that the control room air intake and exhaust Dampers are NOT closed and the timers have not started.
		ATC/BOP actuates CREVS by: <ul style="list-style-type: none"> • Depressing both trains Control Room Emergency Air Supply Actuation PB's. • Verifying the control room air intake and exhaust dampers are CLOSED. • Placing CS's for dampers in close.
		SRO requests a BV-2 operator to verify Unit 2 CREVS actuation.
		SRO directs STA to commence control room ventilation actions. Refer to Attachment 4-E.
<u>Critical Task: CT-17 (E-2.A)</u>		ATC/BOP verifies steamline isolation has occurred by checking all YELLOW SLI identified components are in the designated position. (previously verified IAW Attachment 1-K)
Crew isolates the faulted SG and directs operator to close isolation valves operated from outside of the CR before transition out of E-2.		"C" Steamline isolation valve failed to automatically close on the MSLI signal but was manually closed.
See below SAFETY SIGNIFICANCE	"C" SG pressure is lower than "A" & "B". "A" & "B" may be slowly lowering as expected due to the cooldown. Crew should respond with "stable" for "A" & "B" SG's.	Crew checks for any NON-FAULTED SG's. BOP identifies "A" & "B" steam generator pressures are "stable or rising" and "C" SG is FAULTED.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

Critical Task: CT-17 (E-2.A)

Crew isolates the faulted SG and directs operator to close isolation valves operated from outside of the CR before transition out of E-2.

SAFETY SIGNIFICANCE -- Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Also, depending upon the plant conditions, it could constitute a demonstrated inability by the crew to recognize a failure of the automatic actuation of an ESF system or component.

NOTE:

Crew would have isolated AFW valves to the "C" SG IAW FR-H.1 due to WR lvl <14%.

NOTE:

The items underlined in the right column are the components that are required to be verified/manipulated to confirm isolation of a faulted SG.

BOP isolates the faulted, "C" SG as follows:

- Verifies FWI, (was previously verified IAW attachment 1-K)
- Verifies AFW throttle valves on "C" SG; MOV-1FW-151A, B closed.
- Close Turbine driven AFW pump steam supply isolation valve for "C" SG, crew recognizes Trip-Throttle valve previously failed closed and 1MS-17 is NSA closed.
- Reports, "C" SG Atmospheric steam dump valve is failed open and cannot be closed or isolated. (Crew may dispatch operator with Attachment 2-U, to locally attempt to close)
- Verifies residual heat release valve is closed.
- Verifies SG blowdown isolated; TV-1BD-100C.

BOP verifies 1WT-TK-10, PPDWST level is >28 ft.

Crew checks if SG tubes are intact:

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

Determines no SG levels are rising in an uncontrolled manner and secondary radiation is CONSISTENT WITH PRE-EVENT VALUES.

Crew determines SG tubes ARE INTACT.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 6 - 10, (continued)

Crew checks if SI flow should be reduced by:

- ATC verifies RCS subcooling is >46F [54F ADVERSE CNMT] based on CETC's.
- BOP confirms secondary heat sink available by >370 gpm of feed flow available OR NR level in at least 1 SG >31%. [50% ADVERSE CNMT].
- ATC confirms RCS pressure is stable or rising.
- ATC confirms PRZR level is >17%. [38% ADVERSE CNMT]

Crew determines that current plant conditions support SI reduction.

SRO transitions to ES-1.1, SI Termination

Terminate scenario when the crew demonstrates the intent to transition to ES-1.1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Attachment 1-K 'Verification of Automatic Actions'

Both EDG's are running.

Ensure Reheat Steam Isolation.

BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows:

Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow.

Verifies power to both Emergency 4KV AC busses.

Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B). ("A" running)

Station instrument air header pressure > 100 PSIG.

Ensure Reheat Steam Isolation:

- Verify MOV-1MS-100A,B – CLOSED.
- Reset reheater controller.
- Close MOV-1MS-204, gland stm spillover vlv.

Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig.

Align Neutron Flux Monitoring For Shutdown:

- When operable IR channels <1E-10 amp, check SR channels energized.
- Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

BEAVER VALLE POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		Verify River Water System In Service: <ul style="list-style-type: none"> • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. OR (IF CIB has occurred) <ul style="list-style-type: none"> • Verify RPRW flow to recirc spray hxs.
<u>Critical Task: CT-17 (E-2.A)</u> Crew isolates the faulted SG and directs operator to close isolation valves operated from outside of the CR before transition out of E-2.	"C" MSLI valve failed to automatically close on Main Steamline isolation signal.	Check If Main Steamline isolation required: <ul style="list-style-type: none"> • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57) Determines automatic steamline isolation occurred. "C" MSLI valve failed to automatically close. Check CIB And CNMT Spray Status: <ul style="list-style-type: none"> • Containment press - REMAINED < 11 PSIG.
<u>Critical Task CT-2 (E-0.D)</u> Crew manually actuates at least one train of SIS-actuated safeguards before transition to any ORP.	Automatic SI failed to actuate. All AFW pumps failed. SG Blowdown sample line isolation valves failed to automatically close.	Verify ESF Equipment Status: <ul style="list-style-type: none"> • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT.

BEAVER VALLE JWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>Attachment 1-K 'Verification of Automatic Actions' (continued)</u>		<p>When SR's are energized, verify Audible indication:</p> <ul style="list-style-type: none"> • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.
<u>Attachment 1-K- COMPLETE</u>	<p>Discrepancies:</p> <ul style="list-style-type: none"> • Automatic SI failed to actuate. • All AFW pumps failed. • SG Blowdown sample line isolation valves failed to automatically close. • "C" Main steamline isolation valve failed to automatically close. 	<p>Start CNMT Hydrogen Analyzers:</p> <ul style="list-style-type: none"> • Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service. <p>Upon completion, reports any discrepancies to SRO.</p>

Appendix D

Scenario Outline

Facility: **BVPS Unit 1** Scenario No. 3 Op Test No.: 1LOT18 NRC
 Examiners: _____ Candidates: _____ SRO
 _____ ATC
 _____ BOP

Initial Conditions: **IC 103:** ~4% power, EOL, Xe increasing, CB "D" @ 109 steps, RCS boron - 685 ppm.

Turnover: Continue power increase IAW reactivity plan and commence turbine roll.
 PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A

Critical Tasks:

- 1. E-3.A Isolate Ruptured SG**
- 2. E-3.B Establish/maintain RCS temperature**
- 3. ECA-3.3.A Terminate Safety Injection**

Event No.	Malf. No.	Event Type	Event Description
1	N/A	(R) ATC (N) SRO	Raise power
2	N/A	(N) BOP, SRO	Startup "B" EHC pump, 1LO-M-9B, shutdown "A" EHC pump, 1LO-M-9A.
3	BST-CCW006 1 CCW3A	(C,A) BOP, SRO (TS) SRO	"A" CCR pump trips, Auto start failure of "B" CCR pump.
4	CND01 (0 0) 100	(C,A) BOP, SRO	MOV-1CN-105 spuriously opens
5	PRS08E (8 0) 2500 15	(I,A) ATC, SRO (TS) SRO	PT-1RC-445 fails high, PORV's 455D & 456 open, ATC required to manually close PORV, PCV-1RC-455D
6	RCS10B (0 0) 30 RCS08B (7 3)	(C,A) ATC, SRO	"B" RCP high vibration and trip – will require manual Rx trip
7	RCS03B (1 0) 425	(M) - ALL	"B" SG - 425 gpm tube rupture
8	VLV-SGB01,02,03	(C) BOP, SRO	SG BD isolation failure, requires manual valve closure.
9	MSS08A (0 0) 100	(C) BOP, SRO	Steam dump, PCV-1MS-106A fails open following cooldown during E-3. Crew required to isolate steam lines and control RCS temperature via atmospheric steam dumps
10	PRS09A (2 120) 0 PRS09B (2 120) 0 IOR X071097O	(C) ATC, SRO	PRZR spray valves and remaining PORV fail to open during depressurization in E-3, will require transition to ECA-3.3

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

E-0 → E-3 → ECA-3.3

The crew will assume the shift at ~4% power with instructions to raise power in accordance with the reactivity scan and 1OM-52.4.B., Additionally, the turnover includes direction to place the "B" EHC pump, 1LO-M-9B, in service and place the "A" EHC pump, 1LO-M-9A in standby after Mode 1 is achieved.

After the power increase is commenced and Mode 1 is declared. The "A" CCR pump will then trip due to a faulty breaker with a failure of the "B" to auto start. The crew will enter AOP 1.15.1. The BOP will manually start the "B"; the crew will dispatch an operator to place the "C" pump in service on the "AE" 4kv bus. The SRO will then address Technical Specifications.

The Condenser Hotwell Hi Level Bypass valve, MOV-1CN-105, will then spuriously open causing condenser hotwell level to drop. The crew will respond to the low level alarm using the Alarm Response procedure and, diagnose, identify and close MOV-1CN-105.

PT-1RC-445 will fail high causing PORV 455D and 456 to open, (per turnover, 456 previously isolated with block valve closed.) The ATC will be required to manually close PORV, PCV-1RC-455D IAW AOP 1.4.1 immediate operator actions. The US will enter AOP 1.4.1 and then transition to 1OM-6.4.IF, Attachment 2 and determine applicable Tech Spec actions.

The "B" RCP will then show signs of high vibration, the crew will respond using AOP 1.6.8, "Abnormal RCP Operation". After diagnosing and monitoring, the vibration will increase in severity to the point where the RCP will trip. Since the plant is less than 30% power, the RCP trip will not cause an automatic Rx trip. The crew will identify the loss of the RCP and manually trip the reactor.

As a result of the reactor trip a 425 gpm SGTR occurs on the "B" SG. The crew will progress through E-0 and diagnose the "B" SG as ruptured and transition to E-3. While the crew is isolating the "B" SG, the BOP will identify that the Blowdown valve will not close and procedurally close the backup CNMT isolation valve. Following the cooldown to target temperature, Condenser Steam Dump valve, PCV-1MS-106A will fail open, the crew will identify the failure and isolate the mainstream lines and stabilize temperature using the "A" and "C" SG atmospheric steam dump valves.

When the crew attempts to depressurize the RCS, the spray valves will not function, nor will the PRZR PORV's, 456 was previously isolated on turnover – block valve will not open, 455D CS was placed in "CLOSE" per event 5, valve will not open. 455C will fail to open via control switch, crew will then transition to ECA-3.3.

The scenario is terminated when the crew establishes a normal charging flow path in ECA-3.3.

Expected procedure flow path is E-0 → E-3 → ECA-3.3.

BEAVER VALLE JWER STATION

INITIAL CONDITIONS: IC-103, ~4 % Power, EOL, Bank D @ 109 steps, Increasing XE, 685 PPM Boron, Stm Dump Pot @ 710

<u>ADDITIONAL LINEUP CHANGES</u>	<u>STICKERS</u>	<u>MONITOR SETUP</u>
MOV-1RC-536 closed with power maintained	YCT on CS	Mid power splash
<u>EQUIPMENT STATUS</u>	<u>DATE/TIME OOS</u>	<u>TECHNICAL SPECIFICATION(S)</u>
PCV-1RC-456 isolated	Yesterday / 1200	3.4.11, Condition A

SHIFT TURNOVER INFORMATION

1. 4.1% power, EOL, plant startup in progress, shift goal is to raise power IAW the reactivity plan and make preparations for turbine roll.
2. PCV-1RC-456 isolated due to seat leakage, block valve closed. TS 3.4.11, Condition A
3. SM requests the crew use "Alternate Dilute" method for required dilutions.
4. After Mode 1 is achieved, swap EHC pumps IAW 1OM-26.4.D, part D.
5. Procedure package to include, Reactivity plan, 1OM-50.4.D2, 1OM-52.4.B (placekept), 1OM-7.4.BB. and 1OM-26.4.D.
6. A field supervisor with a crew of field operators are performing necessary field actions to support the secondary plant startup.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide EOL Rapid Power Reduction reactivity plan.
2. Reactivity plan – provide detailed startup reactivity plan.
3. 1OM-50.4.D2 placekept to support continued plant startup. (single sided)
4. 1OM-52.4.B placekept to support continued plant startup. (single sided)
5. 1OM-26.4.D
6. 1OM-7.4.BB
7. Protected Train "B" Placard
8. Aux steam from Unit 2 placard posted

PROCEDURES NEEDED

E-0
E-3
ECA-3.3
1OM-46.4.G
6 IF, Attach 2
Attachment 1-K
AOP 1.4.1
AOP 1.6.8
AOP 1.15.1

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

BEAVER VALLE WER STATION

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

Normal Plant Startup, Rx Power increase to 10-14% to support Turbine Startup.

NOTE:

Reactivity plan requires 500 gallons dilution and 20 rod steps to raise power to 10%. Crew may elect to add total dilution volume in multiple steps.

Startup procedure, Load Following, 1OM-52.4.B, step 7.a is in progress.

IAW reactivity plan, ATC dilutes and withdraws rods to raise reactor power to between 10 and 14%.

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

ATC initiates control rod withdrawal and dilution IAW 1OM-7.4.BB and the reactivity plan.

- Places 1MU control switch to STOP for > 1 sec.
- Place 43/MU Control switch in ALT DIL.
- Set AM-1CH-114, Blender Total Flow Set Point to desired flow rate.
- Set YIC-1CH-168A, Blender Output Integrator, to desired dilution quantity.
- Reset YIC-1CH-168A.
- Place 1MU Control Switch to START.
- Verify FCV-1CH-114B opens.
- Verify FCV-1CH-113B opens.
- Verify PG water to Blender flow rate indicated on FR-1CH-113.
- When YIC-1CH-168A reaches setpoint, verify dilution automatically stops.

EVENT 2:

(Crew initiated after Mode 1 declared)
Swap EHC pumps.

ROLE PLAY: Report as field operator
- all conditions SAT.

Continue with next event at LE discretion

IAW 1OM-26.4.D, part D, BOP starts the "B" EHC pump, 1LO-M-9B and stops the "A" EHC pump, 1LO-M-9A.

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

Reactor Plant Component Cooling
Water Pump Trip/ Auto start failure of
standby pump

CC-P-1A trips due to a faulty breaker with an
auto start failure of CC-P-1B

IMF CCW3A (0 0)

Numerous Component Cooling water alarms;
A6-33, Primary Comp Cool Pump Auto Start-
Stop
A6-35, Pri Comp Cool Pump Disch Press Low
A6-38, Pri Comp Cool Wtr Heat Exchanger 8"
Disch Line Flow Low
A6-46, Pri Comp Cool Wtr Heat Exchanger 14"
Disch Line Flow Low

ATC recognizes and announces multiple component
cooling water and reactor coolant pump annunciators.
ATC reviews ARP's

ROLE PLAY:

If dispatched to locally investigate the
breaker or pump, wait 3 minutes then
report back as appropriate – "A" pump
not running - nothing obvious at pump.
"B" pump running SAT (if started)
4kv brk is tripped – no relays flagged.

Numerous Reactor Coolant pump alarms;
A3-75, React Cool Pp Lower Brg Lube Oil Cool
Water Flow Low
A3-77, React Cool Pp Stator Winding Cool
Water Flow Low
A3-83, React Cool Pp Upper Brg Lube Oil Cool
Water Flow Low
A3-91, Non Regen Heat Exchanger Disch Temp
High

BOP starts 1CC-P-1B

NOTE:

A6-33 ARP will direct manual starting
of standby pump. Crew may manually
start CC-P-1B without specific
procedural guidance if they recognize
that a design Automatic action did not
occur.

BEAVER VALLE JOWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 3: (continued)

NOTE:

The crew may enter AOP 1.15.1 for Loss of CCR, the 2nd pump is not required for the remainder of the scenario. A follow-up question on TS 3.7.7 may be required.

When requested - wait 5 minutes then insert: **TRG 20**

IRF EPS007 (20 0) F to Rack out A pp

IRF EPS009 (20 0) BusAE rack in C (preloaded)

ROLE PLAY:

Report back to CR that CC-P-1C is now available on AE bus.

Continue with next event at LE discretion

SRO determines 1CC-P-1A is inoperable and TS 3.7.7 Condition A is applicable; Restore “A” train to operable status within 72 hours.

SRO dispatches operator to place 1CC-P-1C inservice on the “A” train.

EVENT 4:

Condensate Spill Valve Bypass Valve, MOV-1CN-105 spuriously opens

VLV-CND01 (0 0) 100

Condensate Spill Valve Bypass Valve, MOV-1CN-105 spuriously opens causing hotwell level to lower.

A7-2, Condenser Hotwell Level High/Low.

SRO directs BOP to close MOV-1CN-105, Condensate Spill Valve Bypass Valve IAW 1OM-22.4.AAD, Condenser Hotwell High/Low.

Continue with next event at LE discretion

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 5:

Pressurizer Press Transmitter Fails Hi
IMF PRS08E (8 0) 2500 15

PT-1RC-445 fails high

Pressurizer Pressure Alarms;
 A4-9; Pressurizer Control Press High
 A4-5; Pressurizer Power Oper Relief Valve
 Open
 A4-6; Pressurizer Safety Valve or PORV Open
 A4-13; Pressurizer Control Press High Pwr
 Relief Act

ATC notes alarms, informs US.
 BOP refers to ARP's.

Crew identifies PT-1RC-445 failed high.

NOTE:

PCV-1RC-456 was previously isolated
 due to seat leakage – given on turnover.

NOTE:

If the crew responds quickly to close the
 open PORV's, they may NOT need to
 place the MPC in MANUAL.

IAW AOP 1.4.1; Part B, ATC responds to
 PT-1RC-445 failure by;

- Closing PCV-1RC-455D & PCV-1RC-456
- Placing Master Pressure Control (MPC) in
 Manual and adjusting demand to < 40%.
- Checks pressure trending to 2235 psig.

SRO provides a control band and Rx trip criteria of
 2100 psig low/2340 psig high for manual press
 control.

After ATC stabilizes PRZR pressure,
 SRO transitions to 1OM-6.4.IF, Attachment 2.

If DNB Tech Spec entry not identified
 by the crew at this time, ask as a follow-
 up question.

ATC and SRO recognize entry conditions met for
 DNB Technical Specification;
 3.4.1 (RCS DNB Parameters, RCS press < 2218 psia)
 Condition A: restore RCS pressure within 2 hours.

Continue with next event at LE
 discretion.

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

B RCP High Vibration, after TD vibrations increase causing RCP trip which requires manually tripping the RX. (No auto Rx trip at this power lvl.)

IMF RCS10B (0 0) 10.6

Additional commands pre-loaded

TRGSET 6 'VRCPP(2) >= 3'

TRG 6 'IMF RCS10B (0 180) 16.4 600 10.6'

TRGSET 7 'VRCPP(2) >= 3.25'

TRG 7 'IMF RCS10B (0 0) 30'

IMF RCS08B (7 3)

A3-126; Reactor Cool Pump Vibration High

SRO enters AOP 1.6.8 for Abnormal RCP Operation.

After a 3 minute time delay, "B" RCP vibrations begin increasing, the RCP will then trip.

ATC reviews ARP while BOP goes behind Vertical Board and checks indications on RCP vibration monitor.

BOP reports "B" RCP frame vibration at 3.2 mils and shaft is at 10.6 mils, both are stable.

SRO directs ATC to review RCP parameters to determine if immediate RCP shutdown is required.

Crew determines Immediate RCP shutdown is not required and continues to monitor parameters while the SRO proceeds with AOP instructions.

ATC identifies that "B" RCP has tripped and the Rx has not automatically tripped.

SRO directs the ATC to manually trip the reactor and perform the Immediate Operator actions of E-0.

SRO directs the crew to perform the Immediate Operator actions of E-0.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 7:

“B” SG develops 425 gpm SGTR on
reactor trip.

Command pre-loaded.

IMF RCS03B (1 0) 425

Reactor trip and bypass breakers open
Rod bottom lights lit
RPI's at zero
Neutron flux dropping

SRO enters E-0

ATC manually trips the reactor

ATC and BOP commence IOA's
SRO references E-0.

ATC verifies Reactor trip:

- Rx trip and bypass breakers open.
- 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.

BOP verifies Power to AC Emergency Busses

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

BOP identifies that both emergency busses are energized from off-site power.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 8, 9 10:**NOTE:**

It is likely that the specified SI required indicators will not indicate that SI is required at this time, however, PRZR level will be dropping due to the SGTR, it is expected that the crew will actuate SI due to PRZR level and continue on with E-0. Otherwise the crew may transition to ES-0.1 and then immediately initiate SI and return to E-0 via Left Hand Page.

Check SI Status.

ATC checks if SI is required:

- ATC verifies CNMT press < 5psig.
- ATC verifies PRZR press is not > 1850 psig.
- ATC/BOP verifies Steamline press > 500 psig.

Crew determines SI is required; ATC manually actuates SI by depressing both trains' pushbuttons.

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

Check if SI flow should be reduced:

- Crew determines PRZR level is not >17%.

SRO determines SI flow should not be secured.

ATC verifies SI system status:

- Charging pumps running – 2 running.
- LHSI pumps running – 2 running.
- BIT Flow indicated – YES.

BOP verifies AFW status:

- Motor-driven AFW Pumps – Two RUNNING.
- Turbine-driven pump:
TV-1MS-105A, B open.
A7-7 is NOT LIT, turbine driven pump running.
- AFW Throttle Valves all FULL OPEN.
- Total AFW Flow is > 370 GPM.

BEAVER VALLE JOWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p><u>EVENTS 8 - 10:</u> (continued)</p> <p>NOTE: Evaluation of BOP performing Attachment 1-K begins on page 20.</p>	<p><u>List of Attachment 1-K Discrepancies:</u></p> <ul style="list-style-type: none"> • SG Blowdown failed to automatically isolate, required isolation of alternate valves. <p>RCS temperature < 547°F and dropping due to Safety Injection flow.</p>	<p>SRO directs BOP to perform Attachment 1-K.</p> <p>ATC checks RCS temp. stable at or trending to 547°F:</p> <ul style="list-style-type: none"> • ATC verifies no steam release is occurring. • ATC verifies Reheat steam is isolated. • ATC reduces total feedflow to minimize C/D. <p>ATC verifies PRZR isolated:</p> <ul style="list-style-type: none"> • PORVs – CLOSED (all) • Spray Valves – CLOSED (both) • Safety relief valves – CLOSED (all) • Power to at least one block valve – AVAILABLE (all available) • Block valves – AT LEAST ONE OPEN (2) <p>ATC checks if RCPs should be stopped:</p> <ul style="list-style-type: none"> • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). • Criteria for stopping is not met – both remaining RCPs left running. <p>ATC/BOP checks if any SGs are faulted:</p> <ul style="list-style-type: none"> • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED <p>Crew determines NO SG's are faulted.</p>

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 8 - 10: (continued)

		<p>Crew checks if SG tubes are intact:</p> <ul style="list-style-type: none"> • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES <p>Crew determines “B” SG level rising in an uncontrolled manner</p>
	SRO transitions to E-3, Steam Generator Tube Rupture.	<p>SRO directs STA to commence control room ventilation actions. Refer to Attachment 4-F.</p> <p>ATC checks if RCPs should be stopped:</p> <ul style="list-style-type: none"> • D/P between RCS pressure and highest SG pressure – <200 PSID. <p>Crew determines criteria for stopping RCPs is not met.</p> <p>BOP verifies station instrument air header pressure - > 100 PSIG.</p>
<p>NOTE: AFW flow may have been preemptively isolated after level rose to >31%.</p>	“B” SG ruptured	<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"> • BOP verifies “B” SG NR level >31%. • SRO directs BOP to isolate feed flow to B SG.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p>EVENT 8:</p> <p><u>Critical Task: CT-18 (E-3.A)</u> 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>ROLE PLAY: 5 minutes after being dispatched to locally isolate 1MS-524, 1MS-16 and open 1MS-17, insert IRF MSS27 (0 0) 0 IRF FWM34 (0 0) 0 IRF FWM36 (0 0) 100 then report 1MS-524 and 1MS-16 are CLOSED 1MS-15 is OPEN & 1MS-17 was OPENED.</p>	<p>NOTE: The items underlined in the right column are the components that are required to be verified/manipulated to confirm isolation of a ruptured SG.</p>	<p>ATC/BOP isolates flow from the ruptured SG.</p> <p><u>BOP verifies "B" SG atmospheric steam dump, PCV-1MS-101B, in MANUAL and closed.</u></p> <p><u>BOP verifies residual heat removal valve – CLOSED.</u></p> <ul style="list-style-type: none"> • Dispatches an operator to close 1MS-524. <p>Isolate ruptured SG to turbine driven AFW pump.</p> <ul style="list-style-type: none"> • Crew identifies that the steam supply from the "B" SG, 1MS-16 is open. • BOP reports 2 motor-driven AFW pps running. • <u>BOP closes MOV-1MS-105, AFW Turbine Steam Isol Vlv.</u> <p><u>Crew dispatches an operator to locally isolate steam supply valve from "B" SG, 1MS-16 and to:</u></p> <ul style="list-style-type: none"> • Verify open stm supply from A SG, 1MS-15. • Unlock/open stm supply from C SG, 1MS-17. <p>Verify closed, ruptured SG blowdown isolation valve.</p> <ul style="list-style-type: none"> • BOP identifies TV-1BD-100B is NOT CLOSED, and valve failed to manually close. • <u>SRO directs BOP to CLOSE TV-1BD-101B1.</u> • <u>BOP CLOSES TV-1BD-101B1.</u> <p>Close ruptured SG Pre-nonreturn drain isol valve.</p> <ul style="list-style-type: none"> • <u>BOP closes TV-1MS-111B.</u> <p><u>BOP closes ruptured SG main steam trip, bypass, and non-return valves:</u></p> <ul style="list-style-type: none"> • <u>TV-1MS-101B trip</u> • <u>NRV-1MS-101B non return</u>

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 8 - 10: (continued)

BOP checks ruptured SG pressure is > 380 PSIG.

BOP initiates RCS cooldown:

- Determine required core exit temperature as a function of ruptured SG pressure.
- WHEN PRZR pressure < 1950 PSIG, THEN blocks low steamline pressure SI.
- Checks MSIVs - AT LEAST ONE OPEN ("A" & "C" SG MSIVs are open).
- Verifies Condenser is available.
- Places Steam dump controller in MANUAL.
- Selects STM PRESS Mode, stm dump control.
- Defeats TAVG interlock when necessary.
- Gradually raises steam dump demand to obtain a maximum cooldown rate.
- Verifies Core Exit TCs (CETC's) are reducing.

When CETC's (average of five hottest), Less than REQUIRED Core exit temp, BOP stops RCS cooldown and maintains CETC's < REQUIRED TEMPERATURE.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 9:

Condenser steam dump valve,
PCV-1MS-106A fails open following
cooldown.

IMF MSS08A (0 0) 100
(preloaded)

Critical Task: CT-19 (E-3.B)

**Crew establishes/maintains an RCS
temperature so that transition from
E-3 does not occur because the RCS
temperature is in either of the
following conditions:**

**Too high to maintain minimum
required subcooling for subsequent
RCS depressurization.**

OR

**Below the RCS temperature that
causes a red or orange path
challenge to Sub-criticality or
Integrity CSF.**

SAFETY SIGNIFICANCE -- Failure to
establish and maintain the correct RCS
temperature during a SGTR leads to a
transition from E-3 to a contingency
procedure, which constitutes an
incorrect performance that necessitates
the crew taking compensating action
which complicates the event mitigation
strategy.

BOP recognizes RCS cooldown has not stopped and
that a condenser steam dump valve will not close.

SRO directs BOP to isolate Main Steam lines and
stabilize RCS temp using Atmospheric stm dumps.

BOP closes TV-1MS-101A and TV-1MS-101C.

BOP manually controls PCV-1MS-101A and
PCV-1MS-101C to stabilize RCS temperature.
May also use, HCV-1MS-104 if they previously
dispatched an operator to isolate it from the "B" SG.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENTS 9 - 10: (continued)

NOTE

If cooldown not previously completed, Crew will identify failed open Stm dump at this point and take previously scripted contingency actions to isolate the main steam lines.

BOP checks intact SG levels:

- Narrow range level > 31%.

Controls feed flow to maintain narrow range level between 25% and 65%.

ATC checks PRZR PORVs and block valves:

- Power to block valves. (all available)
- PORVs – CLOSED. (all)
- Block valves – AT LEAST ONE OPEN. (2)

ATC resets SI, CIA and CIB.

BOP checks if RCS cooldown should be stopped:

- When CETCs (average of five hottest) - < REQUIRED TEMPERATURE

BOP stops RCS cooldown and maintains CETCs < REQUIRED TEMPERATURE.

BOP checks ruptured “B” SG Pressure- STABLE OR RISING

ATC checks RCS subcooling based on CETCs - >66°F .

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<p>EVENT 10:</p> <p>Both PRZR spray valves and available PORV's fail to open.</p> <p>(commands pre-loaded)</p> <p>IMF PRS09A (1 0) 0</p> <p>IMF PRS09A (1 0) 0</p> <p>IOR X07I097O</p>	<p>Both Spray valves fail to open with 100% demand signal.</p> <p>Remaining operable PORV PCV-1RC-455C also fails to open.</p> <p>PORV, PCV-1RC-455D fails to open.</p> <p>Block valve for PORV, PCV-1RC-456, which was isolated on turnover fails to open.</p> <p>Pressure is not reducing.</p> <p>SRO enters ECA-3.3</p> <p>Step skipped if "B" NR level was > 89%</p> <p>Step skipped if "B" NR level was > 89%</p>	<p>ATC depressurizes RCS to minimize break flow and refill PRZR:</p> <ul style="list-style-type: none"> • Checks RCPs 1A and 1C - BOTH RUNNING • Fully opens available PRZR spray valves • Opens one PRZR PORV <p>Checks depressurization method – IS NOT EFFECTIVELY REDUCING RCS PRESSURE</p> <p>ATC recognizes and informs SRO that the depressurization method is not effectively reducing RCS pressure.</p> <p>SRO directs ATC to close PRZR spray valves.</p> <p>BOP checks "B" SG NR level < 89%.</p> <p>ATC confirms 1C RCP running and normal spray did not result in pressure reduction therefore normal spray is not available.</p> <p>ATC attempts to open remaining PORV's/ Block valves – none will result in pressure reduction.</p> <p>SRO continues with procedure.</p>

BEAVER VALLE OWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 10: (continued)	Step skipped if “B” NR level was > 89%	<p>BOP checks intact S/G levels</p> <ul style="list-style-type: none"> • “B” & “C” narrow range levels - GREATER THAN 31% <p>BOP controls feed flow to maintain narrow range level between 25% and 65%.</p>
	Step skipped if “B” NR level was > 89%	BOP checks station instru air hdr press - > 100 PSIG.
	Step skipped if “B” NR level was > 89%	<p>ATC verifies PRZR level > 17%.</p> <p>Crew checks if SI can be terminated.</p> <p>ATC verifies RCS subcooling is > 46°F based on CETC’s.</p> <p>BOP confirms secondary heat sink available by >370 gpm of feed flow available OR NR level in “A” or “C” SG > 31%.</p> <p>ATC confirms RVLIS Dynamic head range is > 43%.</p> <p>Crew determines “B” SG NR level is rising in an uncontrolled manner or is offscale high.</p> <p>SRO directs ATC to stop 1 charging pump.</p>

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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EVENT 10: (continued)

Critical Task: ECA-3.3.A Crew terminates SI when ECA-3.3 termination criteria are met and prior to completion of "SI Flow Verification" step of ECA-3.3.

Basis for Selection:

SAFETY SIGNIFICANCE -- Failure to terminate SI during a SGTR (when the termination criteria are met) needlessly complicates the mitigation strategy. It also constitutes a "significant reduction of safety margin beyond that irreparably introduced by the scenario."

Indicated SI/BIT flow decreases to zero.

SRO directs ATC to isolate the BIT:

- ATC closes MOV-1SI-867A, B
- ATC closes MOV-1SI-867C, D

SRO directs ATC to establish normal charging flow path:

- ATC closes FCV-1CH-122
- ATC opens MOV-1CH-310
- ATC opens MOV-1CH-289
- ATC adjusts FCV-1CH-122 to maintain PRZR level.

Verify SI flow not required.

ATC verifies RCS Subcooling > 46°F based on CETC's.

ATC confirms RVLIS Dynamic head range is > 43%.

Crew determines SI flow is not required.

Terminate scenario when the crew establishes normal charging flowpath in ECA-3.3.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Attachment 1-K 'Verification of Automatic Actions'

Both EDG's are running.

BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows:

Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow.

Verifies power to both Emergency 4KV AC busses.

Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B).

Station instrument air header pressure > 100 PSIG.

Ensure Reheat Steam Isolation.

Ensure Reheat Steam Isolation:

- Verify MOV-1MS-100A,B – CLOSED.
- Reset reheater controller.
- Close MOV-1MS-204, gland stm spillover vlv.

Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig.

Align Neutron Flux Monitoring for Shutdown:

- When operable IR channels <1E-10 amp, check SR channels energized.
- Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		<p>Verify River Water System In Service:</p> <ul style="list-style-type: none"> • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. <p>OR (IF CIB has occurred)</p> <ul style="list-style-type: none"> • Verify RPRW flow to recirc spray hxs. <p>Check If Main Steamline isolation required:</p> <ul style="list-style-type: none"> • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57) <p>Determines steamline isolation is NOT required.</p> <p>Check CIB And CNMT Spray Status:</p> <ul style="list-style-type: none"> • Containment press - REMAINED < 11 PSIG. <p>Verify ESF Equipment Status:</p> <ul style="list-style-type: none"> • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT. <p>When SR's are energized, verify Audible indication:</p> <ul style="list-style-type: none"> • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.

BEAVER VALLE POWER STATION

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
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Attachment 1-K ‘Verification of Automatic Actions’ (continued)

Start CNMT Hydrogen Analyzers:

- Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service.

Attachment 1-K– COMPLETE

Discrepancies:

- SG Blowdown failed to automatically isolate, required isolation of alternate valves.

Upon completion, reports any discrepancies to SRO.