OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

K/A REFERENCE: 2.1.25 3.9 TASK ID: 0011-006-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 25 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 Shutdown Margin is between 1.77% and 2.4%.
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	Determine Shutdown Margin in accordance with 2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15).
INITIAL CONDITIONS:	The Unit is in Mode 1, 100% power. All rods at 230 steps. Annunciator [A4-3C], TAVG DEVIATION FROM TREF is "NOT LIT". ONE control rod has been determined to be inoperable, untrippable, and immovable during performance of 2OST-1.1, Control Rod Assembly Partial Movement Test. Chemistry has just reported current RCS boron concentration at 838 ppm. Current burnup is 12,000 MWD/MTU
INITIATING CUE:	The Unit Supervisor directs you to perform a shutdown margin (SDM) calculation for the present plant conditions by performing steps VII.A through VII.B.5 of 2OST-49.1, Shutdown Margin Calculation (Plant Critical). Report your results in the space provided. (Space provided on candidate direction sheet).
REFERENCES:	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15), Rev. 16, Unit 2 Curve Book Cycle 15.
TOOLS:	Calculator
HANDOUT:	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15), Rev. 16 Filled out up to step VII.A. Unit 2 Curve Book Cycle 15.

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:	Determine Shutdown Margin in accordance with 2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15).
INITIAL CONDITIONS:	The Unit is in Mode 1, 100% power. All rods at 230 steps. Annunciator [A4-3C], TAVG DEVIATION FROM TREF is "NOT LIT". ONE control rod has been determined to be inoperable, untrippable, and immovable during performance of 2OST-1.1, Control Rod Assembly Partial Movement Test. Chemistry has just reported current RCS boron concentration at 838 ppm. Current burnup is 12,000 MWD/MTU
INITIATING CUE:	The Unit Supervisor directs you to perform a shutdown margin (SDM) calculation for the present plant conditions by performing steps VII.A through VII.B.5 of 2OST-49.1, Shutdown Margin Calculation (Plant Critical). Report your results in the space provided. (Space provided on candidate direction sheet).

RESULTS:

Calculated SDM is_____.

☐ 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: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR NOTE: Some judgment may be required to determine satisfactory performance on this JPM. Refer to attached Data Sheet 1 ANSWER KEY.	
	START TIME: _____	
1. If the plant is in Mode 1, Verify that Tavg is less than 3°F above Tref (Annunciator A4-3C, TAVG DEVIATION FROM TREF is OFF) (Otherwise N/A). (Step VII.A.1)	1.1 Initials Step VII.A.1, (Plant in Mode 1, Tavg <3°F above Tref (Annunciator A4-3C OFF) from Initial Conditions. COMMENTS:	
2. If the plant is in Mode 2, Verify that Tavg is less than 8°F above Program Tavg as follows: (Otherwise N/A) (Step VII.A.2)	2.1 N/A's Step VII.A.2, (Plant not in Mode 2). COMMENTS:	
3. Request Chemistry to determine current RCS Boron concentration in ppm. (Step VII.A.3)	3.1 Determines current boron concentration is 838 ppm from initial conditions. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
4. Record the number of steps withdrawn for Control Bank D from the group demand counters, (BB-B) on Data Sheet 1. (Step VII.A.4)	4.1 Records Control Bank D as 230 steps withdrawn on Data Sheet 1 (Block A.4) from initial conditions. COMMENTS:	
5. Record the current reactor power level in percent of full power from [2NME-NR45], Power Range Recorder, (VB-B) OR PCS computer point U1150, 1MIN AVG PWR RNG NUCLEAR FLUX, on Data Sheet 1. (Step VII.A.5)	5.1 Records reactor power as 100% on Data Sheet 1 (Block A.5). COMMENTS:	
6.**C** Record the number of immovable or untrippable control rods on Data Sheet 1. (Step VII.A.6)	6.1**C** Records number of immovable or untrippable rods as "ONE" on Data sheet 1 (Block A.6) (given in Initial Conditions). COMMENTS:	
7. If the number of immovable or untrippable control Rods is greater than 1, Use Attachment 1 to determine the required boron concentration with greater than one struck rod and Record below. (Otherwise N/A) (Step VII.A.7)	7.1 Determines Step VII.A.7 is N/A and marks step N/A COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
8.C Determine control bank reactivity worth per the following: Using the ARO Total Bank Worth table on Data Sheet 1, Enter the total bank worth for the current core burnup range, in the space provided on Data Sheet 1. (Step VII.B.1.a)	8.1C Determines ARO Total Bank Worth (from the Data Sheet 1 table) to be 7.425 %Δk/k and records on Data Sheet 1 (Block B.1.a). COMMENTS:	
9.C Using Curve Book Figures CB-24A, 24B or CB-24C, Determine integral rod worth for the current bank position AND Enter this value on Data Sheet 1. Divide value from curve (in pcm) by 1000 to convert to %Δk/k AND Record on Data Sheet 1. (Step VII.B.1.b)	9.1C Using Curve Book Figure CB-24B, determines integral rod worth to be ZERO and records on Data Sheet 1 (Blocks B.1.b.1) and B.1.b). COMMENTS:	
10. Subtract the integral rod worth from the Total Bank Worth **AND** Enter the result on Data Sheet 1. (Step VII.B.1.c)	10.1 Determines TBW-IRW is 7.425 %Δk/k and records on Data Sheet 1 (Block B.1.c). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
11 Multiply this result by 0.9 to apply a 10% uncertainty **AND** Enter the result on Data Sheet 1. (Step VII.B.1.d)	11.1 Determines 90% of TBW to be 6.6825 %Δk/k and records on Data Sheet 1 (Block B.1.d). COMMENTS:	
12.**C** If **ONE** rod is inoperable (untrippable), Record "Worst Case Stuck Rod with Inoperable Rod" worth on Data Sheet 1. Value is determined from Column "B" on Attachment 2 for the appropriate Cycle Burnup. (Step VII.B.2.b)	12.1**C** Determines stuck rod worth to be 2.330 %Δk/k and records on Data Sheet 1 (Block B.2). COMMENTS:	
13. Subtract Stuck Rod(s) Worth from the 90% Total Bank Worth value **AND** Enter the result on Data Sheet 1. (Step VII.B.3)	13.1 Determines 90% Total Bank Worth minus Stuck Rod(s) Worth to be 4.3525 %Δk/k and records on Data Sheet 1 (Block B.3). COMMENTS:	
14. Determine Power Defect as follows: Record RCS Boron Concentration results from Chemistry on Data Sheet 1. (Step VII.B.4.a)	14.1 Record RCS Boron Concentration of 838 ppm on Data Sheet 1 (Block B.4.a). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
15. Using Curve Book Figure 29, Determine the B-10 Correction Factor for the present Burnup (If between two Burnup values, Use the B-10 Correction Factor for the greater MWD/MTU Burnup entry) AND Record on Data Sheet 1. (Step VII.B.4.b)	15.1 Determines B-10 Correction Factor to be 0.895 and records on Data Sheet 1 (Block B.4.b). COMMENTS:	
16. Determine Corrected Boron Concentration by multiplying the RCS Boron Concentration and the B-10 Correction Factor **AND** Record on Data Sheet 1. (Step VII.B.4.c)	16.1 Determines Corrected Boron Concentration to be 750 ppm and records on Data Sheet 1 (Block B.4.c). COMMENTS:	
17. Using Curve Book Figure 21, Determine the **ABSOLUTE VALUE** of the Power Defect for the current power level and the Corrected Boron Concentration **AND** Enter this value on Data Sheet 1. (Step VII.B.4.d)	17.1 Determines **ABSOLUTE VALUE** of the Power Defect to be 2340 pcm and records on Data Sheet 1 (Block B.4.d). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-036 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) (RO ONLY)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
18.**C** Divide value from curve (in pcm) by 1000 to convert to %Δk/k **AND** Record on Data Sheet 1. (Step VII.B.4.e)	18.1**C** Converts **ABSOLUTE VALUE** of the Power Defect of 2340 pcm to 2.34 %Δk/k and records on Data Sheet 1 (Block B.4.e). COMMENTS:	
19. Add 0.150 % Δk/k for operating temperature band margin to the Power Defect recorded in Step VII.B.4.e **AND** Record on Data Sheet 1. (Step VII.B.4.f)	19.1 Determines Power Defect plus operating temperature band margin to be 2.49 % Δk/k and records on Data Sheet 1 (Block B.4.f). COMMENTS:	
20.**C** Determine SHUTDOWN MARGIN by subtracting Power Defect (Step VII.B.4.f) from the value determined in Step VII.B.3 **AND** Record on Data Sheet 1. (Step VII.B.5)	20.1**C** Determines SDM to be 1.8625 % Δk/k and records on Data Sheet 1 (Block B.4.f) AND space provided on candidate direction sheet. COMMENTS:	
	EVALUATOR CUE: That Completes this JPM	
	STOP TIME: _____	

Operating Surveillance Test
Shutdown Margin Calculation (Plant Critical)
(Updated For Cycle 15)

*** ANSWER KEY *** DATA SHEET 1
SHUTDOWN MARGIN CALCULATION

A. 4. CBD Steps Withdrawn (OR CBC if CBD @ 0 steps) = 230 STEPS

5. Reactor Power = 100 %

6. Number of Inoperable Rods = 1 ROD(s) C

ARO TOTAL BANK WORTH (% Δk/k)	
0 to 10000 MWD/MTU	10000 to EOL
6.985	7.425

B. 1. a. ARO Total Bank Worth (See Table above) (TBW) = 7.425 % Δk/k C

b. Integral Rod Worth (Curve Book Figure 24A, 24B OR 24C) (IRW) = Ø pcm C

1) Ø (pcm from B.1.b) X 1% Δk/k / 1000pcm = Ø % Δk/k

c. TBW (B.1.a) - IRW (B.1.b.1) = 7.425 % Δk/k

d. 90% Current Total Bank Worth

0.9 x 7.425 (B.1.c) = 6.6825 % Δk/k

2. Stuck Rod(s) Worth = 2.330 %Δk/k C

3. (90% Total Bank Worth) - (Stuck Rod(s) Worth)

(6.6825 (B.1.d)) - (2.330 (B.2)) = 4.3525 %Δk/k

4. a. RCS Boron Concentration = 838 ppm

b. B-10 Correction Factor (CB Figure 29) = 0.895

c. (RCS Boron Concentration) x (B-10 Correction Factor)

(838 (B.4.a)) x (0.895 (B.4.b)) = 750 ppm

d. ABSOLUTE VALUE of Power Defect (CB Figure 21) = 2340 pcm

e. 2340 (pcm from B.4.d) x 1%Δk/k / 1000 = 2.34 %Δk/k C

f. Power Defect + Operating temperature band margin

2.34 (B.4.e) + 0.150% Δk/k = 2.49 %Δk/k

5. SHUTDOWN MARGIN
(Acceptance Criteria - Within Limits Specified in COLR)

(4.3525 (B.3)) - (2.49 (B.4.f)) = 1.8625 %Δk/k C

C = Critical Step

(1) _____ Initial

(2) _____ Initial

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-030 JPM REVISION: 0	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel) (RO ONLY)

K/A REFERENCE: 2.1.7 4.4 TASK ID: 0061-016-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 8 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 5781 $FT^3 \pm 4$ **AND** Final Void Volume is 5477 $FT^3 \pm 4$
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	Calculate The RCS Initial Void Volume And Final Void Volume (IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel)
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. • RCS Hot Leg temperature is stable. • Voids are indicated in the Reactor Coolant System by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure.
INITIATING CUE:	The Unit Supervisor has directed the performance of 2OM-6.4.T, Response To Voids In The Reactor Vessel. The necessary data to calculate the RCS Initial Void Volume And Final Void Volume has been collected and recorded within 2OM-6.4.T, Response To Voids In The Reactor Vessel. Using the data recorded in 2OM-6.4.T, Response To Voids In The Reactor Vessel: The Unit Supervisor directs you to Calculate The RCS Initial Void Volume And Final Void Volume IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel steps IV.B.5 and 6. Report your results in the space provided. (Space provided on candidate direction sheet).
REFERENCES:	2OM-6.4.T, Response To Voids In The Reactor Vessel, Rev. 3.
TOOLS:	Calculator
HANDOUT:	2OM-6.4.T, Response To Voids In The Reactor Vessel Rev. 3 filled out up to step IV.B.5.

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel)

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.
- RCS Hot Leg temperature is stable.
- Voids are indicated in the Reactor Coolant System by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure.

INITIATING CUE: The Unit Supervisor has directed the performance of 2OM-6.4.T, Response To Voids In The Reactor Vessel. The necessary data to calculate the RCS Initial Void Volume And Final Void Volume has been collected and recorded within 2OM-6.4.T, Response To Voids In The Reactor Vessel.

Using the data recorded in 2OM-6.4.T, Response To Voids In The Reactor Vessel:
The Unit Supervisor directs you to Calculate The RCS Initial Void Volume And Final Void Volume IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel steps IV.B.5 and 6. Report your results in the space provided. (Space provided on candidate direction sheet).

RESULTS:

RCS Initial Void Volume _____

RCS Final Void Volume _____

☐ 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: 2AD-030 JPM REVISION: 0	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel) (RO ONLY)

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: Information used to fill-out procedure: P_i = 1800 psig P_f = 1900 psig L_i = 50% L_f = 25%	
	EVALUATOR NOTE: Some judgment may be required to determine satisfactory performance on this JPM.	
	START TIME: _____	
1.**C** Calculate the size of the RCS initial void volume (G_i) as follows: G_i =((L_i % - L_f %) x 12.17) / (1 - (P_i psig / P_f psig)) G_i =((_____ - _____) x 12.17) / (1 - (_____ /_____)) G_i =_____ cu-ft.	1.1**C** Calculates the size of the RCS initial void volume (G_i) G_i =((L_i % - L_f %) x 12.17) / (1 - (P_i psig / P_f psig)) G_i =((_____ - ____) x 12.17) / (1 - (____ /_____)) G_i =((__**50**_ - _**25**_) x 12.17) / (1 - (_**1800**_ /_**1900**__)) G_i =((__**25**___) x 12.17) / (1 - (_.**947368421**_)) G_i =(_**304.25**_) / (**.052631579**) G_i = **5781** cu-ft. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-030 JPM REVISION: 0	JPM TITLE: Calculate The RCS Initial Void Volume And Final Void Volume (IAW 2OM-6.4.T, Response To Voids In The Reactor Vessel) (RO ONLY)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2.**C** Calculate the size of the RCS final void volume (Gf) from the initial RCS void volume (Step B.5) as follows: Gf =Gi x (Pi psig / Pf psig) Gf =(_____) x (_____ / _____) Gf =_____ cu-ft.	2.1**C** Calculates the size of the RCS final void volume (Gf) from the initial RCS void volume. $G_f = G_i$ x (P_i psig / P_f psig) G_f =(_**5781**_) x (__**1800**__ / __**1900**__) G_f =(_**5781**_) x (_.**947368421**_) G_f =(_**5477**_) COMMENTS:	
	EVALUATOR CUE: That Completes this JPM	
	STOP TIME: _____	

Beaver Valley Power Station

Unit 2

2OM-6.4.T

Response to Voids in the Reactor Vessel

Revision 3

Prepared by	Date	Pages Issued	Effective Date
W. K. Giffrow	**10/04/99**	**1 through 7**	
Reviewed by	Date	Validated by	Date
C. O'Neill	**10/04/99**	**N/A**	
OSC Meeting No.	Date	Approved by	Date
Non-Intent	**10/04/99**		

I. PURPOSE

This procedure provides the instructions necessary to detect and size voids in the Reactor Coolant System. Discrimination between voids in the Reactor Vessel and the Steam Generators is not possible.

- This procedure may be entered into from an EOP.

II. PRECAUTIONS & LIMITATIONS

A. If Safety Injection is in operation, **THEN** this procedure is not to be used.

III. INITIAL CONDITIONS

A. Normal Charging and Letdown are in operation.

B. RCS Hot Leg temperature is stable.

C. Voids are indicated in the Reactor Coolant System by an abnormal change in Pressurizer level due to a change in Reactor Coolant System pressure.

IV. INSTRUCTIONS

A. Prepare for determining the RCS Void Volume by performing the following:

1. Using normal Pressurizer controls establish constant Pressurizer level and pressure.

Note:	System pressure and level are placed on a Trend Recorder for better accuracy in recording values. The range of RCS parameters is not expected to exceed 150 psi (± 75 psi) or 10% (± 5%) of level span for the Reactor Coolant System transient.

2. Place the following parameters on a Trend Recorder, ([2IHC-UR760 or 761], Trend Recorder, VB-B):

   - Pressurizer **OR** RCS Wide Range pressure
   - Pressurizer level

3. Record the following initial RCS parameters:

   a. RCS pressure (P_i) = 1800 psig

   dtc TODAY
   Initial / Date

   b. PRZR level (L_i) = 50 ~~psig~~ %

   dtc TODAY
   Initial / Date

B. Determine the RCS Gaseous Void as follows:

CAUTION:	IF PRESSURIZER LEVEL DECREASES TO LESS THAN 20%, THE RCS PRESSURE INCREASE SHOULD BE STOPPED AND CHARGING FLOW INCREASED TO RESTORE PRESSURIZER LEVEL.

Note:

- The Reactor Coolant System void volume is equal to the change in Pressurizer volume for a change in RCS pressure. The ratio of initial void volume to final void volume is equal to the ratio of initial to final RCS pressures. The final void volume may be determined by substituting the void volume change into the equation for the void and pressure ratios.
- Initial Void $G_I = ((\Delta L) \times (12.17\ ft^3/\%)) / (1 - (P_I / P_f))$
- Final Void $G_f = G_I \times (P_I / P_f)$

1. Maintain charging and letdown flow constant during RCS pressure change.
2. Increase RCS pressure ≥50 psig by energizing all Pressurizer heaters.
   a. If Pressurizer level falls to < 20%, **THEN** deenergize Pressurizer Heaters **AND** restore Pressurizer level by increasing charging flow.
3. When RCS pressure has been raised at least 50 psig, **THEN** stabilize RCS pressure.
4. Record the following final RCS parameters:
   a. RCS pressure (P_f) = 1900 psig

      dlc / TODAY
      Initial / Date

   b. PRZR level (L_f) = ~~25 psig~~ dlc TODAY 25 %

      dlc / TODAY
      Initial / Date

5. Calculate the size of the RCS initial void volume (G_I) as follows:

   $G_I = ((L_I\% - L_f\%) \times 12.17) / (1 - (P_I\ psig / P_f\ psig))$

   $G_I = ((\_\_\_\_\_ - \_\_\_\_\_) \times 12.17) / (1 - (\_\_\_\_\_ / \_\_\_\_\_))$

   Step A.3.b Step B.4.b Step A.3.a Step B.4.a

G_i =_____ cu-ft.

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

6. Calculate the size of the RCS final void volume (G_f) from the initial RCS void volume (Step B.5) as follows:

   $G_f = G_i$ x (P_i psig / P_f psig)

   G_f =(_____) x (_____ / _____)

   Step B.5 Step A.3.a Step B.4.a

   G_f =_____ cu-ft.

   (1) _____/_____
   Initial / Date
   (2) _____/_____
   Initial / Date

7. Increase RCS pressure an additional 50 psig by energizing Pressurizer Heaters.

8. When pressure has been increased 50 psig, proceed as follows:

   a. If Pressurizer level decreases due to the pressure increase, **THEN** a void is indicated and should be vented in accordance with Step C.

   b. If Pressurizer level does not change on the pressure increase, **THEN** this procedure is complete.

C. Vent Non-Condensable Gasses from the Reactor Coolant System as follows:

1. Ensure Pressurizer Relief Tank is available **AND** capable of being vented to the Gaseous Waste System.

2. Ensure RCS Subcooling is > 50°F by increasing RCS pressure **OR** dumping Steam from a non-faulted Steam Generator.

3. Adjust charging and letdown as necessary to establish Pressurizer level at 50 to 90%.

4. Verify Reactor Coolant System is borated to the Cold Shutdown Boron Concentration.

CAUTION:
- VENTING THE REACTOR COOLANT SYSTEM MAY RESULT IN A SAFETY INJECTION SIGNAL DUE TO DECREASING PRESSURE. THE SI SIGNAL SHOULD BE BLOCKED WHEN PRESSURIZER PRESSURE DROPS TO LESS THAN 2000 PSIG.
- THE SAFETY INJECTION SIGNAL WILL BE AUTOMATICALLY UNBLOCKED IF PRESSURIZER PRESSURE INCREASES TO GREATER THAN 2000 PSIG REQUIRING THE SIGNAL TO BE BLOCKED AGAIN IF PRESSURE IS TO BE REDUCED TO LESS THAN 2000 PSIG.

5. Limit Pressurizer pressure and level drop on venting by manually raising charging flow to maximum.

Note: Reactor Vessel Vent Valve burping may occur during valve cycling due to differential pressure across the valve. If this is the case, the valve should be closed when pressure equalizes.

6. Align to vent the Reactor Vessel Head by performing one of the following, (BB-A):
   a. Open [2RCS*SOV200A] **AND** [2RCS*SOV201A], Rx Vessel Vent to PRT Train A Isol Vlvs.
   b. Open [2RCS*SOV200B] **AND** [2RCS*SOV201B], Rx Vessel Vent to PRT Train B Isol Vlvs.

Note:
- Venting of the Reactor Coolant System should be terminated when any of the following limits are reached:
- Reactor Coolant Subcooling is < 50°F.
- Pressurizer level < 20%.
- Pressurizer Relief Tank level increases at a rate consistent with RCS makeup indicating the void has been vented.

7. Initiate Vessel vent by opening [2RCS*HCV250A or B], Rx Vessel Vent to PRT Train A or B Vlv (100%). (BB-A)
8. When one of the vent termination criteria is met, **THEN** close the valve opened in the previous step: (N/A valve not operated)
   a. [2RCS*HCV250A], Rx Vessel Vent to PRT Train A

(1) _____/_____
Initial / Date
(2) _____/_____
Initial / Date

b. [2RCS*HCV250B], Rx Vessel Vent to PRT Train B

(1) _____/_____
Initial / Date

(2) _____/_____
Initial / Date

9. Ensure all Rx Vessel Vent to PRT Isolation Valves are closed, (BB-A):

   a. [2RCS*SOV200A], Rx Vessel Vent to PRT Train A Isol Vlv.

   b. [2RCS*SOV201A], Rx Vessel Vent to PRT Train A Isol Vlv.

   c. [2RCS*SOV200B], Rx Vessel Vent to PRT Train B Isol Vlv.

   d. [2RCS*SOV201B], Rx Vessel Vent to PRT Train B Isol Vlv.

10. Place the following controls to normal:

   a. Pressurizer level control

   b. Pressurizer pressure control

D. Repeat Steps A.3 through Step B.8 to determine the effectiveness of the Vessel venting.

Performed By _____

_____

Verified By _____

Reviewed By _____ **Date** _____
NSS/ANSS

E. Route the completed copy of this procedure to Document Control via the Operations clerk's daily transmittal.

V. REFERENCES

A. TECHNICAL SPECIFICATIONS

NONE

B. UPDATED FINAL SAFETY ANALYSIS REPORT

NONE

C. COMMITMENTS

1. LER 1-99-002, CATS A990155A, CR 981459, CR 990132, BCO 2-98-004 Rev 2 - The Chemical and Volume Control System will be operated with a letdown flow rate of greater than 75 gpm and less than or equal to 120 gpm only on a temporary basis to address a transient condition and only when the RCS specific activity is verified to be less than or equal to 0.35 µCi/gram dose equivalent I-131. (Revision 2)

D. ADMINISTRATIVE

NONE

E. VENDOR INFORMATION

NONE

F. DRAWINGS

1. 10080-RM-406-2, VOND Reactor Coolant System

G. OPERATING MANUAL

1. 2OM-6.1, Reactor Coolant System Description
2. 2OM-6.3 2RCS Valve List

H. PLANT MODIFICATION

NONE

I. OTHER

1. OMDR 2-91-0738 (Rev. 0)
2. BCO 2-98-004 (Original issue) established a normal letdown flow limit of 66 gpm. Cautions were placed in the procedure prior to Steps B.1 and C.3 to make the user aware of this limitation. (Revision 1)
3. OMCN 2-98-324 incorporated Revision 1 to BCO 2-98-004 which changed normal letdown flow limit to 75 gpm. (Revision 2)
4. OMCR 2-96-0477 adds a dual signoff to Step 8 to ensure return to NSA, and corrects a typographical error. BCO 2-98-004 (Rev. 2) changed the maximum permissible RCS specific activity to 0.35 µCi/gram dose equivalent I-131 in the Cautions containing letdown flow and RCS specific activity limits. (Revision 2)
5. Removed Cautions containing letdown flow and RCS specific activity limits from steps that control charging and letdown flow (Steps B.1 and C.3), and the associated reference to BCO 2-98-004, to support implementation of TS Amendment 101. (Issue 4/Rev. 3)

JPM NUMBER: 2AD-031 JPM REVISION: 0	JPM TITLE: Prepare a Clearance Tagout [2QSS-P21B] Quench Spray Pump 21B

K/A REFERENCE: 2.2.13 4.1 TASK ID: 0481-007-03-043

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 25 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Identify the tags and sequence of placement for a tagout of 2QSS-P21B Quench Spray Pump 21B.
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	You are to perform the task Prepare a **SAFE** Clearance Tagout.
INITIAL CONDITIONS:	The plant is in Refueling Mode, no fuel is in the reactor. [2QSS-P21B] Quench Spray Pump 21B is to be placed on clearance.
INITIATING CUE:	You are to identify the required clearance points (equipment), position (placement configuration), and sequence for clearing [2QSS-P21B] Quench Spray Pump 21B for pump seal replacement IAW the attached clearance coversheet. Document your results on the worksheet provided.
REFERENCES:	NOBP-OP-1001, Manual Clearance Generation, Rev. 3 NOP-OP-1001, Clearance/Tagging Program, Rev. 12
TOOLS:	None
HANDOUT:	NOBP-OP-1001, Manual Clearance Generation, Rev. 3 NOP-OP-1001, Clearance/Tagging Program, Rev. 12 OP Manual Fig. No. 13-2, 10080-RM-413-2, Rev. 19 OM Chapter 2OM-13.3.C, Power Supply and Control Switch Checklist Rev. 9. Clearance coversheet 2R15-13-QSS-TRNG ***2R15-13-QSS-TRNG*** ***08 / 16 / 2010*** 2QSS-P21B] Quench Spray Pump 21B Seal Replacement Yes Mode 4 Use caution when breaching seal package; casing may not be completely drained. *2R15 – SEAL REPLACEMENT 2001005844

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to perform the task Prepare a **SAFE** Clearance Tagout.

INITIAL CONDITIONS: The plant is in Refueling Mode, no fuel is in the reactor. [2QSS-P21B] Quench Spray Pump 21B is to be placed on clearance.

INITIATING CUE: You are to identify the required clearance points (equipment), position (placement configuration), and sequence for clearing [2QSS-P21B] Quench Spray Pump 21B for pump seal replacement IAW the attached clearance coversheet. Document your results on the worksheet provided.

☐ 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: 2AD-031 JPM REVISION: 0	JPM TITLE: Prepare a Clearance Tagout [2QSS-P21B] Quench Spray Pump 21B

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
	EVALUATOR NOTE: This task is normally performed using the SOMS clearance computer and signed electronically. For this JPM, the SOMS computer is NOT available. IF necessary inform candidates that it is not required to follow the instructions for Manual Clearance Generation (IAW NOP-OP-1001 section 4.28). **EVALUATOR NOTE:** Provide JPM handout and student copy of table.	
1.**C** Candidate completes the table.	1.1**C** Candidates table matches the ANSWER KEY. COMMENTS: **EVALUATOR CUE:** When the candidate identifies and reports that all tags are identified, the evaluation for this JPM is complete.	
	STOP TIME: _____	

ANSWER KEY (DO NOT GIVE TO STUDENTS)

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

Component ID	Component Description	Position	Sequence
2QSS*P21B-CS (DF)	Control Switch for Quench Spray Pump 21B 2QSS*P21B (DF)	Pull-To-Lock (PTL)	1
4KVS-2DF-2F2	Supply to Quench Spray Pump 21B 2QSS*P21B	Racked Out OR Bus Barrier	2
2QSS*MOV101B-CS	Quench Pump 21B Discharge Isolation Valve	Shut	3
2QSS-9	Quench Pump 21B Recirc Isol	Shut	3
2QSS*MOV100B-CS	Quench Pump 21B Suction Isolation Valve	Shut	4
480 VAC MCC*2-E12 Cub 1A	Supply to Quench Pump 21B Suction Isolation Valve	Open	5
480 VAC MCC*2-E12 Cub 2A	Supply to Quench Pump 21B Discharge Isolation Valve	Open	5
2QSS-206	Quench Spray Pmp 21B Discharge Drain Isol Valve	Open	6
2QSS-310	Vent valve for Quench Spray Pmp 21B	Open	7

STUDENT COPY

Component ID	Component Description	Position	Sequence

Component to be Worked:

QSS-P21B

Quench Spray Pump 21B

Description /Reason

Seal Replacement

Placement Notes

MECH. MAINT. CLEARANCE

Cautions

Use caution when breaching seal package; casing may not be completely drained.

Completion Instructions /Feedback

Verify pump operability.

Clearance Attributes:

Attribute Description	Attribute Value
Equipment Required For Mode Change	Yes
Restored/Removed Prior to Mode	Mode 4
ESF Clearance Required	No
Schedule	2R15
Clearance Type	Danger
ıe to Post (In Minutes)	
ıme to Remove (In Minutes)	
Impacts Reactivity	No
Time for Draining/Venting (In Minutes)	
Time for Filling/Venting (In Minutes)	
Crew Size for Draining	
Crew Size for Filling	
Posting Pre-Job Brief Card completed	
Removal Pre-Job Brief Card completed	
Regulatory Applicability Determination #	

Work Documents List: 2R15 – SEAL REPLACEMENT 2001005844

Clearance Verification:

Status	Description	Name	Verification Da
Prepared	Prepared By		
Reviewed	Reviewed By		
Second Reviewed	Second Reviewed By		
Approved	Approved By		
Issued for Work	Issued for Work By		
Restoration Review	Restoration Review By		
Removal Authorized	Removal Authorized By		
Clearance Closed	Clearance Closed By		

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-010 JPM REVISION: 1	JPM TITLE: Determine GW Storage Tank Discharge Bleed Flow rate

K/A REFERENCE: 2.3.11 3.8/4.3 TASK ID: 0191-006-01-011
0191-010-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:	Performer SSN:

Time Critical: ☐ Yes ☒ No	Allotted Time: 8 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:	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
DIRECTIONS:	You are to calculate the GW Storage Tank Discharge Bleed Flow rate **AND** based on your calculation make a recommendation for continuing the discharge.
INITIAL CONDITIONS:	• The plant is in Mode 5, making preparations to enter Mode 6. • Unit 2 Gaseous waste Decay Tanks 2GWS-TK-25A, 25B, 25C, 25D, 25E, 25F, and 25G are being discharged to the Unit 1 Atmospheric Vent, IAW 1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. • The initial pressure in **ALL** of the tanks was 64 psig. • The discharge has been ongoing for 2 hours. • The current pressure of **ALL** tanks is 59.8 psig. • The Shift chemist has completed proper tritium sampling.
INITIATING CUE:	Determine the GW Storage Tank Discharge Bleed Flow rate IAW 1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. Step IV.M.20 **AND** make a recommendation for continuing the discharge in the box below. (Provided in the candidate direction sheet)
REFERENCES:	1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. Rev. 15 1/2-HPP-3.06.006.F01 RWDA-G.
TOOLS:	Calculator
HANDOUT:	1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. Rev. 15 filled out up to step IV.M.20. 1/2-HPP-3.06.006.F01 RWDA-G filled out with a MAXIMUM undiluted discharge rate of 2 SCFM.

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to calculate the GW Storage Tank Discharge Bleed Flow rate **AND** based on your calculation make a recommendation for continuing the discharge.

INITIAL CONDITIONS:

- The plant is in Mode 5, making preparations to enter Mode 6.
- Unit 2 Gaseous waste Decay Tanks 2GWS-TK-25A, 25B, 25C, 25D, 25E, 25F, and 25G are being discharged to the Unit 1 Atmospheric Vent, IAW 1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent.
- The initial pressure in **ALL** of the tanks was 64 psig.
- The discharge has been ongoing for 2 hours.
- The current pressure of **ALL** tanks is 59.8 psig.
- The Shift chemist has completed proper tritium sampling.

INITIATING CUE: Determine the GW Storage Tank Discharge Bleed Flow rate IAW 1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. Step IV.M.20 **AND** make a recommendation for continuing the discharge in the box below.

GW Storage Tank Discharge Bleed Flow rate_____.

Recommendation:

☐ 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: 2AD-010 JPM REVISION: 1	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 1/2-OM-19.4A.B, Unit 2 GW Storage Tk Disch To Unit 1 Atmos Vent. Step IV.M.20 COMMENTS:	
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) = $\frac{(132FT^3)(P_i-P_f)(\#\text{ of Tanks being discharged})}{(14.7\text{ psi})(T_f-T_i)\text{ min.}}$	2.1**C** Inserts the numbers from the initial conditions and determines bleed flow: Bleed flow rate (SCFM) = $\frac{(132)(64-59.8)(7)}{(14.7)(120)}$ Bleed flow rate (SCFM) = **2.2 SCFM** COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-010 JPM REVISION: 1	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**
Pi = Initial Gaseous Waste Storage Tank pressure in PSIG from [2GWS-PR125] **OR** PCS computer trend on GP 352. Pf = Current Gaseous Waste Storage Tank pressure in PSIG from [2GWS-PR125] **OR** PCS computer trend on GP 352. Ti = Time the discharge started Tf = Current time (Tf-Ti) shall have units of minutes		
3.1**C.** If the bleed flow rate exceeds 2 SCFM, THEN Stop the discharge by performing Steps IV.M.21 and IV.M.22 AND Notify Radiation Protection of the problem. (Otherwise N/A)	3.1**C.** Determines that the discharge **MUST be Terminated** COMMENTS: **EVALUATOR CUE:** When the applicant makes the decision to terminate the discharge, the evaluation for this JPM is complete	
	STOP TIME: _____	

RTL A9.520B
RWDA-G- TR99999

BEAVER VALLEY POWER STATION-2
GASEOUS
Radioactive Waste Discharge Authorization

This permit authorizes the discharge of 4032. cu. ft. (64.0 psig) of gaseous radioactivity at a maximum undiluted discharge rate of 2 cfm from gaseous waste decay tank: 2GWS-TK25A,25B,25C,25D,25E,25F,25G 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 12:07

Monitor Alarms Adjusted

HI DW (INIT) HI-HI DW (INIT)

(cpm)	HI-HI	HI
RM-GW-108B	2.36E+05	1.18E+05
RM-GW-109(5)	3.60E+05	1.20E+05

Prerequisites of ODCM 1/2-ODC-3.03 Table 3.3-13 met
INIT JS

Prepared By	Reviewed By	Chemistry Notified
Rad Tech TODAY	Radpro Supe TODAY	Wm Cress TODAY
RT Signature Date	RP Supervision Sig Date	Chemist Signature Date

Sample ID TEST	Approved By	Approved By
Sample Date/Time Today 12:07	Al Hartnes TODAY	Dane Held TODAY
	U1 Shift Mngr Sig Date	U2 Shift Mngr Sig Date

Discharge Record

Discharge Start							Discharge Stop						
mo	dy	yr	hr	mn	psig/ psia	init	mo	dy	yr	hr	mn	psig/ psia	init
TODAY			2 hours ago		64.0	TJ							

Monitor Alarms Reset

HI ____ (INIT) HI-HI ____ (INIT)

(cpm)	HI-HI	HI
RM-GW-108B	3.60E+05	1.20E+05
RM-GW-109(5)	3.60E+05	1.20E+05

Total Discharge ______ minutes

Reviewed By	Reviewed By	Post Review
U1 Shift Mngr Sig Date	U2 Shift Mngr Sig Date	Signature Date

EXERCISE USE ONLY

BEAVER VALLEY POWER STATION-2
Gaseous Release
Dose and Dose Rate Summary

SITE DOSE RATE VALUES*

	Mrem/Yr		Organ Dose Rates (mrem/yr)						
	Total Body Dose Rate	Skin Dose Rate	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LLI
PROJECTED RELEASE DOSE RATE =	2.107E-08	4.789E-08	0.000E+00	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10
Site Continuous Dose Rate =	4.580E-07	7.520E-06	0.000E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00
SITE PROJECTED DOSE RATE =	4.791E-07	7.568E-06	0.000E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00	1.980E+00

UNIT DOSE VALUES*

	mrad		Organ Dose (mrem)						
	Gamma Air	Beta Air	Bone	Liver	Total Body	Thyroid	Kidney	Lung	GI-LLI
TOTAL PROJECTED RELEASE DOSE =	1.187E-10	6.892E-11	0.000E+00	2.774E-11	2.774E-11	2.774E-11	2.774E-11	2.774E-11	2.774E-11
Unit 1 Current Month Dose =	2.890E-07	1.360E-09	0.000E+00	1.690E-01	1.690E-01	1.690E-01	1.690E-01	1.690E-01	1.690E-01
UNIT 1 PROJECTED MONTH DOSE =	2.891E-07	1.394E-09	0.000E+00	1.690E-01	1.690E-01	1.690E-01	1.690E-01	1.690E-01	1.690E-01
Unit 2 Current Month Dose =	2.890E-07	1.360E-09	0.000E+00	5.040E-04	5.040E-04	5.040E-04	5.040E-04	5.040E-04	5.040E-04
UNIT 2 PROJECTED MONTH DOSE =	2.891E-07	1.394E-09	0.000E+00	5.040E-04	5.040E-04	5.040E-04	5.040E-04	5.040E-04	5.040E-04
Unit 1 Current Quarter Dose =	2.890E-07	1.360E-09	0.000E+00	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01
NIT 1 PROJECTED QUARTER DOSE =	2.891E-07	1.394E-09	0.000E+00	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01
Unit 2 Current Quarter Dose =	2.890E-07	1.360E-09	0.000E+00	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03
NIT 2 PROJECTED QUARTER DOSE =	2.891E-07	1.394E-09	0.000E+00	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03
Unit 1 Current Year Dose =	2.890E-07	1.360E-09	0.000E+00	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01
UNIT 1 PROJECTED YEAR DOSE =	2.891E-07	1.394E-09	0.000E+00	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01	3.440E-01
Unit 2 Current Year Dose =	2.890E-07	1.360E-09	0.000E+00	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03
UNIT 2 PROJECTED YEAR DOSE =	2.891E-07	1.394E-09	0.000E+00	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03	1.008E-03

ie sum of the RQ's is < 1; this is not considered a Reportable Quantity.

EXERCISE USE ONLY

BEAVER VALLEY POWER STATION-2
Noble Gas
Dose Rates and Doses

	Nuclide	Concentration uCi/cc	Total Body Dose Rate mrem/yr	Skin Dose Rate mrem/yr	Gamma Air Dose mrad	Beta Air Dose mrad	EPA-RQ Fraction
	KR-85	1.440E-05	2.107E-08	4.789E-08	4.010E-12	2.329E-12	1.593E-06
	TOTALS	1.440E-05	2.107E-08	4.789E-08	4.010E-12	2.329E-12	1.593E-06
EXTENDED	TOTALS		2.107E-08	4.789E-08	1.187E-10	6.892E-11	1.593E-06

Calculated at Site Boundary

EXERCISE USE ONLY

BEAVER VALLEY POWER STATION-2
Dose Rates From
Radioiodines and Particulates

Nuclide	Concentration uCi/cc	Bone mrem/yr	Liver mrem/yr	Tot.Body mrem/yr	Thyroid mrem/yr	Kidney mrem/yr	Lung mrem/yr	GI-LLI mrem/yr	EPA-RQ Fraction
H-3	2.100E-07	0.000E+00	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10	2.323E-07
TOTALS	2.100E-07	0.000E+00	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10	1.554E-10	2.323E-07

Dose Rates are Calculated for the Inhalation Pathway - Child
The Controlling Location is 0.35 miles NW.

EXERCISE USE ONLY

RTL A9.520B
RWDA-G-1 TR99999

BEAVER VALLEY POWER STATION-2
Doses From
Radioiodines and Particulates

Nuclide	Concentration uCi/cc	Bone mrem	Liver mrem	Tot.Body mrem	Thyroid mrem	Kidney mrem	Lung mrem	GI-LLI mrem	EPA-RQ Fraction
H-3	2.100E-07	0.000E+00	9.373E-13	9.373E-13	9.373E-13	9.373E-13	9.373E-13	9.373E-13	2.323E-07
TOTALS	2.100E-07	0.000E+00	9.373E-13	9.373E-13	9.373E-13	9.373E-13	9.373E-13	9.373E-13	2.323E-07
EXTENDED TOTALS		0.000E+00	2.774E-11	2.774E-11	2.774E-11	2.774E-11	2.774E-11	2.774E-11	2.323E-07

Dose are Calculated for the Inhalation, Ground and Vegetation Pathway - Child
The Controlling Location is 0.89 miles NW.

EXERCISE USE ONLY

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

K/A REFERENCE: 2.1.25 4.2 TASK ID: 0011-006-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:	Performer SSN:

Time Critical: ☐ Yes ☒ No	Allotted Time: 25 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:	Determine that Shutdown Margin is greater than COLR required value of 1.77% and less than 2.4%. Determines Power defect is 2340 $\pm$ 20 pcm.
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	Determine Shutdown Margin in accordance with 2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15).
INITIAL CONDITIONS:	The Unit is in Mode 1, 100% power. All rods at 230 steps. Annunciator [A4-3C], TAVG DEVIATION FROM TREF is "NOT LIT". ONE control rod has been determined to be inoperable, untrippable, and immovable during performance of 2OST-1.1, Control Rod Assembly Partial Movement Test. Chemistry has just reported current RCS boron concentration at 838 ppm. Current burnup is 12,000 MWD/MTU
INITIATING CUE:	The Shift Manager directs you to perform a shutdown margin (SDM) calculation for the present plant conditions by performing steps VII.A through VII.C.1 of 2OST-49.1, Shutdown Margin Calculation (Plant Critical). Report your results in the space provided. Be sure to include a determination of whether or not the Technical Specification required SDM is being met. (Space provided on candidate direction sheet).
REFERENCES:	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15), Rev. 16, Unit 2 Curve Book Cycle 15, License Requirement Manual, Technical Specifications.
TOOLS:	Calculator
HANDOUT:	2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15), Rev. 16 Filled out up to step VII.A. Unit 2 Curve Book Cycle 15, License Requirement Manual, Technical Specifications.

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Determine Shutdown Margin in accordance with 2OST-49.1, Shutdown Margin Calculation (Plant Critical) (Updated for Cycle 15).

INITIAL CONDITIONS: The Unit is in Mode 1, 100% power. All rods at 230 steps. Annunciator [A4-3C], TAVG DEVIATION FROM TREF is "NOT LIT". ONE control rod has been determined to be inoperable, untrippable, and immovable during performance of 2OST-1.1, Control Rod Assembly Partial Movement Test. Chemistry has just reported current RCS boron concentration at 838 ppm. Current burnup is 12,000 MWD/MTU

INITIATING CUE: The Shift Manager directs you to perform a shutdown margin (SDM) calculation for the present plant conditions by performing steps VII.A through VII.C.1 of 2OST-49.1, Shutdown Margin Calculation (Plant Critical). Report your results in the space provided. Be sure to include a determination of whether or not the Technical Specification required SDM is being met.

RESULTS:

Calculated SDM is_____.

Calculated SDM _____within the limits specified in the Technical Specifications?
IS/IS NOT

☐ 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: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: Some judgment may be required to determine satisfactory performance on this JPM. Refer to attached Data Sheet 1 ANSWER KEY.	
	START TIME: _____	
1. If the plant is in Mode 1, Verify that Tavg is less than 3°F above Tref (Annunciator A4-3C, TAVG DEVIATION FROM TREF is OFF) (Otherwise N/A). (Step VII.A.1)	1.1 Initials Step VII.A.1, (Plant in Mode 1, Tavg <3°F above Tref (Annunciator A4-3C OFF) from Initial Conditions. COMMENTS:	
2. If the plant is in Mode 2, Verify that Tavg is less than 8°F above Program Tavg as follows: (Otherwise N/A) (Step VII.A.2)	2.1 N/A's Step VII.A.2, (Plant not in Mode 2). COMMENTS:	
3. Request Chemistry to determine current RCS Boron concentration in ppm. (Step VII.A.3)	3.1 Determines current boron concentration is 838 ppm from initial conditions. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4. Record the number of steps withdrawn for Control Bank D from the group demand counters, (BB-B) on Data Sheet 1. (Step VII.A.4)	4.1 Records Control Bank D as 230 steps withdrawn on Data Sheet 1 (Block A.4) from initial conditions. COMMENTS:	
5. Record the current reactor power level in percent of full power from [2NME-NR45], Power Range Recorder, (VB-B) OR PCS computer point U1150, 1MIN AVG PWR RNG NUCLEAR FLUX, on Data Sheet 1. (Step VII.A.5)	5.1 Records reactor power as 100% on Data Sheet 1 (Block A.5). COMMENTS:	
6.**C** Record the number of immovable or untrippable control rods on Data Sheet 1. (Step VII.A.6)	6.1**C** Records number of immovable or untrippable rods as "ONE" on Data sheet 1 (Block A.6) (given in Initial Conditions). COMMENTS:	
7. If the number of immovable or untrippable control Rods is greater than 1, Use Attachment 1 to determine the required boron concentration with greater than one struck rod and Record below. (Otherwise N/A) (Step VII.A.7)	7.1 Determines Step VII.A.7 is N/A and marks step N/A COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
8.C Determine control bank reactivity worth per the following: Using the ARO Total Bank Worth table on Data Sheet 1, Enter the total bank worth for the current core burnup range, in the space provided on Data Sheet 1. (Step VII.B.1.a)	8.1C Determines ARO Total Bank Worth (from the Data Sheet 1 table) to be 7.425 %Δk/k and records on Data Sheet 1 (Block B.1.a). COMMENTS:	
9.C Using Curve Book Figures CB-24A, 24B or CB-24C, Determine integral rod worth for the current bank position AND Enter this value on Data Sheet 1. Divide value from curve (in pcm) by 1000 to convert to %Δk/k AND Record on Data Sheet 1. (Step VII.B.1.b)	9.1C Using Curve Book Figure CB-24B, determines integral rod worth to be ZERO and records on Data Sheet 1 (Blocks B.1.b.1) and B.1.b). COMMENTS:	
10. Subtract the integral rod worth from the Total Bank Worth **AND** Enter the result on Data Sheet 1. (Step VII.B.1.c)	10.1 Determines TBW-IRW is 7.425 %Δk/k and records on Data Sheet 1 (Block B.1.c). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
14. Multiply this result by 0.9 to apply a 10% uncertainty **AND** Enter the result on Data Sheet 1. (Step VII.B.1.d)	11.1 Determines 90% of TBW to be 6.6825 %Δk/k and records on Data Sheet 1 (Block B.1.d). COMMENTS:	
12.**C** If **ONE** rod is inoperable (untrippable), Record "Worst Case Stuck Rod with Inoperable Rod" worth on Data Sheet 1. Value is determined from Column "B" on Attachment 2 for the appropriate Cycle Burnup. (Step VII.B.2.b)	12.1**C** Determines stuck rod worth to be 2.330 %Δk/k and records on Data Sheet 1 (Block B.2). COMMENTS:	
13. Subtract Stuck Rod(s) Worth from the 90% Total Bank Worth value **AND** Enter the result on Data Sheet 1. (Step VII.B.3)	13.1 Determines 90% Total Bank Worth minus Stuck Rod(s) Worth to be 4.3525 %Δk/k and records on Data Sheet 1 (Block B.3). COMMENTS:	
14. Determine Power Defect as follows: Record RCS Boron Concentration results from Chemistry on Data Sheet 1. (Step VII.B.4.a)	14.1 Record RCS Boron Concentration of 838 ppm on Data Sheet 1 (Block B.4.a). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
15. Using Curve Book Figure 29, Determine the B-10 Correction Factor for the present Burnup (If between two Burnup values, Use the B-10 Correction Factor for the greater MWD/MTU Burnup entry) AND Record on Data Sheet 1. (Step VII.B.4.b)	15.1 Determines B-10 Correction Factor to be 0.895 and records on Data Sheet 1 (Block B.4.b). COMMENTS:	
16. Determine Corrected Boron Concentration by multiplying the RCS Boron Concentration and the B-10 Correction Factor **AND** Record on Data Sheet 1. (Step VII.B.4.c)	16.1 Determines Corrected Boron Concentration to be 750 ppm and records on Data Sheet 1 (Block B.4.c). COMMENTS:	
17. Using Curve Book Figure 21, Determine the **ABSOLUTE VALUE** of the Power Defect for the current power level and the Corrected Boron Concentration **AND** Enter this value on Data Sheet 1. (Step VII.B.4.d)	17.1 Determines **ABSOLUTE VALUE** of the Power Defect to be 2340 pcm and records on Data Sheet 1 (Block B.4.d). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
18.C Divide value from curve (in pcm) by 1000 to convert to %Δk/k **AND** Record on Data Sheet 1. (Step VII.B.4.e)	18.1C Converts **ABSOLUTE VALUE** of the Power Defect of 2340 pcm to 2.34 %Δk/k and records on Data Sheet 1 (Block B.4.e). COMMENTS:	
19. Add 0.150 % Δk/k for operating temperature band margin to the Power Defect recorded in Step VII.B.4.e **AND** Record on Data Sheet 1. (Step VII.B.4.f)	19.1 Determines Power Defect plus operating temperature band margin to be 2.49 % Δk/k and records on Data Sheet 1 (Block B.4.f). COMMENTS:	
20.C Determine SHUTDOWN MARGIN by subtracting Power Defect (Step VII.B.4.f) from the value determined in Step VII.B.3 **AND** Record on Data Sheet 1. (Step VII.B.5)	20.1C Determines SDM to be 1.8625 % Δk/k and records on Data Sheet 1 (Block B.4.f) AND space provided on candidate direction sheet. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-035 JPM REVISION: 0	JPM TITLE: Perform Shutdown Margin Calculation (At Power and ONE Inoperable Rod) SRO ONLY

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
21.**C** Consult the Acceptance Criteria for acceptable performance. (Step VII.C.1)	21.1 Consults the Acceptance Criteria, LRM 5.1.2, and Technical Specification 3.1.1. 21.2**C** Determines SDM is within limits and records on space provided on candidate direction sheet. COMMENTS:	
	EVALUATOR CUE: That Completes this JPM	
	STOP TIME: _____	

Operating Surveillance Test
Shutdown Margin Calculation (Plant Critical)
(Updated For Cycle 15)

*** ANSWER KEY *** DATA SHEET 1

SHUTDOWN MARGIN CALCULATION

A. 4. CBD Steps Withdrawn (OR CBC if CBD @ 0 steps) = 230 STEPS

5. Reactor Power = 100 %

6. Number of inoperable Rods = 1 ROD(s) C

ARO TOTAL BANK WORTH (% Δk/k)	
0 to 10000 MWD/MTU	10000 to EOL
6.985	7.425

B. 1. a. ARO Total Bank Worth (See Table above) (TBW) = 7.425 % Δk/k C

b. Integral Rod Worth (Curve Book Figure 24A, 24B OR 24C) (IRW) = 0 pcm C

1) 0 (pcm from B.1.b) X 1% Δk/k / 1000pcm = 0 % Δk/k

c. TBW (B.1.a) - IRW (B.1.b.1) = 7.425 % Δk/k

d. 90% Current Total Bank Worth

0.9 x 7.425 (B.1.c) = 6.6825 % Δk/k

2. Stuck Rod(s) Worth = 2.330 %Δk/k C

3. (90% Total Bank Worth) - (Stuck Rod(s) Worth)

(6.6825 (B.1.d)) - (2.330 (B.2)) = 4.3525 %Δk/k

4. a. RCS Boron Concentration = 838 ppm

b. B-10 Correction Factor (CB Figure 29) = 0.895

c. (RCS Boron Concentration) x (B-10 Correction Factor)

(838 (B.4.a)) x (0.895 (B.4.b)) = 750 ppm

d. ABSOLUTE VALUE of Power Defect (CB Figure 21) = 2340 pcm

e. 2340 (pcm from B.4.d) x 1%Δk/k / 1000 = 2.34 %Δk/k C

f. Power Defect + Operating temperature band margin

2.34 (B.4.e) + 0.150% Δk/k = 2.49 %Δk/k

5. SHUTDOWN MARGIN
(Acceptance Criteria - Within Limits Specified in COLR)

(4.3525 (B.3)) - (2.49 (B.4.f)) = 1.8625 %Δk/k C

C = Critical Step

(1) _____ Initial

(2) _____ Initial

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-024 JPM REVISION: 1	JPM TITLE: Determine Availability For Call-in (3 ROs) SRO ONLY

K/A REFERENCE: 2.1.3 3.9 TASK ID: 0481-002-03-043

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

_____

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

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Determines that working hour limits of NOP-LP-4011, FENOC Work Hour Control, will be exceeded for ROs Bill and Joe **AND NOT** exceeded for Sam.
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	You are to perform the task "Determine availability for call-in".
INITIAL CONDITIONS:	Both Units have been in Mode 1 for the past 100 days. Today is 8/14/10. The daylight RO for 8/15/10 has called in sick. It is desired to replace the daylight RO by assigning an RO to fill this vacancy. Three ROs are available to assume this vacancy, beginning at 0700 hours on 8/15/10. The available RO replacements have the listed work hour history.
INITIATING CUE:	As the Unit Supervisor, determine which one(s), if any of the available RO replacements are able to work the 8 hour daylight shift on 8/15/10 without violating the 10CFR 26 Work Hour Limits specified in NOP-LP-4011, FENOC Work Hour Control. Explain why or why not. Document your results on the sheet provided.
REFERENCES:	NOP-LP-4011, FENOC Work Hour Control, Rev. 3
TOOLS:	Calculator.
HANDOUT:	Working hour history; NOP-LP-4011, FENOC Work Hour Control, Rev. 3

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to perform the task "Determine availability for call-in".

INITIAL CONDITIONS: Both Units have been in Mode 1 for the past 100 days. Today is 8/14/10. The daylight RO for 8/15/10 has called in sick. It is desired to replace the daylight RO by assigning an RO to fill this vacancy. Three ROs are available to assume this vacancy, beginning at 0700 hours on 8/15/10. The available RO replacements have the listed work hour history.

INITIATING CUE: As the Unit Supervisor, determine which one(s), if any of the available RO replacements are able to work the 8 hour daylight shift on 8/15/10 without violating the 10CFR 26 Work Hour Limits specified in NOP-LP-4011, FENOC Work Hour Control. Explain why or why not. Document your results on the sheet provided.

☐ 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: 2AD-024 JPM REVISION: 1	JPM TITLE: Determine Availability For Call-in (3 ROs) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR CUE: PROVIDE WORK HISTORY SHEET (LAST PAGE OF JPM)	
	START TIME: _____	
1. Evaluate work hour history.	1.1 Compares work hour history against NOP-LP-4011, FENOC Work Hour Control requirements of section 4.2. COMMENTS:	
2.**C** Determines working hour limit will be exceeded for RO Bill, and documents on the sheet provided.	2.1**C** Determines that RO Bill may **NOT** be called in. 2.2**C** Determines that RO Bill will exceed 26 hours in 48 hours after working 4 hours on 8/15. (Turnover times are not considered in this determination) 2.3**C** Documents the result in the space provided. **EVALUATOR NOTE:** Bill also does not have the required 10 hour break before assuming the shift. This is an Alternate acceptable answer. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-024 JPM REVISION: 1	JPM TITLE: Determine Availability For Call-in (3 ROs) SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
3.**C** Determines working hour limit will be exceeded for RO Joe, and documents on the sheet provided.	3.1**C** Determines that RO Joe may **NOT** be called in. 3.2**C** Determines that the RO Joe will exceed 72 hours in 7 days. 3.3**C** Documents the result in the space provided. COMMENTS:	
4.**C** Determines working hour limit will **NOT** be exceeded for RO Sam, and documents on the sheet provided.	4.1**C** Determines that RO Sam may be called in. 4.2**C** Determines that RO Sam meets all of the call-in requirements 4.3**C** Documents the result in the space provided. COMMENTS:	
	EVALUATOR CUE: The evaluation on this JPM is complete when the applicant determines whether the ROs may be called in.	
	STOP TIME: _____	

WORK HISTORY

T/O = Turnover time

Joe, Sam, and Bill are all 8- hour Operations Shift workers.

Date	Joe	Sam	Bill
7/18/10 through 8/7/10	Vacation	Vacation	Vacation
8/8/10	OFF	0700-1500 T/O 20 min	1500-2300 T/O 20 min
8/9/10	0700-1900 T/O 20 min	0700-1900 T/O 20 min	1500-2300 T/O 20 min
8/10/10	0700-1900 T/O 20 min	1100-2300 T/O 20 min	OFF
8/11/10	0700-1900 T/O 20 min	1500-2300 T/O 20 min	OFF
8/12/10	0700-1900 T/O 20 min	1500-2300 T/O 20 min	0700-1500 T/O 20 min
8/13/10	0700-1900 T/O 20 min	0700-1500 T/O 20 min	1100-2100 T/O 20 min
8/14/10	0700-1700 T/O 20 min	0700-1900 T/O 20 min	0700-2300 T/O 20 min
8/15/10	OFF	OFF	OFF

RESULTS:

WORK HISTORY

ANSWER KEY

DO NOT GIVE TO STUDENTS

T/O = Turnover time

Joe, Sam, and Bill are all 8- hour Operations Shift workers.

Date	Joe	Sam	Bill
7/18/10 through 8/7/10	Vacation	Vacation	Vacation
8/8/10	OFF	0700-1500 T/O 20 min	1500-2300 T/O 20 min
8/9/10	0700-1900 T/O 20 min	0700-1900 T/O 20 min	1500-2300 T/O 20 min
8/10/10	0700-1900 T/O 20 min	1100-2300 T/O 20 min	OFF
8/11/10	0700-1900 T/O 20 min	1500-2300 T/O 20 min	OFF
8/12/10	0700-1900 T/O 20 min	1500-2300 T/O 20 min	0700-1500 T/O 20 min
8/13/10	0700-1900 T/O 20 min	0700-1500 T/O 20 min	1100-2100 T/O 20 min
8/14/10	0700-1700 T/O 20 min	0700-1900 T/O 20 min	0700-2300 T/O 20 min
8/15/10	OFF	OFF	OFF

RESULTS:

1. **RO Bill may NOT be called in. He will exceed 26 hours in 48 hours after working 4 hours on 8/15.**
   (Alternate acceptable answer – Bill does not have the required 10 hour break)
2. **RO Joe may NOT be called in. He will exceed 72 hours in 7 days.**
3. **RO Sam may be called in. He meets all of the call-in requirements**

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-033 JPM REVISION: 0	JPM TITLE: Determine Compensatory Actions for Low CO_2 Tank Level SRO ONLY

K/A REFERENCE: 2.2.37 4.6 TASK ID: 1300-029-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 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:	Required actions of 1/2-ADM-1900, Fire Protection Program Attachment B items 4a and 4b are identified.
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	You are to Determine appropriate Compensatory Actions for Low CO_2 Tank Level.
INITIAL CONDITIONS:	Both Units have been in Mode 1 for the past 100 days. The 24 Ton CO_2 storage tank 2FPD-TK24 is empty and on clearance for maintenance. The tour operator reports the following CO_2 Storage Tank levels: • 10 Ton CO_2 Storage Tank 2FPD-TK22 is 86% • 10 Ton CO_2 Storage Tank 2FPD-TK23 is 80%. • 7.5 Ton CO_2 Storage Tank 2FPD-TK21 is 70%
INITIATING CUE:	Determine the required 1/2-ADM-1900, Fire Protection Program compensatory actions, if any, for these CO_2 Storage Tank levels. List any required actions on the attached answer sheet.
REFERENCES:	1/2-ADM-1900, Fire Protection Program Rev. 22
TOOLS:	None
HANDOUT:	1/2-ADM-1900, Fire Protection Program Rev. 22

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to Determine appropriate Compensatory Actions for Low CO_2 Tank Level.

INITIAL CONDITIONS: Both Units have been in Mode 1 for the past 100 days. The 24 Ton CO_2 storage tank 2FPD-TK24 is empty and on clearance for maintenance. The tour operator reports the following CO_2 Storage Tank levels:

- 10 Ton CO_2 Storage Tank 2FPD-TK22 is 86%
- 10 Ton CO_2 Storage Tank 2FPD-TK23 is 80%.
- 7.5 Ton CO_2 Storage Tank 2FPD-TK21 is 70%

INITIATING CUE: Determine the required 1/2-ADM-1900, Fire Protection Program compensatory actions, if any, for these CO_2 Storage Tank levels. List any required actions on the attached answer sheet.

☐ 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: 2AD-033 JPM REVISION: 0	JPM TITLE: Determine Compensatory Actions for Low CO_2 Tank Level SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR CUE: Provide student with attached answer sheet to document the determination.	
	START TIME: _____	
1.C Determines 1/2-ADM-1900, Fire Protection Program item 4a required actions	1.1C Utilizes Attachment B item 4a and determines the following actions are required: Within 1 hour Establish a continuous fire watch in the following areas: • Cable Spreading Area Cntrl. Bldg. Elev. 725 • Process Rack Area Cntrl. Bldg. Elev. 707 • Cable Tunnel (Between Cntrl. & Aux. Bldgs.) Elev. 712 • West Cable Vault Elev. 735 • Cable Vault & Rod Cntrl. Area Elev. 755 • Cable Spreading Area Service Bldg. Elev. 745 1.2C Restore to operable status within 14 days COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-033 JPM REVISION: 0	JPM TITLE: Determine Compensatory Actions for Low CO_2 Tank Level SRO ONLY

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
2.C Determines 1/2-ADM-1900, Fire Protection Program item 4b required actions	2.1C Utilizes Attachment B item 4b and determines the following actions are required: Within 1 hour Establish an hourly fire watch patrol and establish controls to prohibit transient combustibles and ignition sources in the following areas: • Relay Room Elev. 755 • Emergency Diesel Generator Bldg. Rooms • East Cable Vault Elev. 735 2.2C Identifies the need to verify the operability of Early Warning Fire Detection in the following affected areas: • Relay Room Elev. 755 • Emergency Diesel Generator Bldg. Rooms • East Cable Vault Elev. 735 2.3C Restore to operable status within 14 days COMMENTS:	
	EVALUATOR CUE: That Completes this JPM.	
	STOP TIME: _____	

ANSWER SHEET PROVIDED TO STUDENT

1/2-ADM-1900, Fire Protection Program required Actions, if any, if there are none, simply state NONE:

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2AD-014 JPM REVISION: 1	JPM TITLE: Approve Emergency Exposure

K/A REFERENCE: 2.3.4 3.7 TASK ID: 1350-006-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:	Performer SSN:

Time Critical: ☐ Yes ☒ No	Allotted Time: 15 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:	Determine appropriate Emergency authorization limit in accordance with EPP/IP 5.3 (Limit exposure to: 75 rem TEDE; 225 rem lens of eye, 750 rem organ CDE)
RECOMMENDED STARTING LOCATION:	Classroom
DIRECTIONS:	Determine the Emergency Exposure Authorization Limit.
INITIAL CONDITIONS:	• A Site Area Emergency has been declared at Unit 2. • An individual is trapped and bleeding in a Locked High Radiation Area. • An immediate response is necessary to save their life. • It has been clearly determined that actions establishing adequate or equivalent protection, with less dose are not readily available. • Bill Jones, a qualified radiation worker has volunteered to perform the rescue activity and has been briefed on risks of projected radiation exposure. • Bill Jones has a year to date exposure of 880 mR (TEDE). • The area dose rate is 8,110 mR/hr and there is no airborne radioactivity present. • The rescue activity could take up to 4 hours.
INITIATING CUE:	As the Emergency Director, you are to evaluate the listed conditions and determine the Emergency Exposure Authorization Limit. Document your determination in the box below. The Emergency Exposure Authorization Form will NOT be filled out at this time.
REFERENCES:	1/2-EPP/IP 5.3 Emergency Exposure Criteria and Control, Rev. 10
TOOLS:	None
HANDOUT:	1/2-EPP/IP 5.3 Emergency Exposure Criteria and Control, Rev. 10

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: Determine the Emergency Exposure Authorization Limit.

INITIAL CONDITIONS:

- A Site Area Emergency has been declared at Unit 2.
- An individual is trapped and bleeding in a Locked High Radiation Area.
- An immediate response is necessary to save their life.
- It has been clearly determined that actions establishing adequate or equivalent protection, with less dose are not readily available.
- Bill Jones, a qualified radiation worker has volunteered to perform the rescue activity and has been briefed on risks of projected radiation exposure.
- Bill Jones has a year to date exposure of 880 mR (TEDE).
- The area dose rate is 8,110 mR/hr and there is no airborne radioactivity present.
- The rescue activity could take up to 4 hours.

INITIATING CUE: As the Emergency Director, you are to evaluate the listed conditions and determine the Emergency Exposure Authorization Limit. Document your determination in the box below. The Emergency Exposure Authorization Form will NOT be filled out at this time.

DETERMINATION:

☐ 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: 2AD-014 JPM REVISION: 1	JPM TITLE: Approve Emergency Exposure

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
1.**C** Per Attachment A, determine the appropriate Emergency Exposure Authorization Limit. (Step 8.1.1)	1.1**C** Using Attachment A, determines the Emergency Exposure Authorization Limit: **Block 1:** Declared Emergency **YES** **Site Area** Personnel are qualified **YES** No declared pregnant workers **YES** **Male** **Block 2:** Exposure necessary to (1) save human life **YES** **Block 3:** Personnel are volunteers and have been briefed on risks of projected radiation exposure **YES** **Block 4C:** Sr. Vice President authorization for exposure >75 rem **NO (3,332 mR)** **Block 5C:** Limit exposure to: 75 rem TEDE; 225 rem lens of eye, 750 rem organ CDE COMMENTS: **EVALUATOR CUE:** That completes this JPM	
	STOP TIME: _____	

JPM NUMBER: 2AD-034 JPM REVISION: 0	JPM TITLE: Classify an Emergency Event (Scenario Specific)

K/A REFERENCE: 2.4.41 4.6 TASK ID: 1350-004-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☒ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	The correct EPP classification is made for the associated scenario **AND** all "critical" steps of the initial notification form are correctly completed.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to perform the task Classify An Emergency Event and complete the initial notification form.
INITIAL CONDITIONS:	The simulator scenario just completed.(2LOT7 NRC Exam)
INITIATING CUE:	As the Unit Supervisor, you are to classify the events in the scenario just completed in accordance with EPP/I-1a, Recognition and Classification of Emergency Conditions **AND** complete the initial notification form. For the purpose of filling out the initial notification form the following conditions exist: • The code word is "TANGO" • Unit 1 is at 100% steady state power • Wind direction at 150' is 65° • Wind speed at 35' is 7 mph
REFERENCES:	EPP/I-1b, Recognition and Classification of Emergency Conditions, Rev. 14, 1/2-EPP-IP-1.1.F01, Nuclear Power Plant Initial Notification Form Rev. 4
TOOLS:	None
HANDOUT:	EPP/I-1b, Recognition and Classification of Emergency Conditions, Rev. 14, 1/2-EPP-IP-1.1.F01, Nuclear Power Plant Initial Notification Form Rev. 4

ANSWER KEY
SCENARIO #2

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

1. Call Status ☒ THIS IS A DRILL ☐ *THIS IS AN ACTUAL EVENT*

2. This is: _____ At: **Beaver Valley Power Station**

My Telephone Number is: 724-643-8000 The Code Word is: TANGO Notification Time is: _____

"C" 3. Emergency Classification: ☐ Unusual Event ☐ General Emergency
☒ Alert ☐ This event has been terminated
☐ Site Area Emergency

Unit(s): 1 (2) Both Declaration Time: TIME Date: DATE

Power Level at time of Notification UNIT 1 100 % UNIT 2 Ø %

This represents a/an: "C" ☒ Initial Declaration
☐ Escalation
☐ No Change
In Classification Status

"C" 4. The Emergency Action Level (EAL) number is: TAB 1.2.4

Brief non-technical description of the event: _____

"C" 5. There is: ☐ No Radiological Release in Progress due to the event
☒ An Airborne Radiological Release in Progress due to the event
☐ A Liquid Radiological Release in Progress due to the event

"C" 6. Wind Direction is **FROM**: 65 degrees at 150' Wind Speed is: 7 mph at 35'

7. Conclusion: ☒ THIS IS A DRILL ☐ *THIS IS AN ACTUAL EVENT*

APPROVED: _____ **DATE:** _____

PEER CHECK _____

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

BEAVER VALLEY POWER STATION

PROTECTIVE ACTION RECOMMENDATION (PAR)

☐ **INITIAL** _____ TIME ☐ **UPGRADED** _____ TIME

☒ **NONE** (Done) _____ INIT.

Evacuate 360°

☐ N/A

☐ 2 Miles

☐ 5 Miles

☐ 10 Miles

AND

Evacuate Downwind Wedge

☐ N/A

☐ 5 Miles (circle appropriate sectors)

☐ 10 Miles (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

Shelter

☐ N/A

☐ Remainder of 10-Mile Emergency Planning Zone (EPZ)

☐ 10-Mile EPZ

☐ 0-2 Miles, 360 Degrees and 5 Mile Downwind Wedge (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

AND ☐ Administer Potassium Iodide in accordance with State Plan

REASON

☐ Plant Conditions ☐ Release In Progress ☐ Dose Projection

☐ Other (Explain)

Other Info:

Current Wind Direction is **FROM** _____ degrees at 150' Wind Speed is _____ mph at 35'

APPROVED: _____ _____
DATE

PEER CHECK: _____

ANSWER KEY
SCENARIO # 3

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

1. Call Status [X] THIS IS A DRILL [ ] *THIS IS AN ACTUAL EVENT*

2. This is: _____ At: **Beaver Valley Power Station**

My Telephone Number is: 724-643-8000 The Code Word is: TANGO Notification Time is: _____

"C" 3. Emergency Classification:
[ ] Unusual Event [ ] General Emergency
[ ] Alert [ ] This event has been terminated
[X] Site Area Emergency

Unit(s): 1 (2) Both Declaration Time: TIME Date: DATE

Power Level at time of Notification UNIT 1 100 % UNIT 2 Ø %

This represents a/an: "C"
[X] Initial Declaration
[ ] Escalation
[ ] No Change
In Classification Status

"C" 4. The Emergency Action Level (EAL) number is: TAB 2.3

Brief non-technical description of the event: _____

"C" 5. There is:
[ ] No Radiological Release in Progress due to the event
[X] An Airborne Radiological Release in Progress due to the event
[ ] A Liquid Radiological Release in Progress due to the event

"C" 6. Wind Direction is **FROM**: 65 degrees at 150' Wind Speed is: 7 mph at 35'

7. Conclusion: [X] THIS IS A DRILL [ ] *THIS IS AN ACTUAL EVENT*

APPROVED: _____ **DATE:** _____

PEER CHECK _____

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

BEAVER VALLEY POWER STATION

PROTECTIVE ACTION RECOMMENDATION (PAR)

☐ **INITIAL** _____ TIME ☐ **UPGRADED** _____ TIME

☒ **NONE** (Done) _____ INIT.

Evacuate 360°

☐ N/A
☐ 2 Miles
☐ 5 Miles
☐ 10 Miles

AND

Evacuate Downwind Wedge

☐ N/A
☐ 5 Miles (circle appropriate sectors)
☐ 10 Miles (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

Shelter

☐ N/A
☐ Remainder of 10-Mile Emergency Planning Zone (EPZ)
☐ 10-Mile EPZ
☐ 0-2 Miles, 360 Degrees and 5 Mile Downwind Wedge (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

AND ☐ Administer Potassium Iodide in accordance with State Plan

REASON

☐ Plant Conditions ☐ Release In Progress ☐ Dose Projection
☐ Other (Explain)

Other Info:

Current Wind Direction is **FROM** _____ degrees at 150' Wind Speed is _____ mph at 35'

APPROVED: _____ _____
DATE

PEER CHECK: _____

ANSWER KEY
SCENARIO # 4

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

1. Call Status ☒ THIS IS A DRILL ☐ *THIS IS AN ACTUAL EVENT*

2. This is: _____ At: **Beaver Valley Power Station**

My Telephone Number is: 724-643-8000 The Code Word is: TANGO Notification Time is: _____

"C" 3. Emergency Classification: ☐ Unusual Event ☐ General Emergency
☐ Alert ☐ This event has been terminated
☒ Site Area Emergency

Unit(s): 1 (2) Both Declaration Time: TIME Date: DATE

Power Level at time of Notification UNIT 1 100 % UNIT 2 Ø %

This represents a/an: "C" ☒ Initial Declaration
☐ Escalation
☐ No Change
In Classification Status

"C" 4. The Emergency Action Level (EAL) number is: TAB 1.2.3 OR 1.3.2

Brief non-technical description of the event: _____

"C" 5. There is: ☐ No Radiological Release in Progress due to the event
☒ An Airborne Radiological Release in Progress due to the event
☐ A Liquid Radiological Release in Progress due to the event

"C" 6. Wind Direction is **FROM**: 65 degrees at 150' Wind Speed is: 7 mph at 35'

7. Conclusion: ☒ THIS IS A DRILL ☐ *THIS IS AN ACTUAL EVENT*

APPROVED: _____ **DATE:** _____

PEER CHECK _____

NUCLEAR POWER PLANT INITIAL NOTIFICATION FORM

BEAVER VALLEY POWER STATION

PROTECTIVE ACTION RECOMMENDATION (PAR)

☐ **INITIAL** _____ TIME ☐ **UPGRADED** _____ TIME

☒ **NONE** (Done) _____ INIT.

Evacuate 360°

☐ N/A
☐ 2 Miles
☐ 5 Miles
☐ 10 Miles

AND

Evacuate Downwind Wedge

☐ N/A
☐ 5 Miles (circle appropriate sectors)
☐ 10 Miles (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

Shelter

☐ N/A
☐ Remainder of 10-Mile Emergency Planning Zone (EPZ)
☐ 10-Mile EPZ
☐ 0-2 Miles, 360 Degrees and 5 Mile Downwind Wedge (circle appropriate sectors)

A B C D E F G H J K L M N P Q R

AND ☐ Administer Potassium Iodide in accordance with State Plan

REASON

☐ Plant Conditions ☐ Release In Progress ☐ Dose Projection
☐ Other (Explain)

Other Info:

Current Wind Direction is **FROM** _____ degrees at 150' Wind Speed is _____ mph at 35'

APPROVED: _____ _____
DATE

PEER CHECK: _____

JPM NUMBER: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

K/A REFERENCE: 004A4.07 3.9/3.7 TASK ID: 0071-011-01-013
004A4.12 3.8 / 3.3

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Approximately 226 gallons of primary makeup water added to the RCS at a rate of 75 gpm.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to perform a Reactor Coolant System dilution.
INITIAL CONDITIONS:	• The plant is 100% power, with all systems in NSA. • The Control Rods are fully withdrawn. • Tavg is 1°F below Tref. • Current RCS boron concentration is 1030 ppm. • IAW the current reactivity placard, 226 gallons of dilution water will be needed to raise Tavg 1°F.
INITIATING CUE:	Your supervisor directs you to dilute the RCS 226 gal in accordance with 2OM-7.4.AR, "Blender Operation in Mode 1", at a rate of 75 gpm to raise Tavg 1°F. All procedure required initial conditions are satisfied. It is **NOT** desired to take manual control of VCT Level and Pressure. It is desired to use the "DILUTE" Mode.
REFERENCES:	2OM-7.4.AR, "Blender Operation in Mode 1", Revision 7 Reactivity Plan (Placard) to coincide with 226 gals/°F.
TOOLS:	None
HANDOUT:	2OM-7.4.AR, "Blender Operation in Mode 1", Revision 7

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:

You are to perform a Reactor Coolant System dilution.

INITIAL CONDITIONS:

- The plant is 100% power, with all systems in NSA.
- The Control Rods are fully withdrawn.
- Tavg is 1°F below Tref.
- Current RCS boron concentration is 1030 ppm.
- IAW the current reactivity placard, 226 gallons of dilution water will be needed to raise Tavg 1°F.

INITIATING CUE:

Your supervisor directs you to dilute the RCS 226 gal in accordance with 2OM-7.4.AR, "Blender Operation in Mode 1", at a rate of 75 gpm to raise Tavg 1°F. All procedure required initial conditions are satisfied. It is **NOT** desired to take manual control of VCT Level and Pressure. It is desired to use the "DILUTE" Mode.

☐ 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: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Initialize to a MOL 100% power IC. Reduce Tavg ~°1 F below Tref. Adjust [2CHS*FCV114A] pot setting to 568 units **EVALUATOR CUE:** Provide candidate with a copy of 2OM-7.4.AR, "Blender Operation in Mode 1". When candidate is ready to begin JPM, PLACE the simulator in RUN.	
	START TIME: _____	
1. Review procedure.	1.1 Reviews procedure provided. COMMENTS:	
2. At the discretion of the RO and SM/US, take control of VCT Level and Pressure.	2.1. N/A – Initiating cue states that it is NOT desired to take manual control of VCT level and pressure. **EVALUATOR CUE:** IF necessary, remind the candidate to refer to initiating cue. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Place Boric Acid Blender Control Switch to Stop	3.1**C** Places Boric Acid Blender Makeup Control Switch to STOP. 3.2 Verifies green light – LIT and red light – NOT LIT. COMMENTS:	
4.**C** Set [2CHS*FCV114A] to desired flow rate.	4.1**C** Adjusts [2CHS*FCV114A] pot setting to 468 units based on the following formula: $\frac{75gpm}{16gpm} = 4.68$ **EVALUATOR NOTE:** Pot should be set at 468 units ±2 units. COMMENTS:	
5.**C** Set Total Makeup From Blender Flow Totalizer.	5.1**C** Adjusts [2CHS-FQIS168] to 226 (Green LED) 5.2**C** Depresses [2CHS-FQIS168] RESET PB. 5.3 Verifies [2CHS-FQIS168] is reading ZERO (Red LED). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6. Ensure [2CHS-FQIS113], Boric Acid Flow To Blender is set to zero.	6.1. Verifies that [2CHS-FQIS113], Boric Acid Flow To Blender is set to ZERO (Red and green LED). COMMENTS:	
7.**C** Place makeup Mode Selector switch in Dilute or Alternate Dilute.	7.1**C** Places the makeup Mode Selector switch in DILUTE. **EVALUATOR NOTE:** Initiating cue stated that it is desired to use the "DILUTE" mode. COMMENTS:	
8.**C** Initiate dilution.	8.1**C** Places Boric Acid Blender Makeup Control Switch to START. 8.2 Verifies green light – NOT LIT and red light – LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
9. Verify proper operation.	9.1 Verifies [2CHS*FCV114B] green light – NOT LIT and red light – LIT. 9.3 If in ALTERNATE DILUTE, verifies [2CHS-FCV113B] OPENS. 9.2 Verifies [2CHS-FR113] is reading ~ 75 gpm. COMMENTS:	
10. Operate pressurizer heaters to equalize boron concentration.	**EVALUATOR NOTE:** The candidate may elect to N/A JPM Steps # 10 & 11 because they are only necessary for large amounts of PG water or frequent dilutions. 10.1 Places control switch for 2RCS*H2A, B, D, or E to ON. 10.2 Verifies green light – NOT LIT and red light – LIT. **EVALUATOR CUE:** If necessary, role-play the Unit Supervisor and direct candidate to energize one additional backup heater group. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-089 JPM REVISION: 7	JPM TITLE: RCS Dilution

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
11. Verify at least one RCP in operation at least once per hour during dilution and document in narrative log.	11.1 Checks at least one RCP in operation and notes this must be done at least once per hour. 11.2 Indicates this check must be logged in the Narrative Log. **EVALUATOR CUE:** Another operator will make the appropriate log entry. COMMENTS:	
12. When the dilution or series of dilutions is complete, Perform the following to place the makeup control systems in automatic operations: Place the Boric Acid Makeup Blender Control Switch in STOP.	12.1 Verifies Total Makeup From Blender Flow Totalizer [2CHS-FQIS168] reaches 226 gal. 12.2 Places Boric Acid Blender Makeup Control Switch to STOP. 12.3 Verifies green light – LIT and red light – NOT LIT. COMMENTS:	
	EVALUATOR NOTE: It is not desired to set-up the blender for AUTOMATIC operation. **EVALUATOR CUE:** That Completes this JPM	
	STOP TIME: _____	

JPM NUMBER: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

K/A REFERENCE: 006A4.05 3.9/3.8
006A4.07 4.4/4.4

TASK ID: 0531-002-05-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☒ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Cold Leg Recirculation established.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to perform the task, Transfer from Hot Leg to Cold Leg Recirculation.
INITIAL CONDITIONS:	• The plant has experienced a large break LOCA 16 hours ago with all systems having functioned as designed. • The EOP's have been implemented normally to this point and the SI headers are currently split as expected. • The plant is currently in Hot Leg recirculation and has been for 9.5 hours. • A transfer from Hot Leg to Cold Leg Recirculation is required. • Charging High Head Safety Injection Pump [2CHS*P21C] is cleared for pump repairs.
INITIATING CUE:	Your supervisor has directed you to transfer recirculation of the RCS from the Hot Legs to the Cold Legs using EOP ES-1.5, "Transfer from Hot Leg Recirculation to Cold Leg Recirculation".
REFERENCES:	Unit 2 EOP ES-1.5, "Transfer from Hot Leg Recirculation to Cold Leg Recirculation", Issue 1C, Rev 6
TOOLS:	Shorting Bars
HANDOUT:	Unit 2 EOP ES-1.5, "Transfer from Hot Leg Recirculation to Cold Leg Recirculation", Issue 1C, Rev 6

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to perform the task, Transfer from Hot Leg to Cold Leg Recirculation.

INITIAL CONDITIONS:

- The plant has experienced a large break LOCA 16 hours ago with all systems having functioned as designed.
- The EOP's have been implemented normally to this point and the SI headers are currently split as expected.
- The plant is currently in Hot Leg recirculation and has been for 9.5 hours.
- A transfer from Hot Leg to Cold Leg Recirculation is required.
- Charging High Head Safety Injection Pump [2CHS*P21C] is cleared for pump repairs.

INITIATING CUE: Your supervisor has directed you to transfer recirculation of the RCS from the Hot Legs to the Cold Legs using EOP ES-1.5, "Transfer from Hot Leg Recirculation to Cold Leg Recirculation".

☐ 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: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	SIMULATOR SETUP: Insert a Large Break LOCA and perform E-0, E-1, ES-1.3 and ES-1.4 actions. (Note this takes several hours of setup work) To setup for ES-1.5 and associated fault which trips [2CHS*P21B] when 2SIS*MOV8888B is opened perform the following: • Select Event Trigger • Enter Event # • Enter in Event Tab XA2o058R == 1 **Ensure 2CHS*21C is on clearance (Yellow Tagged)**	
	START TIME: _____	
1. Review procedure.	1.1 Reviews EOP ES-1.5. COMMENTS:	
2.1 Recirc Spray Pumps - no signs of cavitation. 2.2 Align RSS Pumps for Cold Leg Recirculation: Verify [2RSS*P21C & D] running.	2.1 Verifies 2RSS*P21C & D ammeters, flow indicators and pressure indications all STABLE. 2.2 Verifies [2RSS*P21C & D] BOTH Red lights – LIT White lights – NOT LIT. COMMENTS:	
	EVALUATOR CUE: A Shorting Bar will be needed in the next step. When requested, Role-play the Shift Manager and supply the shorting bar.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
3.C Insert Shorting Bar and close [2SIS*MOV8889]. (ES-1.5 steps 2.b & c)	3.1 Contacts Shift manager and requests a shorting bar. 3.2C Inserts into [2SIS*MOV8889] jacks. 3.2C Places [2SIS*MOV8889] CS to CLOSE. 3.3 Verifies Green light – LIT and Red light – NOT LIT. COMMENTS:	
4.C Close [2SIS*MOV8887A & B]. (ES-1.5 step 2.d)	4.1C Places [2SIS*MOV8887A and B] CS to CLOSE. 4.2 Verifies Green lights – LIT and Red lights – NOT LIT. COMMENTS:	
5.C Open [2SIS*MOV8888A & B]. (ES-1.5 step 2.e)	5.1C Places [2SIS*MOV8888A and B] CS to OPEN. 5.2 Verifies Green lights – NOT LIT and Red lights – LIT. **EVALUATOR NOTE:** [2CHS*P21B] is triggered to trip when 2SIS*MOV8888B control switch is placed to OPEN. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6. Verify flow indicated on [2SIS*FI945 & 946]. (ES-1.5 step 2.f)	6.1. Verifies flow indicated on [2SIS*FI945 & 946]. COMMENTS:	
	FAULT STATEMENT: Alternate path begins here: Only ONE CHS Pump [2CHS*P21A] is available.	
7. Verify two Charging Pumps running. (ES-1.5 step 3.a and RNO a)	7.1 Verifies [2CHS*P21A] White light – NOT LIT and Red light – LIT. 7.2 Verifies [2CHS*P21B] White light – LIT and Red light – NOT LIT. 7.3 Determines that neither of the other Charging Pumps can be started and continues with RNO response. **EVALUATOR CUE:** If an NLO is dispatched to check charging pump status, role play and acknowledge request. Cue candidate to continue on in the procedure. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
8.**C** Stop the running Charging Pump. (ES-1.5 step 3.a RNO a.1)	8.1**C** Places [2CHS*P21A] CS to STOP. 8.2 Verifies White light – LIT and Red light – NOT LIT. COMMENTS:	
	EVALUATOR CUE: Shorting Bars will be needed in the next two steps. When requested, Role-play the Shift Manager and supply the shorting bars.	
9.**C** Insert Shorting Bars and close [2SIS*MOV869A]. (ES-1.5 step 3.c & d)	9.1 Contacts Shift manager and requests a shorting bar. 9.2**C** Inserts into [2SIS*MOV869A] jacks. 9.3**C** Places [2SIS*MOV869A] CS to CLOSE. 9.4 Verifies Green light – LIT and Red light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-560 JPM REVISION: 3	JPM TITLE: Transfer from Hot Leg to Cold Leg Recirculation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10.**C** Open [2SIS-MOV836]. (ES-1.5 step 3.e & f)	10.1 Contacts Shift manager and requests a shorting bar. 10.2**C** Inserts into [2SIS-MOV836] jacks. 10.3**C** Places [2SIS-MOV836] CS to OPEN. 10.4 Verifies Green light – NOT LIT and Red light – LIT. COMMENTS:	
11.**C** Start previously running Charging Pump. (ES-1.5 step 3.g)	11.1**C** Places [2CHS*P21A] CS to START. 11.2 Verifies White light – NOT LIT and Red light – LIT. COMMENTS:	
12. Verify flow indicated on [2SIS*FI940]. (ES-1.5 step 3.h)	12.1 Verifies flow indicated on [2SIS*FI940]. COMMENTS:	
	EVALUATOR CUE: That completes this JPM.	
	STOP TIME: _____	

JPM NUMBER: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service

K/A REFERENCE: 004A.4.06 3.6/3.1
004A.4.08 3.8/3.4
004A2.07 3.4/3.7

TASK ID: 0071-019-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Excess letdown flow established. Normal charging and letdown secured. Excess letdown heat exchanger outlet temperature $\leq 140^{\circ}F$.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to place Excess Letdown in Service.
INITIAL CONDITIONS:	The plant is operating at 25% power during a plant startup. All systems are operating normally except for a leak on the CCP supply line to the non-regenerative heat exchanger. Isolation of this leak will require that normal charging and letdown be secured. Normal letdown is in service.
INITIATING CUE:	The Unit Supervisor directs you to place excess letdown in service to the VCT and secure normal charging and letdown in accordance with 2OM-7.4.G, "Excess Letdown Heat Exchanger Operation". Establish Excess Letdown from the "A" RCS loop. You are to maintain excess letdown heat exchanger outlet temperature $\leq 140^{\circ}F$ and report when task is complete.
REFERENCES:	2OM-7.4.G, Revision 6, "Excess Letdown Heat Exchanger Operation"
TOOLS:	None
HANDOUT:	2OM-7.4.G, Revision 6, "Excess Letdown Heat Exchanger Operation"

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to place Excess Letdown in Service.

INITIAL CONDITIONS: The plant is operating at 25% power during a plant startup. All systems are operating normally except for a leak on the CCP supply line to the non-regenerative heat exchanger. Isolation of this leak will require that normal charging and letdown be secured. Normal letdown is in service.

INITIATING CUE: The Unit Supervisor directs you to place excess letdown in service to the VCT and secure normal charging and letdown in accordance with 2OM-7.4.G, "Excess Letdown Heat Exchanger Operation". Establish Excess Letdown from the "A" RCS loop. You are to maintain excess letdown heat exchanger outlet temperature $\leq 140^{\circ}F$ and report when task is complete.

☐ 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: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service	

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Initialize to any 25% power IC set. **EVALUATOR NOTE:** Provide the candidate a copy of 2OM-7.4.G. When candidate is ready to begin, place simulator in RUN.	
	START TIME: _____	
1. Reviews 2OM-7.4.G, "Excess Letdown Heat Exchanger Operation."	1.1 Reviews 2OM-7.4.G. COMMENTS:	
2. Verify Open (2CCP*AOV170), Shield Tank & Ex LTDN CLRS WTR Supply Isol. Vlv.	2.1 Verifies 2CCP*AOV170 OPEN. 2.2 Verifies Green light – NOT LIT and Red light – LIT. COMMENTS:	
3. Verify Open (2CCP*AOV105), Excess Letdown Cooler Inlet Vlv.	3.1 Verifies 2CCP*AOV105 OPEN. 3.2 Verifies Green light – NOT LIT and Red light – LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service	

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
4.**C** Position (2CHS*HCV389), Ex LTDN Hx Disch Diverting Valve to Pri Drn TFR TK position.	**EVALUATOR CUE:** Role play the US and inform the candidate that the reactor plant vents and drains system are aligned to receive letdown. 4.1**C** Positions (2CHS*HCV389) to P.D.T. Tank position. 4.2 Verifies Red Valve position light (PRI DRN TRF TK) – LIT and Red Valve position light (VCT) – NOT LIT COMMENTS:	
	EVALUATOR/INSTRUCTOR CUE: When asked, role play the US and inform the candidate that MCC-2-17 Cub 5D, Loop A Drain Isolation Valve (2RCS*MOV557A) is ON **after having the instructor** SELECT REMOTE: Select LOA-LOV304, Click RACKIN to provide power to Loop A Drain Isol. Valve.	
5.**C** Open (2RCS*MOV557A) "RCS Loop A Drain Valve".	5.1 **C** Places control switch for 2RCS*MOV557A to OPEN. (BB-A) 5.2 Verifies Red Light - LIT and Green Light - NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
6.**C** Open (2CHS*MOV201), "Excess Letdown Heat Exchanger Inlet Valve".	6.1**C** Places (2CHS*MOV201) to OPEN position. (BB-A). 6.2 Verifies Red Light - LIT and Green Light - NOT LIT. COMMENTS:	
7. Monitor Seal Injection flow on 2CHS-FI130A, 127A, 124A and leakoff flow on 2CHS-FR154A while adjusting excess letdown flow.	7.1 Monitors Seal Injection flow on 2CHS-FI130A, 127A, 124A and leakoff flow on 2CHS-FR154A while adjusting excess letdown flow. (VB-A) COMMENTS:	
8**C**. Establish excess letdown flow slowly, using Excess Letdown Hx Discharge. Press Reducing Valve (2CHS-HCV137), to allow for warm-up of heat exchanger.	8.1**C** Locates hand control station for (2CHS*HCV137) and slowly turns the pot in the clockwise direction to open the valve. 8.2**C** Controls Ex Letdown HX temperature at less than or equal to140°F on 2CHS-TI139. 8.3 Controls Ex Letdown HX Pressure <135 psig on [2CHS-PI138]. **EVALUATOR CUE:** Ten (10) minutes has elapsed. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service	

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
9**C**. Ensures Ex. LTDN. HX. Discharge. "Diversion Valve" (2CHS*HCV389) is aligned to VCT.	9.1**C** Locates switch for 2CHS*HCV389 and places switch in VC Tank position. 9.2 Verifies Red light (VCT Tank) – LIT and RED light (PRI DRN TRF TK) – NOT LIT. COMMENTS:	
10. Monitor Seal Injection flow and adjust if necessary.	10.1 Verifies seal injection flow meters 2CHS-FI130A, 127A, 124A indicate 6-9 gpm per pump. 10.2 Coordinates efforts with local operator and adjusts (CHS*179, 178, 180) to maintain 6 - 9 gpm, if necessary. COMMENTS:	
11**C**. Close Letdown Orifice Vlvs 2CHS*AOV200A/B.	11.1**C** Places 2CHS*AOV200A and 200B control switches to CLOSED position. 11.2 Verifies Green Lights – LIT and Red Lights – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-056 JPM REVISION: 7	JPM TITLE: Place Excess Letdown in Service	

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
12**C**. Place auto/manual station for Charging Pumps Discharge Flow Control Valve (2CHS-FCV122) to MANUAL and CLOSE the valve.	12.1**C** Depresses 2CHS*FCV122 MANUAL ▲ pushbutton; demand increases to 100% to CLOSE valve. COMMENTS:	
13.**C** Close (2CHS*MOV289), Normal Charging Header Isolation Valve.	13.1**C** Places 2CHS*MOV289 control switch to CLOSE position. 13.2 Verifies Green Light – LIT and Red Light – NOT LIT. COMMENTS:	
14. Report to supervisor.	**EVALUATOR CUE:** Another operator will perform 2OST-6.4 and adjust 2CHS-HCV186 as needed. Shift Manager will discuss chemistry concerns with the Chemistry Department. 14.1 Notifies Unit Supervisor that Excess Letdown has been placed into service to VCT, and the outlet temperature is <140°F and pressure is <135 psig. COMMENTS:	
	EVALUATOR CUE: That completes this JPM.	
	STOP TIME: _____	

JPM NUMBER: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

K/A REFERENCE: 003A2.01 3.5/3.9 TASK ID: 0061-046-04-012
015/017AA1.22 4.0/4.2

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS

Performer Name:	Performer SSN:

Time Critical: ☒ Yes ☐ No	Allotted Time: 15 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:

- 2RCS*P21A tripped,
- 2RCS*PCV455A closed,
- 2CHS*MOV303A closed greater than three (3) minutes, but less than five (5) minutes, following the time that the reactor coolant pump was tripped.

RECOMMENDED STARTING LOCATION: Simulator

DIRECTIONS: You are to respond to reactor coolant pump seal trouble annunciator.

INITIAL CONDITIONS: The plant is in Mode 3 at normal operating temperature and pressure, with the reactor trip breakers open and with all RCS loops in operation.

INITIATING CUE: Annunciator A2-4D, "REACTOR COOLANT PUMP SEAL TROUBLE", will alarm soon. You are to analyze the problem and respond accordingly.

This JPM contains time critical elements.

REFERENCES: 2OM-7.4.AAH, "Reactor Coolant Pump Seal Trouble", Rev. 22
Unit 2 AOP 2.6.8, "Abnormal RCP Operation", Rev. 6
Unit 2 EOP E-0, "Reactor Trip or Safety Injection", Issue 1C, Rev. 8

TOOLS: Plant computer.

HANDOUT: 2OM-7.4.AAH, "Reactor Coolant Pump Seal Trouble", Rev. 22
Unit 2 AOP 2.6.8, "Abnormal RCP Operation", Rev. 6

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to respond to reactor coolant pump seal trouble annunciator.

INITIAL CONDITIONS: The plant is in Mode 3 at normal operating temperature and pressure, with the reactor trip breakers open and with all RCS loops in operation.

INITIATING CUE: Annunciator A2-4D, "REACTOR COOLANT PUMP SEAL TROUBLE", will alarm soon. You are to analyze the problem and respond accordingly.

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: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
	SIMULATOR SETUP: Depending on desired core life, initialize IC-3, 11, or 25. Mode 3, all RCP's running, NOP/NOT, open RTB and allow the plant to stabilize. Failure to occur 30 seconds after simulator to run. Set Trigger 1 to actuate 2RCS-P21A #1 seal failure, malfunction. Set Malf RCP01A severity = 10, ramp time = 30 sec, delay time = 30 sec. **ENSURE ALL GROUP DEMAND COUNTERS are SET to 000 (Not part of snap)** **EVALUATOR CUE:** When candidate says that they are ready to Begin the JPM, go to run on the simulator and initiate Trigger 1 to actuate the malfunction.	
	START TIME: _____	
1.1 Acknowledge Annunciator A2-4D, "REACTOR COOLANT PUMP SEAL TROUBLE". 1.2 Obtain procedure.	1.1 Acknowledges Annunciator A2-4D, "REACTOR COOLANT PUMP SEAL TROUBLE". 1.2 Refers to ARP A2-4D (2OM-7.4.AAH), or may directly enter AOP 2.6.8. **EVALUATOR CUE:** Provide candidate a copy of whichever procedure is referenced, either ARP A2-4D (2OM-7.4.AAH) or AOP 2.6.8 (2OM-53C.4.2.6.8). The ARP can be provided during the JPM Briefing. NOTE: The candidate may directly enter AOP 2.6.8 which is acceptable in which case step # 2 is N/A. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
2. Evaluate RCP status.	2.1 Evaluates RCP parameters. 2.2 Locates and identifies RCP #1 seal leakoff on [2CHS-FR154A] is higher than normal. 2.3 Refers to ARP section 4 and transitions to AOP 2.6.8. COMMENTS:	
3.1 Proceed to AOP 2.6.8 Step # 1. 3.2 Check Criteria for Immediate RCP Shutdown in Table 1 (Left Hand Page)	3.1 Check criteria for immediate RCP shutdown in Table 1 (Left Hand Page) for any criteria exceeded. 3.2 Identifies seal leakoff flow >6 GPM immediate RCP shutdown criteria is met. **EVALUATOR NOTE:** [2CHS-FR154A] upper range is 6 gpm. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: It is expected that the candidate will not trip the reactor or transition to EOP E-0, since the reactor is already shutdown. If this is the case, N/A JPM steps 4-8 and continue with JPM step 9. JPM steps 4-8 are to be used if the candidate does trip the reactor and transitions to EOP E-0 in response.	
4.1 Trip the reactor. (AOP 2.6.8 step 1.a.1)	4.1 Verifies reactor is tripped.	
4.2 Go to E-0, "Reactor Trip or Safety Injection".	4.2 Transitions to E-0, "Reactor Trip or Safety Injection" for verification of Immediate Manual Actions. COMMENTS:	
	EVALUATOR CUE: Provide candidate a copy of procedure EOP E-0 if candidate references procedure.	
5. Verify E-0 Immediate Manual Actions. (EOP E-0 step 1)	5.1 Verifies reactor trip: 5.1.1 Annunciator A5-6D lit. 5.1.2 Power Range Indication <5%. 5.1.3 Neutron flux dropping. COMMENTS:	
6. Verify E-0 Immediate Manual Actions. (EOP E-0 step 2)	6.1 Verifies turbine trip: 6.1.1 Throttle or Governor Valves all closed. 6.1.2 Main Generator Output Breakers open. 6.1.3 Exciter Circuit Breaker open. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7. Verify E-0 Immediate Manual Actions. (EOP E-0 step 3)	7.1 Verifies power to AC emergency busses: 7.1.1 At least one AC Emergency Bus energized. COMMENTS:	
8. Verify E-0 Immediate Manual Actions. (EOP E-0 step 4)	8.1 Checks SI status: 8.1.1 SI actuated. 8.2 Checks if SI is required: 8.2.1 CNMT pressure >5 PSIG. 8.2.2 PRZR pressure <1860 PSIG 8.2.3 SG Steam pressure <500 PSIG. 8.3 Determines SI is NOT REQUIRED and returns to AOP 2.6.8 step 1.a.3, the step in effect. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-040 JPM REVISION: 6	JPM TITLE: Respond to a Reactor Coolant Pump #1 Seal Failure

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
9.1**C** Stop affected RCP [2RCS*P21A]. 9.3 Close PRZR spray valves for affected RCP(s)	9.1**C** Places [2RCS*P21A] control switch in STOP or PTL. 9.2 Verifies green light – LIT and red light – NOT LIT. **RECORD RCP STOP TIME:** _____ 9.3**C** Places [2RCS*PCV455A] in MANUAL and depresses pushbutton until 0% demand indicated. COMMENTS:	
10.**C** When 3 minutes has elapsed from pump shutdown – , Close affected RCP(s) seal leakoff isolation valve within the following 2 minutes: • [2CHS*MOV303A], 21A RCP Seal Water Leakoff Vlv. (AOP 2.6.8 step 1.b)	10.1**C** Waits 3 minutes from the time [2RCS*P21A] was stopped. 10.2**C** Places [2CHS*MOV303A] to CLOSE within the next 2 minutes 10.3 Verifies Green Light – LIT and Red Light – NOT LIT. **RECORD MOV CLOSE TIME:** _____ **EVALUATOR CUE:** Terminate JPM after candidate completes closure of [2CHS*MOV303A]. COMMENTS:	
	STOP TIME: _____	

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

K/A REFERENCE: 035A3.01 4.0/3.9
035A4.01 3.7/3.6

TASK ID: 0241-004-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☒ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Transfer control of 21A SG Water Level Control from the Main Feed Regulating Bypass Valve (MFRBV) in AUTO to the Main Feed Regulating Valve (MFRV) in AUTO. Recognize improper MFRV control in AUTO and either shifts back to Manual MFRV control OR MFRBV control of 21A NR S/G Water Level to maintain level between 39% to 49%.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to place 2FWS-FCV478, "21A SG Main Feed Regulating Valve in service.
INITIAL CONDITIONS:	• The plant is in Mode 1 @ approximately 25% during a plant startup. • 2OM-52.4.A, "Raising Power from 5% to Full Load Operation" is in effect. • Step F.2 directs SG Main Feed Regulating Valves placed in service in accordance with Attachment 5 (provided).
INITIATING CUE:	The Unit Supervisor directs you to perform Part A of Attachment 5 of 2OM-52.4.A, "Placing [2FWS-FCV478], 21A SG Main Feedwater Regulating Valve in Service". [2FWS-FCV478] is to be placed in automatic to control Steam Generator level.
REFERENCES:	2OM-52.4.A, "Increasing Power From 5% to Full Load Operation" Rev. 69, Attachment 5
TOOLS:	None
HANDOUT:	2OM-52.4.A, "Increasing Power From 5% to Full Load Operation" Rev. 69, Attachment 5

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:

You are to place 2FWS-FCV478, "21A SG Main Feed Regulating Valve in service.

INITIAL CONDITIONS:

- The plant is in Mode 1 @ approximately 25% during a plant startup.
- 2OM-52.4.A, "Raising Power from 5% to Full Load Operation" is in effect.
- Step F.2 directs SG Main Feed Regulating Valves placed in service in accordance with Attachment 5 (provided).

INITIATING CUE:

The Unit Supervisor directs you to perform Part A of Attachment 5 of 2OM-52.4.A, "Placing [2FWS-FCV478], 21A SG Main Feedwater Regulating Valve in Service". [2FWS-FCV478] is to be placed in automatic to control Steam Generator level.

☐ 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: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	Simulator Setup: Initialize to any 25% power IC with Bypass Feed Regulating Valves in automatic. Place A,B,C NR levels on analog trend on plant computer. (L0400A, L0420A, L0440A). To insert the fault which causes a controller failure on "A" MFRV when placed in AUTO insert the following: • Controller Tab –CNH-CFW10B, Select Event Trigger #, Enter 50% severity, Enter 30 second ramp time.C1o084A == 1, click accept new event and ensure it is properly entered. Freeze simulator and take a snap. **EVALUATOR CUE:** Provide candidate with a copy of 2OM-52.4.A, Attachment 5 (Part A), "Placing 2FWS-FCV478, 21A SG Main Feedwater Reg Vlv in Service". When candidate is ready to begin JPM, PLACE the simulator in RUN.	
	START TIME: _____	
1. Review procedure.	1.1 Reviews procedure provided. COMMENTS:	
2. Verify 21A SG level is being controlled in AUTO or MANUAL using 21A SG Feedwater Bypass Control Vlv AND is STABLE at approximately 44%.	2.1 Verifies 21 A SG is being controlled in AUTO using Main Feed Bypass Control Valve and SG NR Water Level is STABLE at approximately 44%. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
3. Verify [2FWS-FCV478] "21A SG Main Feedwater Regulating Valve in MANUAL and CLOSED.	3.1 Verifies [2FWS*FCV478] Auto/Manual station in MANUAL and 0% demand. 3.2 Verifies Green light - LIT and Red light - NOT LIT. COMMENTS:	
4. Verify CLOSED [2FWS-MOV154A] "21A SG Main Feed water Isolation Valve". (BB 'C').	4.1 Verifies [2FWS-MOV154A] is CLOSED. 4.2 Verifies Green light – LIT and Red light – NOT LIT. 4.3 Dispatches an operator to "A" MFRV to observe local valve stroke. **EVALUATOR CUE:** Role Play NLO who is dispatched to report local valve operation. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
5. Stroke [2FWS-FCV478] "21A SG Main Feedwater Reg Vlv." to full OPEN and then full CLOSED, while verifying local position indication.	5.1 Stokes [2FWS*FCV478] full OPEN by depressing ▲ output pushbutton. 5.2 Verifies Red light – LIT and Green light – NOT LIT. 5.3 Strokes [2FWS*FCV478] full CLOSED by depressing ▼output pushbutton. 5.4 Verifies Green light – LIT and Red light – NOT LIT. **EXAMINER CUE:** Report as the Field Operator that [2FWS-FCV478] traveled smoothly full open with no hesitation and now indicates full closed. COMMENTS:	
6.1 Trend L0400A (L0401A), (L0402A) – SG 21A NR LVL FWS*LT474 (475), (476) on the Plant Computer (PCS) using lowest scan rate. 6.2 Monitor Steam Generator level, steam flow and feed flow.	6.1 Trend L0400A (L0401A), (L0402A) – SG 21A NR LVL FWS*LT474 (475), (476) on the Plant Computer (PCS) using lowest scan rate. 6.2 Monitors recorders and indicators for 21A SG level, feed flow AND steam flow. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
7. Maintain stable temperature AND reactor power.	7.1 Verifies stable Tavg and reactor power by monitoring NI power and Loop DT and Tavg. **EVALUATOR CUE:** Tavg and reactor power are stable. Another operator will continue to monitor these parameters. COMMENTS:	
8.**C** Open [2FWS-MOV154A], "21A SG Main Feedwater Isol Vlv.".	8.1**C** Places [2FWS-MOV154A] control switch to OPEN position. 8.2 Verifies Red light – LIT and Green light – NOT LIT. COMMENTS:	
9. If feed flow to the 21A SG rapidly rises or lowers when performing the following steps, THEN manually CLOSE the 21A SG Main Feedwater Reg Vlv AND establish proper feed flow AND level with 21A SG Feedwater Bypass Valve.	9.1 Continuously monitors steam flow and feed flow recorders and/or indicators for rapidly changing feedwater flow. COMMENTS:	
10.**C** Verify [2FWS-FCV478] "21A SG Main Feedwater Reg Vlv." controller in MANUAL and SLOWLY OPEN.	10.1**C** Verifies [2FWS*FCV478] is in MANUAL and slowly opens using ▲output pushbutton. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
11. Continue to open [2FWS-FCV478] "21A SG Main Feed Reg Valve" until [2FWS-FCV479] "21A SG Feedwater Bypass Control Valve" is CLOSED.	11.1 Continues to open [2FWS*FCV478]. 11.2 Verifies [2FWS*FCV479] is closing in AUTO OR is being closed in MANUAL to maintain 21A SG Water Level between 39% and 49%. COMMENTS:	
12. When [2FWS-FCV479], 21A SG Feedwater Bypass Control Valve is CLOSED, verify [2FWS-FCV479]controller in MANUAL and check for leakage past valve.	12.1 Verifies [2FWS*FCV479] full CLOSED. 12.2 Verifies [2FWS*FCV479] controller in MANUAL. 12.3 Verifies no leakage past valve. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-520 JPM REVISION: 0	JPM TITLE: Transfer from Bypass to Main Feed Regulating Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
13.**C** Place controller for [2FWS-FCV478] Main Feed Reg Valve in AUTO and monitor SG level AND feed flow and steam flow.	**FAULT STATEMENT:** Alternate Path begins here when placing "A" MFRV into AUTO. 13.1**C** Places [2FWS*FCV478] controller to AUTO. 13.2**C** Recognizes 21A NR SG level control is **NOT** stable. 13.3**C** Places [2FWS*FCV478] controller back to MANUAL. 13.4**C** Maintains 21A SG NR water level between 39% and 49% using either [2FWS*FCV478] in MANUAL or [2FWS*FCV479] in MANUAL or AUTO. 13.5 Reports problem with [2FWS*FCV478] AUTO control to US. COMMENTS:	
	EVALUATOR CUE: Once it is demonstrated that the candidate can control 21A SG NR water level between 39% and 49%: "This JPM is COMPLETE".	
	STOP TIME: _____	

JPM NUMBER: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

K/A REFERENCE: 064A4.06 3.9/3.9 TASK ID: 0362-005-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING
☒ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 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:	Diesel Generator 2-1 is synchronized and loaded in accordance with 2OST-36.1, "Emergency Diesel Generator [2EDG*2-1] Monthly Test" AND then tripped in response to Annunciator A8-4C and associated computer alarm indicating DG 2-1 DIFF.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to synchronize and load Emergency Diesel Generator 2-1.
INITIAL CONDITIONS:	The plant is in Mode 1 with 2OST-36.1 being performed. The test has been completed up to step VII, Part B, step 21. All steps up to this point have been completed satisfactorily.
INITIATING CUE:	Your supervisor directs you to perform Section VII, Part B, steps 21 through 35 of 2OST-36.1. You are responsible to respond to all alarms on Annunciator panel A8.
REFERENCES:	2OST-36.1, "Emergency Diesel Generator [2EGS*EG2-1] Monthly Test", Rev 62. 2OM-36.4.ACS, "Diesel Gen 2-1 Electrical Fault", Issue 1, Rev. 9
TOOLS:	None
HANDOUT:	2OST-36.1, "Emergency Diesel Generator [2EGS*EG2-1] Monthly Test", Rev 62, place kept up to step 21. 2OM-36.4.ACS, "Diesel Gen 2-1 Electrical Fault", Issue 1, Rev. 9 (AFTER ALARM OCCURS)

OPERATIONS JOB PERFORMANCE MEASURE

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:	You are to synchronize and load Emergency Diesel Generator 2-1.
INITIAL CONDITIONS:	The plant is in Mode 1 with 2OST-36.1 being performed. The test has been completed up to step VII, Part B, step 21. All steps up to this point have been completed satisfactorily.
INITIATING CUE:	Your supervisor directs you to perform Section VII, Part B, steps 21 through 35 of 2OST-36.1. You are responsible to respond to all alarms on Annunciator panel A8.

☐ 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: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	Simulator Setup: Initialize an IC., Ensure simulator is setup for OST-36.1 conditions up to step 21 as follows: • DG in EXERCISE & running @ 514 RPM • DG voltage at ~122 volts Turn on Annuc A11-4B, Y0186D, CO2 in Lockout. Set Trigger 1 to actuate when DG Load reaches 600 KW and actuates Annunciator A8-4C, Y2955D to support Alternate Path JPM.as follows: • Select Even Triggers • Enter HWXC8014M = 600 into event tab • Enter imf A8-4C-Y2955D 0 into command tab	
	START TIME: _____	
1. Check EDG speed at ~514 RPM.	1.1 Verifies EDG 2-1 Diesel Generator Speed at ~514 RPM on BB-C. COMMENTS:	
2. Obtain EDG voltage and frequency readings.	**EVALUATOR CUE:** Digital voltmeter readings are not required. 2.1 Records 2-1 EDG Output Voltage using benchboard indication in Step 22a. 2.2 Records 2-1 EDG Output Frequency using benchboard indication in Step 22a. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	EVALUATOR CUE: Motor Operated Potentiometer Test Not Required.	
3.C Places 2-1 EMERG GEN MTR OPERATED GROUND DISCONNECT switch in the CLOSE position and verifies correct indication.	3.1C Places 2-1 EMERG GEN MOTOR OPERATED GROUND DISCONNECT control switch to CLOSE. 3.2 Releases switch when Green light – NOT LIT and Red light – LIT. 3.3 Acknowledges Annunciator A8-4B, "DIESEL GEN 2-1 M.O. GROUND SW NOT FULLY ENGAGED". COMMENTS:	
4.C Position the 2-1 EMERG GEN SYNCHRONIZING SELECTOR switch to the BUS 2AE position.	4.1C Places the 2-1 EMERG GEN SYNCHRONIZING SELECTOR switch to the BUS 2AE position. COMMENTS:	
5.C Adjust EDG speed using 2-1 EMERG GEN GOVERNOR switch until EDG 2-1 Synchroscope needle is rotating slowly in the FAST direction.	5.1C Raise or lowers 2-1 EMERG GEN GOVERNOR control switch to adjust EDG 2-1 speed until the EDG 2-1 synchroscope is rotating slowly in the fast direction. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
6. Record voltage reading from 2-1 EMERG GEN Voltmeter. (BB-C)	6.1 Records voltage from 2-1 EMERG GEN Voltmeter on BB-C in Step 27a. COMMENTS:	
7. Record voltage reading from 4160V BUS 2AE Voltmeter.(VB-C)	7.1 Records voltage from 4160V BUS 2AE Voltmeter on BB-C in Step 27b. COMMENTS:	
8. If aligned to the SSST, Place Bus 2A Load Tap Changer in MANUAL.	8.1 Determines **NOT** aligned to SSST and N/As procedure step. COMMENTS:	
9. Using the 2-1 EMERG GEN VOLTAGE ADJUST switch, match EDG voltage with the voltage on Bus 2AE within 1 VAC.	9.1. Compares/verifies voltage between the EDG 2-1 and the Bus 2AE within 1 volt or adjusts EDG 2-1 voltage to within that tolerance using the 2-1 EMERG GEN VOLTAGE ADJUST switch. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
10.C While observing both EDG 2-1 synchroscope and synchronizing lights perform the following: When synchronizing lamps are completely dark and synchroscope needle is at 12 o'clock position, place the 2-1 EDG Output Breaker ACB 2E10 control switch in the CLOSE position and when the red light above switch turns ON, release the switch.	10.1C Places 2-1 EMERG GEN OUTPUT BKR ACB-2E10 control switch to CLOSE position when synchronizing needle is at 12 o'clock and lamps are dark. 10.2 Verifies 2E10 Red Light - LIT and White Light – NOT LIT and releases switch. COMMENTS:	
11.C Increase load on EDG 2-1 to approximately 450 KW using EMERG GEN GOVERNOR control switch.	11.1C Increases load on EDG 2-1 by turning 2-1 EMERG GEN GOVERNOR Control switch intermittently to RAISE. 11.2 Observes increasing EDG 2-1 watts and amps. 2-1 Emergency Generator Watts 2-1 Emer Gen 4KV Bus 2AE AMPS COMMENTS:	
12. Place the 2-1 EMERG GEN SYCHRONIZING SELECTOR switch in the OFF position.	12.1 Places 2-1 EMERG GEN SYNCHRONIZING SELECTOR switch in the OFF position. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-524 JPM REVISION: 1	JPM TITLE: Synchronize and Load 2-1 Emergency Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	FAULT STATEMENT: At this point the JPM alternate path begins. Annunciator A8-4C, "DIESEL GEN 2-1 ELECTRICAL FAULT" will annunciate when EDG 2-1 loading reaches 600 KW. Computer alarm DG 2-1 DIFF will also be received. Candidate should respond to ARP and Trip the 2-1 EDG and open ACB 2E10 which failed to automatically occur.	
15.**C** Annunciator A8-4C, "DIESEL GEN 2-1 ELECTRICAL FAULT", alarms due to 2-1 DG DIFF, (Y2955D)	15.1 Acknowledges the alarm and responds by reviewing the ARP for A8-4C. 15.2 Determines the alarm is indicative of an EDG Trip. 15.3**C** Manually Trips EDG 2-1 and opens ACB 2E10 output breaker. **EVALUATOR CUE:** Terminate the JPM after the candidate trips the EDG and opens the output breaker. COMMENTS:	
	STOP TIME: _____	

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

K/A REFERENCE: 008 A4.01 3.3/3.1 TASK ID: 0151-012-01-012

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 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: _____

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Transfer 2CCP*DCV100-1 and 100-2 between automatic and manual operation without invalidating test data. Determine TS 3.7.7 entry is required **AND** determine acceptance criteria is met > .98 for reverse flow test of 2CCP*4, "21A Discharge Check Vlv.".
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to perform 2OST-15.1, "Primary Component Cooling Water Pump (2CCP*P21A) Monthly Test".
INITIAL CONDITIONS:	The plant is in Mode 3 on hold to perform a reactor startup. 2CCP*P21B is running and 2CCP*P21A is in standby. (BOTH Pumps are OPERABLE) All test preparations for 2OST-15.1, "2CCP*P21A Monthly Operability Test" are completed and the procedure is signed ready to begin at Step VII.B.2. An NLO has been briefed and is standing by to support this OST.
INITIATING CUE:	The Unit Supervisor directs you to perform 2OST-15.1, "Primary Component Cooling Water Pump (2CCP*P21A) Monthly Test", Steps VII.B.2 through 4. Determine if acceptance criteria in Step VII.B.4.1 is met.
REFERENCES:	2OST-15.1, "Primary Component Cooling Water Pump [2CCP*P21A] Test", Rev. 44
TOOLS:	None
HANDOUT:	2OST-15.1, Primary Component Cooling Water Pump [2CCP*P21A] Test Rev. 44, place kept up to step VII.4.B.2.

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:	You are to perform 2OST-15.1, "Primary Component Cooling Water Pump (2CCP*P21A) Monthly Test".
INITIAL CONDITIONS:	The plant is in Mode 3 on hold to perform a reactor startup. 2CCP*P21B is running and 2CCP*P21A is in standby. (BOTH Pumps are OPERABLE) All test preparations for 2OST-15.1, "2CCP*P21A Monthly Operability Test" are completed and the procedure is signed ready to begin at Step VII.B.2. An NLO has been briefed and is standing by to support this OST.
INITIATING CUE:	The Unit Supervisor directs you to perform 2OST-15.1, "Primary Component Cooling Water Pump (2CCP*P21A) Monthly Test", Steps VII.B.2 through 4. Determine if acceptance criteria in Step VII.B.4.1 is met.

☐ 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: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	START TIME: _____	
	SIMULATOR SETUP: Select any Mode 3 steady state IC. Ensure 2CCP*P21B is in operation and 2CCP*P21A is in standby. Verify 2CCP*DCV100-1 and 100-2 in AUTO. **EVALUATOR NOTE:** When candidate is ready to begin, ENSURE the simulator is in RUN.	
1. Review procedure.	1.1 Reviews procedure provided. COMMENTS:	
2. Verify 2CCP*P21A, "Component Cooling Water Pump" bearing oil level is normal on local constant level oiler.	2.1 Requests NLO to verify 2CCP*P21A bearing oil level NORMAL on local constant level oiler. **EVALUATOR CUE:** Role play NLO and report 2CCP*P21A local bearing oil level is NORMAL. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3. Record 2CCP-PI150A, "Primary Component Cooling Water local suction pressure.	3.1 Request NLO to report 2CCP-PI150A – local suction pressure reading. **EVALUATOR CUE:** The NLO reports 2CCP-PI150A is reading 19.4 psig. 3.2 Records 2CCP-PI150A in step VII.B.3. COMMENTS:	
4. Verify 2CCP*4, "Component Cooling Water Pump 21A Disch Check Vlv" CLOSED.	4.1 Records 2CCP-PI145B, "21B CCP Pump Disch Press" in step VII.B.4.a. 4.2 N/A 2CCP-PI145C, "21C CCP Pump Disch Press" in step VII.B.4.a (pump is not running). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
5.**C** Verify 2CCP*DCV100-1 AND 2CCP-DCV100-2 , "Pri Comp Cooling Pump Recirc Vlvs" are in MAN.	5.1**C** Places 2CCP*DCV100-1 in MAN by depressing MAN pushbutton. 5.2 Verifies Red MAN light – LIT and Red AUTO light – NOT LIT. 5.3**C** Places 2CCP*DCV100-2 in MAN by depressing MAN pushbutton. 5.4 Verifies Red MAN light – LIT and Red AUTO light – NOT LIT. 5.5**C** Does **NOT** operate 2CCP*DCV100-1 or 100-2 while in MANUAL until pressure data is recorded in procedure step VII.B.4.f. **EVAULATOR NOTE:** If 2CCP*DCV100-1 or 100-2 are operated in MANUAL prior to recording pressures in step VII.B.4.f, this will invalidate the data and will be considered UNSAT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
6.C If in MODEs 1-4 AND 2CCP*P21A is required to be operable, notify SM/US to make entry in the Narrative Log that TS 3.7.7 condition and required action will apply.	6.1C Determines that since the plant is in MODE 3 and TWO (2) train of CCP are required to be OPERABLE, that TS 3.7.7 entry is required. 6.2 Requests SM/US make TS 3.7.7 narrative log entry. **EVALUATOR CUE:** When requested, role play the SM/US and acknowledge that TS 3.7.7 entry and associated narrative log entry have been made. COMMENTS:	
7. If in MODEs 1-4, perform either of the following: • Station an operator at 2CCP*7, "Component Cooling Pump P21A Disch Isol." With specific instructions to open 2CCP*7 if directed by control room staff. OR • Record date and time below AND in narrative log that 2CCP*P21A is to be declared unavailable for documentation of Maintenance Rule Availability.	7.1 Determines Mode 3 applies and either directs an operator stationed at 2CCP*7 with specific instructions to open 2CCP*7 if directed by control room staff **OR** make a narrative log entry that 2CCP*P21A is to be declared unavailable for documentation of Maintenance Rule Availability. **EVALUATOR CUE:** Role play either the NLO or SM/US based on which choice is taken by the candidate and acknowledge the request. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
8.**C** Close 2CCP*7, "Component Cooling Pump P21A Disch Isol.".	8.1**C** Directs the NLO stationed in the Aux Building to CLOSE 2CCP*7. **EVALUATOR NOTE:** 2CCP*7 is not modeled therefore 2CCP*151 will be closed. Coordinate with the simulator operator and CLOSE 2CCP*151 by selecting Primary Component Cooling Water Drawing (CCP2), clicking on 2CCP*151, Enter 0 into remote value with a 10 second ramp time and ensure 2CCP*151 CLOSES. **EVALUATOR CUE:** Once closed, Role Play NLO and report 2CCP*7 is CLOSED. COMMENTS:	
9. Record 2CCP-PI145B, "21B CCP Pump Disch Press".	9.1 Records 2CCP-PI145B, "21B CCP Pump Disch Press" in Step VII.B.4.f. 10.2 Marks 2CCP-145C, "21C CCP Pump Disch Press" N/A " in Step VII.B.4.f. (Pump is NOT operating) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
10. Open 2CCP*7, "Component Cooling Pump P21A Disch Isol.".	10.1 Directs the NLO stationed in the Aux Building to REOPEN 2CCP*7. **EVALUATOR NOTE:** Coordinate with the simulator operator and REOPEN 2CCP*151 by clicking on 2CCP*151, Enter 1 into remote value with a 10 second ramp time and ensure 2CCP*151 OPENS. **EVALUATOR CUE:** Once opened, Role Play the NLO and report 2CCP*7 is OPEN. COMMENTS:	
11. IF 2CCP*P21A was declared unavailable in Step VII.B.4.d AND IF desired to return pump to "available", record date and time below in the Narrative Log AND declare 2CCP*P21A available for operation.	11.1 If 2CCP*P21A was declared unavailable in previous step AND IF desired to return pump to "available", record date and time below in the Narrative Log AND declare 2CCP*P21A available for operation. If NOT applicable, mark step N/A. **EVALUATOR CUE**: If applicable, it is desirable to return 2CCP*P21A to available status. Narrative Log entries will be made. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: It is NOT desirable to maintain 2CCP*DCV100-1 and 100-2 in MANUAL.	
12. IF manual operation of 2CCP*DCV100-1 and 100-2 is desired, adjust valves as necessary UNTIL 2CCP-DI100-1 AND 2 indicate 93 to 97 psid.	12.1 This step will be marked N/A COMMENTS:	
13.**C** IF automatic operation of 2CCP*DCV100-1 and 100-2 is desired, place valves in AUTO.	13.1**C** Places 2CCP*DCV100-1 in AUTO by depressing AUTO pushbutton. 13.2 Verifies Red AUTO light – LIT and Red MAN light – NOT LIT. 13.3**C** Places 2CCP*DCV100-2 in AUTO by depressing AUTO pushbutton 13.4 Verifies Red AUTO light – LIT and Red MAN light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-157 JPM REVISION: 0	JPM TITLE: Primary Component Cooling Water Pump [2CCP*P21A] Test

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
14. IF in MODEs 1-4, Notify SM/US to make an entry in Narrative Log that TS 3.7.7 condition no longer applies.	14.1 Notifies SM/US to make an entry in Narrative Log that TS 3.7.7 condition no longer applies. **EVALUATOR CUE:** Role Play SM/US and acknowledge Narrative Log Entry that TS 3.7.7 no longer applies. COMMENTS:	
15.**C** Calculate the ratio between operating pump discharge pressure with standby pump discharge valve closed and open	15.1**C** Calculates the ratio between operating pump discharge pressure with standby pump discharge valve closed and open as follows: RATIO = Indicated press with 2CCP*7 open (step VII.B.4.a) Indicated press with 2CCP*7 shut (step VII.B.4.f) 15.2**C** Determines that the ratio for 2CCP*P21B is >.98 acceptance criteria and records ratio in step VII.B.4.l. 15.3 N/A's ratio for 2CCP*P21C. 15.4 Requests a second check for acceptance criteria. **EVALUATOR CUE:** Upon calculating acceptance criteria inform the candidate, "This JPM is COMPLETE". COMMENTS:	
	STOP TIME: _____	

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

K/A REFERENCE: 060 AA1.02 2.9/3.1 TASK ID: 0441-007-01-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☒ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

EVALUATOR DIRECTION SHEET

TASK STANDARD:	MANUALLY closes 2HVC*MOD201B which failed to AUTO close. MANUALLY starts 2HVC*FN241B due to 2HVC*FN241A and 2HVC*FN241B failing to start.
RECOMMENDED STARTING LOCATION:	Simulator
DIRECTIONS:	You are to verify CREVS Actuation.
INITIAL CONDITIONS:	A Large Break LOCA has occurred. A transition to E-1, "Loss of Reactor or Secondary Coolant" has just been made. CIB has actuated.
INITIATING CUE:	The Unit Supervisor directs you to perform Step 1 RNO actions of E-1, "Loss of Reactor or Secondary Coolant".
REFERENCES:	2OM-53A.1.E-1, "Loss of Reactor or Secondary Coolant", Issue 1C, Rev.12. 1/2OM-44A.4A.A, "Post Control Room Habitability System Actuation/Recovery", Rev. 15
TOOLS:	
HANDOUT:	2OM-53A.1.E-1, "Loss of Reactor or Secondary Coolant", Issue 1C, Rev.12. 1/2OM-44A.4A.A, "Post Control Room Habitability System Actuation/Recovery", Rev. 15

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:

INITIAL CONDITIONS: A Large Break LOCA has occurred.
A transition to E-1, "Loss of Reactor or Secondary Coolant" has just been made. CIB has actuated.

INITIATING CUE: The Unit Supervisor directs you to perform Step 1 RNO actions of E-1, "Loss of Reactor or Secondary Coolant".

☐ 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: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
	START TIME: _____	
	SIMULATOR SETUP: Begin with any power IC. Insert a LB LOCA Malfunction (MALF RCS03A(B,C)) on either loop. Perform actions of E-0, up to step 1 of E-1. Fail 2HVC*MOD201B from AUTO closing (can manually close) as follows: • Select VLV-MSC029 (1-Fail Open) • Select Event Trigger, Select Event #, Enter Event XBSI065C == 1, Enter command DMF VLV-MSC029 Fail 2HVC*FN241A from AUTO and MANUAL Start: • Enter BST-MSC014 (0- Actuate) • Enter IOR XBS1077T – OFF • Enter IOR XBS1077C - ON Fail 2HVC*FN241B from AUTO Start ONLY: • Enter BST-MSC013 (0-Actuate) Freeze and take a snap. **EVALUATOR NOTE:** When the candidate is ready to begin the JPM, place the simulator in RUN.	
1. Review procedure.	1.1 Reviews procedure (E-1 Step 1 RNO) provided. COMMENTS:	
2. Actuate both trains using the CONTROL ROOM EMERG AIR SUP ACTUATION pushbuttons.	2.1 Actuates BOTH trains of CREVS using the CONTROL ROOM EMERG AIR SUP ACTUATION pushbuttons located on Building Services Panel. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: The following step can be done in any order.	
3**C**. Verify CREVS actuation: Control Room Air Intake Dampers – CLOSED.	3.1 Verifies 2HVC*MOD201A, "Control Room ACU Outside Air Intake" CLOSED. 3.2 Verifies Green Light – LIT and Red Light – NOT LIT. 3.3 Verifies 2HVC*MOD201C, "Control Room ACU Outside Air Exhaust" CLOSED. 3.4 Verifies Green Light – LIT and Red Light – NOT LIT. 3.5**C** Verifies 2HVC*MOD201B, "Control Room ACU Outside Air Intake" CLOSED. Recognizes 2HVC*MOD201B did **NOT** AUTO close and manually places 2HVC*MOD201B control switch to CLOSE. 3.6 Verifies Green Light – LIT and Red Light – NOT LIT. 3.7. Verifies 2HVC*MOD201D, "Control Room ACU Outside Air Exhaust" CLOSED. 3.8 Verifies Green Light – LIT and Red Light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: When requested, role play and acknowledge request for Unit 1 Control Staff verification of CREVS actuation.	
4. Request Unit 1 Control Room staff to verify CREVS actuation	4. Requests Unit 1 Control Room staff to verify CREVS actuation. COMMENTS:	
5.**C** Verify one control room pressurization fan starts. (2HVC*FN241A or 241B)	5.1 Recognizes that neither 2HVC*FN241A or 2HVC*FN241B AUTO started. (Green Lights – LIT and Red Lights – NOT LIT. 5.2 Places 2HVC*FN241A control switch to START. 5.3 Recognizes 2HCVC*FN241A did NOT start: Green Light – LIT and Red Light – NOT LIT. 5.4**C** Places 2HVC*FN241B control switch to START. 5.5 Verifies Red Light – LIT and Green Light – NOT LIT. **EVALUATOR NOTE:** Candidate may opt to attempt a start of a fan prior to going to 1/2OM-44A.4A.A, which is acceptable. Operation Managers Expectation is to manually perform actions which should have automatically occurred. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: Once located, provide candidate a copy of 1/2OM-44.4A.A, "Post Control Room Emergency Habitability System Activation/Recovery, Part A".	
6. Refer to 1/2OM-44.4A.A, "Post Control Room Emergency Habitability System Activation/Recovery, Part A".	6.1 Locates and references 1/2OM-44.4A.A, "Post Control Room Emergency Habitability System Activation/Recovery, Part A". COMMENTS:	
7. If CREVS was initiated as a result of a toxic gas release, refer to 1/2OM-53C.4A.44A.A, "Toxic Gas Release".	7.1 N/A this step since CREVS was initiated by a Large Break LOCA as opposed to a Toxic Gas Release. COMMENTS:	
8. Verify 2HVC*FN241A, "Control Room Emer Vent Fan", has auto started AND 2HVC*MOD204A, "Control Room Emer Outside Air Intake Damper has opened.	8.1 Recognizes 2HVC*FN241A failed to start: Green Light – LIT and Red Light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	EVALUATOR NOTE: Some of these critical steps may have been previously performed.	
9.**C** If 2HVC*FN241A failed to start, perform the following: • Place 2HVC*FN241A, "Control Room Emer Vent Fan" control switch to OFF. • If 2HVC*FN241B, "Control Room Emer Vent Fan" has NOT started automatically, START 2HVC*FN241B. • Verify, 2HVC*MOD204B, "Control Room Emerg Outside Air Intake Damper" OPEN. • Verify OFF annunciator A10-3E, "CONTROL ROOM SUPPLY AIR FLOW LOW".	9.1 Places 2HVC*FN241A control switch to STOP. 9.2**C** Places 2HVC*FN241B control switch to START. 9.3 Verifies 2HVC*MOD204B OPEN. 9.4 Verifies Red Light – LIT and Green Light – NOT LIT. 9.5 Verifies annunciator A10-3E, "CONTROL ROOM SUPPLY AIR FLOW LOW" is NOT in alarm. COMMENTS:	
10. If annunciator A10-3E, "CONTROL ROOM EMER SUPPLY AIR FLOW LOW" is ON, proceed to step IV.A.6.	10.1 Recognizes Annunciator A10-3E is NOT ON: N/A's this step and does NOT proceed to step IV.A.6. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2CR-599 JPM REVISION: 0	JPM TITLE: Verify CREVS Actuation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE/CUE: If the candidate decides to leave the control room to obtain DP indications, inform the candidate that an NLO will obtain this information.	
11. Observe the following indicators and verifies the combined differential pressure on 2HVC-PDIS21A(B), 22A(B) AND 23A(B) is < 5.6 in. WG. • 2HVC-PDIS21A(B), DP for 2HVC*FLTA251A(B). • 2HVC-PDIS22A(B), DP for 2HVC*FLTA252A(B). • 2HVC-PDIS23A(B), DP for 2HVC*FLTA253A(B).	11.1 Requests an NLO to observe the following indicators: • 2HVC-PDIS21A(B), DP for 2HVC*FLTA251A(B). • 2HVC-PDIS22A(B), DP for 2HVC*FLTA252A(B). • 2HVC-PDIS23A(B), DP for 2HVC*FLTA253A(B). **EVALUATOR CUE:** NLO reports 2HVC-PDIS21B is reading 1.3 in W.G. 2HVC-PDIS22B is reading 1.2 in W.G. and 2HVC-PDIS23B is reading 1.1 in W.G. 11.2 Determines the combined differential pressure on 2HVC-PDIS21A(B), 22A(B) AND 23A(B) is < 5.6 in. WG. **EVALUATOR CUE:** This JPM is COMPLETE. COMMENTS:	
	STOP TIME: _____	

Number	Title	
E-1	**Loss Of Reactor Or Secondary Coolant**	**Issue 1C Revision 12**

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

****

CAUTION

IF both trains of Service Water are in operation and one train is subsequently lost, flow in the train that is out of service should NOT be reinitiated without the concurrence of the TSC. Initiating flow with one train already in service could cause a water hammer of the Recirc Spray Hx discharge piping.

****

1. Check If CREVS Should Be Actuated

a. Control Room Radiation Monitor - NOT IN HIGH ALARM

- [2RMC*RQ201,202] (1069,1072)

b. CIB - HAS NOT OCCURRED

Actuate both trains using the CONTROL ROOM EMERG AIR SUP ACTUATION pushbuttons.

Verify CREVS actuation:

a) Control Room Air Intake and Exhaust Dampers - CLOSED

b) Request Unit 1 Control Room staff to verify CREVS actuation.

c) Verify one control room pressurization fan starts. Refer to 1/2OM-44A.4A.A, "Post Control Room Emergency Habitability System Activation/Recovery", Part A.

JPM NUMBER: 2PL-061 JPM REVISION: 7	JPM TITLE: Transferring Power for 2RHS*MOV702A

K/A REFERENCE: 005 K4.07 3.2/3.5 TASK ID: 0101-022-01-042

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:		Performer SSN:
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	[2RHS*MOV702A] is powered from [2MCC*E05].
RECOMMENDED STARTING LOCATION:	In-Plant
DIRECTIONS:	You are to simulate transferring power for [2RHS*MOV702A].
INITIAL CONDITIONS:	• The Control Room has been evacuated due to a fire. • The Alternate Safe Shutdown panel has been activated. • A plant cooldown is in progress and nearing the point where the Residual Heat Removal System can be placed into service.
INITIATING CUE:	Your supervisor directs you to transfer power for [2RHS*MOV702A] from [MCC*2-E06] to [MCC*2-E05] in accordance with 2OM-56C.4, Subprocedure F-12. The use of any required keys is to be simulated.
REFERENCES:	2OM-56C.4.F-12, "Transferring Power For [2RHS*MOV702A] From Normal Power [MCC*2-E06] To Alternate Power [MCC*2-E05]", Issue 1 Revision 5
TOOLS:	Keys (simulated).
HANDOUT:	2OM-56C.4.F-12, "Transferring Power For [2RHS*MOV702A] From Normal Power [MCC*2-E06] To Alternate Power [MCC*2-E05]", Issue 1 Revision 5

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to simulate transferring power for [2RHS*MOV702A].

INITIAL CONDITIONS:

- The Control Room has been evacuated due to a fire.
- The Alternate Safe Shutdown panel has been activated.
- A plant cooldown is in progress and nearing the point where the Residual Heat Removal System can be placed into service.

INITIATING CUE: Your supervisor directs you to transfer power for [2RHS*MOV702A] from [MCC*2-E06] to [MCC*2-E05] in accordance with 2OM-56C.4, Subprocedure F-12. The use of any required keys is to be simulated.

☐ 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: 2PL-061 JPM REVISION: 7	JPM TITLE: Transferring Power for 2RHS*MOV702A

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
	START TIME: _____	
1. Reviews procedure 2OM-56C.4.F-12, "Transferring Power For [2RHS*MOV702A] From Normal Power [MCC*2-E06] To Alternate Power [MCC*2-E05]"	1.1 Reviews procedure provided. COMMENTS:	
2.**C** Ensure the following breakers are energized: • [MCC*2-E05] cubicle 8A • [2CAB*RCPBP-04] cubicle R4A	2.1**C** Removes lock and energizes [MCC*2-E05] cubicle 8A by turning the switch handle to the ON position. **EVALUATOR CUE:** Breaker is in the **ON** position. 2.2 Locates [2CAB*RCPBP-04] cubicle R4A and verifies cubicle R4A in ON position. **EVALUATOR CUE:** Breaker is **ON**. COMMENTS:	
3.**C** At [2RHS*TRSMOV702A] insert key into the upper lock on the normal power supply [MCC*2-E06] to release the switch handle.	3.1**C** Inserts the key into the upper lock for switch handle [MCC*2-E06-7A] and turns it to release the switch handle. **EVALUATOR CUE:** Key is **INSERTED** and **TURNED**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-061 JPM REVISION: 7	JPM TITLE: Transferring Power for 2RHS*MOV702A

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
4.**C** De-energize normal power [MCC*2-E06].	4.1**C** Pulls the [MCC*2-E06-7A] switch handle to the OFF position (handle down). **EVALUATOR CUE:** Handle is in **OFF** position. COMMENTS:	
5.**C** Lock the normal power in the OFF position.	5.1**C** Turns the key in the lower lock to lock [MCC*2-E06-7A] power OFF and remove the key. **EVALUATOR CUE:** Key is **TURNED** and **REMOVED**. COMMENTS:	
6.**C** Place the released key into the lower lock on the alternate power supply [MCC*2-E05].	6.1**C** Places the released key in the lower lock of alternate power [MCC*2-E05-8A] and turn it to release the switch handle. **EVALUATOR CUE:** Key is **INSERTED** and **TURNED**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-061 JPM REVISION: 7	JPM TITLE: Transferring Power for 2RHS*MOV702A

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7.**C** Energize the alternate power supply.	7.1**C** Places [MCC*2-E05-8A] switch handle to the ON position (handle up). **EVALUATOR CUE:** Handle is in **ON** position. COMMENTS:	
8. Lock the alternate power in the ON position.	8.1 Turns and removes the key in the upper lock to lock [MCC*2-E05-8A] power ON. **EVALUATOR CUE:** Key is **TURNED** and **REMOVED**. COMMENTS:	
	EVALUATOR CUE: That Completes this JPM	
	STOP TIME: _____	

JPM NUMBER: 2PL-150 JPM REVISION: 0	JPM TITLE: Locally Throttle Open AFW Valve During ECA-0.0

K/A REFERENCE: 061A2.05 3.1/3.4 TASK ID: 0534-010-05-042

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

EVALUATOR DIRECTION SHEET

TASK STANDARD:	2FWE*HCV100F is OPEN.
RECOMMENDED STARTING LOCATION:	In-Plant
DIRECTIONS:	You are to simulate MANUALLY opening 2FWE*HCV100F.
INITIAL CONDITIONS:	• The plant has tripped from 100% and has experienced a loss of all AC power. • The crew has entered ECA-0.0, "Loss Of All AC Power". • Total AFW flow to the Steam Generators is less than 340 gpm. • The Steam Driven AFW Pump is running and aligned to the "B" Header. • 21A SG AFW Throttle valve 2FWE*HCV100F is CLOSED.
INITIATING CUE:	Your supervisor directs you to OPEN 21A SG AFW Throttle valve 2FWE*HCV100F by performing 2OM-53A.1.A-1.11, "Manual Handpump Operation Of Hydraulically Actuated Valves". **The valve is to be left in the full open position.**
REFERENCES:	2OM-53A.1.A-1.11, "Manual Handpump Operation Of Hydraulically Actuated Valves", Issue 1C Rev. 5.
TOOLS:	None
HANDOUT:	2OM-53A.1.A-1.11, "Manual Handpump Operation Of Hydraulically Actuated Valves", Issue 1C Rev. 5.

CANDIDATE DIRECTION SHEET

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK: You are to simulate MANUALLY opening 2FWE*HCV100F.

INITIAL CONDITIONS:

- The plant has tripped from 100% and has experienced a loss of all AC power.
- The crew has entered ECA-0.0, "Loss Of All AC Power".
- Total AFW flow to the Steam Generators is less than 340 gpm.
- The Steam Driven AFW Pump is running and aligned to the "B" Header.
- 21A SG AFW Throttle valve 2FWE*HCV100F is CLOSED.

INITIATING CUE: Your supervisor directs you to OPEN 21A SG AFW Throttle valve 2FWE*HCV100F by performing 2OM-53A.1.A-1.11, "Manual Handpump Operation Of Hydraulically Actuated Valves". **The valve is to be left in the full open position.**

☐ 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: 2PL-150 JPM REVISION: 0	JPM TITLE: Locally Throttle Open AFW Valve During ECA-0.0

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	START TIME: _____	
1. Reviews procedure 2OM-53A.1.A-1.11, "Manual Handpump Operation Of Hydraulically Actuated Valves".	1.1 Reviews procedure provided. COMMENTS:	
2. Refer to the two lists in step 1 for "Fail-Closed" vs. "Fail-As-Is" actuators.	**EVALUATOR NOTE:** It may take the candidate several minutes to proceed to step 4 due to procedure awkwardness. 2.1 Determines 21A SG AFW Throttle valve 2FWE*HCV100F is a "Fail-As-Is" actuator. **AND** Proceeds to step 4 of the procedure. COMMENTS:	
3. Open supply breaker for 2FWE*HCV100F [MCC*2-E14 Cub 3D (East Cable Vault 735')]	3.1 N/A **EVALUATOR CUE:** Role-play the Unit Supervisor and report that another operator was dispatched to OPEN MCC*2-E14 Cub 3D, and it is **OPEN**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-150 JPM REVISION: 0	JPM TITLE: Locally Throttle Open AFW Valve During ECA-0.0

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
4.C Place the three position pump control valve to OPEN position.	**EVALUATOR NOTE:** Valve is NSA OPEN 4.1C Rotates the three position pump control valve to OPEN position. **EVALUATOR CUE:** Pump control valve is in the **OPEN** position. COMMENTS:	
5.C Insert the pump handle into the hand-pump socket.	5.1 Locates the locally mounted hand pump handle. 5.2C Inserts the pump handle into the hand-pump socket. **EVALUATOR CUE:** Pump handle **INSERTED**. COMMENTS:	
6.C Pump the hand pump until the valve reaches the desired position.	**EVALUATOR NOTE:** Valve position is located on back side of valve. 6.1C Pumps the hand pump (up and down) until the valve is full OPEN. 6.2 Verifies valve stem is moving towards the OPEN position. **EVALUATOR CUE:** Valve is **FULL OPEN** or **AS INDICATED.** COMMENTS:	

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

K/A REFERENCE: 064 K1.01 4.1/4.4 TASK ID: 0362-005-06-013

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☒ FAULTED JPM ☐ ADMINISTRATIVE JPM

EVALUATION METHOD:	LOCATION:	TYPE:	ADMINISTERED BY:
☐ Perform ☐ Simulate	☐ Plant Site ☐ Simulator ☐ Classroom	☐ Annual Requal Exam ☐ Initial Exam ☐ OJT/TPE ☐ Training ☐ Other:	☐ BVT ☐ NRC ☐ Other:

EVALUATION RESULTS		
Performer Name:	Performer SSN:	
Time Critical: ☐ Yes ☒ 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: _____

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Relay 27-VE2200(VF2200) and 27-VE2200X(VF2200X) are tested and reset.
RECOMMENDED STARTING LOCATION:	In-Plant
EVALUATOR NOTE:	This JPM is designed for either train. Perform for Train A relays if Protected Train B, and Train B relays if Protected Train A. Steps 1-18 of the JPM are for Train A performance. Steps 19-36 of the JPM are for Train B performance. **Sign key out ahead of time and notify Shift manager that the JPM will be performed. Give key to student during reading of the initiating cue.**
DIRECTIONS:	You are to simulate the task Test the EDG UV Start Relay.
INITIAL CONDITIONS:	The plant is in Mode 5. 2OST-36.15A(15B) is in progress. The Initial Conditions and Part A, Test Preparation, are complete. Steps 1 through 14 of Part B, Shutdown Mode Testing, are complete.
INITIATING CUE:	Your supervisor directs you to review the Initial Conditions and Precautions and Limitations, then perform Part B, Steps 15 through 24 of 2OST-36.15A (15B).
REFERENCES:	2OST-36.15A(15B), Revision 3
TOOLS:	Key 33 (34) for PNL*2UV-T-A(B)
HANDOUT:	2OST-36.15A(15B), Revision 3 Filled out through step V.B.14

CANDIDATE DIRECTION SHEET

Use This Sheet if Protected Train "A"

* THIS SHEET TO BE GIVEN TO CANDIDATE *

☐ Read:

TASK:	Test the EDG UV Start Relay
INITIAL CONDITIONS:	The plant is in Mode 5. 2OST-36.15B is in progress. The Initial Conditions and Part A, Test Preparation, are complete. Steps 1 through 14 of Part B, Shutdown Mode Testing, are complete.
INITIATING CUE:	Your supervisor directs you to review the Initial Conditions and Precautions and Limitations, then perform Part B, Steps 15 through 24 of 2OST-36.15B.

☐ 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: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
	START TIME: _____	
	EVALUATOR NOTE: This is a "FAULTED" JPM, read cues carefully to ensure alternate path situation is presented to candidate.	
	EVALUATOR NOTE: This JPM is setup for either Train. If Train **A** is to be performed, follow JPM steps 1-18. If Train **B** is to be performed, follow JPM steps 19-36.	
1. Review the OST.	1.1 Reviews initial conditions, P&Ls and instructions. COMMENTS:	
2. Obtain Key 33.	2.1 N/A provided by evaluator. COMMENTS:	
3. Open the door on the Train A UV Test Panel.	3.1 Uses key to unlock and open panel door. (PNL * 2UV-T-A) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7. Verify white (Push-to-Test) pushbutton Test: [27-VE2200X] Contacts is OFF (1B-ENSAB).	7.1 Verifies white test pushbutton for [TEST: 27-VE2200X CONTACT] is OFF. **EVALUATOR CUE:** White test pushbutton light is **NOT LIT**. COMMENTS:	
8. At cubicle 2E6 verify red trip target displayed on [27-VE2200].	8.1 At [4KVS*2AE] Swgr, Cubicle 2E6, Verifies red trip target is displayed on relay [27-VE2200]. **EVALUATOR CUE:** Red trip target is **DISPLAYED.** COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
9. Verify control room alarms A8-4H and computer point [Y5714D] are active.	9.1 Establishes communications with Control Room. 9.2 Requests Control room operator to verify annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" in alarm. **AND** Computer point [Y5714D] 4KV EMER BUS 2AE UV TEST is active. **EVALUATOR CUE:** Role-play the control room operator and report Annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is **IN ALARM** and computer point [Y5714D] 4KV EMER BUS 2AE UV TEST is **ACTIVE**. COMMENTS:	
10.**C** Depress white pushbutton and verify lamp ON when depressed and OFF when released to verify continuity through the trip circuit (Test [27-VE2200X]).	10.1**C** Depresses [TEST: 27-VE2200X CONTACT] white pushbutton. 10.2**C** Verifies light is ON when pushbutton is depressed. 10.3**C** Verifies light goes OFF when pushbutton released. **EVALUATOR CUE:** Light is **LIT** when button depressed and **NOT LIT** when button released. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate "S" FOR SAT or "U" FOR UNSAT)⇒	S/U
15. Verify white indicating light for [27-VE2200] and red indicating light for [27-VE2200X] are ON.	15.1 Verifies white light for [TEST: 27-VE2200 CONTACT] is ON. 15.2 Verifies red light for [TEST: 27-VE2200X COIL] is ON. **EVALUATOR CUE:** Both lights are **LIT**. COMMENTS:	
16. Verify circuit is reset by checking white light on test pushbutton is ON when not depressed and OFF when depressed.	16.1 Verifies [TEST: 27-VE2200X CONTACT] white pushbutton light is ON. **EVALUATOR CUE:** White light is **LIT**. 16.2 Depresses [TEST: 27-VE2200X CONTACT] white pushbutton light and verifies light goes OFF when depressed. **EVALUATOR CUE:** White light is **NOT LIT** when depressed. 16.3 Releases [TEST: 27-VE2200X CONTACT] white pushbutton light and verifies light comes ON when released. **EVALUATOR CUE:** White light is **LIT** when released. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP ("C" Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
17. Verify control room alarms A8-4H and computer point [Y5714D] are reset.	17.1 Establishes communications with Control Room. 17.2 Requests Control room operator to verify annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is NO LONGER IN ALARM. **AND** Computer point [Y5714D] 4KV EMER BUS 2AE UV TEST is normal. **EVALUATOR CUE:** Role-play the control room operator and report Annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is **NO LONGER IN ALARM** AND Computer point [Y5714D] 4KV EMER BUS 2AE UV TEST is **NORMAL**. COMMENTS:	
18. At 4KV cubicle 2E6, reset the red trip target on [27-VE2200].	18.1 At [4KVS*2AE] Swgr, Cubicle 2E6, Depresses the relay target reset pushbutton for relay [27-VE2200]. **EVALUATOR CUE:** Red trip target is **NOT FLAGGED (BLACK).** COMMENTS:	
	EVALUATOR CUE: That completes this JPM. (For Train A)	
	STOP TIME: _____	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
	EVALUATOR NOTE: Steps 19-36 are for Train B performance.	
19. Review the OST.	19.1 Reviews initial conditions, P&Ls and instructions. COMMENTS:	
20. Obtain Key 34.	20.1 N/A provided by evaluator. COMMENTS:	
21. Open the door on the Train B UV Test Panel.	21.1 Uses key to unlock and open panel door. (PNL * 2UV-T-B) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
22.**C** Place [1B-ENSBB] in TEST.	22.1**C** Turns 4KV Bus 2DF Test [1B-ENSBB] switch to the TEST position and allows it to spring return to normal. **EVALUATOR CUE:** Test switch was placed in **TEST** and allowed to spring return to **NORM**. COMMENTS:	
23. Verify red indicating light for [27-VF2200X] is OFF.	23.1 Verifies red indicating light for [TEST: 27-VF2200X COIL] is OFF. **EVALUATOR CUE:** Red light is **NOT LIT**. COMMENTS:	
24. Verify white indicating light for [27-VF2200] is OFF.	24.1 Verifies white indicating light for [TEST: 27-VF2200 CONTACT] is OFF. **EVALUATOR CUE:** White light is **NOT LIT**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
25. Verify white (Push-to-Test) pushbutton Test: [27-VF2200X] Contacts is OFF (1B-ENSBB).	25.1 Verifies white test pushbutton for [TEST: 27-VF2200X CONTACT] is OFF. **EVALUATOR CUE:** White test pushbutton light is **NOT LIT**. COMMENTS:	
26. At cubicle 2F6 verify red trip target displayed on [27-VF2200].	26.1 At [4KVS*2DF] Swgr, Cubicle 2F6, Verifies red trip target is displayed on relay [27-VF2200]. **EVALUATOR CUE:** Red trip target is **DISPLAYED.** COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
27. Verify control room alarms A8-4H and computer point [Y5715D] are active.	27.1 Establishes communications with Control Room. 27.2 Requests Control room operator to verify annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" in alarm. **AND** Computer point [Y5715D] 4KV EMER BUS 2DF UV TEST is active. **EVALUATOR CUE:** Role-play the control room operator and report Annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is **IN ALARM** and computer point [Y5715D] 4KV EMER BUS 2DF UV TEST is **ACTIVE**. COMMENTS:	
28.**C** Depress white pushbutton and verify lamp ON when depressed and OFF when released to verify continuity through the trip circuit (Test [27-VF2200X]).	28.1**C** Depresses [TEST: 27-VF2200X CONTACT] white pushbutton. 28.2**C** Verifies light is ON when pushbutton is depressed. 28.3**C** Verifies light goes OFF when pushbutton released. **EVALUATOR CUE:** Light is **LIT** when button depressed and **NOT LIT** when button released. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	S/U
31. Verify circuit is reset by checking white light on test pushbutton is ON when not depressed and OFF when depressed.	31.1 Verifies [TEST: 27-VF2200X CONTACT] white pushbutton light is ON. **EVALUATOR CUE:** White light is **NOT LIT**. 31.2 Determines that the indications do not support verification that the relay was RESET and determines that the relay reset should be attempted a second time. **EVALUATOR NOTE:** If the candidate does depress the button, cue that the light remains **NOT LIT**. COMMENTS:	
32.**C** Reset relay [27-VF2200] by placing switch 1B-ENSBB in the RESET position for five seconds minimum.	32.1**C** Places and holds for 5 seconds switch 1B-ENSBB in the RESET position. 32.2**C** Allows it to spring return to NORM. **EVALUATOR CUE:** Switch was held to **RESET** for 5 seconds and then returned to **NORM**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 2PL-549 JPM REVISION: 3	JPM TITLE: Test the EDG UV Start Relay

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT**)⇒	S/U
35. Verify control room alarms A8-4H and computer point [Y5715D] are reset.	35.1 Establishes communications with Control Room. 35.2 Requests Control room operator to verify annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is NO LONGER IN ALARM. **AND** Computer point [Y5715D] 4KV EMER BUS 2DF UV TEST is normal. **EVALUATOR CUE:** Role-play the control room operator and report Annunciator A8-4H, 4KV EMER BUS 2AE/2DF UV CKT "IN TEST" is **NO LONGER IN ALARM** AND Computer point [Y5715D] 4KV EMER BUS 2DF UV TEST is **NORMAL**. COMMENTS:	
36. At 4KV cubicle 2F6, reset the red trip target on [27-VF2200].	36.1 At [4KVS*2DF] Swgr, Cubicle 2F6, Depresses the relay target reset pushbutton for relay [27-VF2200]. **EVALUATOR CUE:** Red trip target is **NOT FLAGGED (BLACK).** COMMENTS:	
	EVALUATOR CUE: That completes this JPM. (For Train B)	
	STOP TIME: _____	

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: **FENOC BVPS Unit 2** Scenario No.: 1 Op Test No.: 2LOT7 NRC

Examiners: _____ Candidates: _____ SRO

_____ _____ ATC

_____ _____ BOP

Initial Conditions: **IC 211**: 61% power, MOL, Equ. Xe Conditions, CB "D" @ 152 steps, RCS boron – ***1044*** ppm, ***Condensate Polishing Air Compressor - OOS***.

Turnover: Maintain current power level.

Critical Tasks: **E-0.A, Auto Rx Trip failure**
E-0.H, Start LHSI Pumps
E-0.E, Manually Initiate CIB

Event No.	Malf. No.	Event Type	Event Description
1	XMT-RCS054A	I(ATC/SRO) SRO TS	Loop 1 Tcold RTD fails low
2	PMP-CFW004	C(BOP/SRO)	2FWS*P21A pump trip.(Power reduction required)
3		R(ATC) N(SRO/BOP)	Power reduction to <50%
4	FLX-CCP34 PMP-RCP003	C(ALL) SRO TS	CCP supply leak to 2RCS*P21B (10 minute ramp to 450 gpm leads to an automatic RCP trip).
5	PPL01A PPL01B	C(ATC) (SRO)	Auto Reactor Trip failure (manual available)
6	RCS03B	M(ALL)	B Loop Large break LOCA
7	PPL07A PPL07B	C(ATC) (SRO)	Both low head SI pumps fail to auto start (manual start available).
8	PPL09A PPL09B	C(BOP) (SRO)	Auto CIB failure (manual available)

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

The crew will take the shift at 61% power, MOL at Equilibrium Xe, Bank D control Rods at 152 steps and RCS ooron is at ***1044*** ppm. Crew instructions are to maintain current stable plant conditions.

Loop 1 Tcold RTD will fail low, requiring implementation of **2OM-6.4.IF, attachment** 4. The ATC will have to accurately determine failed channel and select a non-failed channel and the SRO will evaluate **TS**.

2FWS-P21A will then trip requiring the crew to enter **AOP 2.24.1** and rapidly reduce power to less than 50%.

When plant conditions have begun to stabilize, a leak develops on the CCP supply line to 2RCS-P21B, "B" RCP. The leak will ramp to 450 gpm over ten minutes. First indication is annunciator A2-2B for UIL HIGH, **ARP 2OM-9.4.AAL** will be entered at which point dropping CCP surge tank level indication will require entry into **AOP 2.15.1.** The US will evaluate **TS 3.7.7** applicability. The "B" RCP will degrade and eventually trip with a failure of the reactor to trip automatically. The Unit Supervisor should direct a manual reactor trip and enter **E-0.**

Immediately following the reactor trip, a large break LOCA occurs. After completing E-0 immediate actions, all RCPs should be manually tripped due to the loss of component cooling.

Additional failures that occur following the LOCA, the ATC operator will identify that both low head SI pumps failed to start automatically and will manually start them. During the performance of EOP attachment A-0.11, the BOP will identify that Containment Isolation Phase "B" (CIB) failed to actuate automatically and will manually initiate CIB. The Unit Supervisor will progress through E-0 to E-1 at the "Check if the RCS is Intact" step, **E-1** will be implemented until the crew determines that ES-1.2 transition is not appropriate in E-1 step 19 based upon RCS pressure being less than 225 psig.

The drill is terminated at step 20 of E-1 when the crew evaluates if Transfer to Cold Leg Recirculation is required.

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

INITIAL CONDITIONS: 61 % Power, CBD = 152, EQU XE MOL, 1044 PPM Boron, IC-211

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
2SAS-C22 in PTL	YCT on CS	None
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**
2SAS-C22 OOS	2 days ago	None

SHIFT TURNOVER INFORMATION

1. 61 % Power, CBD = 152, EQU XE MOL, 1044 PPM Boron, ROD's in AUTO
2. Protected Train is Train "B"
3. Maintain steady state power level for confidence run on 2FWS-P21B which was just returned to service at the end of last shift from a pump bearing replacement outage.
4. 2SAS-C22, Condensate Polishing Air Compressor OOS for overhaul.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan placard for MOL
2. Placard for 2FWE*P22 position stating 2FWE*P22 is aligned to "A" header
3. Place plaque on wall for Protected Train "B"

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Initialize IC Set 211, and establish initial plant conditions.	Reactor plant at 61% power, MOL, equilibrium conditions. RCS boron 1044 PPM, CBD = 152 steps.	
Insert the following per the Simulator Setup section of the HTML File for this drill:	Inserts all pre-loads required to support the drill	
TRGSET 1 'JPPLP4(1)'	Set trigger 1 on Reactor trip	
IMF PPL01A (0 0) 0	TRN "A" Auto Reactor trip failure	
IMF PPL01B (0 0) 0	TRN "B" Auto Reactor trip failure	
IMF PPL07A (0 0) 4	2SIS*P21A auto start failure	
IMF PPL07B (0 0) 4	2SIS*P21B auto start failure	
IMF PPL09A (0 0) TRUE	TRN "A" CIB Auto Actuation failure	
IMF PPL09B (0 0) TRUE	TRN "B" CIB Auto Actuation failure	
IMF RCS03B (1 0) TRUE	B Loop LBLOCA occurs on reactor trip	
IMF FLX-CCP34 (3 0) 1	450 gpm leak on CCP supply line to "B" RCP	
IOR XB4O001R (3 0) 1	Fail 2CCP*MOV103B red light on.	
IMF VLV-CCP042A (3 120) 15 420	Reduced CCP flow to 2RCS-P21B	
IMF PMP-RCP003 (3 720) 1	Trip of "B" RCP in 12 minutes	
TRG 4 'IMF PMP-RCP003 1'	OPTIONAL action to allow booth operator to manually trip the "B" RCP.	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Assign shift positions SRO:_____ ATC:_____ BOP:_____		
Conduct a shift turnover with oncoming operators.	Simulator Frozen until after shift turnover unless it needs to be run momentarily for an alignment change.	
When the shift turnover is completed, place the simulator to RUN and commence the drill.	Simulator running.	Crew assumes control of the Unit.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT #1: Loop 1 Tcold fails low 2RCS-TE412D		
IMF XMT-RCS054A (0 0) 510 240	**IMMEDIATE PLANT RESPONSE:** A4-4C, - 'LOOP ΔT DEVIATION' - LIT A4-3F, - 'LOOP TAVG DEVIATION' - LIT	ATC acknowledges alarms, informs Crew. BOP refers to ARP's. SRO directs entry into Instrument Failure procedure, **2OM-6.4.IF ATT 4.** ATC/SRO diagnoses Loop 1 Tcold as failed low. ATC selects an unaffected loop on OTDT recorder selector switch. SRO reviews TS TS 3.3.1, functions 6 & 7, Both are Condition E, trip Bistables w/in 72 hours. TS 3.3.2, function 8c, Condition K, verify P-12 in correct position w/in 1 hour. Contacts I&C to trip OTDT Bistables. 1 hour action to verify P-12 in correct position.
Proceed with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENTS 2 and 3:		
2FWS-P21A Trip **IMF PMP-CFW004 (0 0) 1**	**IMMEDIATE PLANT RESPONSE:** A6-10A, - 'SG FEED PUMP 21A/B AUTO-STOP' - LIT A6-9E, A6-10E, A6-11E, - 'S/G 21A, B, C LEVEL DEVIATION FROM SETPOINT' - LIT BRIGHT white light for 2FWS-P21A	BOP recognizes feed pump trip and informs US Refers to ARPs as time permits. As necessary, BOP controls SG level with manual control of the Main Feed Regulating valves.
		SRO refers to AOP-2.24.1, Loss of Main Feedwater. ATC verifies reactor power < 80%.
Turbine load reduction to < 50%.		SRO refers to AOP-2.24.1 and directs load decrease to < 50% at desired reduction rate. BOP decreases turbine load at rate designated by SRO.
	In AUTO mode, Rods begin to step inward in response to Turbine Load Reduction.	ATC performs RCS boration to maintain Tavg-Tref. ATC maintains rods in Auto SRO places calls to Ops Management & Electrical maintenance. BOP notifies turbine operator to check Aux oil pump for 2FWS-P21A
Proceed with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 4:		
CCP leak on supply line to "B" RCP with automatic RCP trip. **IMF FLX-CCP34 (3 0) 450 600** **PMP-RCS003**	**IMMEDIATE PLANT RESPONSE:** Decreasing CCP Surge Tank level on 2CCP*LI100A and 2CCP*LI100B.	Crew determines CCP header leak inside containment.
	Increasing containment sump levels. A2-2B, - 'UNIDENTIFIED LEAKAGE SYSTEM TROUBLE' - LIT A1-2G, - 'UNIDENTIFIED LEAKAGE FLOW > 60 GALLONS' - LIT A2-3B, - 'INCORE INSTR ROOM/CNMT SUMP LEVEL HIGH/VALVE NOT RESET' - LIT	SRO may initially enter AOP 2.6.7, 'Primary Plant Leakage' due to containment sump alarms. SRO refers to AOP-2.15.1, 'Loss of Primary Component Cooling Water'. Crew may dispatch an operator to verify CCP makeup valve(s) unisolated.
	Decreasing 21B RCP motor CCP flow indication. Increasing 21B RCP motor and bearing temperatures.	
	1 CCP pump operating.	ATC/BOP checks CCP system status.
NOTE: Dependant on timing and progression through AOP 2.15.1, CCP surge tank level may initially rise if makeup is quickly established, however as the leak continues to get larger, level will then drop again.	Level control in manual with maximum makeup.	ATC/BOP places surge tank level control valve in manual and adjusts control signal to maximize makeup to surge tank. ATC attempts to identify leak using AOP 2.15.1, either Attachments 1 or 2 dependant upon timing.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	A2-5F, - 'RCP COOLING WATER TROUBLE' – LIT	SRO enters AOP 2.6.8.
		Crew monitors RCP motor bearing upper and lower temperatures for RCPs.
	Non-essential loads isolated.	Crew attempts to locate the leak.
NOTE: If crew is preparing to pre-emptively trip the reactor before the RCP trip times out, insert the following command to trip the RCP immediately. **TRG4 'IMF PMP-RCP003 1'**	Surge tank continues to decrease. Cavitation of CCP pumps possible. Leakage excessive.	Crew monitors to determine if any RCP temperatures are approaching limits OR operating CCP pumps discharge pressure and current indicates cavitation, or if leakage is determined to be excessive: IAW AOP-2.15.1 the crew will Trip the Rx, THEN Go to E-0 and perform IMA's, THEN Stop all RCP's . Isolate Letdown Transfer CHS suct to RWST Stop ALL CCP pumps
NOTE: The Reactor will trip manually.	The "B" RCP condition will continue to degrade and trip, however an automatic reactor trip will NOT occur. A5-3F, - 'REACTOR COOLANT PUMP AUTO-STOP' - LIT A5-2G, - '1/3 REACTOR COOLANT PUMP LOOP FLOW LOW REACTOR TRIP' - LIT	Crew recognizes Automatic Reactor trip failure and ATC manually trips the reactor using a Benchboard control switch.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
NOTE: Due to the sequence of events, the SRO may not identify applicable TS. Ask follow-up question, "If CCP Surge Tank levels dropped to 0%, What, if any TS entries would be required?"		SRO Applies TS; TS 3.7.7, Condition C, Immediately initiate actions to restore one train of CCW to operable status.
<u>EVENTS 5,6,7 & 8</u> Automatic Reactor Trip failure **(preloaded)** **TRGSET 1 'JPPLP4(1)'** **IMF PPL01A (0 0) 0** **IMF PPL01B (0 0) 0** **IMF PPL07A (0 0) 4** **IMF PPL07B (0 0) 4** **IMF RCS03B (1 0)** **IMF PPL09A (0 0)** **IMF PPL09B (0 0)**	Set trigger 1 on Reactor trip TRN "A" Auto Reactor trip failure TRN "B" Auto Reactor trip failure 2SIS*P21A auto start failure 2SIS*P21B auto start failure DBA LOCA on reactor trip TRN "A" Auto CIB failure TRN "B" Auto CIB failure	SRO directs the ATC to manually trip the reactor, perform IMAs and trip all RCPs.
<u>CRITICAL TASK:</u> **E-0.A – Crew manually trips the reactor from the control room before performing the mitigation strategy of FR-S.1.**		ATC manually trips the reactor.
	Crew enters **E-0,** performs immediate operator actions	Crew performs IMAs of E-0.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Rod bottom lights lit. Neutron flux dropping. First Out: A5-2G, - '1/3 REACTOR COOLANT PUMP LOOP FLOW LOW REACTOR TRIP' - LIT	
Steps 1 - 4 of E-0 are Immediate Actions.	A5-6D, - 'TURBINE TRIP DUE TO REACTOR TRIP' - LIT Power range indication - LESS THAN 5% Neutron flux - DROPPING	ATC verifies reactor trip.
	Throttle Valves - ALL CLOSED OR Governor Valves - ALL CLOSED Main Generator Output Bkrs - OPEN Exciter Circuit Bkr - OPEN	BOP verifies turbine tripped.
	AC Emergency Busses - AT LEAST ONE ENERGIZED	BOP verifies power to AC Emergency Buses.
	Check SI – ACTUATED CNMT Pressure - > 5PSIG PZR Pressure - < 1860 PSIG SG Steam Pressure - < 500 PSIG	ATC checks SI status. **CREW DETERMINES SI REQUIRED**
Crew continues E-0 E-0 Immediate Actions completed.	Manually actuate SI (both trains)	ATC manually actuates SI both trains.
	Manual reactor trip resulted in a DBA LOCA on RCS Loop B.	SRO directs manual trip of all RCPs.
		ATC trips all RCPs.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Alert Plant Personnel	ATC/BOP sound Standby Alarm, announce reactor trip and safety injection.
	Leak collection filtered exhaust fan status SAT.	Crew verifies leak collection filtered exhaust fan 2HVS-FN204A or B running.
CRITICAL TASK: **E-0.H – Crew manually starts at least one low head ECCS pump before transition out of E-0.**	Charging Pumps – TWO RUNNING HHSI Flow – INDICATED LHSI Pumps – **NONE RUNNING**	ATC verifies SI System status. 2CHS*P21A & 2CHS*P21B running. HHSI Flow indicated on 2SIS-FI943. **ATC manually starts 2SIS*P21A & 2SIS*P21B.**
	Motor-driven AFW Pumps – **BOTH** RUNNING Turb Driven AFW Pump Stm Supply Isol Valves - OPEN AFW Throttle Vlvs – FULL OPEN Total AFW Flow – GREATER THAN 340 GPM	BOP verifies AFW System status.
		SRO directs an operator verify automatic actions by performing Attachment A-0.11 when time permits.
Attachment A-0.11 included with scenario beginning on Pg 18.	**List of Attachment A-0.11 Discrepancies:** **Both LHSI pumps failed to auto start and were manually started.** **CIB failed to auto actuate and was manually actuated.**	Operator assigned to perform Attachment A-0.11 reports status of attachment to the SRO and any actions taken when completed.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	RCPs OPERATING – MONITOR Tavg RCPs STOPPED – MONITOR Tcold	ATC/BOP checks RCS Tcold stable at or trending to 547°F.
	Plant rapidly cooled down due to DBA LOCA	ATC reports RCS cold leg temperature and cooldown caused by LOCA.
	Check CIB – **ACTUATED**	ATC checks Recirc Spray Pump status.
	Recirc Spray HXs – SERVICE WATER FLOW TO ALL 4 HXs	ATC verifies 2SWS*MOV103A(B) OPEN and 2SWS*MOV106A(B) CLOSED.
	Check Recirc Spray Pumps – ANY RUNNING	ATC checks no Recirc Spray pumps are running.
	Check Recirc Spray Pumps – ALL RUNNING	
	Check Recirc Spray Pumps – NOT CAVITATING	If CIB was not previously actuated, the Crew will recognize CIB is required and manually actuate CIB – Both Trains.
	PORVs – CLOSED(not leaking).	ATC verifies PZR isolated.
	Spray Valves – CLOSED	
	Safety relief valves – (PSMS Detailed Data Page 1) – CLOSED	
	Check PRT conditions – CONSISTENT WITH EXPECTED VALUES	
	Power to at least one block valve – AVAILABLE	
	Block valves – AT LEAST ONE OPEN	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	D/P between RCS pressure and highest SG pressure – LESS THAN 205 PSID [220 PSID ADVERSE CNMT] AND HHSI Flow – INDICATED	ATC checks if RCPs should be stopped.
	Stop All RCPs	If not previously stopped, ATC stops RCPs.
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR ANY SG COMPLETELY DEPRESSURIZED	BOP determines no SGs are faulted.
	Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES [2ARC-RQ100] Air Ejector Discharge (1007) [2SSR-RQ100] SG Blowdown Sample (1062) [2MSS*RQ101A,B,C] Main Steamline Discharge (1005, 3005, 5005)	Crew determines all SG tubes are intact.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check the following consistent with pre-event values: CNMT Pressure CNMT Sump Level CNMT Radiation	Crew checks if RCS is intact. **CREW DETERMINES THAT RCS IS NOT INTACT, TRANSITIONS TO E-1 STEP 1.**
Transition to E-1, **NOTE:** **After transition to E-1, crew may enter FR-P.1 due to the excessive cooldown, however FR-P.1 will be exited as soon as adequate LHSI flow is verified.**		US directs transition to **E-1.**
	Crew checks if CREVS should be actuated Control Room radiation monitor [2RMC*RQ201, 202] (1069, 1072) – **NOT** IN HIGH ALARM CIB – **HAS OCCURRED**	If Auto Actuation of CREVs did not occur, BOP actuates both trains of CREVS using the CONTROL ROOM EMERG AIR SUP ACTUATION pushbuttons.
	D/P between RCS pressure and highest SG pressure – LESS THAN 205 PSID [220 PSID ADVERSE CNMT] AND HHSI Flow – INDICATED **RCPs – STOPPED**	ATC checks if RCPs should be stopped. If not previously stopped, ATC stops RCPs.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	CIB – **ACTUATED**	ATC checks Recirc Spray Pump status.
	Recirc Spray Hxs – SERVICE WATER FLOW TO ALL 4 HXS	ATC verifies 2SWS*MOV103A(B) OPEN and 2SWS*MOV106A(B) CLOSED.
	RWST Level – ≤ 381 inches	ATC checks RWST level > 381 inches.
	Verify Recirc Spray Pumps – NOT CAVITATING	
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR ANY SG COMPLETELY DEPRESSURIZED	BOP determines no SGs are faulted.
	SGs are NOT faulted	
	Narrow Range Levels – GREATER THAN 12% [31% ADVERSE CNMT]	BOP checks intact SG levels.
		BOP controls feed flow to intact SGs to maintain NR level between 12% [31% ADVERSE CNMT] and 50%.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES [2ARC-RQ100] (1007) Air ejector discharge [2SSR-RQ100] (1062) SGBD sample [2MSS*RQ101A,B,C] Main Steamline discharge (1005, 3005, 5005)	Crew determines SG tubes are intact.
	Power to the Block Vlvs – AVAILABLE PORVs – CLOSED Block Vlvs – AT LEAST ONE OPEN	ATC checks PRZR PORVs and Block Valves: All PORVS CLOSED. All Block valves open and energized.
	RCS Subcooling based on core exit TCs > 41F [59F ADVERSE CNMT] Secondary heat sink: Total feed flow to intact SGs – GREATER THAN 340 GPM OR Narrow range level in at least one intact SG – GREATER THAN 12% [31-% ADVERSE CNMT]	ATC/BOP check if SI flow can be reduced. Crew determines RCS subcooling is ≤ required from Attachment A-5.1. **SI FLOW CANNOT BE REDUCED**
	RCS pressure – STABLE OR RISING PRZR level – GREATER THAN 17% [38% ADVERSE CNMT]	**SI TERMINATION CONDITIONS ARE NOT SATISIFIED, SRO CONTINUES IN E-1.**

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Any Quench spray or recirc spray pump – RUNNING	ATC/BOP check if CNMT Spray should be stopped. SRO continues with STEP 10.
	SI & CIA - RESET	ATC resets SI and CIA.
	RCS Pressure - > 225 PSIG [250 PSIG ADVERSE CNMT] RCS Pressure – **STABLE OR RISING**	ATC checks if LHSI pumps should be stopped. ATC determines RCS pressure is NOT stable or rising.
	LHSI Pumps stopped and in auto	**ATC determines RCS pressure < 225 psig, LHSI pumps to remain running.**
	Check pressures in all SGs – STABLE OR RISING Check RCS Pressure – STABLE OR DROPPING	ATC/BOP checks RCS and SG Pressures. BOP determines SG pressures are stable or rising. ATC determines RCS pressure is dropping.
	Verify AC emergency busses energized from offsite	BOP checks if EDGs should be stopped.
	Stop any unloaded EDG by performing **2OM-36.4.AF(AG)**	Crew initiates actions to STOP EDGs.
	Verify Cold Leg Recirculation Capability	US directs operators to perform **Att A-0.6** and verify cold leg recirculation capability. ATC/BOP verifies all components in Attachment A-0.6 are available and dispatches an operator to energize valves per Step 4 of Attachment.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check Aux building and Safeguards radiation – CONSISTENT WITH PRE-EVENT	Crew recognizes that Rad Mon indications are consistent and leak is NOT outside containment.
ROLE PLAY: If SRO requests TSC status – Report TSC not yet activated.	SM consults with TSC Staff to determine whether samples can be obtained	TSC is not yet activated, crew is to continue with next step.
	Crew performs **ATT A-1.1**	SRO directs crew to perform additional actions as required to aid in plant recovery per **ATT A-1.1.**
	RCS Pressure - > 225 PSIG [250 PSIG ADVERSE CNMT]	ATC checks if cooldown and depressurization is required: Determines RCS pressure is < 225 psig and LHSI flow is > 1050 GPM.
		Crew determines transition to ES-1.2 is not appropriate at this time.
Terminate drill when crew determines that **ES-1.2 is not appropriate, continues with procedure and checks RWST level to determine if Transfer to Cold Leg Recirculation is necessary.**		Check if Transfer to Cold Leg Recirculation is Required. – Check RWST level < 400 inches.
Classify Event SRO evaluates EPP and declares an **ALERT either due to Loss of RCS Barrier (TAB 1.2.3) or Failure of Rx Protection (Tab 2.3)**		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Attachment A-0.11 'Verification of Automatic Actions' performed as time & manpower permit.		SRO directs an operator to perform **Attachment A-0.11** as time & manpower permit.
	Diesel generators – BOTH RUNNING	Check both EDGs running.
	Ensure Reheat Steam Isolation	Verifies 2MSS-MOV100A,B closed. Depresses reheater controller RESET pushbutton.
	CNMT pressure – GREATER THAN 7 PSIG **OR** SG Steam Pressure – LESS THAN 500 PSIG **OR** Steamline pressure high rate of change – 100 PSIG DROP IN 50 SECONDS	Check if MSLI is required. If **not required**, go to step 4.
	Yellow SLI marks - LIT	Verify steamline isolation.
	Open 2CCS-AOV118 domestic water to station air compressors.	BOP establishes domestic water system cooling to the station air compressors by opening 2CCS-AOV118.
	At least one Station Air Compressor – RUNNING	BOP starts 1 station air compressor as required.
	CCP pumps – AT LEAST 1 RUNNING	Check CCP Pump status – None running due to CIB.
	2NME-NR45 Nuclear Recorder selected to operable source and intermediate range displays	Align neutron flux monitoring for shutdown.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	CNMT pressure – HAS REMAINED < 11 PSIG	Check CIB status.
	IF NOT	Actuate CIB if required.
CRITICAL TASK: **E-0.E – Crew manually actuates at least the minimum required complement of containment cooling equipment before an Extreme (red path) challenge develops to the Containment CSF.**	Manually initiate CIB – BOTH SWITCHES FOR BOTH TRAINS	**BOP Manually Actuates CIB both trains.**
	Manually align equipment as required All RCPs – STOPPED BV-1 operator verifies CREVS actuation and Service water flow established to RSS HX(s)	Stop ALL RCPs.
	Service Water Pumps – 2 RUNNING Service Water Header Pressure – GREATER THAN 55 PSIG SWS Seal Water Pressure – NOT LOW	Verify Service Water System in service.
	[2HCS*SOV100A1, B1] – CNMT Sample amber light – LIT	Verify both CNMT hydrogen analyzers running.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		Verify ESF Equipment status – Start/align equipment as required.
CRITICAL TASK: **E-0.H - Crew manually starts at least one low head ECCS pump before transition out of E-0.**	All Red SIS Marks – LIT **2SIS*P21A and 2SIS*P21B failed to start automatically.** All Orange CIA Marks – LIT All Green FWI Marks – LIT	If ATC didn't previously start both LHSI pumps the BOP will start them now.
	Power available to both Emergency AC Busses	Verify power to both AC Emergency busses. Restore power as required.
	Attachment A-0.11 – COMPLETE	Report any discrepancies to SRO.

Facility:	**FENOC BVPS Unit 2**	Scenario No.:	2	Op Test No.:	2LOT7 NRC
Examiners:	_____	Candidates:	_____		SRO
	_____		_____		ATC
	_____		_____		BOP

Initial Conditions: **IC 212**: 10% power, BOL, Equ. XE Conditions, CB "D" @ 118 steps, RCS boron - 1854 ppm, ***Condensate Polishing Air Compressor - OOS***.

Turnover: Raise power to 15% to S/U main turbine.

Critical Tasks:
E-3.A, Isolate Ruptured SG
E-3.B, Cooldown RCS
E-3.C, Depressurize RCS

Event No.	Malf. No.	Event Type	Event Description
1		R(ATC) N(SRO/BOP)	Normal power increase to 15% IAW 2OM-52.4.A
2	RCS04B	C(ALL) SRO TS	SG 21B Tube Leak
3	CNH MSS03A	C (ATC/SRO) SRO TS	SG 21B atmospheric dump valve fails open.
4	NIS08A	I(ALL) SRO TS)	N41 Power Range Instrument fuse blown
5	RCP06B RCP01B	C (ATC/SRO)	21B RCP high vibration (Manual RCP trip required) Manual reactor trip
6	RCS04B	M (ALL)	21B SG Tube Rupture
7	CNH PCS07A	I (BOP/SRO)	Condenser steam dumps fail closed.(Requires cooldown with 21A and 21C Atmospheric Steam Dumps
8	VLV-MSS057A	C (BOP/SRO)	2SDS-AOV129A failed open, requires RNO actions for S/G isolation.

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

After taking the shift, the crew will continue the startup to raise power to 15% in accordance with **2OM-52.4.A**, Part IV A, Plant Startup, currently the plant is at 10% power and Step 7 is in progress. The ATC will withdraw control rods IAW the reactivity plan while the BOP will be required to manually control the ***"C"*** S/G level due to the AUTO level control function being OOS.

A SG Tube leak will occur as evidenced by Rad monitor indications, the Unit Supervisor will direct actions per **AOP 2.6.4** and refer to **TS 3.4.13** for Primary to Secondary leakage.

2SVS*PCV101B, 21B SG atmospheric steam dump valve will fail open and stick open, the valve will not close in Auto, Manual or Locally, requiring the crew to direct the local isolation. The Unit Supervisor will refer to **TS 3.7.4** for Inoperable Atmospheric Steam Dumps.

An Instrument power fuse will blow for Power range Channel N41, requiring the use of AOP 2.2.1C. The crew will take actions per **AOP 2.2.1C** and the SRO will evaluate **TS 3.3.1**.

When the AOP actions are completed for N41, a 21B RCP high vibration condition develops, the crew will respond using **AOP 2.6.8**. The high vibration will increase at >1 mil/hr which requires the crew to trip the reactor, enter **E-0** and take the reactor coolant pump out of service.

Following the reactor trip, a 500 gpm SGTR occurs on the 21B SG resulting in a Safety Injection actuation. The crew will transition to **E-3** at the "Check if SG Tubes are Intact" step of E-0.

When the cooldown is attempted in E-3 the condenser steam dumps will fail closed, requiring the BOP operator to use manual control of the atmospheric steam dump valves and/or 2SVS-HCV104.

The drill will be terminated when HHSI flow is isolated in E-3.

Expected procedure flow path is E0 → E3.

INITIAL CONDITIONS: 10 % Power, CBD = 118, EQU XE BOL, 1854 PPM Boron, IC-212

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
2SAS-C22 in PTL	YCT on CS	None
2FWS-FCV499 AUTO Pushbutton	YCT on CS	None
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**
2SAS-C22 OOS	2 days ago	None
2FWS-FCV499 AUTO control OOS	Yesterday, 1200 hrs	None

SHIFT TURNOVER INFORMATION

1. Plant is at 10% power, BOL, EQU XE, CB "D" at 118 steps, RCS boron = 1854 ppm.
2. Protected Train is Train "B"
3. Continue the plant startup to 100% IAW 2OM-52.4.A, Step 7
4. 2SAS-C22, Condensate Polishing Air Compressor OOS for overhaul.
5. AUTO control function of "C" Bypass Feed Reg Valve, 2FWS-FCV499 is OOS, requires manual operation.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Plant startup reactivity plan.
2. Placard for 2FWE*P22 position stating 2FWE*P22 is aligned to "A" header
3. Place plaque on wall for Protected Train "B"
4. 2OM-52.4.A, Increasing Power From 5% Reactor Power And Turbine On Turning Gear To Full Load Operation, completed through Step 7.a.1

SETUP

Start w/ IC-5, raise power to 10% IAW reactivity plan and 2OM-52.4.A, then SNAP IC

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Initialize IC Set 212, and establish initial plant conditions.	Reactor plant at 10% power, BOL, equilibrium conditions. RCS boron 1854 PPM, CBD = 118 steps.	
Insert the following per the Simulator Setup section of the HTML File for this drill:	Inserts all pre-loads required to support the drill	
TRGSET 1 'JPPLP4(1)'	Set trigger 1 on Reactor Trip	
TRGSET 4 'TPCSTAAU <=530'	Set trigger 4 on Tavg < 530 degrees f	
IMF CNH-PCS07A (4 0) 0	2MSS-PK464 failed, closes Steam Dumps	
IMF VLV-MSS057A (0 0) 100	2SDS*AOV129A failed open	
TRGSET 6 'JMLRCP6B == 1'	Set trigger 6 when malfunction RCP06B is actuated	
TRG 6 'IMF RCP06B 21 600 15'	Ramp RCP vibration to 21 mils over 10 minutes	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Assign shift positions SRO:_____ ATC:_____ BOP:_____		
Conduct a shift turnover with oncoming operators.	Simulator Frozen until after shift turnover unless it needs to be run momentarily for an alignment change.	
When the shift turnover is completed, place the simulator to RUN and commence the drill.	Simulator running.	Crew assumes control of the Unit.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 1:		
Normal Plant Startup, Reactor Power increase to 15% to support Turbine Startup.		
2OM-52.4.A, step 7		Crew commences power increase in accordance with reactivity plan.
Continue reactor startup	Reactor at 10% power.	ATC commences raising reactor power to between 10 and 15%.
	Status lights on Panel 308 actuate at 10%.	ATC verifies P-10 bistables lit on Panel 308 ATC verifies A12-1G, 'P-10 PERMISSIVE' - LIT.
	A12-2B, - 'NIS IR TRIP BLOCKED' – LIT.	ATC blocks the IR High Flux Trip AND IR High Flux Rod Stop by placing the IR BLOCK TRAIN and TRAIN B control switches to the BLOCK position and verifies annunciator A12-2B is LIT.
	A12-2C, - 'POWER RANGE LOW SETPOINT TRIP BLOCKED' – LIT.	ATC blocks the Power Range Low Overpower Trip by placing the PR BLOCK TRAIN A and TRAIN B control switches to the BLOCK position and verifies annunciator A12-2C is LIT.
	A12-1H, - 'NOT P-7' – NOT LIT.	ATC verifies that annunciator A12-1H, 'NOT P-7' is NOT LIT.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	A4-5G, - 'NIS POWER RANGE HIGH/LOW SP NEUTRON FLUX HIGH' – NOT LIT.	ATC verifies that annunciator A4-5G is OFF. ATC selects highest power ranges on N-45.
	"C" S/G level decreases during power increase.	BOP controls S/G level at target using manual control of 2FWS-FCV499.

Proceed with next event at LE discretion

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 2:		
After Crew has raised reactor power to 15% Insert **TRG! 3** **IMF RCS04B (3 0) 0.048** (pre-loaded) 70 gpd tube leak "B" S/G.	**IMMEDIATE PLANT RESPONSE:** A4-5A; - 'RADIATION MONITORING SYSTEM TROUBLE' - LIT A4-5C, - 'RADIATION MONITORING LEVEL HIGH' - LIT	ATC reports Alarms to the SRO. BOP checks DRMS panel and determines that 2MSS-RQ102B is indicating a 70 gpd tube leak in the "B" S/G. BOP refers to the ARP and determines entry to AOP 2.6.4 is necessary. SRO refers to AOP-2.6.4
	Estimate initial pri-sec leakrate	SRO determines that the leak rate is > 30 gpd due to the HIGH alarm on 2MSS-RQ102B actuated.
	Check PZR level – DROPPING PZR Level is stable	ATC determines value and trend for PZR level SRO monitors SG Tube leak by performing ATTACHMENT 1 of AOP 2.6.4.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	ATTACHMENT 1, >5 gpd tube leak	ATC opens 2SSR*AOV117A,B,C prior to obtaining Blowdown samples. BOP to report leak rate from N-16 monitor every 2 hours. SRO Notifies Chemistry of entry into AOP-2.6.4, requests them to identify S/G, and quantify leakrate and report every 2 hours. SRO Notifies RP of entry into AOP-2.6.4, requests them to quantify leakrate and report every 2 hours and to obtain grab samples every 12 hours and calculate leakrate based upon samples. SRO determines leak rate is > 30 gpd and proceeds to ACTION LEVEL 1 of Attachment 1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	ACTION LEVEL 1, >30 gpd tube leak	ATC opens 2SSR*AOV117A,B,C prior to obtaining Blowdown samples. BOP to report leak rate from N-16 monitor every 15 minutes. SRO Notifies Chemistry of entry into AOP-2.6.4, requests them to identify S/G, and quantify leakrate and report every 2 hours. SRO Notifies RP of entry into AOP-2.6.4, requests them to quantify leakrate and report every 15 minutes and to obtain grab samples every 4 hours and calculate leakrate based upon samples, and perform additional surveys as appropriate. SRO determines sustained leakrate is < 75 gpd and does not enter ACTION LEVEL 2. SRO references Technical Specification 3.4.13 for "RCS Operational Leakage", determines not applicable until leakage >150 gpd.
Next event occurs 10 minutes from initiation of Tube Leak (pre-loaded)		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 3:		
10 minutes after tube leak occurs, 2SVS-PCV101B fails OPEN, requires manual isolation **IMF CNH-MSS03B (3 600) 100 (Pre-loaded)**	**IMMEDIATE PLANT RESPONSE:** STATUS #2 ALARM PANEL on VB-C indicates SG 21B ATM STM DUMP, 2SVS-PCV101B is 'NOT CLOSED' Red light illuminated for 2SVS-PCV101B RCS Tavg shows a slight decrease SG level deviation alarms may actuate. ADV will NOT close from BB control	SRO directs ATC to take manual control of open ADV, (2SVS-PCV101B) and close it. ATC places controller for 21B SG ADV in manual and attempts to close ADV. SRO requests I&C assistance. Crew notifies Field operator to close 2SVS-PCV101B using 2OM-21.4.J Or locally isolate via 2SVS-24 or de-energize via MCC
Valve requires manual isolation, valve will not close via either local manual operation or by de-energizing **ROLE PLAY:** IF requested to Isolate 2SVS-24, INSERT 'LOA-MSS017 0' then report to Control Room that 2SVS-24 is isolated		SRO refers to TS 3.7.4, Condition A for inoperable atmospheric dump valve. Requires restoring within 7 days.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Continue with next event at LE discretion		
EVENT 4		
N41 Instrument Power fuse blows **IMF NIS08A (0 0) 0**	**IMMEDIATE PLANT RESPONSE:** A4-4F, –'NIS POWER RANGE COMPARATOR DEVIATION' - LIT A4-4G, – 'NIS POWER RANGE NEUTRON FLUX RATE HIGH' - LIT A4-4H, – 'NIS POWER RANGE HIGH SETPOINT OVERPWR ROD STOP BLOCK ROD W/D' - LIT A4-5G, – 'NIS POWER RANGE HIGH/LOW SP NEUTRON FLUX HIGH' - LIT BB-B Indication for N41 indicates downscale NIS Rack drawer 41A, downscale indication and all Indicating lights illuminate.	ATC notes associated Power Range alarms and indications, reports this to SRO. SRO determines AOP 2.2.1C is necessary due to indications of failed Power Range channel. Crew verifies malfunction of only 1 Power Range Channel has occurred.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		To comply with TS 3.3.1, functions 17.c, 17.d, & 17.e, within 1 hr, SRO directs ATC to verify P-8, P-9 and P-10 interlocks are in the required state for the existing Plant conditions. ATC verifies A12-1G – P-10 PERMISSIVE', A12-2G – 'NOT P-8' and A12-3G – 'NOT P-9' ALL LIT and in the required state for the plant being at 15% power. Within 72 hrs, SRO directs BOP to TRIP the Nuclear Bistables by removing the Control Power Fuses from Drawer N41A.
	ALL STATUS lights on Drawer N41A extinguish.	BOP removes Control Power Fuses from drawer N41A. At NIS Rack N50, BOP turns the "Rod Stop Bypass Switch" to BYPASS for N41.
	Status light A-14 on status panel 308 illuminates A4-4H, – 'NIS POWER RANGE HIGH SETPOINT OVERPWR ROD STOP BLOCK ROD W/D' - CLEARS	ATC verifies status light A-14 on status panel 308 illuminates. ATC verifies Reactor Power is < 50%

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		At NIS Rack N37/N46, BOP turns "Comparator Channel Defeat Switch" to N41 channel.
	NIS Drawer N37/N46 Status light indication for "CHANNEL DEVIATION" clears and indication illuminates for "COMPARATOR DEFEAT" A4-4F, –'NIS POWER RANGE COMPARATOR DEVIATION' - CLEARS	
		ATC verifies Vertical board recorders are NOT selected to N41. To comply with TS 3.3.1 functions 6 & 7, SRO contacts I&C and requests Bistables on Attachment 1 for N41be tripped w/in 72 hrs. ATC verifies Reactor Power is < 50% SRO refers to TS 3.3.1 function 2.b and to SR 3.2.3.1 for applicability, determines they are not applicable due to being at 15% reactor power.
Continue with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT #5 B RCP High Vibration/Seal Failure Insert the following: **IMF RCP01B (5 0) 4 30** **IMF RCP06B (5 0) 15**	**IMMEDIATE PLANT RESPONSE:** 21B RCP seal leakoff rising as indicated on 2CHS-FR154A. A2-5C, - 'REACTOR COOLANT PUMP VIBRATION ALERT/DANGER' - LIT	ATC acknowledges RCP Hi vibration alarm, informs SRO, BOP refers to A2-5C ARP. Crew notes 21B RCP Shaft vibrations at 15 mils and trends.
IMF RCP06B 21 600 15 (inserted as pre-load on trg 6)	21B RCP vibration rises to >20 mils.	
		SRO enters AOP-2.6.8, Crew checks RCP parameters in Table 1 of AOP 2.6.8 to determine if Criteria is met for an Immediate RCP Shutdown.
NOTE: Trend on RCP vibration will need to be observed before RCP trip criteria is met.		SRO continues in AOP 2.6.8
		ATC verifies that EITHER Seal Injection Flow OR Thermal Barrier cooling flow is indicated to EACH RCP.
NOTE: SRO May not enter Attachment 3 if Trend of RCP vibration has identified Immediate RCP Trip Criteria has been met.		SRO refers to Attachment 3 for RCP Vibration issue.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Shaft vibration > 15 mils and rising at > 1.0 mils/hr.	When it is determined that RCP vibration is > 15 mils rising at >1 mil/hour, the SRO directs a reactor trip and the stopping of 21B RCP after E-0 Immediate Actions are completed.
EVENT 6 500 gpm B SGTR		ATC manually trips reactor.
IMF RCS04B (1 0) 500 (preload)	500 gpm 21B SGTR when the reactor is tripped.	ATC informs SRO of a reactor trip.
Steps 1 - 4 of E-0 are Immediate Actions.		ATC/BOP commence IMA's of E-0, SRO references E-0 to verify IMA's.
	A5-6D, - 'TURBINE TRIP DUE TO REACTOR TRIP' - LIT. Power range indication - LESS THAN 5% Neutron flux dropping.	ATC verifies reactor trip.
	Throttle Valves - ALL CLOSED OR Governor Valves - ALL CLOSED Main Generator Output Bkrs - OPEN Exciter Circuit Bkr - OPEN	BOP verifies turbine tripped.
	AC Emergency Busses - AT LEAST ONE ENERGIZED	BOP verifies power to AC Emergency Buses.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Due to SGTR; RCS pressure reducing PZR Level goes offscale low.	
	SG level and Feedflow /Steam flow mismatch alarms will occur.	BOP will continue to control "C" S/G level due to 2FWS-FCV499 controller in manual.
NOTE: SI may not have actuated at this time however, RCS conditions are degrading due to 21B SGTR. If crew transitions to ES-0.1 at this time, they will be required to manually actuate SI and return here. **This drill assumes SI is actuated at this time and the crew continues with E-0.**	Evaluate if SI is Actuated or Required Check SI – ACTUATED CNMT Pressure - > 5PSIG PZR Pressure - < 1860 PSIG SG Steam Pressure - < 500 PSIG	ATC reports SI status, manually actuates SI.
	SI actuated on low PZR pressure.	
E-0 Immediate Actions completed.		
		SRO directs RO to secure 21B RCP due to high vibration/seal leakoff trouble.
	21B RCP secured.	ATC secures 21B RCP.
	Alert Plant Personnel	ATC/BOP sound Standby Alarm, announce reactor trip and safety injection.
	Leak collection filtered exhaust fan status SAT.	Crew verifies leak collection filtered exhaust fan 2HVS-FN204A or B running.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Verify SI Status	ATC verifies SI System status. 2CHS*P21A & 2CHS*P21B running. HHSI flow indicated on 2SIS-FI943 Both LHSI pumps running.
	Verify AFW Status	BOP verifies 2FWE*P23A & B both running 2FWE*P22 steam supply valves all open AFW Throttle valves all full open And total AFW flow is > 340 gpm.
		SRO directs an operator verify automatic actions by performing Attachment A-0.11 when time permits.
Attachment A-0.11 included with scenario beginning on Pg 24.	**List of Attachment A-0.11 Discrepancies:** **All Automatic actions of A-0.11 are SAT**	Operator assigned to perform Attachment A-0.11 reports status of attachment to the SRO and any actions taken when completed.
	RCS temperature trending to 547°F. RCPs OPERATING – MONITOR Tavg RCPs STOPPED – MONITOR Tcold	ATC reports Tavg status, SRO directs crew to control steam/feed flow as necessary to achieve desired status.
	Check CIB – **NOT ACTUATED**	ATC checks Recirc Spray Pump status, CIB NOT actuated, Recirc spray pumps not running.
	Recirc Spray HXs – SERVICE WATER FLOW TO ALL 4 HXs	
	Check Recirc Spray Pumps – ANY RUNNING	
	Check Recirc Spray Pumps – ALL RUNNING	
	Check Recirc Spray Pumps – NOT CAVITATING	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	PORVs – CLOSED	ATC verifies PZR isolated.
	Spray Valves – CLOSED	
	Safety relief valves – (PSMS Detailed Data Page 1) – CLOSED	
	Check PRT conditions – CONSISTENT WITH EXPECTED VALUES	
	Power to at least one block valve – AVAILABLE	
	Block valves – AT LEAST ONE OPEN	
	21B RCP previously secured. 21A & 21C RCPs running. CCP flow normal.	ATC checks if RCPs should be stopped.
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER	BOP determines no SGs are faulted.
	OR	
	ANY SG COMPLETELY DEPRESSURIZED	
	21B SG level rising in an uncontrolled manner. Secondary rad monitors not consistent with pre-event levels.	SRO directs operator to check if SG tubes are intact. BOP determines that the 21B SG level is rising in an uncontrolled manner.
Crew transitions to E-3.		**SRO makes transition to E-3 and informs crew.**
		SRO directs STA to monitor status trees.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Control room habitability system not required.	BOP verifies control room habitability.
	21B RCP previously secured. 21A & 21C RCPs running. RCS – Highest SG Delta Pressure >205 psid CCP flow normal.	ATC/BOP checks if RCPs should be stopped, determine 21A & 21C RCPs to remain running.
CRITICAL TASK **E-3.A – Crew isolates feed flow into and steam flow from the ruptured SG and directs operator to close isolations valve(s) operated from outside of the control room before a transition to ECA-3.1 occurs.**	21B SG level rising in an uncontrolled manner. Secondary rad monitors not consistent with pre-event levels.	Crew identifies SG 21B as the ruptured SG.
		Crew isolates flow from ruptured SG.
	Adjust ruptured SG atmospheric steam dump controller setpoint to 100% and verify 2SVS*PCV101B closed.	Crew notes that 2SVS*PCV101B was previously isolated.
		ATC verifies 2SVS*HCV104 closed
IRF LOA-MSS010 0 **ROLE PLAY:** Notify crew that 2SVS*28 closed when requested.	Verify closed 21B SG steam supply to 2SVS-HCV104, 2SVS*28.	Crew dispatches an operator to close 2SVS*28

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Isolate 21B SG steam supply to 2FWE*P22	BOP verifies both motor driven AFW pumps running. BOP closes 2MSS*SOV105B and E
	Verify Blowdown and Steamline drains isolated	ATC verifies 2BDG*AOV100B1 is closed ATC verifies 2SDS*AOV111B1 is closed
VLV-MSS057A (pre-loaded)	**2SDS*AOV129A – failed open**	BOP verifies 2SDS*AOV129A is not closed. BOP identifies that 2SDS*AOV129A is failed open, and won't close from VB-C control switch. Reports to SRO and closes 2SDS*AOV129B.
	Closes Ruptured SG main steam lines isolation and bypass valves.	BOP closes 2MSS*AOV101B and verifies 2MSS*AOV102B is closed.
	21B SG narrow range level greater than 12% (31% adverse).	BOP checks ruptured SG level. When NR level is >12%, BOP isolates feed flow to 21B SG by closing 2FWE*HCV100C & D.
	Feed Water Isolation verified	BOP confirms FWI was previously verified using Attachment A-0.11.
	Ruptured SG pressure > 240 psig.	BOP verifies ruptured SG pressure > 240 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
CRITICAL TASK **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 Subcriticality or Integrity CSF.**	Based on ruptured SG pressure. 1000 - 1084 = 505°F (480°F). 900 - 999 = 492°F (467°F).	SRO determines target temperature for cooldown, uses NORMAL containment parameters.
		ATC blocks low steamline pressure SI when PRZR pressure is less than 2000 psig.
	Steam dump is available, Max rate cooldown.	BOP attempts to dump steam at maximum rate using condenser steam dumps in steam pressure Mode. If not already in steam pressure mode, BOP does so now.
Steam dumps fail closed **CNH-PCS07A**	Condenser steam dumps fail closed,	BOP determines that the condenser steam dumps have failed closed and reports to SRO. SRO directs BOP to use the 21A and 21C ADV's to initiate max rate cooldown.
		STA monitors thermocouples.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		BOP stops cooldown when core exit TCs < target temperature. BOP places 21A & 21C atmospheric dump valve controllers in auto with pot setting corresponding to current intact SG pressure.
	Intact SG levels > 12% (31% adverse).	BOP controls intact SG feed flow as required (340 gpm min) to achieve/maintain levels between 26% and 50%.
	Power to PORVs & block valves SAT. PORVs closed, not leaking. PORV/block alignment SAT.	ATC verifies PORV/block valve conditions as expected.
	Auto SI blocked A12-1C lit. SI signal A12-1D NOT lit.	ATC resets SI (both trains).
	Both trains of CIA reset. CIB not actuated.	ATC resets CIA and CIB (both trains).
	Station air available.	BOP verifies/reports status of station air system.
	Instrument air established to CNMT.	Crew establishes instrument air to CNMT. BOP verifies 2IAC-MOV131 - open. BOP opens 2IAC-MOV130. BOP verifies Instrument air header pressure > 85 psig on VB-C.
	RCS pressure > 225 psig (250 psig adverse). LHSI pumps stopped, in auto.	ATC verifies RCS pressure > 225 psig and stable, stops LHSI pumps and places them in auto.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Ruptured SG pressure stable.	BOP verifies ruptured SG pressure stable.
	Subcooling > 61°F (79°F adverse).	Crew verifies subcooling SAT at >61°F.
CRITICAL TASK **E-3.C –Crew depressurizes RCS to meet SI termination criteria before water release from the ruptured SG safety or atmospheric relief valve.**	Depressurize RCS to minimize break flow and refill PRZR	ATC depressurizes RCS to minimize break flow and refill PRZR by; Verifying 21A and 21C RCPS both running. Opening both pzr spray valves, 2RCS*PCV455A and 2RCS*PCV455B. Opens one PORV Verifies RCS pressure is reducing.
	Depressurization Termination	ATC closes the PORV and spray valves when RCS pressure is < ruptured SG pressure AND PRZR level is > 17%.
	Verify PORV closed.	ATC verifies RCS pressure rising.
	Check if SI Flow should be terminated.	ATC verifies RCS subcooling > 41°F. BOP verifies secondary heat sink, total AFW flow > 340 gpm or one intact SG NR level >12% ATC verifies RCS pressure is stable or rising. ATC verifies PRZR level is > 17%. SRO determines that above conditions support termination of SI.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Terminate SI flow.	SRO directs ATC to stop all but one charging pumps. ATC secures all but one charging pumps. SRO directs ATC to close 2SIS*MOV867A, B, C, D. ATC closes 2SIS*MOV867A, B, C, D from BB-A.
Terminate scenario when HHSI is isolated in E-3. Classify Event: **ALERT** due to Tab 1.2.4, LOSS of RCS Barrier, Primary to Secondary Leak.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Attachment A-0.11 'Verification of Automatic Actions' performed as time & manpower permit		SRO directs an operator to perform **Attachment A-0.11** as time & manpower permit
	Diesel generators – BOTH RUNNING	Check both EDGs running
	Ensure Reheat Steam Isolation	Verify 2MSS-MOV100A and B closed Depress Reheater Controller RESET push button
	CNMT pressure – GREATER THAN 7 PSIG **OR** SG Steam Pressure – LESS THAN 500 PSIG **OR** Steamline pressure high rate of change – 100 PSIG DROP IN 50 SECONDS	Check if MSLI is required If **not required**, go to step 4
	Yellow SLI marks - LIT	Verify steamline isolation
Step 4	Open [2CCS-AOV118] Domestic Water to Station Air Compressor	Establish Domestic Water System Cooling to Station Air Compressors
	At least one Station Air Compressor – RUNNING	Start 1 Station Air Compressor as required
	CCP pumps – AT LEAST 1 RUNNING	Check CCP Pump status
	[2NME-NR45] Nuclear Recorder selected to operable source and intermediate range displays	Align neutron flux monitoring for shutdown

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	CNMT pressure – HAS REMAINED LESS THAN 11 PSIG	Check CIB status
	IF NOT	Actuate CIB if required
	Manually initiate CIB – BOTH SWITCHES FOR BOTH TRAINS	
	Manually align equipment as required All RCPs – STOPPED	Stop ALL RCPs
	BV-1 operator verifies CREVS actuation Service water established to RSS HX(s)	
	Service Water Pumps – 2 RUNNING Service Water Header Pressure – GREATER THAN 55 PSIG SWS Seal Water Pressure – NOT LOW	Verify Service Water System in service
	[2HCS*SOV100A1, B1] – CNMT Sample amber light – LIT	Verify both CNMT hydrogen analyzers running
	All Red SIS Marks – LIT All Orange CIA Marks – LIT All Green FWI Marks – LIT	Verify ESF Equipment status – Start/align equipment as required
	Power available to both Emergency AC Busses	Verify power to both AC Emergency busses
		Restore power as required
	Attachment A-0.11 – COMPLETE	Report any discrepancies to SRO

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: **FENOC BVPS Unit 2** Scenario No.: 3 Op Test No.: 2LOT7 NRC

Examiners: _____ Candidates: _____ SRO

_____ _____ ATC

_____ _____ BOP

Initial Conditions: **IC-213** MOL, 100 % power Equ Xe, Rods Bank D @ 230 steps, RCS Boron - 883 PPM, ***Condensate Polishing Air Compressor - OOS***.

Turnover: Maintain current plant conditions

Critical Tasks: **FR-S.1.A, Crew isolates the main turbine from the SG's**
FR-S.1.C, Crew inserts negative reactivity into the core by inserting RCCAs
E-2.A, Crew isolates/directs isolation of faulted SG

Event No.	Malf. No.	Event Type	Event Description
1	XMT-MSS043A	I(ALL) *SRO T.S.*	2MSS*PT447 fails LOW, Rods Auto insert, Rx power rises due to cold Feedwater, Power reduction required.
2		R(ATC) N(BOP/SRO)	Emergency Power reduction
3	XMT-RCS030A	I(ATC/SRO) *SRO T.S.*	2RCS*PT444 drifts HIGH, Pzr pressure decreases, manual control of Pzr pressure required.
4	FLX-CFW31	M(ALL)	4500 gpm Feedwater leak inside cnmt on "A" S/G
5	PPL01A PPL01B	M(ALL)	ATWS – Failure of auto/manual Rx trip
6	EHC03B EHC01B	C(BOP/SRO)	Incomplete turbine trip, requires manual Steamline isolation actuation
7	VLV-MSS003A PPL10A PPL10B	C(BOP/SRO)	Auto MSLI Isolation actuation failure with 2MSS-AOV101A failing to close on a manual MSLI actuation, manual isolation required.
8			

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

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

2MSS*PT447 will fail low, this will cause 2CNM-AOV100 to open resulting in an overpower condition, causing the control rods to insert. The crew will respond by performing an **Emergency Shutdown** IAW **AOP 2.51.1**. Once the overpower condition has been corrected, **2OM-24.4.IF, attachment** 5 will be implemented to respond to 2MSS*PT447 failure. The SRO will evaluate **TS 3.3.1** applicability and initiate required actions.

When the plant has stabilized, 2RCS*PT444 will drift high, requiring use of **2OM-6.4.IF, Attachment 2**, the ATC will be required to manually control RCS pressure. The SRO will evaluate **TS 3.4.1** applicability.

A 4500 gpm Feedwater leak on the "A" loop inside containment will begin to ramp in, 1st indication of leak will be containment sump pumpout and Incore sump alarms. Based upon the sump alarms, the crew may enter AOP 2.6.7 to diagnose leak location. Feed flow to the "A" S/G will increase, however, S/G level will begin to drop. Level will continue to drop to the Reactor trip setpoint, however, Auto and Manual Reactor trips have been inhibited. When the crew recognizes a reactor trip is necessary a manual reactor trip will be directed by the SRO and **E-0** will be entered.

When it is recognized that the reactor will not trip, the SRO will direct entry into **FR-S.1**, this will be complicated by TV-2 and GV-2 sticking open on a turbine trip. An automatic MSLI actuation is inhibited requiring the BOP to manually actuate a MSLI, this is further complicated by 2MSS-AOV101A failing to automatically close on the manual MSLI actuation, which will require manual closure. The ATC will be inserting control rods and initiating emergency boration. An operator will be dispatched to locally trip the reactor, which will ***occur 2 minutes after being dispatched***, at which time the crew will transition back to **E-0**. The crew will identify the "A" S/G as faulted and transition to **E-2** to isolate.

When the crew has isolated the "A" S/G, in E-2, the drill will be terminated.

Expected Procedure flow path is E-0 → FR-S.1 → E-0→ E-2

INITIAL CONDITIONS: 100 % Power, CBD = 230, EQU XE MOL, 883 PPM Boron, IC-213

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
2SAS-C22 in PTL	YCT on CS	None
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**
2SAS-C22 OOS	2 days ago	None

SHIFT TURNOVER INFORMATION

1. 100 % Power, CBD = 230, EQU XE MOL, 883 PPM Boron
2. Protected Train is Train "B"
3. Maintain steady state power level.
4. 2SAS-C22, Condensate Polishing Air Compressor OOS for overhaul.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan placard for MOL
2. Placard for 2FWE*P22 position stating 2FWE*P22 is aligned to "A" header
3. Place plaque on wall for Protected Train "B"

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Initialize IC Set 213, and establish initial plant conditions.	Reactor plant at 100 % Power, MOL, equilibrium conditions, RCS Boron 883 PPM, CBD = 230 steps.	
Insert the following per the Simulator Setup section of the HTML File for this drill:	Inserts all pre-loads required to support the drill	
TRGSET 1 'JPPLP4(1)'	Set trigger 1 on Reactor Trip	
IMF PPL01A (0 0) 1	Set ATWS condition TRN "A"	
IMF PPL01B (0 0) 1	Set ATWS condition TRN "B"	
IMF EHC03B (0 0) 100 0 100	TV 2 stuck open	
TRGSET 2 'JPPLASO(1)'	Set trigger 2 on Turbine Trip (auto stop oil low)	
IMF EHC01B (2 0) 74 0 ASIS	GV 2 stuck in pre-trip position	
IMF PPL10A (0 0)	TRN "A" AUTO MSLI inhibited	
IMF PPL10B (0 0)	TRN "B" AUTO MSLI inhibited	
IMF VLV-MSS003A (0 0) 100	2MSS-AOV101A failed to auto close on MSLI	
TRGSET 3 'XC2I027C == 1'	Set trigger 3 on manual close attempt with TRN "A" 2MSS-AOV101A CS	
TRG 3 'DMF VLV-MSS003A'	Delete MALF preventing 2MSS-AOV101A closure.	
TRGSET 4 'XC2I028C == 1'	Set trigger 4 on manual close attempt with TRN "B" 2MSS-AOV101A CS	
TRG 4 'DMF VLV-MSS003A'	Delete MALF preventing 2MSS-AOV101A closure.	
IMF PPL02A (30 120)	Train A trip BKR open	
IMF PPL02B (30 130)	Train B trip BKR open	
IRF LOA-CRF007 (30 140) 1	Trip A rod drive MG set	
IRF LOA-CRF008 (30 150) 1	Trip B rod drive MG set	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Assign shift positions SRO:_____ ATC:_____ BOP:_____		
Conduct a shift turnover with oncoming operators.	Simulator Frozen until after shift turnover unless it needs to be run momentarily for an alignment change.	
When the shift turnover is completed, place the simulator to RUN and commence the drill.	Simulator running.	Crew assumes control of the Unit.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENTS 1 & 2: 2MSS*PT447 fails LOW requires Emergency Power Reduction		
IMF XMT-MSS043A (0 0) 0 30 ASIS	**IMMEDIATE PLANT RESPONSE**: Rods begin stepping inward Automatically A4-3C, - 'TAVG DEVIATION FROM TREF' - LIT A6-12G, - 'AMSAC TROUBLE' - LIT Followed by; A6-5E, - 'CONDENSATE PUMP DISCH/SUCT PRESSURE LOW' - LIT A6-5D, - 'CONDENSATE PUMP AUTO START/AUTO STOP' – LIT 2CNM-P21A Auto Starts – Red light illuminated 2CNM-AOV100 opens – Red light illuminated Checks First Stage Pressure indication Loop delta T's exceed 100% power indication	ATC observes Inappropriate Rod Movement and performs Immediate Action Step of AOP 2.1.3. ATC determines No Load Rejection is in progress and places Rod Control into Manual to stop rod movement. SRO implements AOP 2.1.3 BOP identifies that 2MSS-PT447 is failing low. Crew determines that Reactor Power is exceeding 100% SRO enters AOP 2.51.1 and directs an emergency power reduction.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	NOTE: 2CNM-AOV100 will automatically close 4 minutes after opening.	ATC initiates Emergency power reduction by Depressing 1st stage in pushbutton, Setting EHC setter to ~5% below current power lvl, Setting load rate thumbwheel to 5%/min Depressing GO pushbutton ATC monitors Power level less than 100% and not rising. If necessary, SRO directs BOP to reduce additional turbine load. ATC controls RCS Tavg via use of Control Rods in manual and/or Boration of the RCS. When power level is <100%, SRO implements 2OM-24.4.IF BOP selects 2MSS*PT446 by placing "Main Turb First Stage Press Sensor Select" CS to PM446 position on BB-C SRO directs BOP to remove the Arming signal to the condenser steam dumps by placing the "Steam Dump Control Mode Selector Switch" on BB-C to the RESET position.
	Steam dump arming signal reset – stm dumps close.	BOP verifies 2CNM-AOV100 closed BOP places Steam Dumps in Steam Pressure Mode of Operation with a control Setpoint of 1005 psig IAW SRO Direction per 2OM-24.4.IF.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		SRO refers to TS 3.3.1, Function 17.f, Condition P, verify P-13 interlock is in it's required State w/in 1 hour. ATC determines A12-1F, 'P-13 PERMISSIVE' is lit.
When the Crew has stabilized the plant at less than 100% power and the SRO has determined TS applicability, Proceed with next event at LE discretion		
EVENT 3: 2RCS-PT444 drifts high RCS Pressure control input PT		
IMF XMT-RCS030A (0 0) 2500 90	**IMMEDIATE PLANT RESPONSE:** A4-1D, - 'PRESSURIZER CONTROL PRESSURE HIGH/LOW' - LIT A4-1E, - 'PRESSURIZER CONTROL PRESS DEVIATION HIGH/LOW' – LIT A4-2F, - 'PRESSURE RELIEF BLOCK' - LIT A2-4B, - 'REACTOR COOLANT SYSTEM SUBCOOLING OFF NORMAL` - LIT	ATC notes/verifies alarms, informs SRO/Crew of apparent instrument failure of 2RCS*PT444. ATC takes manual control of Pressurizer pressure control to restore pressure.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		SRO enters 2OM-6.4.IF Attachment 2 and directs ATC to place the CS for 2RCS*PCV455C to close. SRO directs ATC to manually control pressurizer spray valves and heaters as necessary to restore/control RCS pressure. ATC reports to SRO that Pressurizer pressure reduced low enough to require entry into DNB TS. Per TS 3.4.1, SRO identifies that pressure must be restored within limit w/in 2 hours. ATC continues to manually control Pressurizer pressure for the remainder of the scenario.
When ATC has stabilized pressure and SRO has addressed DNB TS. Continue with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 4:		
4500 GPM Feedwater leak, "A" S/G inside Cnmt		
IMF FLX-CFW31 (0 0) 4500 600 0 **IMF CRF01A**	**IMMEDIATE PLANT RESPONSE:** Cnmt Sump Alarms, A2-2B, - 'UNIDENTIFIED LEAKAGE SYSTEM TROUBLE' - LIT A1-2G, - 'INCORE INSTRUMENT ROOM/CNMT SUMP LEVEL HIGH/VALVE NOT RESET' - LIT Cnmt Dewpoints rising	ATC notes cnmt sump alarms and informs SRO. BOP refers to ARP for A2-2B, checks CCP surge tank levels stable and reports that ARP directs entry into AOP 2.6.7.
NOTE: It not likely that AOP 2.6.7 actions will be taken due to the degrading S/G parameters that will become evident.		SRO enters AOP 2.6.7
	A6-9E, - 'SG 21A LEVEL DEVIATION FROM SETPOINT' – LIT	BOP acknowledges alarm and informs SRO.
	"A" SG level dropping w/ increasing Feedwater flow.	BOP recognizes and informs the crew, that the A SG level is dropping with an increase in Feedwater flow.
	A2-3B, - 'UNIDENTIFIED LEAKAGE FLOW GREATER THAN 60 GALLONS' – LIT	ATC informs SRO that another Cnmt Sump alarm has annunciated.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	A6-9D, - 'SG 21A LEVEL HIGH/LOW' – LIT 21A S/G level continues to drop with an increasing Feedwater flow rate	BOP reports to the crew that the A S/G low level alarm has annunciated and that level continues to drop. SRO directs the crew to perform a manual reactor trip and enter E-O
EVENTS 5 - 7: (pre-loaded) **ATWS, Incomplete Turb Trip, MSLI Actuation failure**	**IMMEDIATE PLANT RESPONSE:** Reactor will NOT trip from the control room	
Crew enters E-0, performs immediate operator actions.		Crew performs IMAs of **E-0.**
	A5-6D, - 'TURBINE TRIP DUE TO REACTOR TRIP' – **NOT LIT** Power range indication – **NOT LESS THAN 5%** Neutron flux – **NOT DROPPING**	ATC verifies reactor is NOT tripped. ATC attempts manual reactor trip from BB-B and BB-A, reports reactor has **NOT** tripped
US transitions to FR-S.1	Reactor **IS NOT** tripped	SRO/Crew determine **FR-S.1** entry conditions met, transitions to **FR-S.1** Step 1 Crew performs IMAs of **FR-S.1**

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
IMF EHC03B (0 0) 100 0 100 **TRGSET 2 'JPPLASO(1)'** **IMF EHC01B (2 0) 74 0 ASIS** **IMF PPL10A (0 0)** **IMF PPL10B (0 0)** **IMF VLV-MSS003A (0 0) 100** **TRGSET 3 'XC2I027C == 1'** **TRG 3 'DMF VLV-MSS003A'** **TRGSET 4 'XC2I028C == 1'** **TRG 4 'DMF VLV-MSS003A'** (all above commands pre-loaded)	Turbine trip	BOP manually trips the turbine by depressing both Turbine Trip push buttons on BB-C. BOP identifies that TV-2 and GV-2 have not closed and the turbine has not tripped. BOP manually initiates Main Steam Line Isolation. BOP identifies that 2MSS-AOV101A did not close and manually closes valve from BB-C.
CRITICAL TASK **FR-S.1.A Crew isolates the main turbine from the SGs before WR SG level is less than 10%**		
CRITICAL TASK **FR-S.1.C Crew inserts negative reactivity into the core by inserting RCCAs before completing the immediate action steps of FR-S.1.**	Control Rods are inserting in Manual	ATC identifies that the control rods are not inserting in Auto, selects **MANUAL** and begins inserting Control Rods.
	Verify AFW Status	BOP verifies 2FWE*P23A & B both running 2FWE*P22 steam supply valves all open AFW Throttle valves all full open
	Crew initiates Emergency Boration	ATC verifies at least 1 Charging Pump is running and SI is actuated with HHSI flow indicated. ATC verifies PRZR pressure is < 2330 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	PZR Pressure < 2330 PSIG	ATC checks PZR pres < 2330 PSIG
	Plant personnel alerted of ATWS	Crew alerts plant personnel by sounding the standby alarm and announcing Unit 2 reactor trip without SCRAM.
ROLE PLAY: When a crew member directs a field operator to locally trip the Unit 2 Reactor, insert **TRG! 30**, this will initiate a timed sequence for the operator to get to the rx trip breakers/MG sets and open them. Report to the control room when the Actions have been completed.		Crew notifies and dispatches a field operator to locally trip the Unit 2 reactor by opening the reactor trip breakers or open the rod drive MG sets output breakers.
	Verify turbine tripped and reheat steam isolated.	BOP reports that turbine is not completely TRIPPED, previously required a MSLI. Verifies 2MSS-MOV100A and B closed Depresses Reheater Controller RESET push button
	Check SI signal status	ATC determines SI is actuated. SRO directs a crew member to complete the First NINE steps of **E-0** when time and manpower permit.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
NOTE: Scenario assumes the reactor has been locally tripped by this time	Check if reactor is subcritical	ATC verifies; All power range channels indicate <5% Both IR NI channels indicate a negative SUR
	Safety Injection actuated – Emergency Boration is not required.	
		SRO returns to **E-0** step 1
Crew enters **E-0,** performs immediate operator actions.		Crew performs IMAs of E-0.
	A5-6D, - ' TURBINE TRIP DUE TO REACTOR TRIP' - LIT Power range indication - LESS THAN 5% Neutron flux - DROPPING	ATC verifies reactor tripped.
	Throttle Valves - ALL CLOSED OR Governor Valves - ALL CLOSED Main Generator Output Bkrs - OPEN Exciter Circuit Bkr - OPEN	BOP verifies turbine tripped.
	AC Emergency Busses - AT LEAST ONE ENERGIZED	BOP verifies power to AC Emergency Buses.
	Check SI – ACTUATED CNMT Pressure - > 5PSIG PZR Pressure - < 1860 PSIG SG Steam Pressure - < 500 PSIG	ATC checks SI status **CREW DETERMINES SI REQUIRED**
Crew continues E-0 E-0 Immediate Actions completed.	Manually actuate SI (both trains)	ATC manually actuates SI, both trains.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Alert Plant Personnel	ATC/BOP sound Standby Alarm, announce reactor trip and safety injection.
	Leak collection filtered exhaust fan status SAT.	Crew verifies leak collection filtered exhaust fan 2HVS-FN204A or B running.
	Verify SI Status	ATC verifies SI System status. 2CHS*P21A & 2CHS*P21B running. HHSI flow indicated on 2SIS-FI943 Both LHSI pumps running.
	Verify AFW Status	BOP verifies 2FWE*P23A & B both running 2FWE*P22 steam supply valves all open AFW Throttle valves all full open And total AFW flow is > 340 gpm.
		SRO directs an operator verify automatic actions by performing Attachment A-0.11 when time permits.
Attachment A-0.11 included with scenario beginning on Pg 18.	**List of Attachment A-0.11 Discrepancies:** **MANUAL MSLI was required on initial trip 2MSS-AOV101A failed to close on MSLI signal.**	Operator assigned to perform Attachment A-0.11 reports status of attachment to the SRO and any actions taken when completed.
	RCS temperature trending to 547°F. RCPs OPERATING – MONITOR Tavg RCPs STOPPED – MONITOR Tcold	ATC reports Tavg status, SRO directs crew to control steam/feed flow as necessary to achieve desired status.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check CIB – **NOT ACTUATED**	ATC checks Recirc Spray Pump status, CIB NOT actuated, Recirc spray pumps not running.
	Recirc Spray HXs – SERVICE WATER FLOW TO ALL 4 HXs	
	Check Recirc Spray Pumps – ANY RUNNING	
	Check Recirc Spray Pumps – ALL RUNNING	
	Check Recirc Spray Pumps – NOT CAVITATING	
	PORVs – CLOSED(not leaking).	ATC verifies PZR isolated.
	Spray Valves – CLOSED	
	Safety relief valves – (PSMS Detailed Data Page 1) – CLOSED	
	Check PRT conditions – CONSISTENT WITH EXPECTED VALUES	
	Power to at least one block valve – AVAILABLE	
	Block valves – AT LEAST ONE OPEN	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	D/P between RCS pressure and highest SG pressure – LESS THAN 205 PSID [220 PSID ADVERSE CNMT] AND HHSI Flow – INDICATED Stop All RCPs	ATC checks if RCPs should be stopped ATC determines RCP D/P trip criteria NOT met. RCPs remain in service.
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR ANY SG COMPLETELY DEPRESSURIZED	BOP checks if any SGs are faulted.
	"A" SG is faulted	**SRO determines transition to E-2 is necessary.**
Crew transitions to E-2 STEP 1		SRO directs transition to E-2
As U-1 operator, when requested, report proper CREVS actuation.	Check CREVS actuated: Control room air intake and exhaust dampers – CLOSED [2HVC*FN241A(B)] – ONE RUNNING Request U1 operator to verify CREVS actuation Commence Control Room ventilation actions IAW ATT A-2.4	BOP verifies CREVS actuated, requests Unit 1 CREVS verification.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check All yellow SLI marks – LIT	Crew verifies steam line isolation.
	Check all SG pressures – ANY STABLE OR RISING	BOP checks for any non-faulted SG, determines that "B" and "C" SG's are not faulted.
	Check all SGs pressure – ANY SG PRESSURE DROPPING IN AN UNCONTROLLED MANOR OR ANY SG COMPLETELY DEPRESSURIZED	BOP identifies "A" SG as faulted.
	"A" SG pressure dropping uncontrollably.	
	Check FWI – PREVIOUSLY VERIFIED	Crew verifies faulted SG (A) isolated
	2FWS*HYV-157A closed (rno – close 2FWS-MOV154A, 155A)	BOP verifies "A" SG CNMT isolation vlv closed.
	2FWS*FCV478 closed. (rno – close 2FWS-MOV154A)	BOP verifies "A" MFRV closed.
	2FWS*FW479 closed. (rno – close 2FWS-MOV155A)	BOP verifies "A" BPFRV closed.
	2FWE*HCV100E, F closed.	BOP closes 2FWE*HCV100E, F.
	Check Residual Heat Release valve – CLOSED	BOP verifies 2SVS*HCV104 closed.
IRF LOA-MSS009 (0 0) 0	Check Residual Heat Release Valve from faulted SG – PREVIOUSLY ISOLATED: SG 21A [2SVS*27]	Crew dispatches an operator to close 2SVS*27.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
IF REQUESTED: **IRF LOA-AFW025 (0 0) 0** To close [2MSS*15]	Close Turbine driven AFW pump steam supply isolation valves from faulted SG: [2MSS*SOV105A,D] (rno – close [2MSS*15]	BOP closes [2MSS*SOV105A,D]
IF REQUESTED: **IRF LOA-MSS016 (0 0) 0** To close [2SVS*23]	Close atmospheric steam dump on faulted SG [2SVS*PCV101A] (rno – close [2SVS*23]	BOP closes "A" SG atmospheric steam dump [2SVS*PCV101A]
	Verify SG blowdown isolation valve from faulted SG CLOSED: [2BDG*AOV100A1] OR [2BDG*AOV101A1]	BOP verifies SG blowdown isolated from "A" SG.
CRITICAL TASK **E-2.A Crew isolates the faulted SG and directs operator to close isolation valve(s) operated from outside the control room before transition out of E-2.**	Close [2SSR*AOV117A] SG blowdown sample outside CNMT isolation valves (rno – close[2BDG*AOV102A1,A2]	BOP isolates SG blowdown sample from "A" SG
Terminate Drill upon completion of isolation of the faulted SG per E-2		
Classify Event: **SITE AREA EMERGENCY** due to Tab 2.3, Failure of Rx Protection.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Attachment A-0.11 'Verification of Automatic Actions' performed as time & manpower permit		SRO directs operator to perform **Attachment A-0.11** as time & manpower permit
	Diesel generators – BOTH RUNNING	Check both EDGs running
	CNMT pressure – GREATER THAN 7 PSIG **OR** SG Steam Pressure – LESS THAN 500 PSIG **OR** Steamline pressure high rate of change – 100 PSIG DROP IN 50 SECONDS	Check if MSLI is required (**MANUAL MSLI required on initial trip**) If **not required**, go to step 4
	Yellow SLI marks - LIT	
		Verify steamline isolation
STEP 4	Open [2CCS-AOV118] Domestic Water to Station Air Compressor	Establish Domestic Water System Cooling to Station Air Compressors
	At least one Station Air Compressor – RUNNING	Start 1 Station Air Compressor as required
	CCP pumps – AT LEAST 1 RUNNING	Check CCP Pump status
	[2NME-NR45] Nuclear Recorder selected to operable source and intermediate range displays	Align neutron flux monitoring for shutdown

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	CNMT pressure – HAS REMAINED LESS THAN 11 PSIG	Check CIB status
	IF NOT	Actuate CIB if required
	Manually initiate CIB – BOTH SWITCHES FOR BOTH TRAINS	
	Manually align equipment as required All RCPs – STOPPED BV-1 operator verifies CREVS actuation Service water established to RSS HX(s)	Stop ALL RCPs
	Service Water Pumps – 2 RUNNING Service Water Header Pressure – GREATER THAN 55 PSIG SWS Seal Water Pressure – NOT LOW	Verify Service Water System in service
	[2HCS*SOV100A1, B1] – CNMT Sample amber light – LIT	Verify both CNMT hydrogen analyzers running
	All Red SIS Marks – LIT All Orange CIA Marks – LIT All Green FWI Marks – LIT	Verify ESF Equipment status – Start/align equipment as required
	Power available to both Emergency AC Busses	Verify power to both AC Emergency busses
		Restore power as required
	Attachment A-0.11 – COMPLETE	Report any discrepancies to SM/US

Facility: **FENOC BVPS Unit 2** Scenario No.: 4 Op Test No.: 2LOT7 NRC
Examiners: _____ Candidates: _____ SRO
_____ _____ ATC
_____ _____ BOP

Initial Conditions: **IC 214:** Reactor power ~E-6 amps, BOL, Equ. Xe Conditions, CB "D" @ 101 steps, RCS boron - 1851 ppm, ***Condensate Polishing Air Compressor - OOS***.

Turnover: Raise power to above the POAH (3-5%)

Critical Tasks:
E-1.C, Trip RCPs
E-0.I, Manually Start HHSI Pump
ECA-1.1.B, Makeup to RWST

Event No.	Malf. No.	Event Type	Event Description
1		R(ATC) N(BOP/SRO)	Raise Reactor power to 3-5%
2	BST-CSS035 BST-CSS036	C(ATC/SRO) SRO TS	2RSS-P21D, Recirculation Spray Pump Seal failure 2RSS-P21D seal tank level low 2RSS-P21D seal tank level lo lo
3	***FLX-CSS05***	C(BOP/SRO) SRO TS	500 gpm suction leak to the "***A***" Quench Spray Pump.
4	PMP-CAS003	C(BOP/SRO)	Station Air compressor Trip/auto start failure of standby
5	FLX-CAS10	C(ALL)	Instrument Air Header leak – requires manual reactor trip
6	RCS02C	M(ALL)	5000 gpm SBLOCA on Loop C upon reactor trip
7	BKR-HIV08 DSG01B	C(BOP/SRO)	Inadvertent trip of 2DF feeder brk on ***R***x trip. 2-2 EDG Auto start failure with subsequent trip
8	PPL07A	C(ATC/SRO)	Standby HHSI pump fails to auto start (manual start required).
9	LOA-LOV072	C(ALL)	Loss of 2MCC-E11, (Both Trains of Transfer to Cold Leg Recirculation are unavailable – ECA-1.1 entry required)

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

The Crew will continue the reactor startup, raising reactor power to above the POAH, ~3%. The ATC operator will withdraw control rods and observe startup rate while the BOP controls RCS temperature by manually adjusting 2*SV*S-HCV104. ***The BOP also controls SG level by manually controlling the bypass feed reg valves.***

After the Crew has raised power to above the POAH, A1-3H will annunciate due to a low level in the seal tank for 2RSS*P21D. A1-3H will reflash in 5 minutes due to the seal tank for 2RSS-P21D level being LO-LO which indicates a seal failure for 2RSS*P21D. IAW the ARP for A1-3H, the crew will dispatch an operator to fill the seal IAW 2OM-13.4.F. The SRO will evaluate **TS 3.5.2 & 3.6.7**

A 500 gpm isolable leak develops on the suction line to 2QSS*P21*A* in ***South*** Safeguards. The ***South*** Safeguards sump Hi level annunciator will alarm followed by annunciator A6-1D due to a low level in the RWST, the crew will monitor RWST level and initiate actions to locate the leak and makeup to the RWST. The SRO will evaluate **TS 3.5.4 (RWST level)** and **TS 3.6.6** for 2QSS*P21*A* when leak is located)

The running station air compressor will trip requiring manual start of the standby station air compressor.

A slowly developing Instrument Air leak will occur. The air leak will continue to worsen, requiring the crew to determine that a reactor trip is appropriate IAW **AOP 2.34.1**.

Upon the reactor trip the crew will enter E-0, a 5000 gpm SBLOCA will occur on Loop C. When the reactor trips, one of the 4kv tie breakers, between the "D" and "DF" buses will trip open, 2D10. The automatic start of the 2-2 EDG will fail and requires the BOP to manually start ***the 2-2 EDG***, it will trip 90 seconds after starting. Since the "B" CHS/HHSI pump was in service it will no longer be running, the "A" CHS/HHSI pump will require the ATC to manually start it due to an automatic start failure. The crew will Transition to E-1 based upon containment conditions when checking if the RCS is intact. 5 minutes after the reactor trip, the feeder breaker to 2MCC –E11 will trip When the crew performs EOP attachment A-0.6 to verify Cold Leg Recirculation capability, it will be determined that at least one train of recirculation capability cannot be verified requiring the SRO to transition to ECA-1.1. The crew will remain in ECA-1.1; after the crew has initiated actions to add makeup water to the RWST (step 9) the drill will be terminated.

Expected procedure flow path is E-0 → E-1 → ECA-1.1.

INITIAL CONDITIONS: 0 % Power (~E-6 amps), CBD = 101, EQU XE BOL, 1851 PPM Boron, IC-214

ADDITIONAL LINEUP CHANGES	STICKERS	VOND MARKINGS
2SAS-C22 in PTL	YCT on CS	None
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**
2SAS-C22 OOS	2 days ago	None

SHIFT TURNOVER INFORMATION

1. 0 % Power (~E-6 amps), CBD = 101, CBC = 229, EQU XE BOL, 1851 PPM Boron
2. Protected Train is Train "B"
3. Raise power to above the POAH (3-5%) IAW 2OM-50.4.D, Reactor Startup from Mode 3 to Mode 2, Part C Temperature control is via 2SVS-HCV104, with bypass feed reg valves in manual.
4. 2SAS-C22, Condensate Polishing Air Compressor OOS for overhaul.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Plant Startup reactivity plan, Critical with Bank D at 101steps.
2. Placard for 2FWE*P22 position stating 2FWE*P22 is aligned to "A" header
3. Place plaque on wall for Protected Train "B"
4. Plant startup procedure - 2OM-50.4.D completed up through Part B.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Initialize IC Set 214, and establish initial plant conditions.	Reactor plant at 0% power (~E-6 amps), BOL, equilibrium conditions. RCS boron 1851 PPM, CBD = 101 steps.	
Insert the following per the Simulator Setup section of the HTML File for this drill:	Inserts all pre-loads required to support the drill	
TRGSET 1 'JPPLP4(1)'	Set Trigger 1 on Reactor Trip	
IMF PPL07A (0 0) 0	Auto Start Failure of 2CHS*P21A	
IMF BKR-HIV08 (1 0) 0	ACB-2D10 trips on reactor trip	
IRF LOA-LOV072 (3 300) 0	Trip of ACB 2N-6C, MCC*2-E11 Feeder bkr	
IMF A8-6F-Y3510D (3 300) 0	A8-6F alarm for trip of MCC*2-E11 Feeder bkr	
IMF DSG01E	Auto start inhibit, EDG 2-2	
TRGSET 3 'ODSG02RM > 20'	Set trigger 3 on EDG 2-2 start	
IMF DSG01B (3 90) TRUE	EDG 2-2 trip 90 seconds after manual start	
IMF RCS02C (1 0) 5000	5000 gpm SBLOCA, Loop "C" upon reactor trip	
IMF BST-CAS013 (0 0) 1	2IAS-PS106B, station air compressor autostart inhibit	
IMF BST-CAS010 (0 0) 1	2IAS-PS108, stby diesel air compressor autostart inhibit	
IMF BST-CAS035 (2 0) 0	2RSS-LS156D, RSS*P21D Seal Tk lvl BELOW L0706D	
IMF BST-CAS036 (2 300) 0	2RSS-LS156D1 RSS*P21D Seal Tk lvl LOLO L0707D	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Assign shift positions SRO:_____ ATC:_____ BOP:_____		
Conduct a shift turnover with oncoming operators.	Simulator Frozen until after shift turnover unless it needs to be run momentarily for an alignment change.	
When the shift turnover is completed, place the simulator to RUN and commence the drill.	Simulator running.	Crew assumes control of the Unit.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 1: Raise Reactor Power to 3-5%	As control rods are withdrawn, reactor power rises and then RCS temperature rises as power increases.	ATC withdraws Control rods to raise reactor power being observant of 0.1 dpm procedural SUR limit. BOP manually controls RCS temperature using 2SVS-HCV104. BOP controls SG levels using manual control of the Bypass Feed reg valves.
Proceed with next event at LE discretion		
EVENT 2:		
2RSS*P21D Seal Trouble / Failure **IMF BST-CAS035 (2 0) 0** **IMF BST-CAS036 (2 300) 0** (pre-loaded) Initiate by actuating **TRG! 2**	**IMMEDIATE PLANT RESPONSE:** A1-3H, - 'RECIRC SPRAY SYSTEM TROUBLE' – LIT, L0706D, BELOW	ATC responds with ARP which directs that Seal System be filled IAW 2OM-13.4.F. SRO dispatches an operator to fill 2RSS*P21D seal IAW 2OM-13.4.F, part D.
	5 MINUTES LATER: REFLASH of: A1-3H, - 'RECIRC SPRAY SYSTEM TROUBLE' – LIT, L0707D, LOLO	ATC reports that IAW ARP, Seal is to be filled. (Fill procedure should be already working by now)

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE

ROLE PLAY:

5 minutes after being dispatched as field operator to fill the seal for 2RSS*P21D IAW 2OM-13.4.F, Part D. Call in to the Control Room SRO and report that "you have completed steps 1 through 5 of 2OM-13.4.F, Part D, you can continue with step 6."

SRO to review TS;
TS 3.6.7, RSS Sys, Condition C, Restore in 72 hrs.
TS 3.5.2, ECCS, Condition A, Restore in 72 hrs.
TS 3.6.1, CNMT, Condition A, Restore in 1 hr.

ATC places the CS for 2RSS*P21D in PTL and closes 2RSS*MOV155D and 2RSS*MOV156D.

Field operator is notified to continue with Step 6.f.

Continue with next event at LE discretion

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 3: 500 gpm leak on suction line to 2QSS*P21A. **IMF FLX-CSS05 (0 0) 500** **ROLE PLAY:** As field operator report in that there is a leak on the suction piping for 2QSS*P21A upstream of 2QSS*MOV100A. **ROLE PLAY:** Insert command '**DMF FLX-CSS05**' then as field operator report to SRO that you have closed 2QSS-2.	**IMMEDIATE PLANT RESPONSE:** A11-10G, - 'SAFEGUARDS AREA SUMP LEVEL HIGH' – LIT, (L2963D), SOUTH A6-1D, - 'REFUELING WATER STORAGE TANK LEVEL OFF NORMAL' – LIT, (L2966D)	BOP responds with ARP which directs that someone be dispatched to investigate leakage into South Safeguards. SRO dispatches field operator to investigate South Safeguards to identify leakage. SRO reviews system VOND and determines that leak can be isolated by closing 2QSS*2 and 2QSS*MOV100A. Crew isolates 2QSS*P21A by placing CS for 2QSS*P21A in PTL & closing 2QSS*MOV100A. SRO directs field operator to close 2QSS*2. SRO reviews TS 3.6.6 for 1 Train of Quench Spray, Condition A, Restore in 72 hrs. BOP reviews ARP; Verifies actual low level in the RWST. Determines makeup to RWST is necessary. Dispatches operator to initiate RWST makeup IAW 2OM-7.4.O. SRO reviews TS 3.5.4 for RWST volume. Condition B, restore level within 1 hour.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Continue with next event at LE discretion		
EVENT 4:		
Trip of 2SAS-C21A **IMF PMP-CAS003 (0 0) 1**	**IMMEDIATE PLANT RESPONSE:** A6-3D, - 'STATION AND CONDENSATE POLISHING AIR SYSTEM TROUBLE' – LIT (Y6464D)	BOP determines 2SAS-C21A has tripped and 2SAS-C21B has failed to start, reports to SRO/Crew. SRO directs the BOP to start 2SAS-C21B. BOP starts 2SAS-C21B. SRO notifies maintenance of trip of 2SAS-C21A.
Continue with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
EVENT 5: Instrument Air Header Leak **IMF FLX-CAS10 (0 0) 1200 500**	**IMMEDIATE PLANT RESPONSE:** Numerous air system alarms annunciate A6-3D, - 'STATION AND CONDENSATE POLISHING AIR SYSTEM TROUBLE' – LIT (P0811D) A6-3C, - 'STATION INSTRUMENT AIR RECEIVER TROUBLE' – LIT (P0810D) A6-3C, - 'STATION INSTRUMENT AIR RECEIVER TROUBLE' – LIT (P0812D) A6-3C, - 'STATION INSTRUMENT AIR RECEIVER TROUBLE' – LIT (P0815D) A6-3D, - 'STATION AND CONDENSATE POLISHING AIR SYSTEM TROUBLE' – LIT (P0814D)	BOP reports Air System alarms to the Crew/SRO. SRO determines AOP 2.34.1, "Loss of Station Instrument Air" is applicable, enters and directs actions of AOP. ATC sounds the Standby Alarm and announces "Loss of Station Instrument Air".

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
NOTE: 2SAS-C21A previously tripped. 2SAS-C21B running 2IAS-C21 – Did not auto start 2SAS-C22 OOS on turnover. **ROLE PLAY:** As turbine operator dispatched to start 2IAS-C21, report back in 3 minutes that it appears as though the battery is dead, the Diesel Air compressor will not start.		BOP verifies all available Station Air compressors are running. Verifies 2SAS-C21B is running. BOP dispatches turbine operator to locally start the Diesel Air compressor, (2IAS-C21).
ROLE PLAY: As operator dispatched to Bypass the Instrument air dryers, report back in 3 minutes that the Bypass filters are inservice and the Dryers are isolated. Additionally, report that there is an instrument air leak downstream of 2IAS-1026, right at the header.		SRO dispatches operator to place the Instrument Air Dryer Bypass filters in service and to isolate the Instrument Air Dryers.
NOTE: Continuous Action Step, requires tripping the Reactor if pressure is <55 psig.	Station instrument air pressure continues to drop.	BOP checks for Reactor trip criteria, checks Instrument air header pressure not < 55 psig, however there is a decreasing pressure trend.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
		BOP checks Instrument Air header pressure is <86 psig. BOP verifies 2SAS-AOV105 is closed. SRO continues attempts to restore station instrument air.
	Station instrument air pressure drops to < 55 psig	BOP reports to crew that Instrument Air pressure is < 55 psig SRO directs the crew to Manually trip the reactor, perform Immediate Operator Action steps and report when ready to read.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE

EVENTS 6,7,8,9:

5000 gpm Loop C SBLOCA with inadvertent trip of 2D10 breaker, Auto start failure of 2-2 EDG with trip 90 seconds after loading, Loss of 2MCC-E11 5 minutes later.

TRGSET 1 'JPPLP4(1)'
IMF PPL07A (0 0) 0
IMF BKR-HIV08 (1 0) 0
IRF LOA-LOV072 (3 300) 0
IMF A8-6F-Y3510D (3 300) 0
IMF DSG01E
TRGSET 3 'ODSG02RM > 20'
IMF DSG01B (3 90) TRUE
IMF RCS02C (1 0) 5000
(all preloaded)

Crew enters **E-0,** performs immediate operator actions.

Crew performs **IMAs of E-0**.

A5-6D, - 'TURBINE TRIP DUE TO REACTOR TRIP' - LIT.
Power range indication - LESS THAN 5%
Neutron flux dropping.

ATC verifies reactor trip.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Throttle Valves - ALL CLOSED OR Governor Valves - ALL CLOSED Main Generator Output Bkrs - OPEN Exciter Circuit Bkr - OPEN	BOP verifies turbine tripped.
	AC Emergency Busses - AT LEAST ONE ENERGIZED	BOP verifies power to AC Emergency Buses.
	Check SI – ACTUATED CNMT Pressure - > 5PSIG PZR Pressure - < 1860 PSIG SG Steam Pressure - < 500 PSIG	ATC checks SI status. **CREW DETERMINES SI REQUIRED**
Crew continues E-0 E-0 Immediate Actions completed.	Manually actuate SI (both trains)	ATC manually actuates SI, both trains.
	Alert Plant Personnel	ATC/BOP sound Standby Alarm, announce reactor trip and safety injection.
	Leak collection filtered exhaust fan status SAT.	Crew verifies leak collection filtered exhaust fan 2HVS-FN204A or B running.
CRITICAL TASK **E-0.I – Crew establishes flow from at least one high head ECCS pump before transition out of E-0.**	Charging Pumps – TWO RUNNING HHSI Flow – INDICATED LHSI Pumps – TWO RUNNING	ATC verifies SI System status **ATC identifies that 2CHS*P21A did not Auto start on SI signal, and manually starts 2CHS*P21A.** Reports malfunction to the crew. Both LHSI pumps running.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Verify AFW Status	BOP verifies 2FWE*P23A & B both running 2FWE*P22 steam supply valves all open AFW Throttle valves all full open And total AFW flow is > 340 gpm. SRO directs an operator to verify automatic actions by performing Attachment A-0.11 when time permits.
Attachment A-0.11 included with scenario beginning on Pg 22.	**<u>List of Attachment A-0.11 Discrepancies:</u>** **2CHS*P21A failed to auto start, manually started – SAT.** **2-2 EDG failed to auto start, manually started and then subsequently tripped after loading, resulting in ALL "B" Train equipment being de-energized.**	Operator assigned to perform Attachment A-0.11 reports status of attachment to the SRO and any actions taken when completed.
	RCS temperature trending to 547°F. RCPs OPERATING – MONITOR Tavg RCPs STOPPED – MONITOR Tcold	ATC reports Tavg status, SRO directs crew to control steam/feed flow as necessary to achieve desired status.
	Check CIB – **NOT ACTUATED**	ATC checks Recirc Spray Pump status, CIB NOT actuated, Recirc spray pumps not running.
	Recirc Spray HXs – SERVICE WATER FLOW TO ALL 4 HXs	
	Check Recirc Spray Pumps – ANY RUNNING	
	Check Recirc Spray Pumps – ALL RUNNING	
	Check Recirc Spray Pumps – NOT CAVITATING	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	PORVs – CLOSED(not leaking).	ATC verifies PRZR isolated
	Spray Valves – CLOSED	
	Safety relief valves – (PSMS Detailed Data Page 1) – CLOSED	
	Check PRT conditions – CONSISTENT WITH EXPECTED VALUES	
	Power to at least one block valve – AVAILABLE	
	Block valves – AT LEAST ONE OPEN	
CRITICAL TASK **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.**	D/P between RCS pressure and highest SG pressure – LESS THAN 205 PSID [220 PSID ADVERSE CNMT]	ATC checks if RCPs should be stopped ATC determines RCP D/P trip criteria met.
	AND	ATC verifies HHSI flow.
	HHSI Flow – INDICATED	ATC STOPS all RCPs.
	Stop All RCPs	
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER	BOP determines no SGs are faulted.
	OR	
	ANY SG COMPLETELY DEPRESSURIZED	

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER	BOP determines all SG tubes are intact.
	Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES [2ARC-RQ100] Air Ejector Discharge (1007) [2SSR-RQ100] SG Blowdown Sample (1062) [2MSS*RQ101A,B,C] Main Steamline Discharge (1005, 3005, 5005)	
	Check the following consistent with pre-event values: CNMT Pressure CNMT Sump Level CNMT Radiation	Crew checks if RCS is intact. **CREW DETERMINES THAT RCS IS NOT INTACT, TRANSITIONS TO E-1 STEP 1.**
Crew transitions to E-1 STEP 1		SRO directs transition to E-1 SRO directs STA to monitor status trees.
	Crew checks if CREVS should be actuated Control Room radiation monitor [2RMC*RQ201, 202] (1069, 1072) – NOT IN HIGH ALARM CIB – HAS NOT OCCURRED	Crew checks if CREVS should be actuated

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	D/P between RCS pressure and highest SG pressure – LESS THAN 205 PSID [220 PSID ADVERSE CNMT] AND HHSI Flow – INDICATED **RCPs – STOPPED**	ATC checks if RCPs should be stopped. All RCPs previously stopped.
	CIB – ACTUATED	ATC checks Recirc Spray Pump status
	Recirc Spray Hxs – SERVICE WATER FLOW TO ALL 4 HXS	ATC verifies 2SWS*MOV103A(B) OPEN and 2SWS*MOV106A(B) CLOSED
	RWST Level – ≤ 381 inches	ATC checks RWST level > 381 inches
	Verify Recirc Spray Pumps – NOT CAVITATING	
	Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR ANY SG COMPLETELY DEPRESSURIZED	BOP determines no SGs are faulted.
	SGs are NOT faulted	
	Narrow Range Levels – GREATER THAN 12% [31% ADVERSE CNMT]	BOP checks intact SG levels
		BOP controls feed flow to intact SGs to maintain NR level between 12% [31% ADVERSE CNMT] and 50%

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES [2ARC-RQ100] (1007) Air ejector discharge [2SSR-RQ100] (1062) SGBD sample [2MSS*RQ101A,B,C] Main Steamline discharge (1005, 3005, 5005)	Crew determines all SG tubes are intact
	Power to the Block Vlvs – AVAILABLE PORVs – CLOSED Block Vlvs – AT LEAST ONE OPEN	ATC checks PRZR PORVs and Block Valves: All PORVS CLOSED. All Block valves open and energized.
	RCS Subcooling based on core exit TCs > 41F [59F ADVERSE CNMT] Secondary heat sink: Total feed flow to intact SGs – GREATER THAN 340 GPM OR Narrow range level in at least one intact SG – GREATER THAN 12% [31-% ADVERSE CNMT]	ATC/BOP check if SI flow can be reduced Crew determines RCS subcooling is ≤ required from Attachment A-5.1. **SI FLOW CANNOT BE REDUCED**
	RCS pressure – STABLE OR RISING PRZR level – GREATER THAN 17% [38% ADVERSE CNMT]	**SI TERMINATION CONDITIONS ARE NOT SATISIFIED, SRO CONTINUES IN E-1.**

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Any Quench spray or recirc spray pump – RUNNING	ATC/BOP check if CNMT Spray should be stopped. SRO continues with STEP 10.
	SI & CIA - RESET	ATC resets SI and CIA
	RCS Pressure - > 225 PSIG [250 PSIG ADVERSE CNMT] RCS Pressure – **STABLE OR RISING**	ATC checks if LHSI Pumps should be stopped ATC determines RCS pressure is NOT stable or rising.
	LHSI Pumps stopped and in auto	**ATC determines RCS pressure < 225 psig, LHSI pumps to remain running.**
	Check pressures in all SGs – STABLE OR RISING Check RCS Pressure – STABLE OR DROPPING	ATC/BOP checks RCS and SG Pressures. BOP determines SG pressures are stable or rising. ATC determines RCS pressure is dropping.
	Verify AC emergency busses energized from offsite	BOP checks if EDGs should be stopped.
	Stop any unloaded EDG by performing **2OM-36.4.AF(AG)**	Crew initiates actions to STOP EDGs.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Verify Cold Leg Recirculation Capability.	SRO directs operators to perform Att A-0.6 and verify cold leg recirculation capability **Due to loss of 2DF 4KV bus along with loss of 2MCC-E11, the BOP determines that at least one train of cold leg recirc capability can not be verified and reports to SRO that RECIRC CAPABILITY NOT AVAILABLE.** **SRO determines entry into ECA-1.1 required.**
Crew transitions to ECA-1.1 STEP 1		SRO directs transition to ECA-1.1
	Recirc Spray Pumps – NO SIGN OF CAVITATION.	ATC determines no Recirc Spray pumps are running. ATC determines Transfer-to-Recirculation was not initiated.
	Reset SI signal.	ATC RESETS SI, both trains.
	Reset SI Recirc Mode.	ATC RESETS SI RECIRC MODE, both trains.
	Check Charging Pump Flow	ATC verifies HHSI flow on 2SIS-FI943.

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Check Emergency Coolant Recirculation Equipment - AVAILABLE	BOP performs Attachment A-0.8. Along with unavailability of power to MCC-E11 and 2DF 4KV busses, the BOP determines RWST level is NOT less than 369 inches, therefore, Cold leg recirc alignment is not required at this time. Crew continues attempts to restore at least one train.
	Check RWST level – GREATER THAN 30 INCHES	ATC verifies RWST level is > 30 inches.
	Determine Quench Spray Requirements.	ATC determines that CIB is ACTUATED, however NO Quench Spray pumps are running, Quench Spray reduction is not necessary.
	Check Recirc Spray System Status.	ATC determines that CIB is ACTUATED, Verifies SWS flow established to "A" train RSS Heat Exchangers. ATC verifies RWST level is not less than 381 inches, Transfer to Recirc not required at this time.
CRITICAL TASK **ECA-1.1.B – Crew makes up to the RWST and minimizes RWST outflow.** Terminate drill when crew initiates actions to Makeup to the RWST from the Blender in ECA-1.1.	Add Makeup to RWST as Necessary	Crew initiates makeup from the Fuel pool to the RWST IAW 2OM-7.4.O, "Makeup To The Refueling Water Storage Tank".

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE

Classify Event

SRO evaluates EPP and declares a **SITE AREA EMERGENCY due to TAB 1.2.3, Loss of RCS Barrier and Tab 1.3.2, Potential Loss of Containment Barrier due to not having 1 complete Train of Containment Depressurization available**

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
Attachment A-0.11 'Verification of Automatic Actions' performed as time & manpower permit		US directs operator to perform **Attachment A-0.11** as time & manpower permit
	Diesel generators – BOTH RUNNING	Check both EDGs running, **BOP notes the 2-2 EDG did not auto start, BOP manually starts 2-2 EDG. EDG starts, loads and then trips 90 seconds later resulting in loss of power to the 2DF 4KV bus.**
	CNMT pressure – GREATER THAN 7 PSIG **OR** SG Steam Pressure – LESS THAN 500 PSIG **OR** Steamline pressure high rate of change – 100 PSIG DROP IN 50 SECONDS Yellow SLI marks - LIT	Check if MSLI is required If **not required**, go to step 4 Verify steamline isolation
STEP 4	Open [2CCS-AOV118] Domestic Water to Station Air Compressor	Establish Domestic Water System Cooling to Station Air Compressors
	At least one Station Air Compressor – RUNNING	Start 1 Station Air Compressor as required
	CCP pumps – AT LEAST 1 RUNNING	Check CCP Pump status

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	2NME-NR45 Nuclear Recorder selected to operable source and intermediate range displays	Align neutron flux monitoring for shutdown
	CNMT pressure – HAS REMAINED LESS THAN 11 PSIG	Check CIB status
	IF NOT	Actuate CIB if required
	Manually initiate CIB – BOTH SWITCHES FOR BOTH TRAINS	
	Manually align equipment as required All RCPs – STOPPED BV-1 operator verifies CREVS actuation Service water established to RSS HX(s)	Stop ALL RCPs
	Service Water Pumps – 2 RUNNING Service Water Header Pressure – GREATER THAN 55 PSIG SWS Seal Water Pressure – NOT LOW	Verify Service Water System in service
	[2HCS*SOV100A1, B1] – CNMT Sample amber light – LIT	Verify both CNMT hydrogen analyzers running
NOTE: **Due to 2DF 4KV bus being de-energized, ALL train "B" components will be de-energized with positions unable to be verified.**	All Red SIS Marks – LIT All Orange CIA Marks – LIT All Green FWI Marks – LIT	Verify ESF Equipment status – Start/align equipment as required **2CHS*P21A did not auto start, BOP manually starts 2CHS*P21A satisfactorily.**

INSTRUCTIONAL GUIDELINES	PLANT STATUS OR RESPONSE	EXPECTED STUDENT RESPONSE
	Power available to both Emergency AC Busses	Verify power to both AC Emergency busses Restore power as required **2DF 4KV Bus de-energized**
	Attachment A-0.11 – COMPLETE	Report any discrepancies to SM/US