OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Plot and Evaluate 1/M Data

TRAINING MATERIAL NUMBER: 1AD-016

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-016

REVISION NUMBER: 4

TECHNICAL REFERENCES:

1OM-50.4.F, Performing An Estimated Critical Position Calculation, Rev 11
1OM-50.4.D2, Reactor Startup from Mode 3 to Mode 2, Rev. 3

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 30 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-016
New Revision: 4
Description of Change(s): 1. Updated for procedure revisions. 2. Updated for current cycle. 3. Modified Task Number. 4. Modified data to alter the answer key
Reason for Change (s): 1. Procedures 1OM-50.4.F revised and OM-50.4.D2 were revised. 2. Updated ECP required for JPM accuracy. 3. Task list updated. 4. To modify the JPM from the bank version.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-016 JPM REVISION: 4	JPM TITLE: Plot and Evaluate 1/M Data

K/A REFERENCE: 2.1.43 4.1/4.3 TASK ID: 0021-022-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 30 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Determines that 1/M data predicts >1000 pcm below ECP value for critical rod height. Notify SM/US that appropriate actions of 1OM-50.4.D2 must be taken. (Insert all control banks to zero steps)
RECOMMENDED STARTING LOCATION:	Classroom

INITIAL CONDITIONS:

- The plant is in Mode 2.
- A reactor startup is in progress, following a reactor trip from full power.
- Control Bank C is at 94 steps.
- Control Bank D is at 0 steps.
- RCS Boron concentration is 289 ppm.

INITIATING CUE: Your Supervisor directs you to complete the 1/M plot per 1OM-50.4.F, using the SR count rate data provided on Data Sheet 2. Compare the 1/M data with the predicted ECP data and make a recommendation for further rod withdrawal. Document your recommendation and reason in the box below. (Located on candidate direction sheet)

REFERENCES:	1OM-50.4.F, Performing An Estimated Critical Position Calculation, Rev. 11 1OM-50.4.D2, Reactor Startup from Mode 3 to Mode 2, Rev. 3
TOOLS:	Calculator; Ruler/straight edge.
HANDOUT:	1OM-50.4.F, Performing An Estimated Critical Position Calculation, Rev. 11 with Data sheet 1 completed and Data Sheet 2 partially completed. 1OM-50.4.D2, Reactor Startup from Mode 3 to Mode 2, Rev. 3

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-016 JPM REVISION: 4	JPM TITLE: Plot and Evaluate 1/M Data

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	START TIME: _____	
1. Refer to Data sheet 2.	1.1 Refers to data sheet 2 for count rate data. COMMENTS:	
2.**C** Plots Data Sheet 2 Data on Figure 1.	2.1. Evaluates count rate data from Data Sheet 2 and plots this data on Figure 1 (1/M Plot) for 250 total steps. (> 225 Steps CB "D") 2.2. Evaluates count rate data from Data Sheet 2 and plots this data on Figure 1 (1/M Plot) for 300 total steps. (~140 Steps CB "D") 2.3.**C** Evaluates count rate data from Data Sheet 2 and plots this data on Figure 1 (1/M Plot) for 350 total steps. (~110 Steps CB "C") **EVALUATOR NOTE:** See Attached Answer Key for 1/M plot values. It is not necessary to plot both SR curves since the data is identical. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-016 JPM REVISION: 4	JPM TITLE: Plot and Evaluate 1/M Data

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Evaluate 1/M plot data	3.1.**C** Determines that the 1/M plot predicts criticality >1000 pcm below ECP calculated rod height for criticality of 100 steps on Bank D. (1000 pcm below is 110 steps on Bank C) COMMENTS:	
4.**C** Determines action for continued startup IAW 1OM-50.4.D2, (Attachment 3 Action 6.)	4.1.**C** Informs SM/US that 1/M data indicates that criticality will occur >1000 pcm below the ECP. (Estimates Criticality at approximately 110 steps on Bank C VS the 10 steps on Bank D minimum per ECP) 4.2.**C** Recommends inserting all control banks to ZERO steps. COMMENTS:	
	EVALUATOR CUE: When the Candidate completes the JPM, state "This JPM is complete".	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant is in Mode 2.
- A reactor startup is in progress, following a reactor trip from full power.
- Control Bank C is at 94 steps.
- Control Bank D is at 0 steps.
- RCS Boron concentration is 289 ppm.

INITIATING CUE: Your Supervisor directs you to complete the 1/M plot per 1OM-50.4.F, using the SR count rate data provided on Data Sheet 2. Compare the 1/M data with the predicted ECP data and make a recommendation for further rod withdrawal. Document your recommendation and reason in the box below.

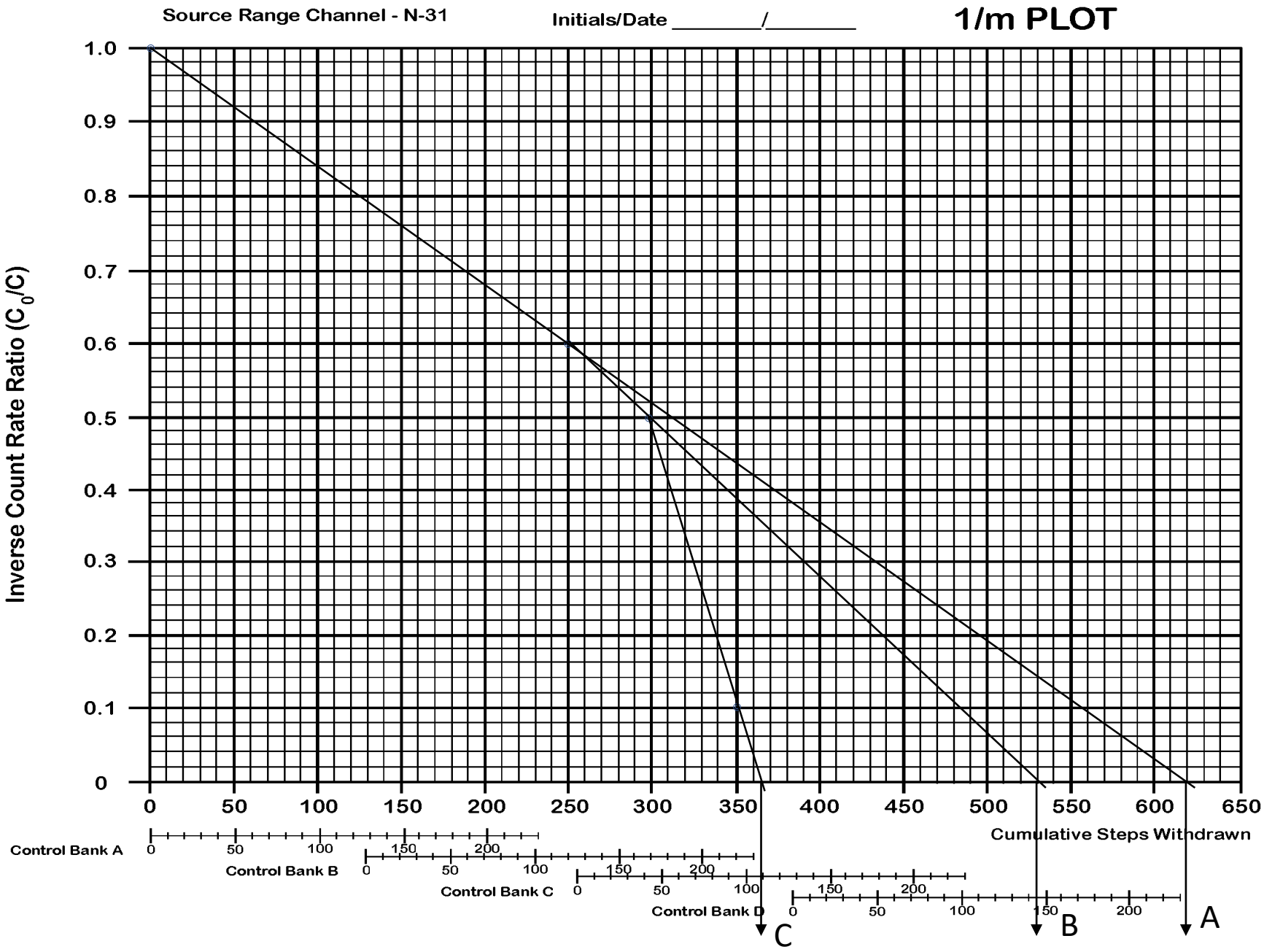
RECOMMENDED ACTIONS:

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

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

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

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



1AD-016 ANSWER KEY

Data Points:

A- 250 Steps, 333 cps, ICCR=0.6

B- 300 Steps, 400 cps, ICCR=0.5

C- 350 Steps, 2000 cps, ICCR=0.1

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Perform An Estimated Critical Position Calculation

TRAINING MATERIAL NUMBER: 1AD-007

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-007

REVISION NUMBER: 4

TECHNICAL REFERENCES:

1OM-50.4.F, "Performing An Estimated Critical Position Calculation", Rev. 11
Unit 1 Curve Book, Cycle 27

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 40 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-007
New Revision: 4
Description of Change(s): 1. Updated for current JPM format. 2. Updated for 1OM-50.4.F revision. 3. Updated JPM to reflect most recent Cycle 27 Core and associated Curves. (ARO = 225 steps) 4. Updated Task number. 5. Updated to identify the Critical steps. 6. Changed time to 40 minutes.
Reason for Change (s): 1. Changed format to reflect current format 2. 1OM-50.4.F was revised to rev. 11. 3. Unit 1 Curve Book was updated for current cycle. 4. Task list update 5. The Critical steps were not clearly identified. 6. Time changed from 35 minutes at NRC request.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-007 JPM REVISION: 4	JPM TITLE: Perform An Estimated Critical Position Calculation

K/A REFERENCE: 2.1.23 4.3/4.4 TASK ID: 0521-001-05-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS		
Performer Name:		Performer ID:
Time Critical: ☐ Yes ☒ No	Allotted Time: 40 Minutes	Actual Time: minutes

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

Comments: _____

_____

_____

_____

OBSERVERS	
Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Boron concentration for startup calculated within the specified tolerance. (1646 - 1746 ppm)
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	• A plant startup is being performed exactly 5 days after a reactor trip from 100% power. • Prior to the trip, the plant was at 100% with All Rods @ 225 steps for 3 months. • An RCS Boron sample was taken at 100% power one hour prior to the Reactor trip. It indicated that the RCS Boron concentration was 1114 ppm. • The Current Core burnup is 10,000 MWD/MTU. • The plant computer is NOT available.
INITIATING CUE:	The Unit Supervisor directs you to determine the boron concentration for startup by performing 1OM-50.4.F, "Performing An Estimated Critical Position Calculation", steps IV. A through IV.C. Control rod position Expected at Criticality is Bank D at 100 steps. Reactor Engineering was consulted regarding B^{-10} Correction for Criticality. They report that the B^{-10} correction Factor for criticality (Data Sheet 1 block C.VII) is 0.910.
REFERENCES:	1OM-50.4.F, "Performing An Estimated Critical Position Calculation", Rev. 11 Unit 1 Curve Book, Cycle 27
TOOLS:	None
HANDOUT:	1OM-50.4.F, "Performing An Estimated Critical Position Calculation", Rev. 11 Unit 1 Curve Book, Cycle 27

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-007 JPM REVISION: 4	JPM TITLE: Perform An Estimated Critical Position Calculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	DEVELOPER/VALIDATION NOTES: When updating this JPM for the current plant cycle, use care to choose parameters that will not require interpolation. Ensure Control Rod Position is updated to reflect actual plant.	
	START TIME: _____	
1. Input Critical Data Data Sheet 1, (Part A (I) Prior to Shutdown) Date/Time Boron Conc. Power Burnup Xenon Samarium Control Rod Position	1.1 Inputs Critical Data Part A (I) Prior to Shutdown. Date/Time = 5 days ago Boron Conc. = 1114 ppm Power = 100% Burnup = 10,000 (MWD/MTU) Xenon = 100% (CB-12) Samarium = 100% (CB-22) Control Rod Position = ARO at 225 steps COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-007 JPM REVISION: 4	JPM TITLE: Perform An Estimated Critical Position Calculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2. Input Critical Data Data Sheet 1, (Part A (II) Expected at Criticality) Date/Time Burnup Xenon Samarium Control Rod Position	2.1 Inputs Critical Data Part A (II) Expected at Criticality. Date/Time = Today / Now Burnup = 10,000 (MWD/MTU) Xenon = 0% (CB-23) Samarium = 113.2% (CB-22) Control Rod Position = Banks A & B @ 225 steps Bank C @ 225 steps Bank D @ 100 steps COMMENTS:	
3. Determine Effective boron Concentration Data Sheet 1, (Part A (III), (IV), & (V)) Part III, Boron Conc. Part IV, B-10 Corr factor Part V, Effective Boron Conc.	3.1 Determines the Effective Boron Concentration Part A (III), (IV), & (V)) Part III, Boron Conc. = 1114 ppm Part IV, B-10 Correction Factor = 0.904 (CB-29) Part V Effective Boron Conc. = 1114 ppm X 0.904 = 1007 ppm (rounded) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-007 JPM REVISION: 4	JPM TITLE: Perform An Estimated Critical Position Calculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
4.**C** Calculate Reactivity Balance (Data Sheet 1, Part B) Part B.1 Part B.2 Part B.3 Part B.4 Part B.5	4.1 Calculates Part B, Item 5. Power Defect = - 0 – 2080 = - 2080 pcm (CB-21) Control Rods = 1012.5 – 0 = + 1012.5 pcm (CB-24B) Xenon = 0 – 2709 = - 2709 pcm (CB-23) Samarium = 1134 – 1002 = + 132 pcm (CB-22) 4.2**C** Reactivity Change = - 3644.5 pcm (+/- 100 pcm) COMMENTS:	
5. Calculate Boron Concentration for Startup (Data Sheet 1, Part C) Part C.I Part C.II Part C.III Part C.IV Part C.V	5.1 Calculates Part C, Line 1, Item V. Reactivity Change = - 3644.5 pcm (from B.5) Differential Boron Worth = - 7.17 pcm/ppm (CB-20) Boron Change = + 508 ppm Eff Boron Conc. at Shutdown = 1007 ppm Eff Boron Conc. For Startup = 1515 ppm COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-007 JPM REVISION: 4	JPM TITLE: Perform An Estimated Critical Position Calculation

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6.**C** Calculate Boron Concentration for Startup (Data Sheet 1, Part C)	6.1**C** Calculates Part C, Line 2, Item V.	
Part C.1	Reactivity Change = - 3644.5 pcm (from B.5)	
Part C.II	Differential Boron Worth = - 6.8 pcm/ppm (CB-20)	
Part C.III	Boron Change = + 536 ppm	
Part C.IV	Eff. Boron Conc. at Shutdown = 1007 ppm (from A.V)	
Part C.V	6.2.**C** Eff. Boron Conc. For Startup = 1543 ppm (+/- 50 ppm)	
Part C.VI	Eff. Boron Conc. For Startup = 1543 (from C.V)	
Part C.VII	B–10 Correction Factor for Criticality = 0.910	
Part C.VIII	6.3.**C** Eff. Boron Conc. For Startup = 1696 ppm (+/- 50 ppm)	
	EVALUATOR NOTE: Grader Discretion Required.	
	COMMENTS:	
	EVALUATOR CUE: When the Candidate completes the calculation, the evaluation for this JPM is complete.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- A plant startup is being performed exactly 5 days after a reactor trip from 100% power.
- Prior to the trip, the plant was at 100% with All Rods @ 225 steps for 3 months.
- An RCS Boron sample was taken at 100% power one hour prior to the Reactor trip. It indicated that the RCS Boron concentration was 1114 ppm.
- The Current Core burnup is 10,000 MWD/MTU.
- The plant computer is NOT available.

INITIATING CUE:

The Unit Supervisor directs you to determine the boron concentration for startup by performing 1OM-50.4.F, "Performing An Estimated Critical Position Calculation", steps IV. A through IV.C. Control rod position Expected at Criticality is Bank D at 100 steps.
Reactor Engineering was consulted regarding B^{-10} Correction for Criticality. They report that the B^{-10} correction Factor for criticality (Data Sheet 1 block C.VII) is 0.910.

☐ 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.

A9.330B

Beaver Valley Power Station

Unit 1

ANSWER KEY
1AD-007

1OM-50.4.F

PERFORMING AN ESTIMATED
CRITICAL POSITION CALCULATION

A. Critical Data

(I) PRIOR TO SHUTDOWN	(II) EXPECTED AT CRITICALITY
Date **5 Days Ago**/___ Time **NOW**	Date **TODAY**/___ Time **NOW**
Boron Conc. **1114** ppm Power **100** %	
Burnup **10,000** (MWD/MTU)	Burnup **10,000** (MWD/MTU)
Xenon **100** % (Use Fig 1CB-12)	Xenon **0** % (Use Fig 1CB-23)
Samarium **100** %	Samarium **113.2** % (Use Fig 1CB-22)
Control Rod Position A **225** C **225** B **225** D **225**	Control Rod Position A **225** C **225** B **225** D **100**

(III) Boron Concentration (Part A, Column I)	(IV) B-10 Correction Factor (use CB-29)	(V) Effective Boron Concentration (III) x (IV)
1114 ppm	**0.904**	**1007** ppm

B. Reactivity Balance - (Record **absolute values** in Columns I and II)

Reactivity Defects	(I) Prior to Shutdown	(II) Expected at Criticality	(III) (II - I) Difference
1. Power (Fig CB-21 **OR** Consult Rx Engr)	**2080** pcm	0 (zero) pcm	(–) **- 2080** pcm
2. Control Rods (Circle Fig. used) (Fig. CB-24A, 24B, 24C **OR** Consult Rx Engr)	**0** pcm	**1012.5** pcm	(±) **+ 1012.5** pcm
3. Xenon (Fig. CB-23)	**2709** pcm	**0** pcm	(±) **- 2709** pcm
4. Samarium (Fig. CB-22)	**1002** pcm	**1134** pcm	(±) **+ 132** pcm
5. Reactivity Change (Sum of 1-4) =			(±) **- 3644.5** **(+/- 100)** pcm

C. Critical Boron Concentration

	(I) Reactivity Change (B.5)	(II) Differential Boron Worth (Fig. CB-20)	(III) Boron Change (I) ÷ (II)	(IV) Eff. Boron Conc. At Shutdown	(V) Eff. Boron Conc. For Startup (III) + (IV)
1.	(±) **-3644.5** pcm	(–)**7.17** *pcm/ppm*	**+ 508** (±) ppm	**1007** ppm	**1515** ppm
2.		(–) **6.8** *pcm/ppm*	**+ 536** (±) ppm	**1007** ppm	**1543** ppm **(+/- 50)**

(VI) Eff. Boron Conc. For Startup (Part C, Column V, line 2)	(VII) ECP Reactivity Bias* (from Rx Eng)	(VIII) Boron Concentration for Startup (VI) ÷ (VII)
1543 ppm	**0.910** ppm	**1696** **(+/- 50)** ppm

D. Estimated Rod Position Correction

(I) Boron Sample	(II) Boron Conc. For Startup C.1.I	(III) Boron Deviation (I) - (II)	(IV) Differential Boron Worth (Fig. CB-20)
ppm	ppm	(±) ppm	(–) *pcm/ppm*

(V) Rod Worth Correction (III) x (IV)	(VI) Rod Worth Expected At Criticality (B.2)	(VII) Corrected Rod Worth Expected At Criticality (V) + (VI)	(VIII) Corr Critical Rod Pos. (Circle Figure Used) (Fig CB-24A, 24B, 24C **OR** Consult Rx Engr)
(±) pcm	pcm	(–) pcm	Steps

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

TRAINING MATERIAL NUMBER: 1AD-053

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-053

REVISION NUMBER: 0

TECHNICAL REFERENCES:

1OST-6.7, Accident Monitoring Instrumentation Channel Checks Rev. 28

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 30 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: T. A. Gaydosik _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-053
New Revision: 0
Description of Change(s): 1. New JPM
Reason for Change (s): 1. New JPM for bank development.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

K/A REFERENCE: 2.2.37 3.6 TASK ID: 0061-201-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS		
Performer Name:	Performer ID:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 30 Minutes	Actual Time: minutes

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

Comments: _____

_____

_____

_____

OBSERVERS	
Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Calculates the data for 1OST-6.7 and determines that ICCM Train A and Train B subcooling margin values are within 28°F of one another, and Train A, Quadrant I, does NOT have two Operable T/Cs. Determines that an SAP Notification is required for thermocouple E07 due to a bad diagnostic code.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	• The plant is at 100% power • A partial surveillance test for 1OST-6.7 is required for PMT testing • Train B of ICCM is Out Of Service
INITIATING CUE:	The Shift Manager directs you to complete 1OST-6.7 sections VII.A.1 through VII.A.2.h and then verify the applicable acceptance criteria have been met. You are to use the provided Plant Computer Screen to perform the qualitative assessment of the ICCM pressure indication versus the plant instruments. **DOCUMENT** the results and any required actions in the comments section of the cover page. **NOTE:** If the step refers to Control Room panel manipulations, refer to the provided handouts and sign off the step.
REFERENCES:	1OST-6.7, Accident Monitoring Instrumentation Channel Checks, Rev 28
TOOLS:	Calculator Steam Tables Magnifying Glass
HANDOUT:	Marked up copy of 1OST-6.7, Accident Monitoring Instrumentation Channel Checks, Rev 28 with pages 13-32 marked as N/A. Pictures of ICCM Data with Core T/C List with Train A Quadrant I only one operable T/C. Picture of ICCM Diagnostic Pages. Picture of the Plant Computer system with the pressure indications.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

	EVALUATOR NOTE: Provide the candidate a marked up copy of 1OST-6.7, and other handout materials.	
	START TIME: _____	
1. Reviews 1OST-6.7.	1.1 Reviews partially completed 1OST-6.7. COMMENTS:	
2. Determine the ICCM Train A Core Subcooling Margin by performing the following: a. Press the T/C pushbutton, (BB-B). b. Record the Subcooling Margin, SUBCOOL (AVG 5) on Data Sheet 1.	2.1 Reviews the T/C figure for the SUBCOOL (AVG 5). 2.2 Records 24 ºF on Data Sheet 1 for the Train A Indication. COMMENTS:	
3. Verify ICCM Train A SUBCOOL (AVG) limits status is normal and quality code is good by performing the following: a) Press the ICCM Train A ERROR MESSAGE Pushbutton. b) Press the ICCM Train A PAGE Pushbutton Twice. c) Verify the SUBCOOL(AVG 5) Diagnostic Code is “34 00”.	3.1 Reviews the ICCM Train A Error Message Page. 3.2 Verifies that the SUBCOOL (AVG 5) Diagnostic Code is “34 00”. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

	EVALUATOR NOTE: ICCM Train B is Out Of Service per the Initial Conditions, the next step will be performed using the Hand Calculation, Attachment A.	
4.**C** If ICCM Train B is out of service, perform a channel check of the Train A Subcooling Margin as follows: (Otherwise N/A) a) Press the ICCM Train A ERROR MESSAGE pushbutton. b) Perform a channel check of PT-440, RCS Wide Range Pressure, by qualitative assessment of channel behavior, using [PI-1RC-455(456)(457)] or [PI-1RC-402(403)] c) Perform Attachment A, "Hand Calculation Of Subcooling Margin - Train B OOS" d) Verify the Hand calculated Subcooling Margin value from Attachment A is within 28°F of the computer-generated Train A Subcooling Margin recorded on Data Sheet 1.	4.1 Reviews the page with ICCM Train A ERROR MESSAGE information. 4.2 Reviews the Page with PT-440 picture and compares to the Computer Picture with PT-1RC 455 (456) (457) or PT-1RC-402 (403) displays. 4.3 Performs Attachment A, "Hand Calculation Of Subcooling Margin - Train B OOS". Wide Range RCS Pressure PT-440 = 2246 psig Convert to PSIA (+ 14.3 psi) = 2260.3 psia T_{SAT} from Steam Tables 653.4 ºF AVG of 5 highest T/Cs (P- T Curve = 631 ºF Subcooling Margin (Tsat – AVG T/Cs) = 22.4 ºF 4.4**C** Determines that the calculated Subcooling Margin is within 28 °F of the computer-generated value. SUBCOOL(AVG5) from Data Sheet 1 = 24 F Hand calculated Subcooling Margin from Att. A = 22.4 COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

5. Determine that at least two thermocouples per quadrant for ICCM Train A are OPERABLE by performing the following: a. Press the ICCM Train A ERROR MESSAGE pushbutton. b. Press the ICCM Train A PAGE pushbutton to obtain the "Thermocouple Diagnostic Page 1" display c. Perform a CHANNEL CHECK of each ICCM Train A Core Exit Thermocouple indication (qualitative assessment that each thermocouple properly represents the local core temperature condition). 1) Record the thermocouple temperature and the results of each CHANNEL CHECK for the Train A indications on Data Sheet 2.	5.1 Performs a Qualitative Assessment of core exit thermocouples, since the opposite Train instrumentation is OOS and recognizes that the operable readings are all not consistent with expected values. 5.2 Records the T/C temperature indications and places a Check Mark (√) in the Channel Check column for Train A on Data Sheet 2, except for Core Location E07. 5.3 Compares the Thermocouple indications and determines that most are indicating as expected, EXCEPT Core locations E07, which is much lower than expected and a Notification has not been generated. 5.4 Determines that a SAP Notification should be generated for this T/C location. **EVALUATOR CUE:** If any values are reported as not consistent, role play SM and acknowledge the report. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

6.**C** Determine if a SAP Notification should be submitted for any thermocouple temperature indication as follows: a. Verify each indication has a diagnostic code of "30 00". (Otherwise N/A). OR b. If an indication does **NOT** have a diagnostic code of "30 00", Initiate **OR** Verify a SAP Notification is submitted. (Otherwise N/A)	6.1 Reviews the Thermocouple diagnostic information to verify that each instrument has a diagnostic code of "30 00". 6.2**C** Determines that T/C in Core location E07 does not have the correct diagnostic code and that an SAP Notification should be generated for T/C location E07. All other T/Cs without diagnostic code 30 00 have a Note or SAP Notification identified in the OST. **EVALUATOR NOTE:** The SAP Notification for T/C E07 may have been identified in the qualitative assessment in the previous step. COMMENTS:	
7.**C** Verify at least two Train A thermocouples in each quadrant are OPERABLE.	7.1**C** Reviews Data Sheet 2 Train A Core Exit Thermocouple data and determines that Quadrant I does NOT have two Operable T/Cs. COMMENTS:	
	EVALUATOR NOTE: The JPM may be terminated at this point if the critical steps have been evaluated since a Qualitative Assessment of the T/Cs was performed previously and B Train of ICCM was Out of Service. The JPM was scripted to ensure the candidate completes the Conclusion section of the OST to ensure all critical steps of the JPM were evaluated.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

8. Record the Train A reference junction box temperatures [RJB RTD1] and [RJB RTD2] on Data Sheet 2.	8.1 Records the Train A reference junction box temperatures on Data Sheet 2. 8.2 Verifies that the temperatures are within 10 °F of each other. COMMENTS:	
9. Perform a partial CHANNEL CALIBRATION on the core exit thermocouples (qualitative assessment of sensor only) by performing a qualitative assessment of ICCM Train A core exit thermocouples: a. Compare temperatures recorded on Data Sheet 2 to determine if the indicated temperatures conform with the expected temperatures based on current plant condition. b. If any thermocouple reading is inconsistent: (Otherwise N/A) (1) Notify SM/US.	9.1 Performs a Qualitative Assessment of core exit thermocouples, reports that the operable readings are all not consistent with expected values. 9.2 Reports to the SM that a SAP Notification should be generated for thermocouple E07. **EVALUATOR CUE:** If any values are reported as not consistent, role play SM and acknowledge the report. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-053 JPM REVISION: 0	JPM TITLE: Perform Accident Monitoring Instrument Channel Checks (1OST-6.7)

	EVALUATOR NOTE: The remaining procedure steps are N/A, step VII.K Conclusion, will be addressed to verify Operability.	
10. CONCLUSION: a) Verify a satisfactory CHANNEL CHECK result on Data Sheet 1 for Subcooling Margin. b) Verify the minimum number of thermocouple indications OPERABLE in each quadrant for Train A and Train B on Data Sheet 2. c) Verify a satisfactory partial CHANNEL CALIBRATION of the core exit thermocouples as required by Step VII.A.2.h and VII.B.2.h. d) Verify satisfactory CHANNEL CHECKS for RVLIS Full Range Level, Upper Range Level and Dynamic Head on Data Sheet 3. e) Consult the Acceptance Criteria for acceptable performance of this test.	10.1 Determines Calculated Subcooling Margin is consistent (within 28 °F)with the calculated Subcooling Margin. 10.2 Determines that Train A, Quadrant I does not have two Operable T/Cs. (Train B is OOS) 10.3 Determines that the CHANNEL CALIBRATION (via quantitative assessment) is not satisfactory, and a SAP Notification is required for T/C E07. 10.4 The remaining items in the ACCEPTANCE CRITERIA were not verified during the partial procedure. COMMENTS:	
	EVALUATOR CUE: When the applicant has completed documenting the results of the OST on the OST cover/problem sheet, state “This JPM is complete”.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant is at 100% power
- A partial surveillance test for 1OST-6.7 is required for PMT testing
- Train B of ICCM is Out Of Service

INITIATING CUE:

The Shift Manager directs you to complete 1OST-6.7 sections VII.A.1 through VII.A.2.h and then verify the applicable acceptance criteria have been met.

You are to use the provided Plant Computer Screen to perform the qualitative assessment of the ICCM pressure indication versus the plant instruments.

DOCUMENT the results and any required actions in the comments section of the cover page.

NOTE: If the step refers to Control Room panel manipulations, refer to the provided handouts and sign off the step.

☐ 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

TRAINING MATERIAL TITLE: Perform Decay Tank Discharge Pre-Release Verification

TRAINING MATERIAL NUMBER: 1AD-004

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-004

REVISION NUMBER: 4

TECHNICAL REFERENCES:

1OM-19.4.E, "Decay Tank Discharge", Rev. 11
1/2ODC-3.03, "ODCM: Controls for RETS/REMP Programs", Rev. 18
1/2-ENV-05.05.F01, Rev. 2 (RWDA-G)

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: T. A. Gaydosik _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-004
New Revision: 4
Description of Change(s): 1. Updated JPM for procedure revision and format. 2. Updated Task number.
Reason for Change (s): 1. Exam Bank Development, procedure changes. 2. Task list updated.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-004 JPM REVISION: 4	JPM TITLE: Perform Decay Tank Discharge Pre-Release Verification

K/A REFERENCE: 2.3.11 3.8/4.3 TASK ID: 0191-202-01-011
071 A4.26 3.1/3.9

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID:
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Identifies 1GW-TK-1A gas release cannot occur until a second sample and analysis are performed and independently verified by two technically qualified facility staff members.
RECOMMENDED STARTING LOCATION:	Classroom
INITIAL CONDITIONS:	• An unplanned shutdown of Unit 1 has resulted in the need to discharge Gas Decay Tank 1GW-TK-1A. • All other equipment is in NSA except for the Gaseous Waste Gas Monitor RM-1GW-108B, which is out of service. • Gas Decay Tank 1GW-TK-1A pressure is 51.8 psig. • RadPro has taken a sample and has generated an RWDA-G for 1GW-TK-1A release.
INITIATING CUE:	You are to perform 1GW-TK-1A Decay Tank Discharge Pre-Release Verification in accordance with 1OM-19.4.E, "Decay Tank Discharge", beginning at step IV.D. Coordinate the completion of RWDA-G for release of 1GW-TK-1A **AND** make a recommendation for continuing the discharge in the box below, INCLUDING any justification. **(Provided in the candidate direction sheet)**
REFERENCES:	1OM-19.4.E, Decay Tank Discharge, Rev. 11 1/2-ENV-05.05.F01, Rev. 2 (RWDA-G) 1/2ODC-3.03, "ODCM: Controls for RETS/REMP Programs", Rev. 18
TOOLS:	None
HANDOUT:	1OM-19.4.E, Decay Tank Discharge, Rev. 11 place kept through step IV.C. Partially completed pre-release RWDA-G for 1GW-TK-1A. 1/2ODC-3.03, "ODCM: Controls for RETS/REMP Programs", Rev. 18 (Provide when asked) 1/2-ENV-05.05.F01, Rev. TRG (RWDA-G) Marked up for Training use.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-004 JPM REVISION: 4	JPM TITLE: Perform Decay Tank Discharge Pre-Release Verification

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: Provide candidate a place kept copy of 1OM-19.4.E place kept up to step IV.C and partially completed RWDA-G.	
	START TIME: _____	
1. Review 1OM-19.4.E, "Decay Tank Discharge" and partially completed RWDA-G.	1.1 Candidate reviews 1OM-19.4.E and RWDA-G provided. **EVALUATOR NOTE:** The purpose of the JPM is to check for an understanding of meeting the ODCM by relying on an Action Statement**.** **EVALUATOR NOTE:** If the candidate requests more information: • The US has notified Chemistry • 1GW-276 is closed. • TV-1GW-103A1, 103B1, and 103C1 are all closed. • FR-1GW-108, GW Flow to Cooling Tower indicates 1200 SCFM. • 1GW-F-1A is operating. COMMENTS:	
	EVALUATOR CUE: If asked, RM-1GW-109 alarms were adjusted ONLY.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-004 JPM REVISION: 4	JPM TITLE: Perform Decay Tank Discharge Pre-Release Verification

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: If candidate requests a copy of the ODCM, ensure 1/2ODC-3.03 is available for reference.	
2.**C** Verify [RM-1GW-108B] is operable as specified by ½-ODC-3.03, 3.3.3.10, Attachment F **OR** the provisions of the action statement will be satisfied **AND** Initial the RWDA-G on the (Prerequisites of ODCM ½-ODC-3.03, 3.3.3.10, Attachment F, Table 3.3-13 are met) block.	2.1**C** Determines [RM-1GW-108B] is **NOT** operable from initial conditions. (this is satisfied as long as the candidate does not recommend that the discharge can continue using this radiation monitor). 2.2**C** Determines ½-ODC-3.03, Attachment F on Table 3.3-13, Action 27 is applicable and at least two independent samples of 1GW-TK-1A contents must be analyzed and at least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge vent lineup. 2.3 Recognizes that RM-1GW-109 LRNG Rel cannot be used as the comparable alternate monitoring channel for batch releases via this pathway. (this is satisfied as long as the candidate does not recommend that the discharge can continue using this radiation monitor). **EVALUATOR CUE: If asked** if two samples have been taken reply - **NO**. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-004 JPM REVISION: 4	JPM TITLE: Perform Decay Tank Discharge Pre-Release Verification

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Makes recommendation to the SM that a second sample and analysis is required prior to continuing the procedure.	3.1**C** Recognizes the second sample and analysis has **NOT** been performed and recommends to the Shift Manager that a second sample and analysis are required, but have not been performed yet in order to continue the procedure. COMMENTS: **EVALUATOR NOTE:** Grader discretion may be required.	
	EVALUATOR CUE: When recommendations are provided to the SM, "this JPM is complete".	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- An unplanned shutdown of Unit 1 has resulted in the need to discharge Gas Decay Tank 1GW-TK-1A.
- All other equipment is in NSA except for the Gaseous Waste Gas Monitor RM-1GW-108B, which is out of service.
- Gas Decay Tank 1GW-TK-1A pressure is 51.8 psig.
- RadPro has taken a sample and has generated an RWDA-G for 1GW-TK-1A release.

INITIATING CUE:

You are to perform 1GW-TK-1A Decay Tank Discharge Pre-Release Verification in accordance with 1OM-19.4.E, "Decay Tank Discharge", beginning at step IV.D. Coordinate the completion of RWDA-G for release of 1GW-TK-1A **AND** make a recommendation for continuing the discharge in the box below, INCLUDING any justification.

RECOMMNEDATION(S):

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

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

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

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

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

TRAINING MATERIAL NUMBER: 1AD-054

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-054

REVISION NUMBER: 0

TECHNICAL REFERENCES:

1OM-53C.4.1.14.1, "Primary Or Secondary Chemistry Out Of Tolerance Rev. 4
BV-1 License Requirements Manual
1/2OM-48.1.I, "Technical Specification Compliance" Rev. 36

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 30 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: T. A. Gaydosik _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-054
New Revision: 0
Description of Change(s): 1. New issue JPM.
Reason for Change (s): 1. Bank development.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

K/A REFERENCE: 2.1.34 3.5 TASK ID: 1300-029-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS		
Performer Name:	Performer ID:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 30 Minutes	Actual Time: minutes

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

Comments: _____

_____

_____

_____

OBSERVERS	
Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD: Determines Action Level 3 has been exceeded for RCS Sulfates, which requires the plant to be in Mode 3 within 6 hours, and Feedwater Dissolved Oxygen exceeds Action Level 2.

RECOMMENDED STARTING LOCATION: Classroom

INITIAL CONDITIONS: The plant has been operating at 100% power for several weeks.
You are to evaluate the latest plant chemistry data in accordance with 1OM-53C.1.14.1, "Primary or Secondary Chemistry Out Of Tolerance", to determine if any action is required.
Chemistry has provided the following sample data:

Reactor Coolant System Data:

Chloride	30 ppb
Fluoride	45 ppb
Sulfate	1600 ppb
Hydrogen	30 cc/ kg
Oxygen	3 ppb

Steam Generator Data:

Sodium	4 ppb
Chloride	7 ppb
Sulfate	6 ppb
Cation Conductivity	0.5 µmhos / cm

Feedwater Data:

Dissolved Oxygen	12 ppb
Ratio Of Feedwater Hydrazine to Feedwater Dissolved Oxygen	2.5

INITIATING CUE: As Shift Manager you are to evaluate the Chemistry data above and determine what actions, if any, are required. You are to evaluate all of the data provided and report any Action Levels that have been exceeded. Consider each parameter for the given plant conditions. Report the results of your assessment and any required actions in the "Candidate Answer" Box below.
(**provided on candidate direction sheet**)

REFERENCES: 1OM-53C.4.1.14.1, "Primary Or Secondary Chemistry Out Of Tolerance", Rev. 4
BV- 1 License Requirements Manual
1/2OM-48.1.I, "Technical Specification Compliance" Rev. 36

TOOLS: None

OPERATIONS JOB PERFORMANCE MEASURE

HANDOUT:	1OM-53C.4.1.14.1, “Primary Or Secondary Chemistry Out Of Tolerance”, Rev. 4 BV- 1 License Requirements Manual 1/2OM-48.1.I, “Technical Specification Compliance” Rev 36

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: Provide a copy of AOP 1.14.1, "Primary Or Secondary Chemistry Out Of Tolerance". Have the LRM and 1/2OM-48.1.I available.	
	START TIME: _____	
1. Refers to AOP 1.14.1, "Primary Or Secondary Chemistry Out Of Tolerance" provided.	1.1 Reviews AOP 1.14.1. COMMENTS:	
2. Notify Operations Management of Chemistry Condition in Action Level.	2.1 Contacts Operations Management and conveys which parameter is in Action Level. COMMENTS: **EVALUATOR NOTE:** This action may be performed later, after assessing the Chemistry data.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** All RCS Chemistry Specifications Less Than Action Level 3 Values.	3.1 Refers to Attachment A, Chemistry Action Levels. 3.2 Compares the RCS Chemistry data to Attachment A, Action Level 3 values. 3.3**C** Determines that Action level 3 value has been exceeded for RCS Sulfates at 1600 ppb. COMMENTS:	
4.**C** Refer to Licensing Requirements Manual, LR 3.4.2 and 1/2OM-48.1.I, Technical Specification Compliance.	4.1 Refers to LRM, notes that Sulfates are not a RCS required Chemistry Limit per the LRM. 4.2 Refers to 1/2OM-48.1.I to perform an orderly plant shutdown. 4.3**C** Determines that the plant must be in Mode 3 within 6 hours. 4.4 Determines that Oxygen is not exceeding any Action Levels. 4.5 Ensures that the plant will be in Mode 5 within the following 30 hours. 4.6 Directs Chemistry to refer to BVPM-CHEM-0001, Primary Systems Strategic Water Chemistry Plan, Section 8. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
5. All RCS Chemistry Specifications Less Than Action Level 2 Values.	**EVALUATOR NOTE:** This step may be omitted since Action Level 3 has been exceeded due to Sulfates. 5.1 Refers to Attachment A, Chemistry Action Levels. 5.2 Compares the RCS Chemistry data to Attachment A, Action Level 2 values. 5.3 Determines that Action level 2 value has been exceeded for RCS Sulfates. COMMENTS:	
6. Check for a loss of Hydrazine Feed to Secondary. a. Check Ratio of feedwater hydrazine to feedwater disolved oxygen ≥ 2.	**EVALUATOR NOTE:** This step may be omitted since Action Level 3 has been exceeded due to Sulfates. 6.1 Determines that the ratio is 2.5 per provided Chemistry data. COMMENTS:	
7. All Steam Generator Chemistry Parameters Less Than Action Level 3 Values.	7.1 Refers to Attachment A, Chemistry Action Levels. 7.2 Compares the Steam Generator Chemistry data to Attachment A, Action Level 3 values. 7.3 Determines that Action level 3 values have not been exceeded. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
8. All Steam Generator Chemistry Parameters Less Than Action Level 2 Values.	8.1 Refers to Attachment A, Chemistry Action Levels. 8.2 Compares the Steam Generator Chemistry data to Attachment A, Action Level 2 values. 8.3 Determines that Action level 2 values have not been exceeded. COMMENTS:	
9. All Steam Generator Chemistry Parameters Less Than Action Level 1 Values.	9.1 Refers to Attachment A, Chemistry Action Levels. 9.2 Compares the Steam Generator Chemistry data to Attachment A, Action Level 1 values. 9.3 Determines that Action level 1 values have not been exceeded. COMMENTS:	
10.**C** Feedwater Disolved Oxygen Less than Action Level 2 Value.	10.1 Refers to Attachment A, Chemistry Action Levels. 10.2 Compares the Feedwater Dissolved Oxygen data to Attachment A, Action Level 2 value of 10 ppb. 10.3**C** Determines that Action level 2 value has been exceeded, since the data is 12 ppb. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-054 JPM REVISION: 0	JPM TITLE: Determine Actions for Plant Chemistry Out Of Tolerance (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
11. Refers to the Step 8 RNO actions.	11.1 Action must be taken to reduce power to ≤ 50% within 8 hours, using AOP 1.51.1, Unplanned Power Reduction 11.2 Action directed to ensure isolation valves are tightly closed on all secondary components that are isolated for maintenance. 11.3 Action directed to ensure proper operation of Auxiliary steam condensate system. 11.4 Requests Management to create a team to inspect for air in-leakage. 11.5 Transitions to step 10 of the procedure. COMMENTS:	
12. Check For Procedure Exit Conditions.	12.1 Does not exit the procedure since Action Level 3 is exceeded for RCS Sulfates and Feedwater Dissolved Oxygen exceeds Action Level 2. COMMENTS:	
	EVALUATOR CUE: When the applicant has completed determining the Action Levels exceeded and required Actions state "This JPM is complete".	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: The plant has been operating at 100% power for several weeks. You are to evaluate the latest plant chemistry data in accordance with 1OM-53C.1.14.1, "Primary or Secondary Chemistry Out Of Tolerance", to determine if any action is required. Chemistry has provided the following sample data:

Reactor Coolant System Data:

Chloride	30 ppb
Fluoride	45 ppb
Sulfate	1600 ppb
Hydrogen	30 cc/ kg
Oxygen	3 ppb

Steam Generator Data:

Sodium	4 ppb
Chloride	7 ppb
Sulfate	6 ppb
Cation Conductivity	0.5 µmhos / cm

Feedwater Data:

Dissolved Oxygen	12 ppb
Ratio Of Feedwater Hydrazine to Feedwater Dissolved Oxygen	2.5

INITIATING CUE: As Shift Manager you are to evaluate the Chemistry data above and determine what actions, if any, are required. You are to evaluate all of the data provided and report any Action Levels that have been exceeded. Consider each parameter for the given plant conditions. Report the results of your assessment and any required actions in the "Candidate Answer" Box on the next page.

Name:_____

CANDIDATE ANSWER(S):

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

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

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

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

A9.330B

Beaver Valley Power Station

Unit 1

ANSWER KEY
1AD-011

1OM-50.4.F

PERFORMING AN ESTIMATED
CRITICAL POSITION CALCULATION

A. Critical Data

(I) PRIOR TO SHUTDOWN	(II) EXPECTED AT CRITICALITY
Date **5 Days Ago**/___ Time **NOW**	Date **TODAY**/___ Time **NOW**
Boron Conc. **1114** ppm Power **100** %	
Burnup **10,000** (MWD/MTU)	Burnup **10,000** (MWD/MTU)
Xenon **100** % (Use Fig 1CB-12)	Xenon **0** % (Use Fig 1CB-23)
Samarium **100** %	Samarium **113.2** % (Use Fig 1CB-22)
Control Rod Position A **225** C **225** B **225** D **225**	Control Rod Position A **225** C **225** B **225** D **100**

(III) Boron Concentration (Part A, Column I)	(IV) B-10 Correction Factor (use CB-29)	(V) Effective Boron Concentration (III) x (IV)
1114 ppm	**0.904**	**1007** ppm

B. Reactivity Balance - (Record **absolute values** in Columns I and II)

Reactivity Defects	(I) Prior to Shutdown	(II) Expected at Criticality	(III) (II - I) Difference
1. Power (Fig CB-21 **OR** Consult Rx Engr)	**2080** pcm	0 (zero) pcm	(–) **- 2080** pcm
2. Control Rods (Circle Fig. used) (Fig. CB-24A, 24B, 24C **OR** Consult Rx Engr)	**0** pcm	**1012.5** pcm	(±) **+ 1012.5** pcm
3. Xenon (Fig. CB-23)	**2709** pcm	**0** pcm	(±) **- 2709** pcm
4. Samarium (Fig. CB-22)	**1002** pcm	**1134** pcm	(±) **+ 132** pcm
5. Reactivity Change (Sum of 1-4) =			(±) **– 3644.5** **(+/- 100)** pcm

C. Critical Boron Concentration

	(I) Reactivity Change (B.5)	(II) Differential Boron Worth (Fig. CB-20)	(III) Boron Change (I) ÷ (II)	(IV) Eff. Boron Conc. At Shutdown	(V) Eff. Boron Conc. For Startup (III) + (IV)
1.	(±) **-3644.5** pcm	(–)**7.17** *pcm/ppm*	**+ 508** (±) ppm	**1007** ppm	**1515** ppm
2.		(–) **6.8** *pcm/ppm*	**+ 536** (±) ppm	**1007** ppm	**1543** ppm **(+/- 50)**

(VI) Eff. Boron Conc. For Startup (Part C, Column V, line 2)	(VII) ECP Reactivity Bias* (from Rx Eng)	(VIII) Boron Concentration for Startup (VI) ÷ (VII)
1543 ppm	**0.910** ppm	**1696** **(+/- 50)** ppm

D. Estimated Rod Position Correction

(I) Boron Sample	(II) Boron Conc. For Startup C.1.I	(III) Boron Deviation (I) - (II)	(IV) Differential Boron Worth (Fig. CB-20)
ppm	ppm	(±) ppm	(–) *pcm/ppm*

(V) Rod Worth Correction (III) x (IV)	(VI) Rod Worth Expected At Criticality (B.2)	(VII) Corrected Rod Worth Expected At Criticality (V) + (VI)	(VIII) Corr Critical Rod Pos. (Circle Figure Used) (Fig CB-24A, 24B, 24C **OR** Consult Rx Engr)
(±) pcm	pcm	(–) pcm	Steps

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Review An Estimated Critical Position Calculation (SRO Only)

TRAINING MATERIAL NUMBER: 1AD-011

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-011

REVISION NUMBER: 5

TECHNICAL REFERENCES:

1OM-50.4.F, "Performing An Estimated Critical Position Calculation", Rev. 11
Unit 1 Curve Book, Cycle 27

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 35 Minutes

PREPARED BY: M. Klingensmith 2-8-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-011
New Revision: 5
Description of Change(s): 1. Updated for current JPM format. 2. Updated for 1OM-50.4.F revision. 3. Updated JPM to reflect most recent Cycle 27 Core and associated Curves. (ARO = 225 steps) 4. Updated Task Number
Reason for Change (s): 1. Changed for format update. 2. 1OM-50.4.F was revised. 3. Unit 1 Curve Book was updated for current cycle. 4. Task list update.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-011 JPM REVISION: 5	JPM TITLE: Review An Estimated Critical Position Calculation (SRO Only)

K/A REFERENCE: 2.1.23 4.4 TASK ID: 0521-001-05-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☒ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 35 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:

Determines the following errors exist in the completed Estimated Critical Position Calculation:

- Wrong Control rod ρ in block B.2.II
  (810 pcm instead of 1012.5 pcm (± 5 pcm)
- Wrong Samarium values in blocks B.4.I and II
  (1134 pcm in block I instead of 1002 pcm AND 1002 pcm in block II instead of 1134 pcm)
- Wrong Boron Concentration for Startup in block C.VIII
  ((block C VI) should have been divided by block C.VII, versus multiplied)
- Calculates the corrected Boron Concentration for Startup is 1696 ppm (± 50 ppm).

RECOMMENDED STARTING LOCATION:

Classroom

INITIAL CONDITIONS:

- A plant startup is being performed exactly 5 days after a reactor trip from 100% power.
- Prior to the trip, the plant was at 100% with All Rods @ 225 steps for 3 months.
- An RCS Boron sample was taken at 100% power one hour prior to the Reactor trip. RCS Boron concentration was 1114 ppm.
- The Current Core burnup is 10,000 MWD/MTU.
- The plant computer is NOT available.
- Reactor Engineering reported that the B^{-10} correction Factor for criticality (Data Sheet 1 block C.VII) is 0.910.
- RCS Tavg is 547 °F

INITIATING CUE:

The Shift Manager directs you to perform a review of the completed ECP calculation in accordance with 1OM-50.4.F, "Performing An Estimated Critical Position Calculation," steps IV.A through IV.C. Report your results in the box below, if any discrepancies are identified, correct the ECP. (Provided on the candidate direction sheet)

REFERENCES:

1OM-50.4.F, "Performing An Estimated Critical Position Calculation", Rev. 11
Unit 1 Curve Book, Cycle 27

TOOLS:

Calculator

HANDOUT:

1OM-50.4.F, Rev. 11 (with DATA SHEET 1 blocks A, B and C completed with the errors listed in the task standard.)
Unit 1 Curve Book, Cycle 27
Blank copies of ECP Data Sheet 1 available for candidates.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-011 JPM REVISION: 5	JPM TITLE: Review An Estimated Critical Position Calculation (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	DEVELOPER/VALIDATION NOTES: When updating this JPM for the current plant cycle, use care to choose parameters that will not require interpolation. Ensure Control Rod Position is updated to reflect actual plant.	
	START TIME: _____	
1.**C** Review the ECP calculation. (Data Sheet 1)	1.1**C** Determines the following errors exist in the completed Estimated Critical Position Calculation: • Wrong Control rod ρ in block B.2.II (810 pcm instead of 1012.5 pcm (± 5 pcm)) • Wrong Samarium values in blocks B.4.I and II (1134 pcm in block I instead of 1002 pcm AND 1002 pcm in block II instead of 1134 pcm) • Wrong Boron Concentration for Startup in block C.VIII. (block C VI should have been divided by block C.VII, versus multiplied) • Calculates the corrected Boron Concentration for Startup is 1696 ppm (± 50 ppm). COMMENTS:	
	EVALUATOR CUE: When the Candidate completes the review of the calculation and reports the results, the evaluation for this JPM is complete. Grader Discretion is required.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- A plant startup is being performed exactly 5 days after a reactor trip from 100% power.
- Prior to the trip, the plant was at 100% with All Rods @ 225 steps for 3 months.
- An RCS Boron sample was taken at 100% power one hour prior to the Reactor trip. RCS Boron concentration was 1114 ppm.
- The Current Core burnup is 10,000 MWD/MTU.
- The plant computer is NOT available.
- Reactor Engineering reported that the B^{-10} correction Factor for criticality (Data Sheet 1 block C.VII) is 0.910.
- RCS Tavg is 547 °F

INITIATING CUE: The Shift Manager directs you to perform a review of the completed ECP calculation in accordance with 1OM-50.4.F, "Performing An Estimated Critical Position Calculation," steps IV.A through IV.C. Report your results in the box below, if any discrepancies are identified, correct the ECP.

RESULTS OF REVIEW: **NAME:**_____

☐ 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

TRAINING MATERIAL TITLE: Perform a Risk Assessment [1FW-P-3A Maintenance] (SRO Only)

TRAINING MATERIAL NUMBER: 1AD-041

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-041

REVISION NUMBER: 1

TECHNICAL REFERENCES:

NOP-OP-1007, "Risk Management", Rev. 32
Technical Specifications Beaver Valley Power Station Units 1 & 2

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: T. A. Gaydosik _____ Date
Training Supervisor or Designee

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-041
New Revision: 0
Description of Change(s): 1. Updated to latest procedure revision. 2. Updated JPM format. 3. Modified initial conditions for bank development.
Reason for Change (s): 1. NOP-OP-1007 was revised to Revision 32. 2. Bank development. 3. Bank updates.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-041 JPM REVISION: 1	JPM TITLE: Perform a Risk Assessment [1FW-P-3A Maintenance] (SRO Only)

K/A REFERENCE: 2.2.17 3.8 TASK ID: 1300-027-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

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

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

Comments: _____

_____

_____

_____

OBSERVERS	
Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Determines Risk Level is ORANGE and the Plant Manager (or designee) is the required approver for this condition.
RECOMMENDED STARTING LOCATION:	Classroom

INITIAL CONDITIONS:

- The Unit is in Mode 1 at 100% power.
- PRA Risk & Traffic Light are GREEN.
- Protected Train is "B".
- Currently the Unit is in YELLOW Risk due to ongoing scaffold erection over "A" Main Feed pump for upcoming scheduled outage work.
- AFW Pump 1FW-P-3A will be taken out of service for repairs to address increasing pump vibrations.
- The planned repairs will render the pump inoperable for 48 hours.

INITIATING CUE:

As Shift Manager you are to evaluate the risk level based on initial plant conditions for upcoming activities (1FW-P-3A repairs) **AND** determine who must approve this risk level in accordance with NOP-OP-1007, "Risk Management". Report the results of your risk assessment and required approver of this risk level in the "Candidate Answer" Box below.

(**provided on candidate direction sheet**)

REFERENCES:	NOP-OP-1007, "Risk Management", Rev. 32 Technical Specifications Beaver Valley Power Station Units 1 & 2
TOOLS:	None
HANDOUT:	NOP-OP-1007, "Risk Management", Rev. 32 Technical Specifications Beaver Valley Power Station Units 1 & 2 (Need to be available in the event the candidate wants to reference)

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-041 JPM REVISION: 1	JPM TITLE: Perform a Risk Assessment [1FW-P-3A Maintenance] (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: Provide a copy of NOP-OP-1007, "Risk Management".	
	START TIME: _____	
1. Refers to NOP-OP-1007, "Risk Management" provided.	1.1 Reviews NOP-OP-1007. COMMENTS:	
	EVALUATOR NOTE: The candidate may want to refer to TS 3.7.5 as part of this JPM step. Ensure Technical Specifications Beaver Valley Power Station Units 1 & 2 is available for reference. TS 3.7.5 Condition B applies since 1FW-P-3A is inoperable. Condition B requires a plant shutdown if 1FW-P-3A cannot be returned to service within 72 hours.	
2.**C** Refers to Attachment 3, Risk Assessment Worksheet, to determine risk.	2.1**C** Determines that this activity is ORANGE risk level. This is based on Attachment 3, Section E.5 answer is YES because 48 hours is greater than half of the 72 hour allowed Technical Specification (TS) Action Statement for any TS which requires a Unit Shutdown if not exited. 2.2 Records the Risk Level in the candidate answer box of the candidate direction sheet. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-041 JPM REVISION: 1	JPM TITLE: Perform a Risk Assessment [1FW-P-3A Maintenance] (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Refers to Attachment 2, Plant Risk Matrix Item 7 or to section 4.3.4 on page 18, to determine required approval.	3.1**C** Determines that based on an Orange Risk, the Plant Manager is the required approver for this risk level. 3.2 Records approver in the candidate answer box of the candidate direction sheet. **EVALUATOR NOTE:** The candidate may also list the Manager of Site Operations, or Assistant Operations Manager as additional approvers of the Risk level. They must identify the Plant Manager. COMMENTS:	
	EVALUATOR CUE: When the applicant has completed determining the Risk level and approver state "This JPM is complete".	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The Unit is in Mode 1 at 100% power.
- PRA Risk & Traffic Light are GREEN.
- Protected Train is "B".
- Currently the Unit is in YELLOW Risk due to ongoing scaffold erection over "A" Main Feed pump for upcoming scheduled outage work.
- AFW Pump 1FW-P-3A will be taken out of service for repairs to address increasing pump vibrations.
- The planned repairs will render the pump inoperable for 48 hours.

INITIATING CUE:

As Shift Manager you are to evaluate the risk level based on initial plant conditions for upcoming activities (1FW-P-3A repairs) **AND** determine who must approve this risk level in accordance with NOP-OP-1007, "Risk Management". Report the results of your risk assessment and required approver of this risk level in the "Candidate Answer" Box below.

Name:_____

CANDIDATE ANSWER(S):

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

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

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

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

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Determine Compensatory Actions for RM-P-1GW-108 and O2A-1GW-110-1 Being OOS. (SRO ONLY)

TRAINING MATERIAL NUMBER: 1AD-042

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-042

REVISION NUMBER: 1

TECHNICAL REFERENCES:

LRM 3.3.12, Rev. 56
1/2 ODCM Section 3.0.3, Rev. 18
OM Fig. 19-1 (RM-0419-001 rev 21)
OM Fig 43-5 (RM-0443-005 rev14)
Technical Specifications

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: 20 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-042
New Revision: 1
Description of Change(s): 1. Updated to latest revision the LRM, ODCM and Drawings
Reason for Change (s): 1. 1/2 ODCM Section 3.0.3 was revised to revision 18, LRM 3.3.12 updated to revision 56, drawings updated.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-042 JPM REVISION: 1	JPM TITLE: Determine Compensatory Actions for RM-P-1GW-108 and O2A-1GW-110-1 Being OOS. (SRO ONLY)

K/A REFERENCE: 2.3.11 4.3 TASK ID: 1300-029-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID#:
Time Critical: ☐ Yes ☒ No	Allotted Time: 20 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD: The compensatory actions required are determined to be:
At least once per 24 hours take grab samples and analyze for Oxygen concentration **AND**, provided at least two independent samples of the tank's content are analyzed and at least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup.

RECOMMENDED STARTING LOCATION: Classroom

INITIAL CONDITIONS: A batch discharge of Gaseous Waste Decay Tank 1GW-TK-1A is to be performed per 1OM-19.4.E, "Decay Tank Discharge".
It is desired to fill the Gaseous Waste Decay Tank 1GW-TK-1B in accordance with 1OM-19.4.G, "Transfer Waste Gas from Unit 1 Surge Tank to Unit 1 Decay Tank".

- The plant is operating at 100% power with all system in NSA.
- Gross Activity of the primary coolant is 75 uCi/ml.
- Gaseous Waste Decay Tank (1GW-TK-1A) pressure is 60 psig and slowly lowering due to the discharge.
- Gaseous Waste Decay Tanks (1GW-TK-1B, 1C) pressures are 8 psig and STABLE.
- Gaseous Waste Surge Tank (1GW-TK-2) pressure is 62 psig and slowly RISING.
- The Gaseous Waste Radiation Monitor (RM-1GW-108B) Sample Pump (RM-P-1GW-108) is out of service (OOS).
- Oxygen Analyzer (O2A-1GW-110-1) is OOS.
- Oxygen Analyzer (O2A-1GW-110-2) is OPERABLE.

INITIATING CUE: For these plant conditions, determine the **REQUIRED** LRM/ODCM compensatory actions for the Gaseous Waste Storage Tanks.
Document any compensatory actions in the block below.
(**provided on the candidate direction sheet).**

REFERENCES: LRM 3.3.12, Rev. 56 & 1/2 ODCM Section 3.0.3, Rev. 18
OM Fig. 19-1 (RM-0419-001) Rev. 21 & OM Fig 43-5 (RM-0443-005) Rev 14
TS 5.5.8, Amend 296/184

TOOLS: None

HANDOUT: DWG 19-1 & OM-43-5
1/2-ODCM Section 3.0.3 Rev 18
Unit 1 LRM

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-042 JPM REVISION: 1	JPM TITLE: Determine Compensatory Actions for RM-P-1GW-108 and O2A-1GW-110-1 Being OOS. (SRO ONLY)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: Provide the Candidate with the Candidate Direction Sheet and a current copy of OM 19 & 43 Figs., LRM, **AND** 1/2 ODCM Section 3.0.3. **EVALUATOR NOTE:** These steps may be performed in any order.	
	START TIME: _____	
1. Determines the impact of RM-P-1GW-108 being OOS.	**EVALUATOR NOTE:** The candidate may already be familiar enough with the system to know the impact of RM-P-1GW-108 being OOS. 1.1 Refers to OM Fig. 19-1 and determines that Waste Gas Storage Tank Radiation Monitor (RM-1GW-108B) is out of service as a result of RM-P-1GW-108 being OOS. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-042 JPM REVISION: 1	JPM TITLE: Determine Compensatory Actions for RM-P-1GW-108 and O2A-1GW-110-1 Being OOS. (SRO ONLY)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2.**C** Determines 1/2 ODCM compensatory actions for Gaseous Waste Gas Monitor (RM-1GW-108B) being out of service. .	2.1 Refers to 1/2 ODCM Section 3.0.3, Att. F item 1, Table 3.3-13 Item 1 Gaseous Waste/ Process Vent System (PV-1/2) Noble Gas Activity Monitor on page 39. 2.2**C** Determines that per action 27, the Decay Tank Discharge may be initiated provided at least two independent samples of the tank's content are analyzed and at least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup. COMMENTS:	
3.**C** Determines LRM compensatory actions for Oxygen Analyzer (O2A-1GW-110-1) being OOS.	3.1 Refers to LRM 3.3.12 Condition B.1 3.2**C** Determines at least once per 24 hours take grab samples and analyze for oxygen content. 3.3 Refers to LRM 3.3.12 Condition B.2 3.4 Restore the inoperable channel to OPERABLE status in 30 days. COMMENTS:	
	EVALUATOR CUE: That completes this JPM.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

A batch discharge of Gaseous Waste Decay Tank 1GW-TK-1A is to be performed per 1OM-19.4.E, "Decay Tank Discharge".
It is desired to fill the Gaseous Waste Decay Tank 1GW-TK-1B in accordance with 1OM-19.4.G, "Transfer Waste Gas from Unit 1 Surge Tank to Unit 1 Decay Tank".

- The plant is operating at 100% power with all system in NSA.
- Gross Activity of the primary coolant is 75 uCi/ml.
- Gaseous Waste Decay Tank (1GW-TK-1A) pressure is 60 psig and slowly lowering due to the discharge.
- Gaseous Waste Decay Tanks (1GW-TK-1B, 1C) pressures are 8 psig and STABLE.
- Gaseous Waste Surge Tank (1GW-TK-2) pressure is 62 psig and slowly RISING.
- The Gaseous Waste Radiation Monitor (RM-1GW-108B) Sample Pump (RM-P-1GW-108) is out of service (OOS).
- Oxygen Analyzer (O2A-1GW-110-1) is OOS.
- Oxygen Analyzer (O2A-1GW-110-2) is OPERABLE.

INITIATING CUE:

For these plant conditions, determine the **REQUIRED** LRM/ODCM compensatory actions for the Gaseous Waste Storage Tanks.
Document any compensatory actions in the block below.

NAME: _____

RECOMMENDED ACTIONS:

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

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

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

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

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Classify An Emergency Event – Site Area Emergency (SRO Only)

TRAINING MATERIAL NUMBER: 1AD-052

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1AD-052

REVISION NUMBER: 1

TECHNICAL REFERENCES:

1/2-EPP-IP-1.1.F01 INITIAL NOTIFICATION FORM BEAVER VALLEY POWER STATION, Rev. 12
1/2-EPP-I-4 "Site Area Emergency", Rev 47
1/2-EPP-IP-4.1, "Offsite Protective Actions", Rev. 35

INSTRUCTIONAL SETTING: Classroom

APPROXIMATE DURATION: ≤ 15 Minutes – Classify
≤ 15 Minutes – Complete Notification Form

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1AD-052
New Revision: 1
Description of Change(s): 1. Updated for procedure revisions. 2. Updated the initial conditions to reflect changes in PAR flowchart and procedures 3. Changed the name of the Initial Notification Form from FENOC Nuclear Power Plant Initial Notification Form to Initial Notification Form Beaver Valley Power Station.
Reason for Change (s): 1. EPP procedure updates. 2. Revisions to PAR evaluation and EPP procedures. 3. BVPS is no longer part of FENOC.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-052 JPM REVISION: 1	JPM TITLE: Classify An Emergency Event – Site Area Emergency (SRO Only)

K/A REFERENCE: 2.4.40 (4.5) TASK ID: 1350-004-03-023
1350-007-03-023

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☒ SRO ONLY ☐ ALTERNATE PATH JPM ☒ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID:	
Time Critical: ☒ Yes ☐ No	Allotted Time:	≤ 15 Minutes each (classify & notification form)	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD: Classifies the event within 15 minutes, then completes the Initial Notification Form for Site Area Emergency per FS1.1, and correctly documents this information per the Answer Key provided within ≤ 15 minutes of the classification.

RECOMMENDED STARTING LOCATION: Classroom

INITIAL CONDITIONS: Unit 2 remains at 100% power, however a small break LOCA at Unit 1 has occurred and offsite power was lost after the reactor trip.

- Both emergency AC busses are currently powered from the Emergency Diesel Generators.
- RCS Pressure is stable at 885 psig.
- Core Exit Thermocouples are reading 530 °F.
- RCS Subcooling based on incore thermocouples is 12°F.
- RVLIS level indication is 37%.
- Steam Generator pressures are stable at 1000 psig and levels are 33% Narrow Range.
- Containment pressure is 1.3 psig and stable.
- Containment Hydrogen Concentration is 1.3%.
- The highest radiation level in Containment is 900 mrem/hr.
- There is no identified leakage outside of Containment.
- The crew is performing FR-C.2, "Response to Degraded Core Cooling".

The following site conditions exist:

- Health Physics reports the following dose projections:
  - At the EAB: .000 REM TEDE; .0000 REM CDE
  - At 2 miles: .0000 REM TEDE; .0000 REM CDE
  - At 5 miles: .00000 REM TEDE; .00000 REM CDE
- Health Physics reports that there is no Liquid Release from the owner controlled area.
- 35' wind direction is from 270° at 4 MPH.
- 150' wind direction is from 270° at 11 MPH.
- 500' wind direction is from 285° at 15 MPH.
- There is **NO** Hostile Action event in progress.
- Offsite agencies have **NOT** identified any impediments to evacuation.

INITIATING CUE: (Located on the next page)

OPERATIONS JOB PERFORMANCE MEASURE

INITIATING CUE:	You are the Emergency Director and the TSC/EOF has **NOT** yet been activated. You are to evaluate the above conditions then classify the event, circle the classification level in the box below and write down the time. **Notify the examiner when you complete this step.** Then complete the Initial Notification Form provided. Determine which, if any, offsite Protective Action Recommendations are necessary IAW 1/2-EPP-IP-4.1, "Offsite Protective Actions". Return the Initial Notification Form to the examiner as soon as you are finished. **This JPM is time critical.**
REFERENCES:	1/2-EPP-IP-4.1, "Offsite Protective Actions", Rev. 35 1/2-EPP-IP-1.1.F01 Rev. 12 1/2-EPP-I-4 Site Area Emergency Rev 47
TOOLS:	None
HANDOUT:	EAL Flow Chart 1/2-EPP-IP-4.1, "Offsite Protective Actions", Rev. 35 1/2-EPP-IP-1.1.F01 Rev. 12 1/2-EPP -I-2 Unusual Event Rev 50 1/2-EPP -I-3 Alert Rev 47 1/2-EPP -I-4 Site Area Emergency Rev 47 1/2-EPP -I-5 General Emergency Rev 48 EOP Status Trees

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-052 JPM REVISION: 1	JPM TITLE: Classify An Emergency Event – Site Area Emergency (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: Provide the Candidate with the Candidate Direction Sheet and a copy of 1/2-EPP-IP-4.1, 1/2-EPP-I-2, thru 5and1/2-EPP-IP-F01.	
	START TIME: _____	
EVALUATOR NOTE: This JPM has two critical times, the classification must be completed within 15 minutes of the start time and the initial notification form must be completed within 15 minutes of the classification time.	**EVALUATOR CUE:** Record start time in the space above after reading the candidate the Initial Conditions and Initiating Cue from the Direction Sheet. Verify the classification level and time meets the acceptance criteria. Record the information from the candidate sheet in the left column.	
1.**C** Reviews Initial Conditions and classifies the event by circling the level on the form and documents the time within 15 minutes of the Start time. **Classification:** _____ **Time:** _____	1.1.**C** Determines event classification level is a Site Area Emergency per FS1.1 due to the potential loss of fuel clad barrier, and loss of the RCS barrier. 1.2.**C** Records the classification time, it must be recorded within 15 minutes of the Start Time. COMMENTS:	
2. Reviews 1/2-EPP-IP-4.1, Attachment A, "Offsite Protective Action Recommendation Flowchart Part 1".	2.1 Determines that a General Emergency has NOT been declared per 1/2-EPP-IP-4.1, Attachment A, "Offsite Protective Action Recommendation Flowchart Part 1" for INF step 7. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1AD-052 JPM REVISION: 1	JPM TITLE: Classify An Emergency Event – Site Area Emergency (SRO Only)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Determine offsite Protective Actions.	3.1**C** Determine NO offsite Protective Actions recommendations are required. COMMENTS:	
4.**C** Completes the Steps marked critical on the Initial Notification Form for Beaver Valley Power Station.	4.1**C** Enters the correct information in all of the spaces marked critical on the Initial Notification Form for Beaver Valley Power Station. COMMENTS: **EVALUATOR NOTE:** The information highlighted on the initial notification form indicates the critical items.	
5.**C** Completes the Initial Notification Form for Beaver Valley Power Station in ≤ 15 minutes from the time of the classification. Classification time from step 1: _____ **Time when Initial Notfication form was completed**: _____	5.1**C** Determine the difference between the classification time and completion of the initial notification form as recorded is ≤ 15 minutes. COMMENTS:	
	EVALUATOR CUE: When the candidate hands in the Initial Notification Form for Beaver Valley Power Station, record the time below and in the previous step, and inform the candidate "This JPM is complete". Grader discretion required.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

Unit 2 remains at 100% power, however a small break LOCA at Unit 1 has occurred and offsite power was lost after the reactor trip.

- Both emergency AC busses are currently powered from the Emergency Diesel Generators.
- RCS Pressure is stable at 885 psig.
- Core Exit Thermocouples are reading 530 °F.
- RCS Subcooling based on incore thermocouples is 12°F.
- RVLIS level indication is 37%.
- Steam Generator pressures are stable at 1000 psig and levels are 33% Narrow Range.
- Containment pressure is 1.3 psig and stable.
- Containment Hydrogen Concentration is 1.3%.
- The highest radiation level in Containment is 900 mrem/hr.
- There is no identified leakage outside of Containment.
- The crew is performing FR-C.2, "Response to Degraded Core Cooling".

The following site conditions exist:

- Health Physics reports the following dose projections:
  - At the EAB: .000 REM TEDE; .0000 REM CDE
  - At 2 miles: .0000 REM TEDE; .0000 REM CDE
  - At 5 miles: .00000 REM TEDE; .00000 REM CDE
- Health Physics reports that there is no Liquid Release from the owner controlled area.
- 35' wind direction is from 270° at 4 MPH.
- 150' wind direction is from 270° at 11 MPH.
- 500' wind direction is from 285° at 15 MPH.
- There is **NO** Hostile Action event in progress.
- Offsite agencies have **NOT** identified any impediments to evacuation.

INITIATING CUE:

You are the Emergency Director and the TSC/EOF has **NOT** yet been activated. You are to evaluate the above conditions then classify the event, circle the classification level in the box below and write down the time. **Notify the examiner when you complete this step.**
Then complete the Initial Notification Form provided. Determine which, if any, offsite Protective Action Recommendations are necessary IAW 1/2-EPP-IP-4.1, "Offsite Protective Actions". Return the Initial Notification Form to the examiner as soon as you are finished. **This JPM is time critical.**

EMERGENCY CLASSIFICATION:	**UNUSUAL EVENT / ALERT / SITE AREA / GENERAL**
TIME:	**_____:_____ hours**

- [ ] 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.

INITIAL NOTIFICATION FORM
Beaver Valley Power Station (BVPS)
1/2-EPP-IP-1.1.F01 Rev. 12

JPM 1AD-052 ANSWER KEY

STATE / COUNTY USE ONLY
DATE: _____ TIME: _____
MESSAGE NO:

1. Call Status: ☒ This is a DRILL ☐ This is an ACTUAL EMERGENCY | CODE WORD: **SIMULATOR**

2. Affected Station: Beaver Valley Power Station ☒ **UNIT 1** ☐ UNIT 2 ☐ BOTH Units 1 & 2

3. Classification: (Check only 1 box)
☐ UNUSUAL EVENT
☐ ALERT
☒ **SITE AREA EMERGENCY (Critical)**
☐ GENERAL EMERGENCY
☐ PAR MODIFIED
☐ EVENT TERMINATION

4. Declared At: TIME: **TIME (Critical)** hrs DATE: **TODAY** / _____ / _____

5. EMERGENCY ACTION LEVEL: **F S 1 . 1** (*See BVPS EAL Reference for more information*)

6. Radiological Release Status:

☒ **a. NO radiological release in progress due to the event (Critical)**

☐ b. AIRBORNE radiological release in progress due to the event

☐ c. LIQUID radiological release in progress due to the event

7. Wind DIRECTION at **150'** is FROM**:** **270** degrees Wind SPEED at **35'** is: 4 mph

8. Protective Action Recommendation (PAR):

☒ **a. NO Protective Action Recommendation (Critical)**

☐ b. The PROTECTIVE ACTION RECOMENDATION from the Utility is:

i. ☐ EVACUATE ☐ SHELTER

ii. ☐ 2 Miles - 360° AND the following sectors out to ☐ 5 miles *or* ☐ 10 miles

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H

☐ J ☐ K ☐ L ☐ M ☐ N ☐ P ☐ Q ☐ R

AND that potassium iodide (KI) be administered to the general public in accordance with State procedures. The general public in unaffected areas should be advised to monitor EAS and prepare for further protective actions.

iii. ☐ Other: _____
(PAR beyond 10-miles, following discussion with State Agencies, per IP-4.1 section 8.4)

9. Call Back Number: ☒ Control Room: 724-643-8000 ☐ TSC: 724-682-5427 ☐ Alt TSC: 724-891-1946

For Utility Use Only

Approved: **Candidate's Name** Peer Check: **EXAMINER**
Print/Sign (Emergency Director) Print/Sign

INSTRUCTIONS FOR COMPLETION
PLANT INITIAL NOTIFICATION FORM (INF)

1/2-EPP-IP-1.1.F01 Rev. 12

This form is to be used for:
- Initial Classifications
- Changes in Classifications
- Changes in PAR
- Event Termination

Boxes 1 through 9 always need completed.

Call Status: Check the one appropriate box.

Affected Station: Check one box for the affected Unit(s) associated with Item 3 below.

- If the event results in an emergency declaration for both Units, check the Unit box with the higher event classification and provide additional details on the other unit in the follow-up notification.
- If the event results in the same emergency declaration for both Units, check the box for both Units.

Classification: Check only one applicable box.

Declared At: Complete the Time and Date that the Classification was declared. If box 3 is PAR Modified, enter the time and date of the PAR modification. If box 3 is EVENT TERMINATION enter time and date event was terminated.

Emergency Action Level: Enter the 4 alpha/numeric characters from EAL Wallboard. If Box 3 is PAR MODIFIED or EVENT TERMINATION enter "N/A".

Release Status: Check the appropriate box per Attachment B of I-2, I-3, I-4, or I-5. If there is an Airborne and Liquid release both boxes should be checked**.**

Wind Direction / Speed: Supply the appropriate meteorological data for both wind direction and speed.

Protective Action Recommendation (PAR): Check the appropriate boxes per 1/2-EPP-IP-4.1 Attachment A. Box 8.b.iii is for TSC/EOF use only for PARs beyond 10 miles and should include any areas not described in 8.b.ii above.

Call Back Number: Select Control Room, TSC, or Alt TSC according to the location of the Emergency Director at the time of Declaration.

Approved: Print and sign name. *Must be performed by Emergency Director*.

Peer Check: Print and sign name

OPERATIONS JOB PERFORMANCE MEASURE

TRAINING MATERIAL TITLE: Emergency Borate the Reactor Coolant System

TRAINING MATERIAL NUMBER: 1CR-511

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-511

REVISION NUMBER: 5

TECHNICAL REFERENCES:

1OM-7.4.S, “Emergency Boration”, Rev. 9

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-511
New Revision: 5
Description of Change(s): 1. Updated for procedure revision. 2. Updated format 3. Updated Task number 4. Modified the directions to have applicant locate the procedure. 5. Modified initial conditions to post trip with 3 stuck rods.
Reason for Change (s): 1. 1OM-7.4.S was revised to rev. 9. 2. Bank development. 3. Task list update. 4. Improve the evaluation. 5. To allow for pairing two JPMs, more probable reason to emergency borate.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-511 JPM REVISION: 5	JPM TITLE: Emergency Borate the Reactor Coolant System

K/A REFERENCE: 004 A2.14 3.8 / 3.9 TASK ID: 0071-202-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Emergency Boration flow is established to the RCS from the RWST with charging flow ≥ 105 gpm.
RECOMMENDED STARTING LOCATION:	Simulator

INITIAL CONDITIONS:

- The plant has tripped from 100% power.
- Three control rods have stuck out following the trip.
- The crew is stabilizing the plant per the Emergency Operating Procedures.

INITIATING CUE: Due to the stuck control rods, your supervisor directs you to initiate emergency boration of the RCS in accordance with 1OM-7.4.S, "Emergency Boration".

REFERENCES:	1OM-7.4.S, "Emergency Boration", Rev. 9
TOOLS:	None
HANDOUT:	1OM-7.4.S, "Emergency Boration", Rev. 9

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-511 JPM REVISION: 5	JPM TITLE: Emergency Borate the Reactor Coolant System

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Select at power IC. Fail 3 controls rods as stuck out. • IMF CRF11BJ MECHANICAL • IMF CRF11BL MECHANICAL • IMF CRF11BH MECHANICAL Fail MOV-1CH-350 closed, however the RED light will be lit • Event 3 = X06i068C • IMF VLV-CHS17 0% • IOR X06o068R (3 3) ON • IOR X06o068G (3 13) OFF Insert a spurious reactor trip. • **Ensure charging flow is < 105 gpm prior to snapping IC, place FCV-1CH-122 in Manual.** **EVALUATOR CUE/NOTE:** [MOV-1CH-350] will not open. (Fault) Do NOT place simulator in RUN until candidate is ready to begin.	
	START TIME: _____	
1. Reviews 1OM-7.4.S, "Emergency Boration".	1.1 Candidate reviews 1OM-7.4.S. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-511 JPM REVISION: 5	JPM TITLE: Emergency Borate the Reactor Coolant System

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2. Ensure at least one [1CH-P-1A(1B)(1C)] Charging Pump Hi Head Safety Injection, is running. (BB-A)	2.1 Verifies at least one Charging Pump is running by observing Red Light above pump control switch – LIT; White Light – NOT LIT. Also verifies associated pump amperage is reading normal (approximately 60 amps). COMMENTS:	
	FAULT STATEMENT In the next step, MOV-1CH-350 **WILL NOT OPEN.** However, the RED light will be lit, the failure will be identified by observing emergency boration flow is ZERO gpm. This will require the use of the RWST valves to Emergency Borate.	
3. Open [MOV-1CH-350], Emergency Boration Isol Vlv. (BB-A)	3.1 Places [MOV-1CH-350] control switch to OPEN. 3.2 Identifies RED Light – LIT, GREEN Light – NOT LIT. 3.3 Determines [MOV-1CH-350] has open indications. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-511 JPM REVISION: 5	JPM TITLE: Emergency Borate the Reactor Coolant System

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
4. Place the in-service [1CH-P-2A (2B)], Boric Acid Transfer Pump, in FAST. (BB-A)	4.1 Places [1CH-P-2A (2B)] control switch to FAST. 4.2 Verifies Red FAST Light – LIT; Red SLOW Light – NOT LIT. COMMENTS:	
5. Verify [FI-1CH-110], Emergency Boration Flow greater than or equal to 30 gpm. (VB-A)	5.1 Candidate checks [FI-1CH-110] greater than or equal to 30 gpm. 5.2 Determines flow is ZERO gpm. COMMENTS:	
6.**C** Align the RWST to the charging pump suction: 1) Open [MOV-1CH-115B or 115D], RWST Disch to Chg Pumps Suct Vlv. (BB-A) 2) Close [MOV-1CH-115C or 115E], VCT Outlet to Chg Pumps Suct Vlv. (BB-A)	**EVALUATOR NOTE/CUE:** If the candidate tries to have [MOV-1CH-350] locally opened or align the blender to the charging pump suction, cue that neither flowpath is available. 6.1**C** Places [MOV-1CH-115B] OR [MOV-1CH-115D] control switch to OPEN. 6.2 Verifies RED Light – LIT; GREEN Light – NOT LIT. 6.3**C** Places [MOV-1CH-115C] OR [MOV-1CH-115E] control switch to CLOSE. 6.4 Verifies GREEN Light – LIT; RED Light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-511 JPM REVISION: 5	JPM TITLE: Emergency Borate the Reactor Coolant System

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7.**C** Place [FCV-1CH-122], Chg Flow to Regen Hx Inlet Control Vlv controller to MAN (BB-A) • If RWST is the source of boric acid, establish ≥ 105 gpm charging flow as indicated on [FI-1CH-122A] Charging Pump Flow. (BB-A)	7.1 Verifies [FCV-1CH-122] control station is in MANUAL by observing RED MAN Light – LIT; WHITE AUTO Light – NOT LIT. 7.2**C** Depresses ▼ pushbutton and establishes ≥ 105 gpm as indicated on [FI-1CH-122A]. COMMENTS:	
8. Verify [PI-1RC-455, 456, 457], PRZR Press indicates < 2335 psig.	8.1 Verifies PRZR pressure on [PI-1RC-455, 456, 457] are indicating < 2335 psig. COMMENTS:	
	EVALUATOR CUE: That completes this JPM. If performing this JPM in parallel with another simulator JPM that takes longer, reposition MOV-1CH-115B or 115D and MOV-1CH-115C or 115E to minimize impact on RCS and subsequent distraction to the other candidate who is still performing their JPM.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant has tripped from 100% power.
- Three control rods have stuck out following the trip.
- The crew is stabilizing the plant per the Emergency Operating Procedures.

INITIATING CUE: Due to the stuck control rods, your supervisor directs you to initiate emergency boration of the RCS in accordance with 1OM-7.4.S, “Emergency Boration”.

☐ 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

TRAINING MATERIAL TITLE: Place Excess Letdown in Service

TRAINING MATERIAL NUMBER: 1CR-056

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-056

REVISION NUMBER: 11

TECHNICAL REFERENCES:

1OM-7.4.H, Rev. 6, "Excess Letdown Heat Exchanger Operation"

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith 2/7/21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-056
New Revision: 11
Description of Change(s): 1. Updated format 2. Updated Task number 3. Modified initiating cue and task standard to establish excess letdown flow to VCT and stabilize Pressurizer level. 4. Modified Task Standard to match procedural allowance. 5. Changed K/A to 011 A2.07.
Reason for Change (s): 1. Bank development. 2. Task list review 3. Intent of the procedure is to control level and save inventory. 4. Procedure has a modified upper limit if level is rising. 5. K/A changed to meet NRC Exam requirements of systems,

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	JPM TITLE: Place Excess Letdown in Service

K/A REFERENCE: 011 A2.07 3.0/3.3 TASK ID: 0071-203-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID#:

Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Excess letdown flow established to the VCT. Normal charging and letdown secured. Excess letdown heat exchanger outlet temperature ≤200ºF with a stable Pressurizer level.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	The Unit is in Mode 1 with all systems in NSA. All systems are operating normally except for a leak on the CCR supply line to the non-regenerative heat exchanger. Isolation of the leak will require that normal letdown be secured.
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 1OM-7.4.H, "Excess Letdown Heat Exchanger Operation". Establish Excess Letdown from the "A" RCS loop, MOV-1RC-557A has previously been energized. You are to stabilize Pressurizer level, and report when task is complete.
REFERENCES:	1OM-7.4.H, Rev. 6, "Excess Letdown Heat Exchanger Operation"
TOOLS:	None
HANDOUT:	1OM-7.4.H, Rev. 6, "Excess Letdown Heat Exchanger Operation"

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	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: Use any Mode 1, 2, or 3 IC. Energize MOV-1RC-557A: - Select Remote Functions - Enter EPS094 and select T **EVALUATOR CUE:** Provide candidate a copy of 1OM-7.4.H. When candidate is ready to begin the JPM, Place the Simulator in RUN. **For EACH run, ensure POT for MOV-1CH-137 is at ZERO.**	
	START TIME: _____	
1. Review 1OM-7.4.H, "Excess Letdown Heat Exchanger Operation".	1.1 Reviews 1OM-7.4.H. COMMENTS:	
	EVALUATOR NOTE: In accordance with initiating cue, it is desired to OPEN [MOV-1RC-557A] and this valve is already energized.	
2.**C** Open one of the following loop drain valves as directed by SM: (BB-A) a. [MOV-1RC-557A], 1A RCL Drain Vlv. b. [MOV-1RC-557B], 1B RCL Drain Vlv. c. [MOV-1RC-557C], 1C RCL Drain Vlv.	2.1**C** Places [MOV-1RC-557A] CS to OPEN. 2.2 Verifies RED light – LIT, GREEN light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	JPM TITLE: Place Excess Letdown in Service

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Place [HCV-1CH-389], Divert to Drain Sys Vlv control switch to the PDT TANK position (BB-A).	3.1**C** Places [HCV-1CH-389] CS to "PDT TANK" position. 3.2 Verifies [HCV-1CH-389] "POT TANK" RED light – LIT, "VC TANK" RED light – NOT LIT. COMMENTS:	
4.**C** Place [MOV-1CH-201], Excess Ltdn HX Isol Vlv control switch to OPEN (BB-A)	4.1**C** Places [MOV-1CH-201] CS to OPEN. 4.2 Verifies RED light – LIT, GREEN light – NOT LIT. COMMENTS:	
5.**C** Slowly adjust [MOV-1CH-137], Excess Ltdn HX Flow Control Vlv. to maintain < 140 °F on [TI-1CH-139], Excess Letdown Temp **AND** < 135 psig on [PI-1CH-138], Excess Letdown Press, allowing for warm-up of the excess letdown heat exchanger.	5.1**C** Slowly turns [MOV-1CH-137] potentiometer in the clockwise direction to OPEN the valve. 5.2 Verifies pressure on [PI-1CH-138] rises and maintains pressure < 135 psig. 5.3 Verifies temperature on [TI-1CH-139] rises and is controlled <140 ºF. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	JPM TITLE: Place Excess Letdown in Service

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: When candidate recognizes a 10 min. purge to PDT is required, inform the candidate that 10 minutes has elapsed. **EVALUATOR NOTE:** When HCV-1CH-389 is placed in VC TANK position be aware that a pressure increase on PI-1CH-138 will occur. The candidate should adjust to ensure parameter(s) are not exceeded as necessary.	
6.**C** If excess letdown flow is to be diverted to the charging pump suction AND after flow has been directed to the reactor plant vents and drains system for 10 minutes, Place [HCV-1CH-389], Divert to Drains System Vlv control switch to the VC TANK position.	6.1**C** Places [HCV-1CH-389] CS to "VC TANK" position. 6.2 Verifies [HCV-1CH-389] "VC TANK" RED light – LIT and "POT TANK" RED light – NOT LIT. COMMENTS:	
7. Monitor the following plant parameters to ensure proper system operation: a. [TR-1RC-448A] RCP Pump Radial Brg Temps. b. [TI-1CH-133], Seal Water Return Temp. c. Pressurizer level d. [TR-1RC-448A] RCP Pumps Seal Leakoff Temps. e. [FR-1CH-154A, (B)], No.1 Seal Leakoff Wide (Narrow).	7.1 Monitors following parameters on VB-A and determines that all parameters are normal: • [TR-1RC-448A] RCP Pump Radial Brg temps. • [TI-1CH-133], Seal Water Return temp. • Pressurizer level • [TR-1RC-448A] RCP Pumps Seal Leakoff temps. • [FR-1CH-154A, (B)], No.1 Seal Leakoff Wide (Narrow) COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	JPM TITLE: Place Excess Letdown in Service

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: In the next step, it is **NOT** critical that [TV-1CH-200A] or [TV-1CH-200B] are closed in any particular order.	
8.**C** If normal letdown is to be isolated, Perform the following: a. Place [TV-1CH-200A], 45 GPM Ltdn Orifice Cnmt Isl Vlv control switch to CLOSE on BB-A. b. Place [TV-1CH-200B], 60 GPM Ltdn Orifice Cnmt Isl Vlv control switch to CLOSE on BB-A. c. Place [TV-1CH-200C], 60 GPM Ltdn Orifice Cnmt Isl Vlv control switch to CLOSE on BB-A. d. Monitor pressurizer level for rising trend. e. Place [FCV-1CH-122], Chg Flow to Regen HX Inlet Control Vlv controller in MAN and close. f. Evaluate the need to raise RCS activity/chemical analysis since purification and hydrogen addition capabilities are impaired.	8.1**C** Places [TV-1CH-200A] to CLOSE. 8.2 Verifies GREEN light – LIT, RED light – NOT LIT. 8.3**C** Places [TV-1CH-200B] to CLOSE. 8.4 Verifies GREEN light – LIT, RED light – NOT LIT. 8.5 Verifies [TV-1CH-200C] GREEN light – LIT, RED light – NOT LIT. 8.6 Monitors pressurizer level for rising trend. 8.7**C** Places [FCV-1CH-122], Chg Flow to Regen HX Inlet Control Vlv controller in MANUAL. 8.8**C** Depresses ▲ PB and verifies demand increases to 100%. 8.9 Evaluates the need to raise RCS activity/chemical analysis. COMMENTS:	
	EVALUATOR CUE: Shift Manager will contact chemistry to evaluate increasing RCS sampling.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-056 JPM REVISION: 11	JPM TITLE: Place Excess Letdown in Service

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
9. If in Mode 1, 2, or 3, Perform 1OST-6.4, "Measurement of Seal Injection Flow" to verify that reactor coolant pump seal injection flow is less than or equal to 28 GPM (TS 3.5.5).	9.1 Notifies Unit Supervisor that 1OST-6.4 must be performed to verify seal injection flow is ≤ 28 gpm to comply with TS 3.5.5. **EVALUATOR CUE:** Role-play the Unit Supervisor and report that another operator will perform 1OST-6.4, "Measurement of Seal Injection Flow". COMMENTS:	
10.**C** Adjust [HCV-1CH-186], RCP Seal Sup Vlv as necessary to control pressurizer level. a. If pressurizer level continues to rise, excess letdown flow may be increased until HX outlet temperature is approximately 200 °F as indicated on [TI-1CH-139], Excess Letdown Temp.	10.1**C** Adjusts [HCV-1CH-186] until RCP seal injection flow on [FI-1CH-124, 127 and 130] is minimized at ≥ 6 gpm/pump. 10.2**C** Adjusts [MOV-1CH-137] potentiometer until [TI-1CH-139] temperature reaches 200°F, or Pressurizer level is no longer rising. **EVALUATOR NOTE:** When the candidate has reduced RCP seal injection flow and increased excess letdown flow until HX temperature is 200°F, or Pressurizer level has stopped rising, the evaluation for this JPM is complete. COMMENTS:	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: The Unit is in Mode 1 with all systems in NSA. All systems are operating normally except for a leak on the CCR supply line to the non-regenerative heat exchanger. Isolation of the leak will require that normal letdown be secured.

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 1OM-7.4.H, "Excess Letdown Heat Exchanger Operation". Establish Excess Letdown from the "A" RCS loop, MOV-1RC-557A has previously been energized. You are to stabilize Pressurizer level, 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

TRAINING MATERIAL TITLE: Isolate SI Accumulators During a LOCA

TRAINING MATERIAL NUMBER: 1CR-642

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-642

REVISION NUMBER: 6

TECHNICAL REFERENCES:

1OM-53.A.1.ES-1.2, Post LOCA Cooldown and Depressurization, Issue 3, Rev. 2
1OM-11.4.H, Venting Safety Injection Accumulator [1SI-TK-1A (1B) (1C)], Rev. 8
1OM-53A.1.6-A, 0 F Plus Subcooling Based on Core Exit TCs, Issue 1C, Rev. 0

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 12 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-642
New Revision: 6
Description of Change(s): 1. Updated for procedure revision. 2. Updated Task number 3. Changed to the "A" Accumulator. 4. Added evaluator note prior to step 15 for stating that the Control switches for TV-1SI-101-1 and TV-1SI-101-2 must be held to the open position until the valve opens. 5. Added evaluator cue at the end of the JPM to ensure all 'B' and 'C' accumulators are isolated.
Reason for Change (s): 1. 1OM-53.A.1.ES-1.2 was revised. 2. Task List update. 3. Procedure alignment. 4. Evaluator note added to ensure proper switch manipulation during the JPM. 5. Evaluator cue added to ensure that 'B' and 'C' accumulators are isolated in the event the candidate does not complete ES-1.2 step 27.e due to 'A' accumulator venting.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

K/A REFERENCE: 009 EA1.13 4.4/4.4 TASK ID: 0111-203-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 12 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	SI Accumulators 'B' and 'C' are isolated. SI Accumulator 'A' venting in progress.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	A LOCA has occurred. The crew is performing ES-1.2, "Post LOCA Cooldown and Depressurization".
INITIATING CUE:	The Unit Supervisor directs you to isolate **ALL** 3 SI accumulators in accordance with ES-1.2, Step 27.
REFERENCES:	1OM-53.A.1.ES-1.2, "Post LOCA Cooldown and Depressurization", Issue 3, Rev. 2 1OM-11.4.H, "Venting Safety Injection Accumulator [1SI-TK-1A (1B) (1C)]", Rev. 8 1OM-53A.1.6-A, "0 F Plus Subcooling Based on Core Exit TCs", Issue 1C, Rev. 0
TOOLS:	Shorting Bars
HANDOUT:	1OM-53.A.1.ES-1.2, "Post LOCA Cooldown and Depressurization", Issue 3, Rev. 2. Have procedure marked up to step 27, and have additional copies of page 20 & 21 to replace as needed. Have available copies of the following procedures as needed: 1OM-11.4.H, "Venting Safety Injection Accumulator [1SI-TK-1A (1B) (1C)]", Rev. 8 1OM-53A.1.6-A, "0 F Plus Subcooling Based on Core Exit TCs", Issue 1C, Rev. 0

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Start with 100% power IC. Override MOV-1SI-865A to OPEN by inserting VLV-SIS26 to 100%. Insert a SBLOCA by inserting RCS02C @ 700 gpm. Progress through E-0 - E-1 - ES-1.2 up to step 27 and freeze simulator. (Ensure subcooling and PRZR Level requirements of step 27 are met). ENSURE CIA signal is reset per procedure. Also ensure PRZR is properly trending so that it is maintained greater than 17%. **JPM SETUP:** Ensure shorting bars for MOV-1SI-865A, B, C are available.	
	START TIME: _____	
	EVALUATOR NOTE: Provide a copy of ES-1.2, marked up to step 27. DO NOT PROVIDE candidate with a copy of 1OM-11.4.H, Venting Safety Injection Accumulator 1SI-TK-1A (1B) (1C), UNTIL he/she recognizes the need for the procedure in step 10 of the JPM. When candidate is ready to begin, go to RUN on the simulator.	
1. Reviews procedure.	1.1 Candidate reviews procedure provided. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2. RCS subcooling based on core exit TCs – greater than subcooling listed on Attachment 6-A.	2.1 Locates and determines ICCM RCS subcooling is greater than subcooling listed on Att. 6-A. COMMENTS:	
3. PRZR level – greater than 17%.	3.1 Verifies PRZR level indication LI-1RC- 459A, 460, and 461 are greater than 17%. COMMENTS:	
4. Power to MOV-1SI-865A, B, C available.	4.1 Verifies MOV-1SI-865A, B and C, RED lights – LIT and GREEN lights – NOT LIT. COMMENTS:	
5.**C** Insert shorting bars into jack for MOV-1SI-865A, B, C.	5.1**C** Inserts shorting bars into jacks for MOV-1SI-865A, B, and C. **EVALUATOR CUE:** Provide candidate with shorting bars, when requested. 5.2 Verifies IN SERVICE OR GROUND RED light – LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	FAULT STATEMENT MOV-1SI-865A will **NOT** close in the next step.	
6.**C** Close MOV-1SI-865A, B, C.	6.1**C** Places MOV-1SI-865A control switch to CLOSE. 6.2 Recognizes MOV-1SI-865A DID NOT close. RED light – LIT and GREEN light – NOT LIT. 6.3**C** Places MOV-1SI-865B control switch to CLOSE. 6.4 Verifies MOV-1SI-865B GREEN light – LIT and RED light – NOT LIT. 6.5**C** Places MOV-1SI-865C control switch to CLOSE. 6.6 Verifies MOV-1SI-865C GREEN light – LIT and RED light – NOT LIT. 6.7 Acknowledges A1-101/102, "SAFETY INJECTOR ACCUMULATOR # 1/#2 DISCH VALVE NOT FULLY OPEN" annunciator after each corresponding valve is taken to CLOSE. 6.5 Takes action in accordance with RNO for failure of MOV-1SI-865A to close. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7. Verify at least one station air compressor or the diesel air compressor is running.	7.1 Verifies 1SA-C-1A or 1B RED light – LIT and WHITE light – NOT LIT. COMMENTS:	
8. Verify TV-1IA-400 - Open.	8.1 Verifies TV-1IA-400 Train A & B OPEN RED lights – LIT and GREEN lights – NOT LIT. COMMENTS:	
9. Check CNMT instrument air header pressure – greater than 85 psig.	9.1 Verifies PI-1IA-106A containment instrument air header pressure GREATER THAN 85 psig. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
10. Locates and reviews procedure 1OM-11.4.H, Venting Safety Injection Accumulator 1SI-TK-1A (1B) (1C).	10.1 Locates and reviews procedure 1OM-11.4.H, "Venting Safety Injection Accumulator [1SI-TK-1A (1B) (1C)]". **EVALUATOR CUE:** Once the candidate has located the procedure, a copy may be provided. COMMENTS:	
	EVALUATOR CUE: If necessary, Role-play the Unit Supervisor and inform the Candidate that 1SI-105, Nitrogen Sup To SI Acc Drain will NOT be used for venting the SI Accumulator.	
11. Verify HIC-1SI-936 SI ACC N_2 Vent to Atm control, output is adjusted to "Zero" percent.	11.1 Verifies HIC-1SI-936 indicates ZERO percent. COMMENTS:	
12. Close 1SI-69, Nitrogen Supply to S.I. Accumulators.	12.1 Dispatches local operator to CLOSE 1SI-69. **EVALUATOR CUE:** Role-play the Local operator and acknowledge the request, then report that 1SI-69 is CLOSED. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
13. If desired by the SM/US, Close 1SI-437, Nitrogen Supply to Overpressure Protection System.	13.1 No action required. **EVALUATOR CUE:** Role-play the Unit Supervisor. Inform Candidate that it is NOT desired to CLOSE 1SI-437. COMMENTS:	
14.**C** Open MOV-1SI-853A, (1A) SI Acc N_2 Sup Isol Vlv	14.1**C** Places MOV-1SI-853A control switch to OPEN. 14.2 Verifies RED light – LIT, GREEN light – NOT LIT. COMMENTS:	
	EVALUATOR NOTE: Control switches for TV-1SI-101-1 and TV-1SI-101-2 must be held to the open position until the valve opens.	
15.**C** Open TV-1SI-101-1, SI Acc N_2 Sup Isol Vlv.	15.1**C** Places TV-1SI-101-1 control switch to OPEN. 15.2 Verifies RED light – LIT, GREEN light – NOT LIT. COMMENTS:	
16.**C** Open TV-1SI-101-2, SI Acc N_2 Sup Isol Vlv.	16.1**C** Places TV-1SI-101-2 control switch to OPEN. 16.2 Verifies RED light – LIT, GREEN light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-642 JPM REVISION: 6	JPM TITLE: Isolate SI Accumulators During a LOCA

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: If necessary, Role-play the Unit Supervisor and inform the Candidate that 1SI-105, Nitrogen Sup To SI Acc Drain will NOT be used for venting the SI Accumulator.	
17. IF using 1SI-105, Nitrogen Sup To SI Acc Drain, to vent, perform the following:	17.1 This step is N/A. COMMENTS:	
18.**C** IF using HCV-1SI-936, SI Acc N2 Vent to Atm Cont, to vent, perform the following: Operate [HIC-1SI-936] to lower accumulator to the desired pressure as indicated on [PI-1SI-921 & 923].	18.1**C** Rotates HIC-1SI-936 controller CLOCKWISE. 18.2 Verifies PI-1SI-921 & 923 indicate accumulator pressure is LOWERING. COMMENTS:	
	EVALUATOR CUE: If 'A' Accumulator pressure is lowering, but 'B' and 'C' accumulators have not been isolated, report that another operator will monitor the 'A' accumulator pressure and continue with the procedure. **EVALUATOR CUE:** Once the 1A Accumulator pressure is verified lowering, and the other accumulators are isolated, state "This JPM is complete**".** **EVALUATOR NOTE:** If running another JPM in parallel, close HCV-1SI-936.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: A LOCA has occurred. The crew is performing ES-1.2, "Post LOCA Cooldown and Depressurization".

INITIATING CUE: The Unit Supervisor directs you to isolate **ALL** 3 SI accumulators in accordance with ES-1.2, Step 27.

☐ 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

TRAINING MATERIAL TITLE: Start a Reactor Coolant Pump

TRAINING MATERIAL NUMBER: 1CR-513

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-513

REVISION NUMBER: 8

TECHNICAL REFERENCES:

1OM-6.4.A, Reactor Coolant Pump Startup Rev. 35
1OM-6.4.ACR, Reactor Coolant Pump Vibration High High Rev. 4
1OM-53C.4.1.6.8, Abnormal RCP Operation Rev. 21

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 20 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-513
New Revision: 8
Description of Change(s): 1. Updated for procedure revisions. 2. Updated Tasks
Reason for Change (s): 1. 1OM-53C.4.1.6.8 was revised to rev. 21 and 1OM-36.4.A was revised to rev 35. 2. Task list update

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

K/A REFERENCE: 003 A2.02 3.7/3.9 TASK ID: 0062-201-01-011
003 A3.04 3.6/3.6 0062-203-01-011
003 A4.06 2.9/2.9

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 20 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	1RC-P-1B, Reactor Coolant Pump '1B' is started and then tripped due to high vibration.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	• The plant is in Mode 3, preparing to enter Mode 2 to perform a reactor startup. • Reactor Coolant Pumps '1A' and '1C' are in operation. • Another operator has begun 1OM-6.4.A, Reactor Coolant Pump Startup procedure, completing all steps through step IV.B.15.d for the '1B' RCP. • All systems and components are operating in their normal alignment to support pump operation.
INITIATING CUE:	The Unit Supervisor directs you to start the '1B' Reactor Coolant Pump, 1RC-P-1B, in accordance with 1OM-6.4.A, Step IV.B.16.
REFERENCES:	1OM-6.4.A, Reactor Coolant Pump Startup Rev. 35 1OM-6.4.ACR, Reactor Coolant Pump Vibration High High Rev. 4 1OM-53C.4.1.6.8, Abnormal RCP Operation Rev. 21
TOOLS:	Stopwatch
HANDOUT:	1OM-6.4.A, Reactor Coolant Pump Startup Rev. 35 place kept up to and including step IV.B.15. **Have replacement copies of these procedures available:** 1OM-6.4.ACR, Reactor Coolant Pump Vibration High High Rev. 4 1OM-53C.4.1.6.8, Abnormal RCP Operation Rev. 21

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Start with IC-11, open the Reactor Trip Breakers, Shutdown "1B" RCP. Allow plant to stabilize. Insert trigger and malfunction as follows: TRGSET 1 'X14D074M >= 65' IMF RCS10B (1 10) 30 60 ASIS Ensure B 4KV bus voltage is between 124 and 126.5 volts and tap changer left in manual. Snap IC.	
	START TIME: _____	
	EVALUATOR NOTE: Put RCP 1B Parameters on PCS, OPS Groups (RC-P-1B) on trend. **EVALUATOR CUE:** Provide a copy of 1OM-6.4.A completed through step IV.B.15.d.	
1. Reviews procedure.	1.1 Reviews 1OM-6.4.A. COMMENTS:	
2. Verifies that the other reactor coolant pumps are running, so the check of loop cold leg temperature and Δ T is N/A.	2.1 Verifies the other two reactor coolant pumps are running and marks the step N/A. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Places 1RC-P-1B control switch to START and starts the stopwatch.	3.1**C** Places 1RC-P-1B control switch to START. 3.2 Starts the stopwatch. **EVALUATOR NOTE:** Candidate should use some means of timing for the RCP start from the start of the lift oil pump. COMMENTS:	
4. Check 1RC-P-1B lift oil pump running.	4.1 Verifies 1RC-P-1B1, RED light LIT, GREEN Light NOT LIT. **EVALUATOR CUE:** Timing of the RCP start is from when the Lift Oil Pump RED indicating light is lit. COMMENTS:	
5. Verify 1RC-P-1B starts.	5.1 Verifies RCP RED running light LIT ~120 seconds after starting the lift oil pump. 5.2 Verifies amps indicating on 1B RCP ammeter. 5.3 Verfies Loop 2 flow rises by observing FI-1RC-424, 425, and 426. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6. Verify 1RC-P-1B post start response.	6.1 Verifies 1RC-P-1B amps drop off in 10 - 30 seconds after the RCP breaker closes. 6.2 Monitors lift oil pump for auto shutoff 47.5 - 52.5 seconds after RCP start by verifying lift oil pump GREEN light LIT. 6.3 Monitors RCP 1B Parameters as indicated on the table. **EVALUATOR CUE:** Candidate should use some means of timing the decay of starting amps. If asked for assistance with various timings, provide assistance as additional Operator specifically for **timing.** COMMENTS:	
	FAULT STATEMENT: Alternate path begins here. RCP High High vibrations will occur, which will require RCP shutdown.	
7. Identifies and responds to high vibration alarms.	7.1 Identifies and acknowledges high vibration alarm annunciator A3-126, REACTOR COOL PUMP VIBRATION HIGH and A3-127, REACTOR COOL PUMP VIBRATION HIGH-HIGH are LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
8. Refers to annunciator A3-127 alarm response procedure.	8.1 Refers to ARP A3-127 (1OM-6.4.ACR). 8.2 Reads indication on the RCP vibration monitor, VIB-MON-8. **EVALUATOR NOTE:** Candidate may attempt to dispatch another Operator to check RCP vibrations. If so, inform Candidate that no other Operators are currently available, or may rely on indications from initial verification of the alarm. 8.3 Verifies high vibration is on 1RC-P-1B. 8.4 Verifies valid alarm (shaft > 20 mils or frame > 5 mils). COMMENTS:	
9. Refers to procedure 1OM-53C.4.1.6.8, Abnormal RCP Operation.	9.1 Refers to 1OM-53C.4.1.6.8, Abnormal RCP Operation. COMMENTS:	
10. Check Criteria For Immediate RCP Shutdown In Table 1 (Left Hand Page) Any criteria – EXCEEDED	10.1 Reviews Immediate RCP Shutdown criteria In Table 1. 10.2 Determines Immediate RCP Shutdown is required based on RCP 1B shaft vibrations >20 mils. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-513 JPM REVISION: 8	JPM TITLE: Start a Reactor Coolant Pump

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
11.**C** 1) Trip the reactor. 2) GO TO E-0, "Reactor Trip Or Safety Injection". 3) WHEN immediate actions of E 0 are complete, perform the following: • Note the time • Stop affected RCP(s) • Close PRZR spray valves for affected RCP(s)	11.1 Determines that the plant is NOT critical. Rx Trip Breakers are OPEN. **EVALUATOR NOTE:** Rx Trip Breakers are OPEN, reactor is tripped. Immediate actions are not required to be performed. 11.2 Notes the time. 11.3**C** Places 1RC-P-1B control switch to STOP. 11.4 Verifies RCP RED light – NOT LIT, WHITE light is – LIT. 11.5 Leaves Pressurizer Spray Valves as is, RCP 1B does not have a spray valve associated with it. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete**"**	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant is in Mode 3, preparing to enter Mode 2 to perform a reactor startup.
- Reactor Coolant Pumps '1A' and '1C' are in operation.
- Another operator has begun 1OM-6.4.A, Reactor Coolant Pump Startup procedure, completing all steps through step IV.B.15.d for the '1B' RCP.
- All systems and components are operating in their normal alignment to support pump operation.

INITIATING CUE: The Unit Supervisor directs you to start the '1B' Reactor Coolant Pump, 1RC-P-1B, in accordance with 1OM-6.4.A, Step IV.B.16.

☐ 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

TRAINING MATERIAL TITLE: Manually Actuate CIB

TRAINING MATERIAL NUMBER: 1CR-078

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-078

REVISION NUMBER: 5

TECHNICAL REFERENCES:

1OM-53A.1.1-K, "Verification Of Automatic Actions", Rev. 8.
1OM-53A.1.1-E, "Containment Isolation Phase B Checklist", Rev. 6

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 10 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Date
Training Supervisor or Designee

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-078
New Revision: 5
Description of Change(s): 1. Updated JPM significantly, modified to remove pumps malfunctions and fail valves. 2. Updated to latest JPM format. 3. Truncated JPM after the components on BB-A are verified. 4. Update time allotment 5. 1OM-53A.1.1-K was revised causing procedure steps to change.
Reason for Change (s): 1. The original version of the JPM malfunctions would make it Alternate Path, this would duplicate JPM 1CR-0578, change this JPM to take alternate actions. 2. JPM format has been updated. 3. Limit the scope of the JPM and minimize repetitive actions. 4. Added steps to locate misaligned valves. 5. Procedure was revised.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

K/A REFERENCE: 026 A3.01 4.3/4.5 TASK ID: 0131-204-01-011
026 A4.01 4.5/4.3

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 10 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Manually initiate CIB, closes TV-1CC-105D1 or 105D2, and stops the RCP's.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	• A large break LOCA has occurred. • The actions of E-0 are being performed.
INITIATING CUE:	The Unit Supervisor directs you to perform Attachment 1-K, "Verification Of Automatic Actions", Step 11 to check CIB and CNMT Spray status. You are responsible for alarms on the primary side of the plant. The BOP will respond to secondary alarms ONLY.
REFERENCES:	1OM-53A.1.1-K, "Verification Of Automatic Actions", Rev 8. 1OM-53A.1.1-E, "Containment Isolation Phase B Checklist", Rev. 6
TOOLS:	None
HANDOUT:	1OM-53A.1.1-K, "Verification Of Automatic Actions", Rev 8. Place kept up to step 11. 1OM-53A.1.1-E, "Containment Isolation Phase B Checklist", Rev. 6 (DO NOT INITIALLY PROVIDE TO CANDIDATE)

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Initialize to any Mode 1 IC. 1. Insert MALF INH50 (Auto CIB failure) 2. Event Trigger #4 - Enter TRG 4 X01i030o Insert MALF IMF VLV-CCW18 100 Enter Command (TV-1CC-105D1) Open and closes once control switch is taken to Close 3. Event Trigger #5 - Enter TRG 5 X01i025o Insert MALF IMF VLV-CCW19 100 Enter Command (TV-1CC-105D2) Open and closes once control switch is taken to Close 4. Event Trigger #6 - TRG 6 X02i066o Insert MALF IMF VLV-RWS20 Allow Sim to run and then: Insert MALF RCS02D (DBA Hot Leg Loop 1) Allow Sim to run until majority of alarms clear and snap into IC. (at least three minutes) **BOOTH OPERATOR NOTE:** Bring up Rx Trip Spray on monitors. **EVALUATOR CUE:** Provide a copy of marked up EOP Attachment 1-K.	
	START TIME: _____	
1. Reviews place kept copy of 1OM-53A.1.1-K, "Verification Of Automatic Actions" provided.	1.1 Reviews 1OM-53A.1.1-K, "Verification Of Automatic Actions". COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2. Checks CIB And CNMT Status • Containment pressure - HAS REMAINED LESS THAN 11 PSIG.	2.1 Determines that containment pressure has **NOT** remained less than 11 psig by checking any of the following: • A1-72, "CONTAINMENT ISOLATION PHASE B" annunciated (should be LIT but is NOT). • PR-LM-100A, Containment Pressure Recorder indicates greater than 11 psig. • PI-1LM-100A, 100B, 100C, 100D, Containment Pressure Indicators indicating > 11 psig. • Status Light PNL 62, HHCP Press CH Trip/Defeat CH I – IV Lights – LIT. COMMENTS:	
3. Check BLUE CIB marks - LIT.	**EVALUATOR NOTE:** It is acceptable that the completion of this step may be out of order and they may choose to perform 1OM-53A.1.1-E, "Containment Isolation Phase B Checklist". 3.1 Checks components properly aligned and determines CIB components not positioned as required, and CIB **NOT** actuated. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	FAULT STATEMENT CIB fails to AUTO actuate and TV-1CC-105D1, and 105D2 fail to auto close, and MOV-1RW-106A fails to auto close upon manual actuation of CIB. The JPM may be stopped once CIB is manually actuated, the three valves are realigned and the RCPs are stopped. The intent is NOT to verify all CIB equipment. Allow the candidate adequate time to identify the misaligned equipment, as they may start in different locations on the panels.	
4.**C** IF NOT, THEN manually initiate CIB (both pushbuttons for both trains).	4.1**C** Simultaneously DEPRESSES **both** Spray Actuation and CIB Actuation Train "A" pushbuttons. 4.2**C** Simultaneously DEPRESSES **both** Spray Actuation and CIB Actuation Train "B" CIB pushbuttons. **EVALUATOR NOTE:** Either train may be actuated first followed by the opposite train. Only one set of PBs need to be depressed to meet the Critical step. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
5. Check BLUE CIB marks - LIT.	5.1 Checks all indicating lights with BLUE CIB marks LIT. 5.2 Determines [TV-1CC-105D1, D2] and [MOV-1RW-106A] are not closed. **EVALUATOR NOTE:** If requested, provide a copy of Attach. 1-E. COMMENTS:	
	EVALUATOR NOTE: Closing Either TV-1CC-105D1 OR 105D2 is critical as the valves are in series.	
6.**C** IF CIB NOT actuated, THEN manually align equipment. If necessary, refer to Attachment 1-E, "Containment Isolation Phase B Checklist".	6.1**C** Places [TV-1CC-105D2] 1B & 1C RCP Motor CCR Outlet CNMT Isol Vlv control switch to CLOSE. 6.2 Verifies GREEN light – LIT, RED light – NOT LIT. 6.3**C** Places [TV-1CC-105D1] 1B & 1C RCP Motor CCR Outlet CNMT Isol Vlv control switch to CLOSE. 6.4 Verifies GREEN light – LIT, RED light – NOT LIT. 6.1 Places [MOV-1RW-106A] CCR HX RW RW Series Isol Vlv control switch to CLOSE. 6.6 Verifies GREEN light – LIT, RED light – NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-078 JPM REVISION: 5	JPM TITLE: Manually Actuate CIB

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7.**C** Stop all RCP's.	7.1**C** Places control switches for [1RC-P-1A, 1B and 1C] to STOP. 7.2 Verifies [1RC-P-1A, 1B and 1C] RED lights – NOT LIT and WHITE lights – LIT. 7.3 Verifies 1RC-FI-414, (415), (416) and 1RC-FI-424, (425), (426) flows dropping. 7.4 Verifies 1RC-P-1A, 1B and 1C amps dropping (BB-A kickup). COMMENTS:	
	EVALUATOR NOTE: Allow candidate adequate time to verify the components on BB-A prior to stopping the JPM.	
8. Request BV-2 operator verify CREVS equipment actuation.	8.1 Contacts Unit 2 to verify CREVS equipment operations. **EVALUATOR CUE:** Role play as the Unit 2 operator and inform candidate that all CREVS equipment is functioning properly. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete**"**	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- A large break LOCA has occurred.
- The actions of E-0 are being performed.

INITIATING CUE:

The Unit Supervisor directs you to perform Attachment 1-K, "Verification Of Automatic Actions", Step 11 to check CIB and CNMT Spray status.

You are responsible for alarms on the primary side of the plant. The BOP will respond to secondary alarms ONLY.

☐ 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

TRAINING MATERIAL TITLE: Synchronize and Load No. 1 Diesel Generator

TRAINING MATERIAL NUMBER: 1CR-524

PROGRAM TITLE: Licensed Operator Retraining

COMPUTER CODE: 1CR-524

REVISION NUMBER: 3

TECHNICAL REFERENCES:

1OST-36.1, "Diesel Generator No.1 Monthly Test", Rev 72
1OM-36.4.ADY, "Diesel Generator No. 1 Differential, Rev. 4

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 20 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-524
New Revision: 3
Description of Change(s): 1. Updated Task Number and procedure revision. 2. Modified task standard and added critical step to trip #1 EDG.
Reason for Change (s): 1. Task list revision, procedure was revised. 2. Verify #1 EDG is tripped is the expected response per the ARP.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

K/A REFERENCE: 064 A4.06 3.9/3.9 TASK ID: 0362-004-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS		
Performer Name:	Performer ID:	
Time Critical: ☐ Yes ☒ No	Allotted Time: 20 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS	
Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	No. 1 Diesel Generator is synchronized and loaded in accordance with 1OST-36.1, "Diesel Generator No. 1 Monthly Test" AND then opens ACB 1E9, and trips #1 EDG in response to Annunciator A9-3.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	The plant is in Mode 1 with 1OST-36.1 being performed. 10 minutes ago the No.1 DG was started and, the test has been completed up to Section V, Step 28. All steps up to this point have been completed satisfactorily.
INITIATING CUE:	Your supervisor directs you to perform Section V, Steps 28 through 34 of 1OST-36.1. You are responsible to respond to all alarms on Annunciator panel A8 & A9.
REFERENCES:	1OST-36.1, "Diesel Generator No.1 Monthly Test", Rev 72 1OM-36.4.ADY, "Diesel Generator No. 1 Differential, Rev 4.
TOOLS:	None
HANDOUT:	1OST-36.1, "Diesel Generator No.1 Monthly Test", Rev 72, place kept up to step 28 (page 49). AFTER A9-3, Generator No1 Differential alarms, and candidate goes to ARP, handout: 1OM-36.4.ADY, "Diesel Generator No. 1 Differential, Rev. 4

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	Simulator Setup: Initialize to any Mode 1 IC Set Ensure simulator is setup for OST-36.1 conditions up to step 28 as follows: • DG in EXERCISE & running @ 900 RPM • EDG voltage at ~122 volts • Turn on Annunciator A11-81, DIESEL GEN BLDG A FIRE PROT SYSTEM TROUBLE by setting XN11081 to ON • Remote EPS288, Diesel Generator 1 Droop Setting and select Parallel Ops Set Event 1 to actuate when DG Load reaches 500 KW and actuates Annunciator A9-3, to support Alternate Path JPM as follows: • Event 1 actuate on X17D049M >= 500 into event tab • Event 1 IMF XN09003 1 Freeze and snap IC Set. **<u>ENSURE "B" PROTECTED TRAIN POSTED</u>**	
	START TIME: _____	
1. Reviews place kept copy of 1OST-36.1, "Diesel Generator No. 1 Monthly Test".	**EVALUATOR CUE:** Provide the candidate a place kept copy of 1OST-36.1 and when ready to begin, place Simulator in RUN. 1.1 Reviews place kept copy of 1OST-36.1 AND begins at Step 28a. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: If necessary, remind the candidate that Digital voltmeter readings are NOT required.	
2. Perform the following voltage and frequency verifications: SR 3.8.1.2 a. IF using the benchboard instrumentation, THEN cycle VM switch through all positions (A-B, B-C, C-A, OFF) to prevent possibility of dirty contacts. • EDG Output Voltage (A-B) ____volts. • EDG Output Frequency___ Hz.	2.1 Records EMERG GEN 1 VOLTS benchboard indication in Step 28a. 2.2 Records EMERG GEN 1 FREQUENCY benchboard indication in Step 28a. COMMENTS:	
3.**C** Close the Motor Operated Ground Switch by positioning the No.1 Diesel Generator Motor Operated Ground Switch Control to CLOSE. (Generator Section of the Benchboard) a. Check ANN. A9-2, "DIESEL GENERATOR NO. 1 M.O. GROUND SWITCH NOT FULLY OPEN" is ON.	3.1**C** Places EMERG GEN 1 MOTOR OPERATED GND SW DS1 control switch to CLOSE position. 3.2 Releases switch when RED light – LIT and WHITE light – NOT LIT. 3.3 Acknowledges Annunciator A9-2, "DIESEL GEN 1 MO GROUND SW NOT FULLY OPEN". COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
4.**C** Position the No. 1 Diesel Generator Synchroscope Selector Switch to the 1E9 position to compare the diesel generator frequency to the frequency on bus 1AE (Generator Section of the Benchboard). a. Check A9-8, "ACB 1E7 or 1E9 IN SYNCHRONIZING MODE" alarms when the Synchroscope Selector Switch is moved from OFF position.	4.1**C** Places the EMERG GEN 1 SYNCHRONIZING SEL SW to the ACB 1E9 position. 4.2 Compares EMERG GEN 1 FREQUENCY to MAIN GEN FREQUENCY on generator section benchboard. 4.3 Acknowledges A9-8, ACB 1E7 or 1E9 IN SYNCHRONIZING MODE" alarm. COMMENTS:	
5.**C** Using the No. 1 Diesel Generator Govenor Control Switch, adjust generator speed until the synchroscope needle is rotating very slowly in the FAST direction (Generator Section of the Benchboard).	5.1**C** Lowers EMERG GEN 1 GOVERNOR control switch to adjust No. 1 EDG speed until the synchroscope is rotating very slowly in the fast direction. COMMENTS:	
6. Using the No.1 Diesel generator Voltage Control Switch, match generator voltage (Incoming) with the voltage on Bus 1AE (Running).	6.1 Adjust voltage using EMERG GEN 1 VOLT ADJUST control switch to match generator voltage (SYNC VOLTS INCOMING NORM) with the voltage on Bus 1AE (SYNC VOLTS RUNNING NORM) on the kickup section of benchboard C. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7.**C** Synchronize DG No. 1 and Close DG output breaker as follows: a. Contact local operator at DG to have personnel stand clear. b. WHEN both synchronizing lights completely dark AND synchroscope needle is at 12 o'clock, THEN place Emerg Gen 1 Circuit Breaker ACB 1E9 to CLOSE. (Red light) (BB-C)	7.1 Calls operator stationed at DG and informs them to ensure all personnel are standing clear of DG No.1 during synchronization. **EVALUATOR CUE:** Acknowledge as Field Operator, that all personnel are standing clear of #1 EDG. 7.2**C** Places EMERG GEN 1 CIRCUIT BREAKER 1E9 control switch to START position when synchronizing needle is at 12 o'clock and lamps are dark. 7.3 Verifies ACB 1E9 RED Light - LIT and WHITE Light – NOT LIT and releases switch. COMMENTS:	
8.**C** Pick up a small amount of load by moving the No. 1 Diesel Generator Govenor Control Swtich, intermittently, to the RAISE position.	8.1**C** Increases load on No. 1 EDG by turning EMERG GEN 1 GOVERNOR Control switch intermittently to RAISE, limiting load to approximately 300 KW. 8.2 Observes increasing No.1 EDG watts and amps. - EMERG No. 1 GEN WATTS - EMER GEN 1 Bus 1AE AMPS COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
9. Turn synchroscope selector switch to OFF. Inform operator at DG that normal access to the DG No.1 room is permitted. Record time of day output breaker was closed and calculate elapsed engine start time.	9.1 Places EMERG GEN 1 SYNCHRONIZING SEL SW in the OFF position. 9.2 Acknowledges A9-8, ACB 1E7 or 1E9 IN SYNCHRONIZING MODE" clears. 9.3 Inform operator at DG that normal access to the DG No.1 room is permitted. 9.4 Records time of day that output breaker was closed. 9.5 Determines from initial conditions that DG was started 10 minutes prior to starting JPM and calculates the elapsed engine start time. 9.6 N/As Step 33.h.1-4 and continues with Step 34. COMMENTS:	
10. Load the diesel to approximately 2450 KW by performing the following: a. While raising load, Adjust generator power factor from 0.90 lagging to 1.00, by using the generator voltage adjust switch (Generator section of the benchboard).	**EVALUATOR CUE:** If asked if the Power Factor Meters are in calibration, state that they are. **EVALUATOR CUE:** If asked Role Play as US and direct candidate to load NO. 1 EDG to 2450 KW over ten minutes. 10.1 Adjusts EMERG GEN 1 POWER FACTOR using the EMERG GEN VOLTAGE ADJUST switch to between 0.90 – 1.00 LAGGING while raising EDG load. 10.2 Verifies power factor on Power Factor meter. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
11.**C** With the No. 1 Diesel Generator ACB closed, increase load to Approximate Load listed in Table A by placing the Govenor Control Switch, intermittently, to the RAISE position.	11.1**C** Using EMERG GEN 1 GOVERNOR Switch intermittently in the RAISE position, picks up load on NO. 1 EDG. 11.2 Begins raising EDG load to 2450 KW over a ten minute period of time. COMMENTS:	

FAULT STATEMENT:
At this point the JPM alternate path begins. Annunciator A9-3, "GENERATOR NO.1 DIFFERENTIAL" will annunciate when NO.1 EDG loading reaches 500 KW.
Candidate should respond to ARP and trip #1 EDG Output Breaker 1E9 and the #1 EDG.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-524 JPM REVISION: 3	JPM TITLE: Synchronize and Load No. 1 Diesel Generator

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR CUE: If the candidate asks the SRO for guidance on EDG S/D, direct the candidate to perform ARP actions.	
12.**C** Responds to Annunciator A9-3, "GENERATOR NO.1 DIFFERENTIAL".	12.1 Acknowledges the alarm and responds by reviewing the ARP for A9-3. 12.2**C** Places ACB 1E9 output breaker to STOP position. 12.3 Verifies Emerg Gen 1 Output Breaker ACB-1E9, WHITE light –LIT, RED light – NOT LIT. 12.4 Verifies EMERG GEN 1 MOTOR OPERATED GND SW DS1 WHITE Light – LIT, RED Light – NOT LIT. 12.5**C** Trips the #1 EDG by depressing the Emer Gen 1 Stop PBs. 12.6 Observes the Emer Gen 1 RPM tachometer coasting down to or at 0 RPM. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete**"**	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: The plant is in Mode 1 with 1OST-36.1 being performed. 10 minutes ago the No.1 DG was started and, the test has been completed up to Section V, Step 28. All steps up to this point have been completed satisfactorily.

INITIATING CUE: Your supervisor directs you to perform Section V, Steps 28 through 34 of 1OST-36.1. You are responsible to respond to all alarms on Annunciator panel A8 & A9.

☐ 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

TRAINING MATERIAL TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

TRAINING MATERIAL NUMBER: 1CR-190

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-190

REVISION NUMBER: 0

TECHNICAL REFERENCES:

1OM-53A.1.FR-H.1, "Response To Loss Of Secondary Heat Sink", Issue 2, Rev 4
1OM-53A.1.2-J, "Feeding Steam Generators From Condensate System", Iss 1C Rev 1

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-190
New Revision: 0
Description of Change(s): 1. New JPM for Bank Development
Reason for Change (s): 1. Initial Issue

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

K/A REFERENCE: E05 EA2.2 3.7/4.3 TASK ID: 0533-204-04-011
E05 EK1.2 3.9/4.5

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	"A" Steam Generator feed flow is established from the Condensate System.
RECOMMENDED STARTING LOCATION:	Simulator
INITIAL CONDITIONS:	The plant has tripped from 100% power due to a loss of both main feedwater pumps. All auxiliary feedwater pumps have failed, including attempts to manually start them. Upon transition from E-0, a red heat sink status tree has directed you to FR-H.1, which has been completed through step 11.g, Establish condensate flow to at least one SG. Refer to Attachment 2-J. The "A" SG has been depressurized to support establishing Condensate Flow.
INITIATING CUE:	Your supervisor directs you to perform Attachment 2-J, "Feeding Steam Generators From Condensate System", beginning with step 1 and perform all required actions to restore a heat sink.
REFERENCES:	1OM-53A.1.FR-H.1, "Response To Loss Of Secondary Heat Sink", Iss 2, Rev 4 1OM-53A.1.2-J, "Feeding Steam Generators From Condensate System" Iss 1C Rev 1
TOOLS:	None
HANDOUT:	1OM-53A.1.2-J, "Feeding Steam Generators From Condensate System" Iss 1C Rev 1

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Start with IC-10, Trip all FW pumps and fail all Aux feed pumps. FWM01A – "A" Main, FWM01B – "B" Main, FWM11A – FW-P-3A, FWM11B – FW-P-3B, FWM11C – FW-P-2 Take all procedure actions through step 11.g. Stop all RCPs. Ensure at least one Condensate pump is in service. Ensure SG WR levels remain above 14% in "B" and "C" SGs. Use the "A" SG as selected for the depressurization, close the MSIVs on "B" and "C" SGs. Ensure B & C SGs pressures remain > 490 psig Setup "A" Atmospheric to stabilize Pressure in "A" SG (set to 270 units). **BOOTH OPERATOR NOTE:** Bring up Rx Trip Spray on monitors. **EVALUATOR NOTE:** Provide the candidate a copy of Attachment 2-J after briefing. Place simulator to RUN when candidate states they are ready to begin JPM.	
	START TIME: _____	
1. Reviews Attachment 2-J, "Feeding Steam Generators From Condensate System".	1.1 Reviews Attachment 2-J. COMMENTS: **EVALUATOR NOTE:** SG WR levels are above >14%. Candidate should not reach Feed and Bleed criteria.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
2. Establish The Following Conditions: a. Place the motor driven AFW pumps in PULL-TO-LOCK. b. Place the Main Feed Pumps in PULL-TO-LOCK. c. Close the Main Feedwater Reg Valves. d. Close [MOV-1FW-154A (B)(C) Main Feedwater Isolation Valves. e. Close Bypass Feed Reg Valves. f. Open [MOV-1FW-155A (B)(C) Feedwater Bypass Isolation Valves	2.1 Places Motor Driven AFW Pumps [1FW-P-3A and 3B] Control Switches in PTL. 2.2 Verifies the MDAFW Pumps [1FW-P-3A and 3B] indicating lights extinguish. 2.3 Places Main Feedwater Pumps [1FW-P-1A and 1B] Control Switches in PTL. 2.4 Verifies the Main Feedwater Pumps [1FW-P-1A and 1B] indicating lights extinguish. 2.5 Places Main Feedwater Regulating valves [FCV-1FW-478, 488, & 498] controllers in MANUAL ▼ with 0% demand. 2.6 Verifies Main Feedwater Regulating valves [FCV-1FW-478, 488, & 498] CLOSED, PNL 622 A1, A3, A5 GREEN Status Lights LIT 2.7 Places control switches for Main Feedwater Isolation Valves [MOV-1FW-154 A, B, and C] to CLOSE. 2.8 Verifies Main Feedwater Isolation Valves [MOV-1FW-154 A, B, and C] GREEN Lights LIT, RED Lights NOT LIT. 2.9 Places Bypass Feedwater Regulating valves [FCV-1FW-479, 489, & 499] controllers in MANUAL ▼ with 0% demand. 2.10 Verifies Bypass Feedwater Regulating Valves FCV-1FW-479, 489, & 499] GREEN Lights LIT, RED Lights NOT LIT. 2.11 Verifies Feedwater Bypass Isolation Valves [MOV-1FW-155 A, B, and C] are OPEN, RED Lights LIT, GREEN Lights NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** Open [MOV-1FW-150A and 150B as follows: a. Dispath an Operator to [MCC1-E5] (West Cable Vault – 735') and establish communications with the operator. b. From the Control Room. Open [MOV-1FW-150A, A Main Feedwater Pump Discharge Valve. 1) Hold Open [MOV-1FW-150A] while the Operator de-energizes [MCC1-E5] Cub AY, Main Feedwater Pump 1A Discharge Vlv. c. From the Control Room. Open [MOV-1FW-150B, B Main Feedwater Pump Discharge Valve. 1) Hold Open [MOV-1FW-150B] while the Operator de-energizes [MCC1-E5] Cub AZ, Main Feedwater Pump 1B Discharge Vlv.	3.1 Dispatches an Operator to [MCC1-E5] and establishes communications. **EVALUATOR NOTE:** Role play as the local Operator and when directed to de-energize the valve, have the Simulator Operator perform the actions. Only one valve needs to be opened to meet the critical step. Enter commands: EPS244 for MOV-1FW-150A or EPS245 for MOV-1FW-150B 3.2**C** Places control switch for [MOV-1FW-150A] "A" Main Feedwater Pump Discharge Valve to OPEN. 3.3**C** When [MOV-1FW-150A] RED Light is LIT and GREEN Light is NOT LIT, directs the local Operator to open Cubicle AY on [MCC1-E5]. 3.4 Verifies that [MOV-1FW-150A] indicating lights are NOT LIT 3.5**C** Places control switch for [MOV-1FW-150B] "B" Main Feedwater Pump Discharge Valve to OPEN. 3.6**C** When [MOV-1FW-150B] RED Light is LIT and GREEN Light is NOT LIT, directs the local Operator to open Cubicle AZ on [MCC1-E5]. 3.7 Verifies that [MOV-1FW-150B] indicating lights are NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
4. Start Main Condensate Pump 1A (1B).	4.1 Verifies at least one Condensate pumps is Running. 4.2 Verifies [1CN-P-1A OR 1B] Red Light lit. COMMENTS:	
5. Reset Feedwater Isolation (FWI) By Performing The Following: a. If necessary, reset SI (both trains) b. Reset FWI (both trains) c. Open [HYV-1FW-100A, B, C] 1A, B, C SG Main FW CNMT Isol Vlvs.	**EVALUATOR NOTE:** SI has not been actuated, so the SI Reset/FWI reset is not required, but the candidate may depress the reset buttons. 5.1 Verifies that SI has NOT actuated, status light PNL 62 C4 NOT LIT. 5.2 Depresses Train "A" SI RESET Pushbutton. 5.3 Depresses Train "B" SI RESET Pushbutton. 5.4 Resets FWI by depressing both train A and B FWI/ FW Bypass Valve RESET pushbuttons. 5.5 Verifies HYV-1FW-100A is OPEN. RED Light LIT, GREEN Light NOT LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-190 JPM REVISION: 0	JPM TITLE: Feeding Steam Generators From Condensate System Per FR-H.1

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6.**C** Using Bypass Feed Reg Valves, Commence Feeding At Least ONE SG.	6.1**C** Depresses the UP ▲ Pushbutton for [FCV-1FW-479] to initiate Feedwater to the A Steam Generator. 6.2 Verifies the valve RED light is LIT, GREEN light will also be LIT. (dual indication) COMMENTS:	
7. Verify SG Feed Flow by SG(s) Level Rising on [LR-1FW-477], Wide Range Steam Generator Level	7.1 Verifies Wide Range Level indicated in the A SG on [LR-1FW-477] or computer. **EVALUATOR NOTE:** Wide Range Level may be rising or stabilized on the plant computer or by other indications. COMMENTS:	
7. Return To Procedure And Step in Effect	7.1 Transitions back to FR-H.1 Step 11.g. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete"	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: The plant has tripped from 100% power due to a loss of both main feedwater pumps. All auxiliary feedwater pumps have failed, including attempts to manually start them. Upon transition from E-0, a red heat sink status tree has directed you to FR-H.1, which has been completed through step 11.g, Establish condensate flow to at least one SG. Refer to Attachment 2-J. The "A" SG has been depressurized to support establishing Condensate Flow.

INITIATING CUE: Your supervisor directs you to perform Attachment 2-J, "Feeding Steam Generators From Condensate System", beginning with step 1 and perform all required actions to restore a heat sink.

☐ 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

TRAINING MATERIAL TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

TRAINING MATERIAL NUMBER: 1CR-691

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1CR-691

REVISION NUMBER: 0

TECHNICAL REFERENCES:

1OM-53A.1.ES-0.1 “Reactor Trip Response”, Issue 3, Revision 0
1OM-53C.4.1.4.1. “Process Control Failure”, Revision 1

INSTRUCTIONAL SETTING: Simulator

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith _____ Date

PEER REVIEW BY: _____ Date

APPROVED FOR USE: _____ Training Supervisor or Designee _____ Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1CR-691
New Revision: 0
Description of Change(s): 1. New JPM for Bank Development
Reason for Change (s): 1. Initial issue

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

K/A REFERENCE: 016 K1.03 3.2*/3.2* TASK ID: 0211-020-01-011
016 A2.01 3.0*/3.1* 0211-018-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☒ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID:
Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	All steam generator Condenser steam dump valves are controlled in MANUAL to stop the cooldown, prior to reaching the Safety Injection setpoint.
RECOMMENDED STARTING LOCATION:	Simulator

INITIAL CONDITIONS:

- The plant is in Mode 3 following an inadvertent reactor trip.
- E-0 "Reactor Trip or Safety Injection" was entered and progressed through to transition to ES-0.1, Reactor Trip Response, which has been completed up to the beginning of step 5.

INITIATING CUE:

Your supervisor directs you to perform ES-0.1 step 5, AND maintain RCS temperature at 547°F +/- 5F.

You are responsible for the alarms on VB-C only.

REFERENCES:	1OM-53A.1.ES-0.1 "Reactor Trip Response", Issue 3 Revision 0 1OM-53C.4.1.4.1. "Process Control Failure", Revision 1
TOOLS:	None
HANDOUT:	1OM-53A.1.ES-0.1 "Reactor Trip Response", Issue 3 Revision 0, place kept up to step 5. 1OM-53C.4.1.4.1. "Process Control Failure", Revision 1

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	SIMULATOR SETUP: Post trip, with E-0 completed to ES-0.1 kickout with T-Avg >P-12. Inhibit 2 of 3 LoLo Tavg Bistables • IMF BST-PCS074 INHIBITED • IMF BST-PCS077 INHIBITED Inhibit Auto SIS • IMF SIS10A • IMF SIS10B TRG 5= X10i057c &&x10o039A IMF MSS11 (5 5) 1050 30 **EVALUATOR CUE:** Provide candidate with place kept copy of ES-0.1, and when they are ready to begin JPM, PLACE the simulator in RUN.	
	START TIME: _____	
1. Reviews procedure.	1.1 Reviews procedure provided. COMMENTS:	
2. Check Station Instrument Air Header Pressure – GREATER THAN 100 PSIG.	2.1 Checks Station Instrument Air Header Pressure PI-1IA-106 is >100 psig. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3. Check MSIVs - AT LEAST ONE OPEN	3.1 Checks indicating lights for TV-1MS-101A, B, C. 3.2 Verifies at least one set of RED lights – LIT, corresponding GREEN lights - NOT LIT. COMMENTS:	
4. Check condenser available.	4.1 Checks indicating light PNL 622 C-12 “Condenser AVAIL” - LIT. COMMENTS:	
5. Check condenser steam dump mode selector in TAVG.	5.1 Checks condenser steam dump mode selector switch in TAVG. COMMENTS:	
6. Set steam header pressure setpoint slightly above existing steam header pressure.	6.1 Checks PI-1MS-464A to determine existing steam header pressure. 6.2 Checks AM-1MS-464A placard to determine desired dial pot setting. 6.3 Adjusts AM-1MS-464B dial pot to desired setting greater than existing steam header pressure. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
7.**C** Place condenser steam dump pressure controller in manual.	7.1**C** Depresses AM-1MS-464B MAN pushbutton. 7.2 Verifies RED MAN light – LIT, AUTO light – NOT LIT. COMMENTS:	
8. Verify zero demand on AM-1MS-464B.	8.1 Verifies AM-1MS-464B OUTPUT is 0 %. COMMENTS:	
9.**C** Place condenser steam dump mode selector in STM PRESS.	9.1**C** Places STM Dump Control Mode Selector Switch to the STM PRESS position. 9.2 Verifies Status PNL 622 D9 “STM DUMP ACT” – LIT. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
10. If necessary, defeat T-AVG interlock.	10.1 Checks the following: • Status PNL 622 D-11 "2/3 LO-LO TAVG NOT LIT • Status PNL 622 A-11, (B-11), (C-11) "RCS LOOP 1, (2), (3) LO-LO TAVG NOT LIT 10.2 Determines TAVG is greater than 541°F and defeating of the T-AVG interlock is NOT NECESSARY. COMMENTS:	
11.**C** Place condenser steam dump controller in AUTO.	11.1**C** Depresses AM-1MS-464B AUTO pushbutton. 11.2 Verifies AUTO light – LIT, RED MAN light – NOT LIT. COMMENTS:	
12. Adjust controller setpoint as necessary to maintain RCS temperature.	12.1 Monitors RCS Tavg, adjusts AM-1MS-464B POT setting to control temperature, (if needed). COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	FAULT STATEMENT After the Condenser Steam Dumps are in AUTO, PI-1MS-464A will begin rising. The steam dumps will cause RCS temperature to lower.	
13. Check Station Instrument Air Header Pressure – GREATER THAN 100 PSIG.	13.1 Checks Station Instrument Air Header Pressure PI-1IA-106 is >100 psig. COMMENTS:	
14. Recognizes the erratic operation of the Condenser steam dumps.	14.1 Recognizes the mis-operation of the Condenser Steam Dumps by observing the valve indicating lights on PNL 622. 14.2 Identifies the changes in RCS Tavg. 14.3 Diagnoses the erratic operation of PI-1MS-464A. 14.4 Transitions to procedure 1OM-53C.4.1.4.1, Process Control Failure part A. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: The next step may be done from memory, then be followed up by referring to AOP 1.4.1. It is Critical that the candidate attempts to return RCS Temperature to 547 F +/- 5F after taking manual control of Condenser Steam Dump Valves. If temperature lowers outside of the band, the candidate may be unable to restore RCS temperature due to the reactor trip.	
15.**C** Stabilize the Affected Process. a. Place controller(s) in MAN b. Establish control of process	15.1**C** Depresses AM-1MS-464B MAN pushbutton. 15.2 Verifies RED MAN light – LIT and AUTO light – NOT LIT. 15.3 Checks RCS Tavg is stable. 15.4**C** Depresses AM-1MS-464B OUTPUT ▼ pushbutton to establish control of RCS Tavg. COMMENTS:	
16. SM/US Shall Establish the Following as Applicable. • Control Band • Manual Reactor Trip Criteria • Owner	16.1 Establishes Control Band, Reactor Trip Criteria and Owner for plant Control. COMMENTS: **EVALUATOR CUE:** If asked as SM/US, provide a control band of RCS Tavg 547 F +/- 5 F.	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1CR-691 JPM REVISION: 0	JPM TITLE: Set Up Steam Dumps In The Steam Pressure Mode (PT-1MS-464A fails)

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
17.**C** Check Affected Process Trending To Or In Control band. a. Affected process – RESTORED TO CONTROL BAND. b. IF AUTO function available restore to AUTO.	17.1**C** Adjusts AM-1MS-464 OUTPUT ▼ or ▲ pushbuttons to maintain RCS Tavg 547 F +/- 5F. 17.2 Determines that AUTO function is NOT available due to the erratic operation of PT-1MS-464. COMMENTS:	
	EVALUATOR NOTE: If Tavg lowers outside of the 547 F +/- 5 F control band, it may take a while to restore due to low heat load, therefore once the candidate has demonstrated control of the event by indication of a stable or rising Tavg, the JPM may be terminated.	
18. WHEN Plant is Stable, Go To Applicable Instrument Failure Procedures Or Annunciator Response Procedures.	18.1 Checks RCS Tavg is stable. 18.2 Refers to Annunciators that are in Alarm. COMMENTS:	
	EVALUATOR CUE: That completes this JPM.	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant is in Mode 3 following an inadvertent reactor trip.
- E-0 “Reactor Trip or Safety Injection” was entered and progressed through to transition to ES-0.1, Reactor Trip Response, which has been completed up to the beginning of step 5.

INITIATING CUE:

Your supervisor directs you to perform ES-0.1 step 5, AND maintain RCS temperature at 547°F +/- 5F.

You are responsible for the alarms on VB-C only.

☐ 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

TRAINING MATERIAL TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

TRAINING MATERIAL NUMBER: 1PL-002

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1PL-002

REVISION NUMBER: 14

TECHNICAL REFERENCES:

1OM-36.4.AFN, "Local – Overspeed Trip", Revision 5

INSTRUCTIONAL SETTING: In-Plant

APPROXIMATE DURATION: 15 Minutes

PREPARED BY: M. Klingensmith 2-8-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1PL-002
New Revision: 14
Description of Change(s): 1. Updated for current JPM format. 2. Updated Task number. 3. Modified step 8 cue to have the operator locally reset stop circuit.
Reason for Change (s): 1. Changed format for bank development. 2. Task list was updated. 3. NRC evaluator requested the change.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-002 JPM REVISION: 14	JPM TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

K/A REFERENCE: 064 K4.02 3.9/4.2 TASK ID: 0362-017-04-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:	Performer ID:

Time Critical: ☐ Yes ☒ No	Allotted Time: 15 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	Reset the Emergency Diesel Generator After an Overspeed Trip.
RECOMMENDED STARTING LOCATION:	In-Plant
INITIAL CONDITIONS:	• EDG # (1/2) is being tested in accordance with 1OST-(36.1/36.2), "Diesel Generator No. (1/2) Monthly Test." • The DG was started, loaded and had been running for 15 minutes • The operator running the diesel was lowering load on the Diesel Generator when Control Room annunciator (A9-7/A9-15), DG (1/2) Local Panel Trouble was received • Local operator performing the OST reported that an overspeed trip alarm has been received on the Engine Control Cabinet and that the DG has tripped • The operator lowering load on the Diesel Generator believes he may have reduced load too quickly
INITIATING CUE:	Your supervisor directs you to proceed to the DG Building to investigate and then reset the overspeed trip.
REFERENCES:	1OM-36.4.AFN, "Local – Overspeed Trip", Revision 5
TOOLS:	None
HANDOUT:	1OM-36.4.AFN, "Local – Overspeed Trip", Revision 5

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-002 JPM REVISION: 14	JPM TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	EVALUATOR NOTE: Provide candidate a copy of 1OM-36.4.AFN, "Local – Overspeed Trip".	
	START TIME: _____	
1. Reviews procedure.	1.1 Reviews 1OM-36.4.AFN. COMMENTS:	
2. Check overspeed trip lever tripped.	2.1 Checks the trip lever is in the TRIPPED position. **EVALUATOR CUE:** The overspeed trip lever is in the tripped position. (UP). COMMENTS:	
3. **IF** overspeed trip lever tripped, Verify DG shutdown.	3.1 Verifies EDG is stopped by observing tachometer at ZERO or engine not running. **EVALUATOR CUE:** EDG Tachometer at ZERO or engine is not running. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-002 JPM REVISION: 14	JPM TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
4. **IF** DG running and overspeed trip lever tripped, shutdown DG using one or more of the following: a)Opening DC CONTROL Breaker on Exciter Cabinet b) Manually placing fuel racks in "no load" position. c) Fill EDG room with CO_2 by initiatinga CO_2 discharge from the pull box (last resort).	4.1 This step is N/A. COMMENTS:	
5. Refer to T.S. 3.8.1, 3.8.2 and 3.8.3.	5.1 Notifies Control Room to review Tech Specs. **EVALUATOR CUE:** Role play as US and state that the appropriate Tech Specs have been reviewed. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-002 JPM REVISION: 14	JPM TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6. Refer to Figure 1 for correct and incorrect limit switch position.	6.1 References 1OM-36.4.AFN figure 1. **EVALUATOR CUE:** If the limit switch is observed, inform candidate that it is approximately in the 10 o'clock position. COMMENTS:	
7.**C** Relatch overspeed trip lever by rotating trip lever counterclockwise **UNTIL** latched.	7.1**C** Simulates moving the overspeed trip lever counterclockwise to the latched (running) position. (Or until it mates with its limit switch). **EVALUATOR CUE:** Overspeed trip lever is full counterclockwise and mated with the limit switch. The limit switch is approximately in the 2 o'clock position. COMMENTS:	
8.**C** Reset stop circuit by simultaneously Depressing both Engine Stop pushbuttons. (BB-C **OR** Local Panel)	8.1**C** Depresses BOTH engine stop pushbuttons. (engine control cabinet). **EVALUATOR CUE:** If candidate requests Control Room depress the stop push buttons, state that the Reactor Operator is busy, and for them to reset locally. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-002 JPM REVISION: 14	JPM TITLE: Reset the Emergency Diesel Generator After an Overspeed Trip

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
9. Reset overspeed trip annunciator.	9.1 Depresses the alarm reset pushbutton (engine control cabinet). 9.2 Verifies overspeed trip light has extinguished. **EVALUATOR CUE:** The alarm has already been silenced (acknowledged) and the overspeed trip light is NOT LIT. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete**"**	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

Use this sheet if Protected Train is "B"

☐ Read:

INITIAL CONDITIONS:

- EDG #1 is being tested in accordance with 1OST-36.1, "Diesel Generator No. 1 Monthly Test."
- The DG was started, loaded and had been running for 15 minutes
- The operator running the diesel was lowering load on the Diesel Generator when Control Room annunciator (A9-7), DG 1 Local Panel Trouble was received
- Local operator performing the OST reported that an overspeed trip alarm has been received on the Engine Control Cabinet and that the DG has tripped
- The operator lowering load on the Diesel Generator believes he may have reduced load too quickly

INITIATING CUE: Your supervisor directs you to proceed to the DG Building to investigate and then reset the overspeed trip.

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

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

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

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

CANDIDATE DIRECTION SHEET

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

Use this sheet if Protected Train is "A"

☐ Read:

INITIAL CONDITIONS:

- EDG #2 is being tested in accordance with 1OST-36.2, "Diesel Generator No. 2 Monthly Test."
- The DG was started, loaded and had been running for 15 minutes
- The operator running the diesel was lowering load on the Diesel Generator when Control Room annunciator (A9-15), DG 2 Local Panel Trouble was received
- Local operator performing the OST reported that an overspeed trip alarm has been received on the Engine Control Cabinet and that the DG has tripped
- The operator lowering load on the Diesel Generator believes he may have reduced load too quickly

INITIATING CUE: Your supervisor directs you to proceed to the DG Building to investigate and then reset the overspeed trip.

☐ 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

TRAINING MATERIAL TITLE: Place a Reactor Protection Channel in the Tripped Condition

TRAINING MATERIAL NUMBER: 1PL-009

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1PL-009

REVISION NUMBER: 11

TECHNICAL REFERENCES:

1OM-53C.4.1.2.1C, Power Range Channel Malfunction, Rev 14

INSTRUCTIONAL SETTING: In-Plant

APPROXIMATE DURATION: 7 Minutes

PREPARED BY: M. Klingensmith 2-7-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1PL-009
New Revision: 11
Description of Change(s): 1. JPM formatting updated. 2. Updated Task number. 3. Added evaluator note/cue prior to switch manipulation to identify procedure/labeling issue and identified the correct labeling in the Standard Column of the JPM.
Reason for Change (s): 1. Changed format for BVPS. 2. Task list was updated. 3. Plant labeling has a hyphen between C1 and C2 (BS-1RC-412C-1).

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-009 JPM REVISION: 11	JPM TITLE: Place a Reactor Protection Channel in the Tripped Condition

K/A REFERENCE: 012A4.04 3.3/3.3 TASK ID: 0011-202-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID:
Time Critical: ☐ Yes ☒ No	Allotted Time: 7 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD:	N41 OTΔT Bistables Tripped, .
RECOMMENDED STARTING LOCATION:	In-Plant
INITIAL CONDITIONS:	The Plant is in Mode 1 at 100% power. Power Range Channel N-41 has malfunctioned. 1OM-53C.4.1.2.1C has been performed through Step 9.
INITIATING CUE:	Your supervisor directs you to simulate tripping the appropriate bistables per AOP 1.2.1C, Step 10.
REFERENCES:	1OM-53C.4.1.2.1C, Power Range Channel Malfunction, rev 14.
TOOLS:	Key 138 for AMSAC Panel door
HANDOUT:	1OM-53C.4.1.2.1C, Power Range Channel Malfunction, rev 14, place kept up to and including step 9.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-009 JPM REVISION: 11	JPM TITLE: Place a Reactor Protection Channel in the Tripped Condition

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	START TIME: _____	
	EVALUATOR NOTE: Inform Candidate that you will interface with him as Control Room operator. To lower traffic in control room, provide candidate with procedure during briefing and provide key when requested.	
1. Obtains Key No. 15 for primary process rack doors and Refer to Attachment 1, "OTΔT Bistable List".	1.1 Obtains Key No. 15. 1.2 Refers to Attachment 1 for N41 bistables. 1.3 Proceeds to Process Rack #1, RK-PRI-PROC-1, and unlocks and opens door. COMMENTS:	
	EVALUATOR NOTE/CUE: There is a discrepancy between the procedure and plant labeling. If questioned, inform the candidate that the Shift Manager has been notified, and it is the correct switch.	
2.**C** IAW Attachment 1, for Channel N41; Trips BS-1RC-412C1, OTΔT Trip bistable. BS-1RC-412C1 (OTΔT Trip)	2.1**C** Places N41 OTΔT Trip bistable in the tripped condition by positioning Toggle Switch for BS-1RC-412C-1 to the UP position. 2.2 Verifies RED tripped light lit **EVALUATOR CUE:** BS-1RC-412C-1 toggle switch is in the UP position and the red light is lit. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-009 JPM REVISION: 11	JPM TITLE: Place a Reactor Protection Channel in the Tripped Condition

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3.**C** IAW Attachment 1, for Channel N41; Trips BS-1RC-412C2, OTΔT Rod Stop bistable. BS-1RC-412C2 (OTΔT Rod Stop)	3.1**C** Places N41 OTΔT Rod Stop bistable in the tripped condition by positioning Toggle Switch for BS-1RC-412C-2 to the UP position. 3.2 Verifies RED tripped light lit. **EVALUATOR CUE:** BS-1RC-412C-2 toggle switch is in the UP position and the red light is lit. COMMENTS:	
	EVALUATOR CUE: State "This JPM is complete".	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS: The Plant is in Mode 1 at 100% power. Power Range Channel N-41 has malfunctioned. 1OM-53C.4.1.2.1C has been performed through Step 9.

INITIATING CUE: Your supervisor directs you to simulate tripping the appropriate bistables per AOP 1.2.1C, Step 10.

☐ 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

TRAINING MATERIAL TITLE: Reset the Terry Turbine Trip Throttle Valve

TRAINING MATERIAL NUMBER: 1PL-004

PROGRAM TITLE: Licensed Operator Training

COMPUTER CODE: 1PL-004

REVISION NUMBER: 13

TECHNICAL REFERENCES:

1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting, Revision 7

INSTRUCTIONAL SETTING: In-Plant

APPROXIMATE DURATION: 10 Minutes

PREPARED BY: M. Klingensmith 2-8-21
Date

PEER REVIEW BY: _____ _____
Date

APPROVED FOR USE: _____ _____
Training Supervisor or Designee Date

OPERATIONS JOB PERFORMANCE MEASURE

JPM CHANGE SUMMARY

Affected JPM: 1PL-004
New Revision: 13
Description of Change(s): 1. Updated for current JPM format. 2. Updated task number. 3. Modified JPM step 1 to match the procedure. 4. Added “Holding the overspeed trip connecting rod to the left.” To the evaluator cue in step 5.
Reason for Change (s): 1. Changed format for bank development. 2. Task list update. 3. Evaluator ability to follow the step sequence. 4. NRC requested the additional cue be added to the step.

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

K/A REFERENCE: 061 A2.04 3.4/3.8 TASK ID: 0241-203-01-011

JPM APPLICATION: ☒ REQUALIFICATION ☒ INITIAL EXAM ☐ TRAINING

☐ SRO ONLY ☐ ALTERNATE PATH JPM ☐ ADMINISTRATIVE JPM

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

EVALUATION RESULTS

Performer Name:		Performer ID:
Time Critical: ☐ Yes ☒ No	Allotted Time: 10 Minutes	Actual Time: minutes

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

Comments: _____

OBSERVERS

Name/ID:	Name/ID:
Name/ID:	Name/ID:

EVALUATOR

Evaluator (Print): _____ Date: _____

Evaluator Signature: _____

OPERATIONS JOB PERFORMANCE MEASURE

EVALUATOR DIRECTION SHEET

TASK STANDARD: 1FW-P-2 trip throttle valve is reset.

RECOMMENDED STARTING LOCATION: In-Plant

INITIAL CONDITIONS:

- The plant is in Mode 1 at 50% power.
- Annunciator A7-7, "Steam Unavailable to Turbine Driven Feed Pump" is illuminated.
- A plant operator has verified that the trip throttle valve is closed.
- No start signal exists for 1FW-P-2, and the pump is stopped.

INITIATING CUE: The US requests that you simulate resetting the trip throttle valve for 1FW-P-2 IAW 1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting.

REFERENCES: 1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting, Revision 7

TOOLS: None

HANDOUT: 1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting, Revision 7

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
	START TIME: _____	
	EVALUATOR CUE: Provide candidate a copy of 1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting.	
1. If [1FW-P-2], Steam Driven Auxiliary Feedwater Pump, is being placed in standby, perform the following: a) Verify closed [TV-1MS-105A], Turb Steam Sup A Trn Trip Vlv. b) Verify closed [TV-1MS-105B], Turb Steam Sup B Trn Trip Vlv. c) Verify open [MOV-1MS-105], AFW Turb Steam Isol Vlv.	1.1 Contacts control room to verify valve position for]TV-1MS-105A], [TV-1MS-105B] and [MOV-1MS-105]. **EVALUATOR CUE:** Role-play the control room operator and report that TV-1MS-105A and TV-1MS-105B both have their GREEN lights – LIT / RED lights – NOT LIT. MOV-1MS-105; RED light – LIT / GREEN light – NOT LIT. COMMENTS:	
2. Press the Manual Emergency Trip Lever to verify that the Overspeed Trip Mechanism is tripped.	2.1 Depresses the manual emergency trip lever. **EVALUATOR CUE:** Manual emergency trip lever is depressed. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
3. Verify that 1MS-465, 1FW-T-2 Inlet Stm Isol, is unlatched.	3.1 Verifies the valve is unlatched by ensuring trip hook is not engaged (may refer to Figure 1 and 2). **EVALUATOR CUE:** Trip hook is not engaged. COMMENTS:	
4.**C** Turn the 1MS-465, 1FW-T-2 Inlet Stm Isol, handwheel in the clockwise direction until the sliding nut and trip lever rise to the upper limit of travel.	4.1**C** Turns 1MS-465 in the clockwise direction until the sliding nut and trip lever rise to the upper limit of travel. **EVALUATOR CUE:** Trip lever and sliding nut are at the upper limit of travel. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
5.**C** Reset the Overspeed Trip Mechanism by performing the following: a. Hold the overspeed trip connecting rod to the left. b. Verify the overspeed tappet washer flat side directly faces the overspeed trip lever. c. Push the overspeed tappet down to ensure the tappet is in the correct position. d. Gently release the connecting rod and allow the spring tension to maintain the reset condition. e. Verify the flat side of the washer is flush against the vertical side of the overspeed trip lever. f. Verify that the trip lever is engaged with the trip hook.	5.1**C** a. Overspeed trip lever held to the left. b. Verifies Tappet washer flat side turned toward trip lever. c. Push the overspeed tappet down to ensure the tappet is in the correct position. (MAY Refer to Figure 1). d. Trip lever released. e. Verifies flat side of washer is flush against the vertical side of overspeed trip lever. f. Verifies trip lever is engaged with the trip hook. **EVALUATOR CUE:** Holding the overspeed trip connecting rod to the left. Flat side of washer is flush against the vertical side of overspeed trip lever. Trip lever is engaged with the trip hook. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
6.**C** Slowly open 1MS-465, 1FW-T-2 Inlet Stm Isol, by turning the handwheel counterclockwise, and verify that the pump does NOT accelerate in an uncontrolled manner.	6.1**C** Slowly rotates 1MS-465 handwheel fully counterclockwise to open. **EVALUATOR CUE:** 1MS-465 handwheel is fully counterclockwise. 6.2 Verifies pump does NOT accelerate in an uncontrolled manner by observing pump shaft. **EVALUATOR CUE:** If asked, indicate that the pump shaft is not rotating. COMMENTS:	
7. Requests concurrent verification of 1MS-465 position.	7.1 Contacts Unit Supervisor and requests concurrent verification of 1MS-465 position. **EVALUATOR CUE:** Role-play that another individual has been assigned the concurrent verifications. COMMENTS:	

OPERATIONS JOB PERFORMANCE MEASURE

JPM NUMBER: 1PL-004 JPM REVISION: 13	JPM TITLE: Reset the Terry Turbine Trip Throttle Valve

STEP (**"C"** Denotes CRITICAL STEP)	STANDARD (Indicate **"S" FOR SAT** or **"U" FOR UNSAT)⇒**	**S/U**
8. WHEN open, THEN adjust 1MS-465, 1FW-T-2 Inlet Stm Isol, 1/4 turn off of the backseat.	8.1 Rotates 1MS-465 handwheel in the clockwise direction ¼ turn off its backseat. **EVALUATOR CUE:** 1MS-465 handwheel ¼ turn clockwise, concurrent verification is complete. COMMENTS:	
9. Notify the Unit 1 Control Room Operator that 1FW-P-2, Steam Driven Auxiliary Feedwater Pump, is available.	9.1 Contacts the Unit 1 Control Room to report that the trip throttle valve is reset. **EVALUATOR CUE:** Acknowledge the report. COMMENTS:	
	EVALUATOR CUE: After the candidate reports the status of 1FW-P-2 to the Control Room; state "This JPM is complete**".**	
	STOP TIME: _____	

CANDIDATE DIRECTION SHEET

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

☐ Read:

INITIAL CONDITIONS:

- The plant is in Mode 1 at 50% power.
- Annunciator A7-7, “Steam Unavailable to Turbine Driven Feed Pump” is illuminated.
- A plant operator has verified that the trip throttle valve is closed.
- No start signal exists for 1FW-P-2, and the pump is stopped.

INITIATING CUE: The US requests that you simulate resetting the trip throttle valve for 1FW-P-2 IAW 1OM-24.4.V, FW-P-2 Trip Throttle Valve Resetting.

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

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

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

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

Appendix D **Scenario Outline**

Facility: **BVPS Unit 1** Scenario No. 1 Op Test No.: 1LOT21 NRC
Examiners: _____ Candidates: _____ SRO
_____ _____ ATC
_____ _____ BOP

Initial Conditions: **IC 156 (15)**: 55% power, 500 MWe, MOL, Equ. XE Conditions, CB "D" @ 169 steps, RCS boron - 1180 ppm.

Turnover: 1FW-P-1A was returned to service 2 hours ago, maintain 55% power for 24 hour confidence run of feedwater pump.

Critical Tasks:
1. CT-16 (E-1.C) Stop RCP's
2. CT-51 (FR-S.1.B) Start AFW pumps
3. CT-52 (FR-S.1.C) Initiate negative reactivity

Event No.	Malf. No.	Event Type	Event Description
1	AUX13G (0 0)	(C,A) BOP, SRO (TS) SRO	VS-F-4A spurious trip, requires BOP to start VS-F-4B.
2	XMT-CNS008A 0	(TS) SRO	RWST Level transmitter, LT-1QS-100B fails low
3	TUR15 (0 0) 27 10 CRF06 5	(C,A) ALL (TS) SRO	Turbine valve position limiter fails low, causes ~ 100 mw load reduction with malfunction of Rod speed at 5 SPM. BOP to remove turbine from Limiter.
4	FWM09B (7 0) 25 0	(C,A) BOP, SRO	"B" SG Feedwater valve, FCV-1FW-488, begins oscillating, requiring BOP to manually control level.
5		(N) BOP, SRO	Shutdown of 1FW-P-1A.
6	IMF EPS18 (0 0) TRUE	(R) ATC (C,A) BOP, SRO	Loss of Main transformer due to Differential Overcurrent.
7	CRF12A CRF12B	(M) ALL	Loss of "C" 4Kv bus with Failure of Automatic and manual Reactor trip from the control room requires entry into FR-S.1.
8	INH20 INH21 INH35 INH36	(C) BOP, SRO	All Aux Feedwater pumps fail to automatically start, requires BOP to start AFW pumps.
9	SIS08	(M) ALL	1200 gpm LOCA occurs on "A" Loop.
10	INH40	(C) ATC, SRO	CH-P-1B fails to auto start on SI signal.

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

E-0 → FR-S.1 → E-0 → E-1 → ES-1.2

After taking the shift at 55% power with directions to maintain power, MOL, Leak Collection Exhaust fan, 1VS-F-4A, will trip, the crew will respond using the ARP which will direct the BOP to manually start 1VS-F-4B. The SRO will address applicable TS and License Requirements Manual.

The "B" RWST level channel, LT-1QS-100B, will then fail low, the SRO will address Tech Specs for the failed RWST level channel.

A malfunction will then occur with the turbine valve position limiter causing a 100 mw load rejection, with a Rod speed malfunction that causes control rods to auto insert at 5 SPM, requiring the ATC to manually insert rods or borate the RCS.
At the same time, a malfunction will occur with the "B" main feed regulating valve controller, FCV-1FW-488, causing oscillations in the "B" SG level. IAW AOP 1.4.1, the BOP will manually stabilize and control level. After level is stabilized, the BOP will take actions to "Recover the Governor Valves from the Limiter" IAW 1OM-26.4.AK.
The SRO will enter AOP 1.35.2, "Load Rejection," to stabilize the plant and address DNB technical specifications.

The load rejection will cause reactor power to decrease to <49% (P-9).

A report from the field will state that there is a significant oil leak on the "A" Main feedwater pump requiring the BOP to shutdown the pump.

There will then be a loss of the main transformer due to Differential overcurrent causing an immediate turbine trip. The crew will enter AOP 1.26.1 and begin reducing Rx power. The rod speed remains at 5 SPM when in AUTO, requiring the ATC to manually insert rods.

When Rx power lowers to <13% or the condenser steam dumps are placed in Steam Pressure mode, the "C" 4Kv bus will fail, resulting in a loss of the "C" RCP and the "B" Main feedwater pump, the SRO will direct the ATC to manually trip the reactor.
The ATC will unsuccessfully attempt to trip the reactor from BB-B and BB-A and begin manually inserting the control rods as auto rod insertion capability failed when power reduced to < 38%.
The SRO will enter FR-S.1 with the ATC and BOP performing the IOA's.
When Rx power is <3% and after Emergency boration flow is established in FR-S.1, if the crew previously dispatched an operator to locally trip the reactor, the reactor will be locally tripped. The ATC will verify reactor power is <5% after which the SRO will return to E-0.
3 minutes after the Rx is locally tripped, a 1200 gpm LOCA will occur on the A loop resulting in an automatic SI, the "B" charging/HHSI pump will fail to automatically start on the SI signal.

Additionally, during the ATWS condition, auto start is inhibited for Auxiliary feed water pumps.

After returning to E-0, the SRO will determine that the RCS is not intact and transition to E-1.
The crew will shutdown the "A" and "B" RCP's due to meeting RCP trip criteria.

The scenario will be terminated at the lead evaluators discretion after the crew transitions to ES-1.2.

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

INITIAL CONDITIONS: IC-156, (15) 55 % Power, MOL, Bank D @ 169 steps, Equilibrium XE, 1180 PPM Boron,

ADDITIONAL LINEUP CHANGES	STICKERS	MONITOR SETUP
		High power splash
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**

SHIFT TURNOVER INFORMATION

1. 1FW-P-1A just returned to service, maintain 55% power for 24 hour confidence run of 1FW-P-1A.
2.
3.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide MOL Rapid Power Reduction reactivity plan.
2.

PROCEDURES NEEDED

E-0
E-1
ES-1.2
FR-S.1
1OM-26.4.AK
1OM-46.4.G
Attachment 1-F
Attachment 1-K
Attachment 2-AD
AOP 1.1.3
AOP 1.4.1
AOP 1.26.1
AOP 1.35.2

Insert preloads per the schedule file for this scenario:

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 1: 1VS-F-4A trips **IMF AUX13G** **ROLE PLAY:** Wait 4 minutes then report back as applicable. SWITCHGEAR - If dispatched to breaker, report breaker 8N5 is tripped. FAN - If dispatched to fan, report that the fan housing is damaged, appears that the fan blades have failed. If started, 1VS-F-4B is running SAT. Continue with next event at LE discretion	1VS-F-4A trips A11-33; Leak Collection Exhaust Fan Auto Stop SRO references Tech Specs.	BOP notes alarm, informs SRO. BOP refers to ARP. BOP manually starts 1VS-F-4B. Crew dispatches operators to investigate cause of fan trip. TS 3.7.12 (Info Only) LR 3.7.7. Condition A, restore in 7 days.
EVENT 2: RWST Level Channel fails low **IMF XMT-CNS008A (0 0) 0 30** **NOTE:** LT-1QS-100B is a Ch 4 Instrument. Continue with next event at LE discretion	LT-1QS-100B fails low. VB-C, level indication fails low. A1-99, 1/3 RWST level low A6-29, RWST Cold S/D CH 2 level low. A1-26, 1/4 RWST level ext low. Status Panel 62, Window D3 Status Panel 176, Window D22 SRO evaluates Tech Specs for failed RWST level channel.	ATC acknowledges alarm. BOP reviews ARPs. Crew determines LT-1QS-100B, Channel 4, RWST level transmitter failed low. SRO addresses TS for LT-1QS-100B failure. 3.3.2, Condition A, One or more functions with one or more channels inoperable IMMEDIATELY enter Condition referenced in Table 3.3.2-1. 3.3.2, Function 2.b 2, CNMT Spray Systems, Recirculation Spray, Condition D, trip CH w/in 72 hrs. 3.3.2, Function 7.b, Auto switchover to CNMT sump, Condition J, place CH in Bypass w/in 72 hrs. 3.3.3, for PAM instrumentation – for Info Only.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 3 & 4: ~100 MW Turbine Runback due to Valve Position limiter failure with Rod speed malfunction. 2 minutes after Control rods are taken out of AUTO, FCV-1FW-488 begins oscillating. **IMF TUR15 (0 0) 78 10** **IMF CRF06 5** Following commands pre-loaded **IRF PLP-MAL06 (7 0) 180** **IMF FWM09B (4 120) 25**	Rods begin stepping in, Megawatts decrease RCS temperature and pressure rise accordingly SRO enters AOP 1.1.3 then transitions to AOP 1.35.2, Load Rejection	IAW Immediate Operator Action of AOP 1.1.3, ATC announces unexpected rod motion, verifies megawatts decreasing and announces load rejection. ATC checks Rods are inserting in AUTO and Tavg is dropping to Tref. ATC recognizes control rods are inserting slowly at 5 spm and places rod control in manual and inserts. ATC borates as necessary by referring to reactivity plan.
	SRO evaluates EPP not applicable at this time.	ATC/BOP, sounds standby alarm, announces Unit 1 load rejection. Verify Normal EHC System Operation: BOP checks the Valve Position Limit and verifies that it is NOT consistent with pre-event value and that the Valve Position Limit red light is lit.
NOTE: It is not the intent for the BOP to completely remove GVs from the limiter. The BOP notices Main Feed Regulating Valve oscillations.	A7-53, SG 1B Level Deviation From Setpoint	As time permits, SRO directs BOP to perform 1OM-26.4.AK to recover the GV's from Limiter. IAW AOP 1.4.1, BOP notes erratic automatic operation informs SRO and takes manual control of main feed regulating valve, FCV-1FW-488 and restores stable level at setpoint.
ROLE PLAY: If dispatched to locally investigate feed valve, wait 2 minutes then report back that there is nothing obvious identified at the valve.	SRO enters AOP 1.4.1, Process Control Failure, Part A.	SRO provides a control band and Rx trip criteria of 25% low and 85% high for operation of FCV-1FW-488 in Manual.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
		Crew notifies I&C of FCV-1FW-488 controller auto control failure with satisfactory manual control.
NOTE: If DNB Tech Spec entry not identified by the crew at this time, ask as a follow-up question. Continue with next event at LE discretion	SRO evaluates Technical Specifications:	3.4.1 (RCS DNB Parameters, RCS press < 2218 psia) Condition A: restore RCS pressure within 2 hours.
EVENT 5: Shutdown of 1FW-P-1A. **ROLE PLAY:** At LE request, report in as Turbine Operator that the "A" Main Feedwater pump has a significant oil leak and must be removed from service. Continue with next event at LE discretion		IAW 1OM-24.4.F, BOP shuts down 1FW-P-1A, verifies pump discharge pressure decreases and discharge valve, MOV-1FW-150A closes.
EVENT 6: Loss of the Main Transformer due to Differential OC. **IMF EPS18 (0 0) TRUE**	Turbine trip with immediate MUG trip. 1st out, A5-46: Man Turb trip at Turb A5-49: Generator Prot Gen trip A5-50: 345 Kv Leads prot trip A5-57: Main Trans Diff Prot Gen trip A8-5; Man Trans Oil Temp High A8-6; Main Trans Fire A8-35: Trans Deluge Valve Open	Crew identifies a turbine trip has occurred.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
	SRO enters AOP 1.26.1	SRO directs crew to perform the IOA's for AOP 1.26.1. BOP verifies turbine trip: • Throttle OR Governor valves ALL closed. • Main Generator output brks – open. • Exciter Circuit breaker – open.
NOTE: If still in auto rods, Automatic rod insertion will stop when Rx power is < 38%. ATC will be required to manually insert rods to reduce reactor power. **NOTE**: Depending upon the crews response to this event, DNB TS may be applicable. **NOTE**: Event 7 loss of "C" 4kv bus with Rx trip failures will automatically occur when either Rx power is <13% power, Steam dumps in STM PRESS mode or at LE discretion.		ATC manually inserts the control rods for the reactor power reduction. BOP verifies condenser steam dumps are responding as expected and controlling RCS temperature. SRO directs ATC to stabilize reactor power to between 12% and 15% using Rods and/or Boration.
<u>EVENT 7:</u> Loss of "C" 4kv bus **IMF EPS04C (5 0) 0** (preloaded)	Loss of "C" 4kv bus results in loss of "C" RCP and "B" main feedwater pump.	Crew reports numerous electrical alarms. ATC reports loss of "C" RCP with Rx still critical, recommends to SRO that the Rx should be manually tripped.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 8 - 10,</u> (all preloaded) ATWS with Auto Rod insertion failure, AFW pump auto start failures 1200 gpm LOCA on "A" loop (3 min after Rx is locally tripped) "B" Charging pump auto start failure **IMF CRF12A/B (0 0)** **IMF CRF02A (5 0)** **INH40**(preloaded)	SRO enters FR-S.1	ATC attempts a manual reactor trip, reports trip failure/ ATWS condition. SRO directs operators to perform IOA's of FR-S.1, enters FR-S.1 at step 1 of E-0.
<u>Critical Task CT-52 (FR-S.1.C):</u> **Crew inserts negative reactivity into the core by inserting RCCAs before completing the immediate action steps of FR-S.1.** **Basis for Selection:** SAFETY SIGNIFICANCE -- Failure to insert negative reactivity, under the postulated plant conditions, results in an unnecessary situation in which the reactor remains critical or returns to a critical condition. Performance of the critical task would make the reactor subcritical and provide sufficient shutdown margin to prevent (or at least minimize the power excursion associated with) any subsequent return to criticality. Failure to insert negative reactivity constitutes "mis-operation or incorrect crew performance which leads to incorrect reactivity control (e.g., failure to initiate emergency boration or manually insert RCCAs)."		Crew performs Immediate Operator Actions of FR-S.1 BOP verifies Turbine previously tripped. ATC recognizes control rods are not automatically inserting, places rods in Manual and begins inserting rods.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 8 - 10, (continued)

Inhibited Auto start of all AFW pumps.

IMF INH20
IMF INH21
IMF INH36
(preloaded)

Critical Task CT-51 (FR-S.1.B)
Crew starts at least 1 AFW pump (with at least 370 gpm flow) before WR SG level is less than 10%.

Basis for Selection:
SAFETY SIGNIFICANCE -- Failure to start at least the minimum required number of AFW pumps under these conditions can lead to violation of the RCS emergency stress limit.

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

BOP manually starts 1FW-P-3A and 1FW-P-3B motor-driven AFW pumps.

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

BOP verifies all AFW throttle valves are open.

BOP verifies AFW flow.

Crew initiates Emergency Boration Flow by;

Verifying at least 1 charging pump is running
Checking Safety Injection is NOT actuated.
Aligning Boration path by;
- Opening MOV-1CH-350.
- Starting “A” Boric Acid pump in “FAST”.
- Verifying Emergency Boration flow > 30 gpm.

Aligning Charging flow path by adjusting FCV-1CH-122 to establish > 75 gpm charging flow.
Verifying RCS pressure is < 2335 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10, (continued) **ROLE PLAY:** When requested to open the reactor trip breakers & trip the rod drive MG set output ACBs, wait until the crew has initiated emergency boration flow and the SRO is evaluating Rx power <5% then actuate "Local Rx Trip – no delay" schedule file, 1st Rx trip breaker will open immediately after actuating schedule file. **IMF CRF14A 0** **IMF CRF14B 10** **IMF CRF01A 25 1** **IMF CRF01B 40 1** **ROLE PLAY:** When all breakers are open, report actions to the control room.		Crew alerts plant personnel by; • Sounding the standby alarm • Announcing a Unit 1 Rx trip w/o SCRAM • Dispatching an operator to locally trip the Rx.
NOTE: The local Rx trip starts a 3 minute countdown until Event 9 (1200 gpm LOCA) is automatically inserted.	Crew continues in FR-S.1 after dispatching an operator.	BOP verifies turbine is tripped. BOP verifies MOV-1MS-100A, B automatically CLOSED. BOP depresses the RESET Pushbutton on the Reheater Controller. ATC checks if SI is actuated.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10, (continued)		
NOTE: This is a continuous action step, when the Rx is locally tripped, the crew will return to this step and then transition back to E-0, Step 1.	When the Rx is locally tripped. SRO returns to E-0, step 1.	ATC checks if Rx is subcritical • Power range channels < 5% • IR channels – negative startup rate. ATC verifies Reactor trip: • Rx trip and bypass breakers open. • Power range indication is < 5%. • Neutron flux is dropping. BOP verifies Turbine trip: • Throttle OR Governor valves ALL closed. • Main Generator output brks - open. • Exciter Circuit breaker – open. BOP verifies Power to AC Emergency Busses • Using VB-C voltmeters, verifies either AE or DF has voltage indicated. BOP identifies that both emergency busses are energized from off-site power.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10; (continued) **NOTE:** Event 9 (1200 gpm "A" loop LOCA) is automatically inserted 3 minutes after the local Rx trip occurs, depending upon the crews timing through the IOA's of E-0, SI may not be actuated or required, but RCS pressure will be dropping and automatic SI will be imminent. **NOTE:** Crew may also MANUALLY actuate SI due to loss of PRZR level.	SI automatically actuated due to the SBLOCA.	Check SI Status. ATC checks if SI is required: • ATC verifies CNMT press < 5psig. • ATC verifies PRZR press is not > 1850 psig. • ATC/BOP verifies Steamline press > 500 psig. Crew determines SI is required; ATC manually actuates SI by depressing both trains' pushbuttons. ATC/BOP, sounds standby alarm, announces reactor trip and safety injection. Check if SI flow should be reduced: • Crew verifies CNMT radiation, Pressure and Sump level are not consistent PRE-EVENT. SRO determines SI flow should not be secured.
EVENT 10; Auto start failure of 1CH-P-1B **INH40** If AFW pump automatic start failure was not previously identified, the crew would identify and start 1FW-P-2, 1FW-P-3A and 3B at this step.		ATC verifies SI system status: • Charging pumps running – 1 running. ATC starts 1CH-P-1B. • LHSI pumps running – 2 running. • BIT Flow indicated – YES. BOP verifies AFW status: • Motor-driven AFW Pumps – 2 RUNNING. • Turbine-driven pump: TV-1MS-105A, B open. A7-7 is NOT LIT, turbine driven pump running. • AFW Throttle Valves all FULL OPEN. • Total AFW Flow is > 370 GPM.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 8 - 10,</u> (continued) **NOTE:** Evaluation of BOP performing Attachment 1-K begins on page 19.	<u>List of Attachment 1-K Discrepancies:</u> • AFW pumps failed to automatically start. • "B" Charging pump failed to auto start on SI signal.	SRO directs BOP to perform Attachment 1-K.
	RCS temperature < 547°F and dropping due to Safety Injection flow.	ATC checks RCS temp. stable at or trending to 547°F: • ATC verifies no steam release is occurring. • ATC verifies Reheat steam is isolated. • ATC reduces total feedflow to minimize C/D. ATC verifies PRZR isolated: • PORVs – CLOSED (all) • Spray Valves – CLOSED (both) • Safety relief valves – CLOSED (all) • Power to at least one block valve – AVAILABLE (all available) • Block valves – AT LEAST ONE OPEN (all)
NOTE: Depending upon crew timing and procedure progression, the RCP trip criteria may not be met at this time.		ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). • Criteria for stopping is met – ATC stops all RCPs. ATC/BOP checks if any SGs are faulted: • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED Crew determines NO SG's are faulted.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10; (continued)		Crew checks if SG tubes are intact: • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES Crew determines all SG tubes are intact.
	Hi-Hi Radiation alarm is in due to containment radiation levels. Incore room, RM-204 and containment, RM-215A and 215B in Hi-Hi alarm. Containment Pressure is rising. Containment Sump level is rising. SRO transitions to E-1, Loss of Reactor or Secondary Coolant.	Crew checks if RCS is intact by checking CNMT conditions consistent with pre-event values: • CNMT radiation • CNMT pressure • CNMT sump level Crew determines the RCS is not intact based on CNMT conditions and verifies HHSI valves, MOV-1SI-867 C & D open & transitions to E-1.
		Crew checks if CREVS should be actuated by checking EITHER of the following: • Control Room Radiation Monitor RM-1RM-218A,B- NOT IN HIGH ALARM. • CIB - HAS NOT OCCURRED. Crew determines CREVS actuation NOT required.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 8 - 10, (continued)
NOTE: If not already, the D/P criteria for stopping the RCPs will be met.

Critical Task: CT-16 (E-1.C)
Crew trips all RCPs when RCS to highest SG D/P criteria is exceeded and SI flow verified prior to exiting procedure E-1.

SAFETY SIGNIFICANCE -- Failure to trip the RCPs under the postulated plant conditions leads to core uncovery and to fuel cladding temperatures in excess of 2200°F, which is the limit specified in the ECCS acceptance criteria. Thus, failure to perform the task represents "mis-operation or incorrect crew performance which leads to degradation of the fuel cladding barrier to fission product release" and to "violation of the facility license condition."

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

ATC checks Recirc Spray Pumps – NONE RUNNING

ATC/BOP checks if any SGs are faulted:
- Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER

OR

- ANY SG COMPLETELY DEPRESSURIZED

Crew determines NO SG's are faulted.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10; (continued)		BOP checks intact SG levels: • NR levels > 31% (50% Adverse) BOP controls feed flow to maintain NR level between 31% (50% adverse) and 65%. BOP checks station Instr air hdr press > 100 PSIG. Crew checks if SG tubes are intact: • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER. • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES. Crew determines no SG levels are rising in an uncontrolled manner and Secondary Radiation is consistent with pre-event values, therefore all SG tubes are intact. ATC checks PORV's and block valves: • Power to block valves. (all available) • PORVs – ALL CLOSED. • Block valves – AT LEAST ONE OPEN. (all) Crew checks if SI flow should be reduced.
NOTE: Dependent on timing, Subcooling requirement may also NOT be met at this time.	SI reduction criteria are not met.	ATC verifies RCS subcooling is > 46°F (54°F Adverse) based on CETC's. ATC verifies RCS pressure is NOT stable or rising. Crew determines that current plant conditions for RCS pressure, does NOT support SI reduction.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10; (continued)		Check if CNMT spray should be stopped. ATC verifies no Quench or Recirc Spray pumps are running. ATC resets SI and CIA.
NOTE: Dependant on procedure progression and timing, RCS pressure may still be dropping at this point, if so, the crew would leave the LHSI pumps in service. This is a continuous action step – therefore the crew will return to this step and secure the LHSI pumps when RCS pressure stabilizes.		ATC checks if LHSI pumps should be stopped; • RCS pressure is > 275 PSIG (400 PSIG ADVERSE CNMT) • Check RCS pressure – STABLE • LHSI pumps are running with RWST suction ATC stops LHSI pumps AND places CS's in AUTO.
		Check RCS and SG pressures. BOP checks pressure in all SG's NOT stable or rising. ATC checks RCS pressure is dropping. SRO determines SG pressure dropping is NOT due to a faulted SG and continues with procedure based upon preceding note. BOP verifies AC Emergency busses are energized by offsite power. SRO directs BOP to stop unloaded EDG's IAW Attachment 2-AD as time permits.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 8 - 10; (continued)		BOP performs Attachment 1-F to verify power available to at least 1 train of Cold Leg Recirculation equipment. BOP reports Attachment 1-F completed SAT with no discrepancies. Crew evaluates radiation monitors, determines Auxiliary building and Safeguards radiation is consistent with pre-event values.
	TSC is not staffed at this point.	SRO determines TSC is not activated. SRO directs ATC to monitor nuclear instrumentation to ensure adequate shutdown margin. Start additional plant equipment to assist in recovery. SRO directs a field operator to perform Attachment 2-A for securing the turbine plant. Check if RCS cooldown and depressurization is required. ATC checks RCS pressure > 275 psig (400 PSIG ADVERSE CNMT). SRO determines plant conditions support transition to ES-1.2.
	SRO transitions to ES-1.2	

Terminate scenario when the crew transitions to ES-1.2.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions'		BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows: Verifies power to both Emergency 4KV AC busses.
	Both EDG's are running.	Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow. Start CNMT Hydrogen Analyzers: IAW 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service. Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B). ("B" running, "A" previously failed) Station instrument air header pressure > 100 PSIG.
	Ensure Reheat Steam Isolation.	Ensure Reheat Steam Isolation: • Verify MOV-1MS-100A,B – CLOSED. • Reset reheater controller. • Close MOV-1MS-204, gland stm spillover vlv. Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig. Align Neutron Flux Monitoring For Shutdown: • When operable IR channels <1E-10 amp, check SR channels energized. • Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		Verify River Water System In Service: • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. OR (IF CIB has occurred) • Verify RPRW flow to recirc spray hxs. Check If Main Steamline isolation required: • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57) Determines steamline isolation is NOT required. Check CIB And CNMT Spray Status: • Containment press - REMAINED < 11 PSIG. Verify ESF Equipment Status: • Verify SI status - all RED SIS marks – LIT. • Verify CIA - all ORANGE CIA marks – LIT. • Verify FWI - all GREEN FWI marks – LIT. When SR's are energized, verify Audible indication: • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.
	1CH-P-1B failed to auto start. All AFW pumps failed to auto start.	
<u>Attachment 1-K– COMPLETE</u>	Discrepancies: • AFW pumps failed to automatically start. • 1CH-P-1B failed to auto start.	Upon completion, reports any discrepancies to SRO.

Appendix D **Scenario Outline**

Facility: **BVPS Unit 1** Scenario No. 2 Op Test No.: 1LOT21 NRC
Examiners: _____ Candidates: _____ SRO
_____ _____ ATC
_____ _____ BOP

Initial Conditions: **IC-161 (10)**: 100% power, BOL, Equ. XE Conditions, CB "D" @ 225 steps, RCS boron - 1280 ppm.

Turnover: Maintain 100% power.

Critical Tasks:
1. CT-2 (E-0.D) Manually actuate 1 train of Safety Injection
2. CT-43 (FR-H.1.A) Establish feed flow to SG before Feed and Bleed is required
3. CT-17 (E-2.A) Isolates faulted SG.

Event No.	Malf. No.	Event Type	Event Description
1	CCW3A	(C,A) ATC, SRO (TS) SRO	Trip of running CCR pump, with Autostart failure of standby.
2	PRS12 85 45	(I,A) ATC, SRO (TS) SRO	Master Pressure controller drifts to 85%, requires ATC to manually control RCS pressure.
3	NIS03D	(I,A) ATC, SRO (TS) SRO	N44 failed high, control rods auto insert. (AOP 1.1.3)
4		(N) BOP, SRO	N44 removal from service. (AOP 1.2.1C)
5	TUR03E 8 30	(R) ATC (C,A) BOP, SRO	Turbine Bearing failure – requires load reduction, (Management directed at 2%/minute IAW AOP 1.51.1)
6	TUR03E 15 60	(C) ATC, SRO	Turbine High vibrations – requires Rx trip.
7	MSS02A,B,C 2.5E6	(M) ALL	Steam Header Break in turbine building occurs on Rx trip – requires Safety Inj.
8	SIS10A SIS10B	(C) ATC, SRO	Automatic SI fails to actuate – requires manual actuation.
9	VLV-MSS18 100	(C) BOP, SRO	"C" SG Mainsteam line isolation valve fails to auto close.
10	EPS19 1	(C) BOP, SRO	Exciter circuit breaker fails to auto open on Rx trip.
11	FWM11C (4 30) FWM11A (0 0)	(M) ALL	Loss of all Aux Feedwater flow, requires entry into FR-H.1

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

E-0 → FR-H.1 → E-0→ ES-1.1.

After taking the shift at 100% power, BOL. The “A” CCR pump will trip due to a faulty breaker with a failure of the “B” to auto start. The crew will enter AOP 1.15.1. The ATC will manually start the “B” CCR pump, the crew will dispatch an operator to place the “C” pump in service on the “AE” 4kv bus. The SRO will address Technical Specifications.

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

Power Range Nuclear instrument, N-44 will then fail high causing the control rods to automatically insert. The crew will perform the Immediate Operator Actions for AOP 1.1.3, Unexpected Control Rod Movement. The ATC will identify the N-44 failure and place the rods in manual. The SRO will then transition to AOP 1.2.1C, Power Range Channel Malfunction, and direct the BOP to remove the failed channel from service. The SRO will address Tech Specs for the failed instrument.

A bearing will then begin failing on the turbine causing turbine vibrations to begin increasing, IAW the alarm response procedure, the crew will address the bearing degradation and perform a management directed power reduction at 2%/minute IAW AOP 1.51.1 to remove the turbine from service. After the reactor power has been reduced ~6%, the turbine bearing will fail causing vibrations to exceed 14 mils – requiring the turbine to be manually tripped.

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

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

The crew will enter E-0 on the reactor trip, and then enter FR-H-1 due to no available auxiliary feed water pumps.

During the immediate operator actions of E-0, the BOP will be required to manually open the exciter circuit breaker due to an auto open failure.

After Feedwater has been established using either the dedicated Feedwater pump, 1FW-P-4 or either Main feed pump, the crew will return to E-0, determine that SI is not required and transition to ES-1.1 to terminate SI flow.

The scenario will be terminated after the crew terminates SI flow in ES-1.1.

Expected procedure flow path is E-0 → FR-H.1 → E-0 → ES-1.1.

INITIAL CONDITIONS: IC-161 (10) 100 % Power, BOL, Bank D @ 225 steps, Equilibrium XE, 1280 PPM Boron,

ADDITIONAL LINEUP CHANGES	STICKERS	MONITOR SETUP
		100% power splash
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**

SHIFT TURNOVER INFORMATION

1. Maintain 100% power.
2.
3.
4.

SCENARIO SUPPORT MATERIAL REQUIRED

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

PROCEDURES NEEDED

E-0
ES-1.1
FR-H.1
1OM-46.4.G
Attachment 1-K
Attachment 2-K
AOP 1.1.3
AOP 1.2.1C
AOP 1.4.1
AOP 1.15.1
AOP 1.51.1

Insert preloads per the schedule file for this scenario:

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 1:		
Reactor Plant Component Cooling Water Pump Trip/ Auto start failure of standby pump	CC-P-1A trips due to a faulty breaker with an auto start failure of CC-P-1B.	
IMF CCW3A (0 0)		
	Numerous Component Cooling water alarms; A6-33, Primary Comp Cool Pump Auto Start-Stop A6-35, Pri Comp Cool Pump Disch Press Low A6-38, Pri Comp Cool Wtr Heat Exchanger 8" Disch Line Flow Low A6-46, Pri Comp Cool Wtr Heat Exchanger 14" Disch Line Flow Low	ATC recognizes and announces multiple component cooling water and reactor coolant pump annunciators. BOP reviews ARP's
ROLE PLAY: If dispatched to locally investigate the breaker or pump, wait 3 minutes then report back as appropriate – "A" pump not running - nothing obvious at pump. "B" pump running SAT (if started) 4kv brk is tripped – no relays flagged.	Numerous Reactor Coolant pump alarms; A3-75, React Cool Pp Lower Brg Lube Oil Cool Water Flow Low A3-77, React Cool Pp Stator Winding Cool Water Flow Low A3-83, React Cool Pp Upper Brg Lube Oil Cool Water Flow Low A3-91, Non Regen Heat Exchanger Disch Temp High	
NOTE: A6-33 ARP will direct manual starting of standby pump. Crew may manually start CC-P-1B without specific procedural guidance if they recognize that a design Automatic action did not occur.		ATC starts 1CC-P-1B

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 1: (continued) **NOTE:** The crew may enter AOP 1.15.1 for Loss of CCR, the 2nd pump is not required for the remainder of the scenario. A follow-up question on TS 3.7.7 may be required.		SRO determines 1CC-P-1A is inoperable and TS 3.7.7 Condition A is applicable; Restore "A" train to operable status within 72 hours.
When requested - wait 5 minutes then insert: **following commands** **IRF EPS007 F** to Rack out A pp **IRF EPS009 BusAE** rack in C (preloaded)		SRO dispatches operator to place 1CC-P-1C inservice on the "A" train.
ROLE PLAY: Report back to CR that CC-P-1C is now available on AE bus.		
Continue with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENT 2:

Master Pressurizer pressure controller drifts high.

IMF PRS12 85 45

Master pressure controller demand increases in auto, opening spray valves.
RCS pressure dropping due to spray valves opening.

Alarms:
A4-10, PRZR control high pressure deviation (due to MPC high demand),
A4-11, PRZR control pressure low (due to actual RCS pressure drop).

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

SRO references Tech Specs.

ATC notes PRZR pressure alarms and reports to the crew.

IAW IOA's of AOP 1.4.1, Part B, RO verifies

- PORV's CLOSED
- Pressure <2200 psig – then attempts to close spray valves by placing master pressure controller in MAN and adjusting demand to <40%.
- Verifies spray valves PCV-1RC-455A and B still open and places Spray valve controllers in MAN and adjusts as necessary to maintain pressure.

Crew determines MPC failure and not a pressure channel failure.

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

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

Continue with next event at LE discretion

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 3 & 4:		ATC reports unexpected alarms and rod motion.
N44 fails high / removal from service	Rods automatically step inward in response to N44 failure.	ATC verifies Control Rods are in AUTO.
IMF NIS03D 200 0 ASIS	PR NI related alarms; A4-65,66,68,69	ATC verifies no load rejection in progress and places rod control to MANUAL to stop the rod insertion.
	Crew enters AOP 1.1.3, Unexpected Control Rod Movement.	ATC verifies reactor overpower has not occurred.
		BOP verifies PT-1MS-446 and 447 are consistent with current power level and Tref.
		ATC reports N-44 indication is not consistent with other power range channels.
	SRO transitions to Power Range Channel Malfunction procedure, AOP 1.2.1C to address failed NI channel.	ATC reports only one PR channel (N44) has failed, and verifies rods previously placed in manual.
		BOP turns “Rod Stop Bypass Switch” for N44 on NIS Rack N50 to BYPASS. ATC verifies status light for Overpower Rod Stop Bypass for N44 is lit. (status pnl 176, D-14)
		BOP turns “Comparator Channel Defeat Switch” on NIS rack N37/N46 to N44 position.
		Within 1 hr, verifies P-8, P-9, & P-10 interlocks in required state for 100% power.
		ATC verifies reactor power is > 50%. BOP determines all PR channel upper and lower detector inputs to QPTR are operable.
NOTE: Crew may initiate performance of 1OST-2.4A, however next event will occur before completion of OST.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 3 & 4: (continued)		BOP determines all detector inputs to AFD monitor alarm are operable or requests I&C assistance in determining AFD alarm operability. Within 72 hrs, trips nuclear bistables by removing control power fuses from Drawer A for N-44 or directing I&C to remove the failed ch from service. ATC ensures VB recorders are selected to operable detectors.
	SRO evaluates Tech Specs for N-44 failure.	SRO addresses TS for N-44 failure: 3.3.1, One or more Functions with one or more channels/trains inoperable, Condition A, Immediately enter Condition referenced in Table 3.3.1-1. 3.3.1, Function 2.a, PR high flux, Condition D, trip ch w/in 72 hrs and QPTR every 12 hours. 3.3.1, Function 2.b, PR Neutron flux - LOW, Condition E, trip ch w/in 72 hrs.- for INFO Only. 3.3.1, Function 3, PR Hi flux rate, Condition E, trip ch w/in 72 hrs. 3.3.1, Functions 17c, d, Rx trip interlocks, Condition P, verify in required state w/in 1 hr. 3.3.1, Function 17.e, Rx trip interlocks, Condition O, verify in required state w/in 1 hr. 3.3.3, for PAM instrumentation – for INFO Only.
Proceed with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 5: Main turbine bearings elevated vibration, requires load reduction, leads to bearing failure requiring turbine trip.	Bearing #5 vibration at 8 mils, adjacent bearings also indicate abnormally high vibration.	BOP acknowledges and reports bearing vibration indications.
IMF TUR03E (0 0) 8 30	A7-104,Turbine Supervisory Instrument Trouble	ATC reviews ARP.
NOTE: ARP directs an immediate turbine trip if bearing vibration exceeds 14 mils		Crew determines that the turbine should be removed from service.
ROLE PLAY: If necessary – call in as Operations management and direct that the turbine be removed from service and a plant shutdown be performed at 2%/min IAW AOP 1.51.1.	SRO enters AOP 1.51.1, Unplanned Power Reduction.	SRO directs ATC and BOP to reduce power with boration and turbine load reduction IAW AOP 1.51.1. BOP initiates turbine load reduction: • Depress 1st STG IN pushbutton. • Set EHC SETTER to desired load. • Set LOAD RATE thumbwheel to 2%. • Depresses GO. • Maintains power factor within limits. • Adjusts Valve Position Limit ~5% above Gov Control signal.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
		ATC determines required boration using the "Reactivity Plan for Rapid Power Reductions" ATC initiates Normal boration IAW Attachment 1: (2% per minute power reduction). • Places 1MU CS to STOP for >1 sec. • Places mode selector switch, 43/MU to BORATE. • Sets FCV-1CH-113A to flow rate desired. • Sets YIC-1CH-113, BA integrator, to total volume in gals of BA to be added per reactivity plan. • Resets YIC-1CH-113. • Verifies YIC-1CH-168 is set to “zero”, then depresses reset. • Places 1MU CS to START, then verifies inservice BA pump starts, FCV-1CH-113B opens and boric acid flow is indicated on FR-1CH-113. • Adjusts FCV-1CH-113A setpoint as desired to control boration flowrate.
NOTE: After approximately 5% power reduction, the turbine vibration will elevate to 15 mils which will require the crew to trip the Rx/turbine. (Bearing failure can be inserted at LE discretion.)		Crew sounds the standby alarm and announces a Unit 1 rapid power reduction. ATC places all PRZR heaters to ON. ATC manually adjusts rod maintain Tavg within ± 5F of Tref and control AFD.
ROLE PLAY: If necessary, at 88% power, call in as Operations Management and ask about the progress of the plant shutdown and the status of the turbine.		Based on rise in turbine vibration, crew determines that a manual turbine trip is required. SRO directs the ATC to manually trip the reactor. SRO directs the crew to perform the IOA’s of E-0 and report when ready to read.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 -11: (preloaded to occur on the Rx trip) Multiple malfunctions occur on Rx trip. **IMF MSS02A,B,C 2.5E6**	Steam Header Break in the Turbine building with auto closure failure of "C" steamline isolation valve. Automatic SI actuation failure and Exciter Circuit brk fails to auto open, along with a loss of all feedwater that will require entry in FR-H.1. Steam flow rises. RCS temperature and pressure drop. SRO enters E-0.	ATC and BOP commence IOA's of E-0. ATC verifies Reactor trip: • Rx trip and bypass breakers open. • Power range indication is < 5%. • Neutron flux is dropping. BOP verifies Turbine trip: • Throttle OR Governor valves ALL closed. • Main Generator output brks – both open. • Exciter Circuit breaker – open. BOP reports that the exciter circuit breaker failed to open automatically, manual opening was successful. BOP verifies Power to AC Emergency Busses • Using VB-C voltmeters, verifies either AE or DF has voltage indicated. BOP identifies that both emergency busses are energized from off-site power.
EVENT 10 Exciter circuit breaker fails to auto open on Rx trip. **IMF EPS19 (0 0) 1** (preloaded)		
Critical Task: CT-17 (E-2.A) **Crew isolates the faulted SG and directs operator to close isolation valves operated from outside of the CR before transition out of E-2.** SAFETY SIGNIFICANCE -- Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Also, depending upon the plant conditions, it could constitute a demonstrated inability by the crew to recognize a failure of the automatic actuation of an ESF system or component.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 - 11, (continued) **Critical Task CT-2 (E-0.D)** **Crew manually actuates at least one train of SIS-actuated safeguards before transition to any ORP.** SAFETY SIGNIFICANCE -- Failure to manually actuate SI under the postulated conditions constitutes "misoperation or incorrect crew performance that leads to degraded ECCS capacity."	SI required due to steam fault in the turbine building.	Check SI Status. ATC checks if SI is required: • ATC verifies CNMT press < 5psig. • ATC verifies PRZR press is not > 1850 psig. • ATC/BOP verifies Steamline press > 500 psig. Crew determines SI is required; ATC manually actuates SI by depressing both trains' pushbuttons. ATC/BOP, sounds standby alarm, announces reactor trip and safety injection. Check if SI flow should be reduced: • Crew verifies SG Pressures are not consistent with expected values. OR • Crew verifies PRZR level is <17%. SRO determines SI flow should not be secured. ATC verifies SI system status: • Charging pumps running – 2 running. • LHSI pumps running – 2 running. • BIT Flow indicated – YES.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 - 11, (continued)		BOP verifies AFW status: • Motor-driven AFW Pumps – NONE RUNNING. • Turbine-driven pump: TV-1MS-105A, B open. A7-7 is LIT, 1FW-P-2 is NOT running. • AFW Throttle Valves all FULL OPEN. • Total AFW Flow is < 370 GPM. BOP reports no Aux feed water flow exists.
	SRO recognizes that AFW flow cannot be established and enters FR-H.1, Response to Loss of Secondary Heat Sink.	ATC checks if secondary heat sink is required by: • Verifying RCS press is > any non-faulted SG. • RCS hot leg temperatures >350°F. Crew determines a secondary heat sink is required.
NOTE: This is a continuous action step, if "C" WR level is not <14% at this time, the crew will return to this step for direction to isolate AFW valves to the "C" SG. If the crew closes the “C” MSIV in a timely manner level will not be <14%.		BOP checks all SG WR levels; • Identifies WR level in "C" SG is <14%. • Confirms no AFW flow available to "C" SG. SRO directs BOP to close AFW valves to the "C" SG. • Closes MOV-1FW-151A and 151B. Crew checks SG WR levels and determines if RCS bleed and feed should be initiated. • BOP verifies WR lvl in at least 2 SG’s is >14%. BOP reports "A" and "B" WR levels are > 14%. Crew determines bleed and feed is not required at this time and continues to monitor WR level.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 7 - 11, (continued)

ROLE PLAY:
When directed to investigate AFW pump status:

If dispatched to Emergency Switchgear, wait 2 minutes then report 1FW-P-3A and 3B both have ground overcurrent relays flagged;
ACB 1E16/1F16 ground OC relays 50-VE(F)116G are flagged.

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

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

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

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

ATC/BOP verifies SG Blowdown and blowdown sample lines are isolated.
Reports SG blowdown and Blowdown sample lines are isolated.

Crew confirms:
- "A" motor-driven pump not running.
- "B" motor-driven pump not running.
- Turbine-driven pump initially started but tripped.

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

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

BOP confirms AFW flow is not > 370 gpm.

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

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

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 - 11, (continued) **NOTE:** It is expected that the crew will not wait for 1FW-P-4 field actions before continuing with procedure and restore a main feed pump.	Restoration of feed using a main feed pump.	Crew takes actions to restore a main feedwater pump. • Verifies a condensate pump is in service. • Resets SI/FWI and opens feedwater CNMT isolation valves, HYV-1FW-100A, B &C. • Starts and holds CS for main feedpump.
Critical Task: CT-43 (FR-H.1.A) **Crew establishes feedwater flow into at least one SG before RCS feed and bleed is required.** **Basis for Selection:** SAFETY SIGNIFICANCE -- Failure to establish feedwater flow to any SG results in the crew's having to rely upon the lower-priority action of establishing RCS bleed and feed to minimize core uncovery. This constitutes incorrect performance that "leads to degradation of any barrier to fission product release."	Feedwater flow established SG levels begin rising. SRO returns to E-0, Step 9 IAW FR-H-1, step 8.	With either the dedicated AFW pump or a main feed pump running as a source, BOP throttles the Bypass feed regulating valves to establish flow to intact SGs. Crew checks at least 1 SG NR level > 31% (50%) If NR not >31%, crew verifies either CETC's are dropping OR SG WR levels are rising.
NOTE: Evaluation of BOP performing Attachment 1-K begins on page 18.	List of Attachment 1-K Discrepancies: • Automatic SI failed to actuate. • All AFW pumps failed. • SG Blowdown sample line isolation valves failed to automatically close. • "C" Main steamline isolation valve failed to automatically close.	SRO directs BOP to perform Attachment 1-K.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 - 11, (continued)	RCS temperature < 547°F (Using Cold leg temperatures) and dropping due to Safety Injection flow and faulted SG.	ATC checks RCS temp. stable at or trending to 547°F: • Verifies no steam release is occurring. • Verifies Reheat steam is isolated. • Reduces total feed flow to minimize C/D. • Closes Main steam trip and bypass trip valves. If not previously identified, closes the "C" Main steamline isolation valve at this time. ATC verifies PRZR isolated: • PORVs – CLOSED (all) • Spray Valves – CLOSED (both) • Safety relief valves – CLOSED (all) • Power to at least one block valve – AVAILABLE (all available) • Block valves – AT LEAST ONE OPEN (all)
NOTE: The RCP's will already be shutdown at this time due to step in FR-H.1.		ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). All RCPs previously shutdown IAW FR-H.1.
NOTE: The steam fault was located in the Turbine Building, if the crew closed the "C" Main Steam Line isolation valve – the fault would now be isolated – entry into E-2 would not be necessary.		ATC/BOP checks if any SGs are faulted: • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED Crew determines there is no faulted SG

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 7 - 11, (continued)

Crew checks if SG tubes are intact:

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

Crew determines all SG tubes are intact.

Crew checks if RCS is intact by checking CNMT conditions consistent with pre-event values:

- CNMT radiation.
- CNMT pressure.
- CNMT sump level.

Crew determines the RCS is intact based on CNMT conditions consistent with PRE-EVENT VALUES.

Crew checks if SI flow should be reduced by:

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

Crew determines that current plant conditions support SI reduction.

SRO transitions to ES-1.1, SI Termination

Terminate scenario when the crew terminates SI flow IAW ES-1.1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions'		BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows: Verifies power to both Emergency 4KV AC busses.
	Both EDG's are running.	Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow. Start CNMT Hydrogen Analyzers: • Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service. Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B). ("A" running) Station instrument air header pressure > 100 PSIG.
	Ensure Reheat Steam Isolation.	Ensure Reheat Steam Isolation: • Verify MOV-1MS-100A,B – CLOSED. • Reset reheater controller. • Close MOV-1MS-204, gland stm spillover vlv. Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig. Align Neutron Flux Monitoring For Shutdown: • When operable IR channels <1E-10 amp, check SR channels energized. • Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		Verify River Water System In Service: • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. OR (IF CIB has occurred) • Verify RPRW flow to recirc spray hxs.
Critical Task: CT-17 (E-2.A) **Crew isolates the faulted SG and directs operator to close isolation valves operated from outside of the CR before transition out of E-2.**	"C" MSLI valve failed to automatically close on Main Steamline isolation signal.	Check If Main Steamline isolation required: • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57) Determines automatic steamline isolation occurred. "C" MSLI valve failed to automatically close. Check CIB And CNMT Spray Status: • Containment press - REMAINED < 11 PSIG.
Critical Task CT-2 (E-0.D) **Crew manually actuates at least one train of SIS-actuated safeguards before transition to any ORP.**	Automatic SI failed to actuate. All AFW pumps failed.	Verify ESF Equipment Status: • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		When SR's are energized, verify Audible indication: • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.
Attachment 1-K– COMPLETE	Discrepancies: • Automatic SI failed to actuate. • All AFW pumps failed. • "C" Main steamline isolation valve failed to automatically close.	Upon completion, reports any discrepancies to SRO.

Appendix D **Scenario Outline**

Facility: **BVPS Unit 1** Scenario No. 4 Op Test No.: 1LOT21 NRC
Examiners: _____ Candidates: _____ SRO
_____ _____ ATC
_____ _____ BOP

Initial Conditions: **IC-170 (17)**: 75% power, MOL, stable Xe, CB "D" @ 189 steps, RCS boron - 1080 ppm.

Turnover: Maintain stable plant conditions.
Startup standby Turbine Plant River Water pump.

Critical Tasks:
1. CT-18 (E-3.A) Crew isolates ruptured SG
2. CT-19 (E-3.B) Crew establishes/maintains temperature
3. CT-34 (ECA-3.1.B) Crew initiates C/D to cold shutdown

Event No.	Malf. No.	Event Type	Event Description
1	N/A	(N) BOP, SRO	Startup standby TPRW pump
2	XMT-MSS021A 0	(C,A) BOP, SRO (TS) SRO	PT-1MS-446 fails LOW
3	RCS02A (0 0) 45	(C,A) ATC, SRO (TS) SRO	35 gpm RCS leak, "A" Loop, unisolable
4	N/A	(R) ATC (C,A) BOP, SRO	Management ordered plant S/D @ 5%/min due to RCS leakage.
5	PRS08D PRS03A	(C,A) ATC, SRO (TS) SRO	Pressurizer pressure transmitter PT-1RC-444 fails high in automatic, PORV, PCV-1RC-455C opens with reseat failure. PORV block valve, MOV-1RC-535, fails to close. Requires manual Reactor trip.
6	X07i038L OFF	(C) ATC, SRO	BB-B Reactor trip switch failure
7	RCS03A	(M) ALL	Reactor trip causes a 650 gpm 1A SG tube rupture.
8	MSS03, MSS04	(C) BOP, SRO	Reheat steam fails to auto isolate on trip - requires closing MOV-1MS-100A and B.
9	VLV-SGB01,02,03	(C) BOP, SRO	SG BD isolation failure, requires manual alternate valve closure.

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

E-0 → E-1 → E-3 → ECA-3.1

The crew will assume the shift at approximately 75% power with instructions to startup the standby Turbine Plant River Water pump, 1WR-P-6B and place the running pump, 1WR-P-6A in standby, IAW 1OM-30.4.N, Standby Turbine Plant River Water Pump Startup.

The non-selected Turbine First Stage pressure transmitter, PT-1MS-446 will fail low. IAW the instrument failure procedure, the crew will take action to transfer the condenser steam dump control to "Steam Pressure" mode. The SRO will address Tech Specs for the failed channel.

A 35 gpm RCS leak will develop on the "A" loop, IAW AOP 1.6.7, the crew will raise charging and isolate letdown to evaluate and quantify the leakage. The SRO will evaluate and enter Technical Specifications.

After the crew has determined that the RCS leak is not isolable and restored letdown, Operations Management will direct the crew to perform a plant shutdown at 5% / minute IAW AOP 1.51.1, Unplanned Power Reduction.

After Rx power has reduced ~10%, PT-1RC-444 will fail high causing the spray valves and PORV 455C to open, The ATC will be required to manually close spray valves and PORV, PCV-1RC-455C, IAW AOP 1.4.1 immediate operator actions. The US will enter AOP 1.4.1 and then transition to 1OM-6.4.IF, Attachment 2 and determine applicable Tech Spec actions. PORV 455C will fail to completely reseat, the ATC will then attempt to close the MOV block valve, MOV-1RC-535, which will fail to close.

Due to the leaking PORV, the SRO will direct the ATC to manually trip the Rx. When the ATC attempts to trip the Rx from BB-B, the Trip switch will fail, the ATC will then trip the Rx using BB-A trip pushbutton.

The Rx trip will cause a 650 gpm SGTR to occur on the "A" SG.

The crew will progress thru E-0, the BOP will identify that Reheat steam and SG blowdown flowpaths both failed to automatically isolate on the trip and take appropriate manual actions.

The crew will transition to E-1 at the check the PORV's step of E-0, then transition to E-3 due to the indications of a SGTR.

The crew will progress thru E-3, after the crew completes the RCS cooldown, they will transition to ECA-3.1 due to the open PORV.

The scenario will be terminated at the Lead Evaluators discretion when the crew performs an RCS cooldown IAW ECA-3.1, recognizes 100F/hr cooldown limit and demonstrates actions to control the cooldown to within limits.

Expected procedure flow path is E-0 → E-1 → E-3→ ECA-3.1.

INITIAL CONDITIONS: (IC-170) 75% Power, MOL, Bank D @ 189 steps, Equilibrium XE, 1080 PPM Boron,

ADDITIONAL LINEUP CHANGES	STICKERS	MONITOR SETUP
		High power splash
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**

SHIFT TURNOVER INFORMATION

1. Maintain 75% power.
2. Startup the standby Turbine Plant River Water pump, 1WR-P-6A, IAW 1OM-30.4.N.
3.
4.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide MOL Rapid Power Reduction reactivity plan.
2. 1OM-30.4.N

PROCEDURES NEEDED

E-0
E-1
E-3
ECA-3.1
1OM-46.4.G
24 IF, Attach 5
Attachment 1-K
AOP 1.4.1
AOP 1.6.7
AOP 1.51.1

Insert preloads per the schedule file for this scenario:

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 1:	IAW 1OM-30.4.N, SRO directs the crew to startup the standby TPRW pump and shutdown the inservice TPRW pump.	SRO directs BOP to start the standby TPRW pump and secure the inservice TRPW pump.
ROLE PLAY: After pump swap is complete, report in as outside operator and state “The "B" Turbine plant River water pump, 1WR-P-6B, is running satisfactorily with normal discharge pressure and 1WR-P-6A vacuum break operated as expected.		BOP places motor bearings on trend on IPC. BOP starts 1WR-P-6B and holds CS until breaker closes, then releases, verifies starting current drops off to normal running current. BOP verifies discharge valve, MOV-1RW-110B automatically opens. BOP places and holds 1WR-P-6A CS to STOP, verifies Annunciator A6-118 is OFF and releases CS. BOP verifies discharge valve, MOV-1RW-110A closes.
Continue with next event at LE discretion		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 2:		
1st Stage Pressure Transmitter, PT-1MS- 446 fails low. **IMF XMT-MSS021A (0 0) 0 10**	PT-1MS-446 failed low (Non controlling Ch) A3-20, AMSAC Trouble SRO enters 1OM-24.4.IF, "Instrument Failure Procedure" Attachment 5.	Crew identifies PT-1MS-446 has failed low. SRO enters 1OM-24.4.IF, Attach 5 BOP verifies Steam Dump Control Mode Selector Switch is in TAVG mode. BOP places Steam Dumps in Stm Pressure Mode; • Places AM-1MS-464B, stm press controller, in MAN with 'zero' percent output signal. • Verify or adjust the setpoint for AM-1MS-464B to the equivalent value for 1005 psig. • Places the Train A and Train B Steam Dump Control Bypass Interlock Selector Switches to OFF/RESET/INTLK. • Place the Steam Dump Control Mode Selector Switch in STM PRESS. • Place AM-1MS-464B, In AUTO. • ATC checks TI-1RC-408, Stm Dump Demand, is indicating 0% (BB-B) • Places the Train A and Train B Steam Dump Control Bypass Interlock Selector SW's to ON. • Check all steam dump valves remain closed.
NOTE: It is not the intent of the scenario to allow the crew to re-arm AMSAC, after the crew has placed the Condenser steam dumps in Steam Pressure Mode, next event can be entered at the Lead Evaluator discretion.		SRO references Tech Specs. 3.3.1 Condition P for P-13, Verify interlock in required state for existing conditions within 1 hour.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 3:		
35 gpm RCS leak on "A" Loop **IMF RCS02A (0 0) 45**	A4-71, Radiation Monitor Hi A4-72, Radiation Monitor Hi-Hi RIS-RM-204 in alarm - Hi-Hi RIS-RM-215A in alarm - Hi-Hi CNMT pressure and sump level increasing. A1-35, 43,Cnmt Air Total Press Hi/Lo Ch I/II A1-36, 44 Cnmt Air Total Press Hi Hi Ch I/II	ATC/BOP review ARPs.
	SRO enters AOP-1.6.7, Excessive Primary Plant Leakage PRZR level can be maintained.	ATC checks if PRZR level can be maintained. ATC controls charging flow as necessary to maintain PRZR level on program. Determines PRZR level is capable of being maintained > 5%. ATC checks if leakage is RCS/CVCS leakage by: • Checking CNMT, PAB and safeguards conditions are consistent with pre-event. Crew determines conditions are NOT consistent with pre-event based upon rising radiation levels on RIS-1RM-204 and RIS-1RM-215A.
	SRO transitions from AOP 1.6.7, step 2 to step 6	Crew verifies RCS temperature is stable. ATC verifies FCV-1CH-122 is maintaining constant PRZR level in AUTO or places FCV-1CH-122 in MAN and controls charging flow and/or HCV-1CH-186 to maintain a constant PRZR level.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 3: (continued)		Crew checks VCT level trend and determines that VCT level is DROPPING at >0.7%/min. and determines that leakrate is >10 gpm. SRO informs SM that leak rate is > 10 gpm but may be isolable from the RCS. ATC quantifies leakage & checks for CVCS leakage: • Isolates charging/letdown by closing valves: • TV-1CH-200A & B Letdown orifice isol. • LCV-1CH-460A & B Regen Ht Ex inlet. • FCV-1CH-122, charging flow control vlv. • ATC adjusts RCP seal injection flow to obtain NET RCS input of 10 gpm. • Crew determines PRZR level is NOT rising. • SRO reports to SM that leak is >10 gpm and not isolable, SM to evaluate EPP for RCS Unidentified Leakage > 10 gpm.
NOTE: Tech spec evaluation may require a followup question.	SRO evaluates Technical Specifications.	3.4.13 Condition A, Reduce leakage w/in 4 hours.
ROLE PLAY: After the crew has determined that the leak is not isolable and restored letdown, As Shift Manager, inform the crew that due to the RCS leak, Operations Management has directed the crew to take the plant offline at **5%**/minute IAW AOP 1.51.1, Unplanned Power Reduction.		Crew restores charging and letdown to service by: • Adjusting FCV-1CH-122 to obtain 30-50 gpm, • Verifying PRZR level is >14%. • Placing PCV-1CH-145 in MAN at 75% open. • Opening LCV-1CH-460A, B. • Opening TV-1CH-200A, B as desired. • Adjusting PCV-1CH-145 until backpressure is ~300 psig. • Placing PCV-1CH-145 in AUTO. • Placing FCV-1CH-122 in AUTO.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 4:	SRO enters AOP 1.51.1, Unplanned Power Reduction.	SRO directs crew to perform a load reduction at 5%/min in accordance with AOP 1.51.1. BOP initiates turbine load reduction; • Depress 1st STG IN pushbutton • Set EHC SETTER to desired load • Set LOAD RATE thumbwheel to 5% • Depress GO • Maintain power factor within limits • Maintains Gov Valve Position Limit ~5% above Gov Control signal. ATC initiates boration IAW Attachment 2; (5% per minute power reduction). • Determines required boration from reactivity plan. • Opens MOV-1CH-350 • Places BA Transfer Pump 2A in FAST • Checks Boration flow is > 30 gpm • Verifies Charging flow, FI-1CH-122A > 40gpm. • Continues to emergency borate per reactivity plan Crew alerts plant personnel of Rapid load reduction by sounding the standby alarms and announcing. ATC places all PRZR heaters to ON. ATC verifies rod control in AUTO and is controlling Tavg within +/-5F of TREF.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
NOTE: After approximately 10% power reduction, Event 5, PT-1RC-444 failure, will automatically insert (Malfunction can also be inserted at LE discretion.)		BOP prepares to transfer 4KV busses to offsite IAW Attachment 3 of AOP 1.51.1.
EVENT 5:	PT-1RC-444 fails high.	ATC recognizes pressurizer pressure related alarms and announces to the crew.
PR-1RC-444 fails high with reseat failure of PCV-1RC-455C. Block valve, MOV-1RC-535 de-energizes upon closure attempt. **PRS08D (0 0) 2500 15** **EPS308 RACKOUT**	A4-10, Pressurizer Control High Pressure Dev, followed by numerous Pressurizer pressure related alarms. PCV-1RC-445A & 445B PRZR spray valves modulate open. PORV, PCV-1RC-455C opens. All PRZR heaters turn off. RCS pressure decreases.	Crew identifies PT-1RC-444 failure.
ROLE PLAY: If crew dispatches an operator to check/reset breaker for MOV-1RC-535, report back in 2 minutes that the breaker would not reset.		IAW AOP 1.4.1; Part B IOA's, ATC responds to PT-1RC-444 failure by: • Placing CS for PCV-1RC-455C to CLOSE. • Recognizing PORV won't completely close. • Placing CS for MOV-1RC-535 to CLOSE. Recognizes MOV won't close and recommends manual RX trip. • Placing Master Pressure control in Manual and adjusting demand to < 40%.
NOTE: Due to imminent Rx trip, It's not expected that the DNB Tech Spec entry would identified by the crew at this time, ask as a follow-up question.		SRO evaluates Technical Specifications: 3.4.1 (RCS DNB Parameters, RCS press < 2218 psia) Condition A: restore RCS pressure within 2 hours. 3.3.4 (Remote Shutdown System) Table B 3.3.4-1 Function 2.a: LCO met if PT-1RC-455 is operable.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 -9</u>: (preloaded to occur on the Rx trip) Multiple malfunctions occur on Rx trip. **RCS03A 650** **X07i038L OFF**	BB-B Rx trip switch failure. 650 gpm SGTR on "A" SG upon Rx trip. Auto close failure of Reheat steam isolation valves along with SG Blowdown automatic isolation failure. Steam flow rises. RCS temperature and pressure drop. Crew enters E-0 and performs IOA's	SRO directs the ATC to manually trip the Rx. ATC attempts to trip the Rx from BB-B, recognizes switch failure and manually trips the Rx from BB-A. ATC verifies Reactor trip: • Rx trip and bypass breakers open. • Power range indication is < 5%. • Neutron flux is dropping. BOP verifies Turbine trip: • Throttle OR Governor valves ALL closed. • Main Generator output brks - open. • Exciter Circuit breaker – open. BOP verifies Power to AC Emergency Busses • Using VB-C voltmeters, verifies either AE or DF has voltage indicated. BOP identifies that both emergency busses are energized from off-site power.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9; (continued) **NOTE:** Event 7 (650 gpm "A" loop SGTR) automatically inserts on the Rx is trip, depending upon the crews timing through the IOA's of E-0, SI may not be actuated or required, but RCS pressure will be dropping and automatic SI will be imminent.	SI automatically actuated due to the PORV failure along with 650 gpm SGTR. **NOTE:** Based on the degrading plant conditions, the ATC may pre-emptively actuate SI prior to Automatic initiation.	Check SI status: ATC reports SI automatically actuated and manually actuates SI by depressing both trains' pushbuttons. ATC/BOP, sounds standby alarm, announces reactor trip and safety injection. Check if SI flow should be reduced: • Crew verifies CNMT radiation, Pressure and Sump level are not consistent PRE-EVENT. • Crew verifies RCS pressure is not stable or rising. SRO determines SI flow should not be secured. ATC verifies SI system status: • Charging pumps running – 2 running. • LHSI pumps running – 2 running. • BIT Flow indicated – YES. BOP verifies AFW status: • Motor-driven AFW Pumps – 2 RUNNING. • Turbine-driven pump: TV-1MS-105A, B open. A7-7 is NOT LIT, turbine driven pump running. • AFW Throttle Valves all FULL OPEN. • Total AFW Flow is > 370 GPM.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7 - 9, (continued) **NOTE:** Evaluation of BOP performing Attachment 1-K begins on page 21.	List of Attachment 1-K Discrepancies: • Reheat steam	SRO directs BOP to perform Attachment 1-K.
NOTE: If Reheat steam automatic isolation failure was not previously identified, the crew will identify and isolate Reheat steam at this step by closing MOV-1MS-100A and B.	RCS temperature < 547°F and dropping due to Safety Injection flow.	ATC checks RCS temp. stable at or trending to 547°F: • ATC verifies no steam release is occurring. • ATC verifies Reheat steam is isolated. • ATC reduces total feedflow to minimize C/D. ATC checks PRZR PORVs and Spray Valves. • PORVs – CLOSED ATC reports PORV PCV-1RC-455C won't close and block valve MOV-1RC-535 also has failed to close.
	Based upon 1 PORV with dual indication and failure of associated MOV block valve – SRO transitions to E-1.	ATC verifies BIT Outlet Isolation valves, MOV-1SI-867C, D both open.
NOTE: It is acceptable for the crew to use the Left Hand Page of E-1 to transition to E-3 when a SGTR is recognized.		Crew checks if CREVS should be actuated by checking EITHER of the following: • Control Room Radiation Monitor RM-1RM-218A, B- NOT IN HIGH ALARM. • CIB - HAS NOT OCCURRED. Crew determines CREVS actuation NOT required. ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). • Criteria for stopping is not met – all RCPs to remain in service.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9; (continued)		ATC checks Recirc Spray Pumps – NONE RUNNING ATC/BOP checks if any SGs are faulted: • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED Crew determines NO SG's are faulted. BOP checks intact SG levels: • NR levels > 31% (50% Adverse) BOP controls feed flow to maintain NR level between 31% (50% adverse) and 65%. BOP checks station Instr air hdr press > 100 PSIG. Crew checks if SG tubes are intact: • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER. • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES.
NOTE: It is acceptable for the crew to use the Left Hand Page of E-1 to transition to E-3 when a SGTR is recognized. **NOTE:** If the crew delays in isolating reheat steam, the SGTR will be masked by the steam demand.		Crew determines "A" SG level is rising in an uncontrolled manner and Secondary Radiation is not consistent with pre-event values, therefore indication of a SGTR exists.
	SRO transitions to E-3, Steam Generator Tube Rupture.	SRO directs STA to commence control room ventilation actions. Refer to Attachment 4-F.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9; (continued)		ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – <200 PSID. Crew determines criteria for stopping RCPs is not met. BOP verifies station instrument air header pressure - > 100 PSIG.
NOTE: AFW flow may have been preemptively isolated after level rose to >31%.	"A" SG ruptured	Crew notes that "A" SG was previously identified as the ruptured SG based upon unexpected NR level rise. • BOP verifies "A" SG NR level >31%. • SRO directs BOP to isolate fd flow to "A" SG.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 7-9, (continued)

Critical Task: CT-18 (E-3.A)
Crew isolates feed flow into and steam flow from the ruptured SG and directs operator to close isolation valve(s) operated from outside of the control room before a transition to ECA-3.1 occurs.
SAFETY SIGNIFICANCE -- Failure to isolate the ruptured SG causes a loss of differential pressure between the ruptured SG and the intact SGs. Upon a loss of differential pressure, the crew must transition to a contingency procedure that constitutes an incorrect performance that necessitates the crew taking compensating action which complicates the event mitigation strategy.

ROLE PLAY: 5 minutes after being dispatched to locally isolate 1MS-523, 1MS-15 and open 1MS-17. Insert following commands and then report completion.
All REMOTE commands:
MSS26 to 0 (1MS-523 closed)
FWM-34 to 0 (MS-15 closed)
FWM36 to 100 (1MS-17 open)

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

ATC/BOP isolates flow from the ruptured SG.

BOP verifies "A" SG atmospheric steam dump, PCV-1MS-101A, in MANUAL and closed.

BOP verifies residual heat removal valve – CLOSED.
BOP dispatches an operator to locally isolate RHR valve by closing 1MS-523.

Isolate ruptured SG to turbine driven AFW pump.
- Crew identifies that the steam supply from the "A" SG, 1MS-15 is open.
- BOP reports 2 motor-driven AFW pps running.
- BOP closes MOV-1MS-105, AFW Turbine Steam Isol Vlv.

Crew dispatches an operator with instructions to locally isolate steam supply valve from "A" SG, 1MS-15 and to:
- Verify open stm supply from B SG, 1MS-16.
- Unlock/open stm supply from C SG, 1MS-17.

Verify closed, ruptured SG blowdown isolation valve.
- BOP reports TV-1BD-100A will not close.

BOP CLOSES TV-1BD-101A1.

Close ruptured SG Pre-non-return drain isol valve.
- BOP closes TV-1MS-111A.

BOP closes ruptured SG main steam trip, bypass, and non-return valves;
- TV-1MS-101A trip
- NRV-1MS-101A non return

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 7-9, (continued)

Critical Task CT-19 (E-3.B)
Crew establishes/maintains an RCS temperature so that transition from E-3 does not occur because the RCS temperature is in either of the following conditions: Too high to maintain minimum required subcooling for subsequent RCS depressurization OR Below the RCS temperature that causes a red or orange path challenge to Subcriticality or Integrity CSF.
SAFETY SIGNIFICANCE -- Failure to establish and maintain the correct RCS temperature during a SGTR leads to a transition from E-3 to a contingency ERG. This failure constitutes an incorrect performance that "necessitates the crew taking compensating action that would complicate the event mitigation strategy...."

BOP checks ruptured SG pressure is > 380 PSIG.

BOP initiates RCS cooldown:

- Determine required core exit temperature as a function of ruptured SG pressure.
- WHEN PRZR pressure < 1950 PSIG, THEN blocks low steamline pressure SI.
- Checks MSIVs - AT LEAST ONE OPEN ("B" & "C" MSIVs remain open).
- Checking condenser available.
- Placing condenser steam dump controller in MANUAL.
- Place steam dumps in STM PRESS Mode
- When necessary, defeats TAVG interlock by holding both control switches in DEFEAT TAVG INTLK as Tavg approaches 541F.
- Gradually raises steam dump demand to obtain max cooldown rate. (~20% on controller)
- Verifies Core Exit TCs (CETC's) are reducing.

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

BOP checks intact SG levels:

- Narrow range level > 31%.

Controls feed flow to maintain narrow range level between 25% and 65%.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9, (continued)		ATC checks PRZR PORVs and block valves: • Power to block valves. (2 available) • PORVs – CLOSED. (455C dual indication) • Block valves – AT LEAST ONE OPEN. (all) ATC reports that PORV PCV-1RC-455C remains partially open and the associated MOV block valve can NOT be closed.
	SRO transitions to ECA-3.1, SGTR With Loss of Reactor Coolant – Subcooled Recovery Desired.	ATC resets SI, CIA and CIB. Crew verifies Stub Busses Energized: BOP checks 4160V Stub busses - ENERGIZED • ACB-1E5, 1AE Stub Bus - CLOSED • ACB-1F5, 1DF Stub Bus - CLOSED Checks 480V Stub busses - ENERGIZED • Boric Acid Transfer Pumps - ANY INDICATION LIGHT LIT -OR- • CNMT Vacuum Pumps - ANY INDICATION LIGHT LIT BOP verifies CNMT Instrument Air – AVAILABLE: Checks Station Instrument Air Hdr Press > 100 PSIG. Verifies TV-1IA-400 is OPEN. Checks CNMT instrument air hdr press > 85 PSIG. BOP verifies all AC Busses - ENERGIZED BY OFFSITE POWER: • Determines AE and DF busses are powered from offsite.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9; (continued)		ATC places all PRZR heaters in PULL-TO-LOCK. ATC checks if CNMT spray should be stopped. Determines NO Quench or Recirc Spray Pumps are RUNNING. BOP checks ruptured SGs level: • Checks narrow range level is > 31%. • Confirms MOV-1FW-151E,F CLOSED. • Confirms FWI - PREVIOUSLY VERIFIED. ATC checks if LHSI pumps should be stopped: • LHSI pumps running w/ RWST suction. • RCS pressure > 275 psig and rising. ATC stops LHSI pumps AND places CS's in AUTO. Crew Initiates Evaluation Of Plant Status: Checks Aux Bldg and Safeguards radiation – ALL CONSISTENT WITH PRE-EVENT VALUES. • RM-VS-102A,B, Aux Bldg Exh Sys A /B Gas • RM-1RM-209, Aux Bldg Bot Flr North • RM-1RM-210, Aux Bldg Third Flr • RM-1RM-211, Aux Bldg Bot Flr South • RM-1RM-212, Sample Room • RM-1VS-105, Leak Collection Area Gas Mon • RM-1VS-107B, Elevated Release Gas • RM-1VS-110, CNMT/SLCRS Exhaust Monitor

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 7-9; (continued)		SRO determines TSC is not activated. SRO directs ATC to monitor nuclear instrumentation to ensure adequate Shutdown Margin. BOP checks if any SGs are faulted: Checks pressures in all SGs - • ANY SG PRESSURE DROPPING IN AN UNCONTROLLED MANNER -OR- • ANY SG COMPLETELY DEPRESSURIZED No SG's faulted. BOP checks intact SG levels: • Narrow range level > 31%. Controls feed flow to maintain narrow range level between 31% and 65%. BOP checks station instr air hdr press > 100 PSIG. Monitor Shutdown Margin during cooldown. SRO determines TSC is not activated. SRO directs ATC to monitor nuclear instrumentation to ensure adequate Shutdown Margin.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

EVENTS 7-9; (continued)

Critical Task: CT-34 (ECA-3.1.B)
Crew initiates cool down of the RCS to cold shutdown conditions at the highest rate achievable but less than 100°F per hour in all RCS cold legs.
SAFETY SIGNIFICANCE --
Depending upon the plant conditions, failure to perform the critical task either causes accelerated depletion of RWST inventory leading to loss of SI and eventual core uncovery or causes increased primary-to-secondary leakage leading to SG overfill and more radioactive release.
Thus, failure to perform the critical task leads to a "significant reduction in safety margin beyond that irreparably introduced by the scenario." It also represents a "demonstrated inability by the crew to take an action or combination of actions that would prevent a challenge to plant safety."

BOP initiates RCS cooldown to Cold Shutdown:

- Maintain C/D rate in RCS cold legs<100F/HR.
- Initiate a trend of RCS cold leg temperature and pressure and Initial every half hour.
- Refer to Attachment 5-A.
- WHEN PRZR pressure < 1950 PSIG, THEN blocks low steamline pressure SI.
- BOP checks station instr air hdr press > 100 PSIG.
- Checks MSIVs - AT LEAST ONE OPEN ("B" & "C" MSIVs remain open).
- Checking condenser available.
- Verifies in STM PRESS mode.
- Placing condenser steam dump controller in MANUAL.
- Gradually raises steam dump demand to initiate RCS Cooldown.
- Crew verifies cooldown rate in RCS cold legs is < 100F/hr.

Terminate scenario after the RCS cooldown is established in ECA-3.1 and the crew demonstrates the intent to control the C/D rate at highest achievable but < 100 F/hour.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions'		BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows: Verifies power to both Emergency 4KV AC busses.
	Both EDG's are running.	Diesel generators – BOTH RUNNING with no Trouble Alarms, RW pumps running supplying cooling water flow.
		Start CNMT Hydrogen Analyzers: • Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service.
		Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B).
		Station instrument air header pressure > 100 PSIG.
Reheat steam failed to automatically isolate on the trip, if crew failed to identify and close valves in FR-S.1 or E-0, BOP will close them at this step.	Ensure Reheat Steam Isolation.	Ensure Reheat Steam Isolation: • Verify MOV-1MS-100A,B – CLOSED. • Reset reheater controller. • Close MOV-1MS-204, gland stm spillover vlv.
		Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig.
		Align Neutron Flux Monitoring For Shutdown: • When operable IR channels <1E-10 amp, check SR channels energized. • Transfer NR-1NI-45 recorder to operable source and intermediate range displays.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		Verify River Water System In Service: • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. OR (IF CIB has occurred) • Verify RPRW flow to recirc spray hxs.
	Steamline isolation not required.	Check If Main Steamline isolation required: • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57)
	CIB is NOT REQUIRED.	Check CIB And CNMT Spray Status: • Containment press remained < 11 PSIG. Verify ESF Equipment Status: • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT. When SR's are energized, verify Audible indication: • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.
Attachment 1-K– COMPLETE	Discrepancies: • Reheat steam auto isolation failure.	Upon completion, reports any discrepancies to SRO.

Appendix D **Scenario Outline**

aFacility: **BVPS Unit 1** Scenario No. 5 Op Test No.: 1LOT21 NRC
Examiners: _____ Candidates: _____ SRO
_____ _____ ATC
_____ _____ BOP

Initial Conditions: **IC-171 (17)**: 64% power,613MWe, MOL, Equ. XE Conditions, CB "D" @ 185 steps, RCS boron - 1100 ppm.

Turnover: Maintain current power level.
Startup 1SD-P-1B and Shutdown 1SD-P-1A IAW 1OM-23B.4.G.

Critical Tasks:
1. CT-6 (E-0.I) – Establish 1 train of HHSI
2. CT-10 (E-0.M) – Close PORV Block valve
3. CT-13 (E-0.Q) – Manually trip the turbine

Event No.	Malf. No.	Event Type	Event Description
1	N/A	(N) BOP, SRO	Startup 1SD-P-1B and S/D 1SD-P-1A
2	FWM11C	(TS) SRO	1FW-P-2 trip Throttle valve failure.
3	IMF MSS16B (0 0) 0 30	(I,A) BOP, SRO (TS) SRO	"A" SG Ch 3 steam press transmitter, PT-1MS-475, fails low
4	FWM01A	(R) ATC (C,A) BOP, SRO	Main feedwater pump trip, requires turbine load reduction and manual rod insertion due to auto rod failure.
5	IMF RCS06A (10 0) 100 300	(C,A) ATC, SRO	"A" RCP #2 seal failure, requires Rx/RCP trip.
6	IMF RCS02A (1 0) 300	(M) ALL	300 gpm SBLOCA occurs on Rx trip, "A" 4kv bus trips on OC, EDG-1 starts then trips on overspd - LOSS OF 1AE bus.
7	IMF TUR04B (5 0) 3 IMF TUR06B (0 0) 100 0 100	(C) BOP, SRO	Incomplete turbine trip, GV-2 and TV-2 fail to close, requires BOP to manually trip turbine.
8	IMF PRS03B (2 0) 90 10 0	(C) ATC, SRO	PORV, PCV-1RC-455D fails open during Rx trip requires ATC to close block valve.
9	IMF INH25	(C) ATC, SRO	MOV-1SI-867D fails to auto open on SI signal, requires ATC to manually open to align HHSI flowpath

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

E-0 → E-1 → ES-1.1

After taking the shift, IAW 1OM-23B.4.G, the crew will startup the standby Heater Drain pump, 1SD-P-1B and shutdown 1SD-P-1A.

The turbine driven AFW pump Trip throttle valve will then fail, the SRO will address TS implications of AFW pump being OOS.

The “A” SG Channel 3 steam pressure transmitter, PT-1MS-475, will fail low, IAW AOP 1.4.1, the BOP will place the “A” MFRV in manual to control level, and the SRO will direct placing the alternate channel in service using 1OM-24.4.IF, Attachment 4. After FCV-1FW-478 is returned to AUTO, the SRO will address Technical Specifications.

The "A" Main feedwater pump will spuriously trip, the crew will enter AOP 1.24.1 and reduce power to less than 52%. The control rods will fail to auto insert requiring the ATC to manually insert control rods and borate for the power reduction.

During the power reduction, the “A” RCP seal leakoff flow will begin to decrease, the crew will respond to the Annunciator, A3-101, for Hi Seal Vent Pot Level via the ARP and then via AOP 1.6.8, “Abnormal RCP Operation”, the crew will continue to monitor seal leakoff flow as it decreases. Seal leakoff flow will decrease to < 0.8 gpm with an increase in radial bearing temperature which meets the immediate trip criteria in AOP 1.6.8. The ATC will manually trip the reactor, trip the “A” RCP and then close the spray valve.

As a result of the Rx trip, a 300 gpm SBLOCA will occur on the “A” loop.

The turbine will fail to completely trip on the reactor trip, GV-2 and TV-2 will fail to close requiring a manual turbine trip.

Additionally; PORV, PCV-1RC-455D will fail open causing a Safety Injection due to low PRZR pressure, requiring closure of the block valve. During the transfer to offsite power, the “A” 4kv bus will trip due to overcurrent; the #1 EDG will start then trip on overspeed.

With the “AE” 4kv emergency bus de-energized, A "B" train SIS Injection valve, MOV-1SI-867D, will fail to auto open; therefore, with no Safety Injection flow, the crew will be required to manually open MOV-1SI-867D to restore HHSI flow.

The crew will enter E-0, transition to E-1 due to containment parameters and then to ES-1.1 to terminate Safety Injection.

The scenario will be terminated when normal charging flowpath is established in ES-1.1.

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

INITIAL CONDITIONS: (IC-171) 64 % Power, MOL, Bank D @ 185 steps, Equilibrium XE, 1100 PPM Boron,

ADDITIONAL LINEUP CHANGES	STICKERS	MONITOR SETUP
		High power splash
EQUIPMENT STATUS	**DATE/TIME OOS**	**TECHNICAL SPECIFICATION(S)**

SHIFT TURNOVER INFORMATION

1. Maintain current power.
2. IAW 1OM-23B.4.G, S/U 1SD-P-1B and S/D 1SD-P-1A.
3.
4.

SCENARIO SUPPORT MATERIAL REQUIRED

1. Reactivity plan – provide MOL Rapid Power Reduction reactivity plan.
2. 1OM-23B.4.G

PROCEDURES NEEDED

E-0
E-1
ES-1.1
1OM-46.4.G
24 IF, Attach 4
AOP 1.4.1
AOP 1.6.8
AOP 1.24.1

Insert preloads per the schedule file for this scenario:

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 1:		
Startup the standby Heater Drain pump, 1SD-P-1B and shutdown 1SD-P-1A. **ROLE PLAY:** As field operator at the Heater Drain Pumps report back as applicable regarding pump status. Continue with next event at LE discretion.	IAW 1OM-23B.4.G	BOP swaps inservice heater drain pumps: • Informs field operator that a bump of 1SD-P-1B will occur. • Bumps the pump by momentarily placing CS in START and then returning to STOP. • Waits for pump to come to complete stop. • Places CS for 1SD-P-1B in START. • Places CS for 1SD-P-1A in STOP, then PTL. • Verifies running current stabilizes. • Verifies discharge pressure is 260 - 665 psig. • Confirms pump operation locally is SAT. • Returns CS to AUTO.
EVENT 2:		
1FW-P-2 Trip Throttle Valve trips **IMF FWM11C (0 0)** **ROLE PLAY:** 2 minutes after being dispatched to inspect 1FW-P-2, report back that the trip throttle valve linkage rod is broken.	A7-7, Stm Unavailable to Turb Driven Feed pp, 1FW-P-2.	BOP reports that 1FW-P-2 is tripped. Crew dispatches operator to investigate 1FW-P-2.
	SRO evaluates Technical Specifications	SRO enters TS 3.7.5, condition B, restore w/in 72 hrs.
Continue with next event at LE discretion.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 3:	PT-1MS-475, 1A SG Stm Press Trans fails low.	BOP notes failure and notifies US.
"A" Steam Pressure Channel, PT-1MS-475 fails low. **IMF MSS16B (0 0) 0 30**	MFRV FCV-1FW-478 closes due to steam flow/feed flow mismatch. A7-41, loop 1 steamline press lo or press rate hi A7-42, loop 1 Fd flow > stm flow A7-45, SG 1A level deviation.	IAW AOP 1.4.1, BOP takes manual control of FCV-1FW-478 and stabilizes 1A SG feed flow and level. ATC reviews ARPs.
	SRO enters AOP 1.4.1.	SRO enters AOP 1.4.1 SRO directs BOP to take manual control of FCV-1FW-478 and restore SG level to normal. SRO directs transient SG level control band and reactor trip criteria (25%/85%.)
	SRO transitions to Instrument Failure procedure, 1OM-24.4.IF, Attachment 4.	SRO transitions to 1OM-24.4.IF Attachment 4 and directs BOP to transfer A SG control to CH. 4. BOP places FC-1FW-478 (SF) in the FM 475 pos. BOP places FC-1FW-478 (FF) in the FM 476 pos. When SG level is stabilized, SRO directs BOP to place FCV-1FW-478 in AUTO. SRO contacts I&C to investigate failed steam pressure transmitter and take actions per Attach 4 of IF.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
	SRO evaluates TS.	3.3.2 (ESFAS Instrumentation) Cond A; immediately enter the Cond referenced in Table 3.3.2-1 Function 1.e (steamline press low SI) and Function 4.D.1 (steamline press low Steamline isolation) both are Cond D; place channel in trip in 72 hrs. or be in Mode 3 in 78 hrs. and be in Mode 4 in 84 hrs. INFO ONLY: Tech Spec 3.3.3 – Table 3.3.3-1, function 13a, Condition E, Be in Mode 3 in 6 hours. Tech Spec 3.3.4 Table B 3.3.4-1 function 3c, Condition A, Restore in 30 days.
Continue with next event at LE discretion.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 4: Trip of "A" Main Feed Pump Rapid Power reduction, Control rods fail to insert in AUTO. **IMF FWM01B (0 0)** **IMF CRF02A (0 0) TRUE** **NOTE:** Crew may enter AOP 1.51.1, Unplanned Power Reduction. **NOTE:** Crew may elect to begin the load reduction at 2%/min then increase rate to 5%/min. **NOTE:** When auto rod insertion malfunction is recognized, the crew may enter AOP 1.1.8.	1FW-P-1A trips. A7-37, SG Feed Pump Auto Stop A7-39, SG Feed Pump Disch Flow Hi Start 2nd Pump A7-40, Steam Generator Feed Pump Disch Equalize Press Low SRO enters AOP 1.24.1, Loss of Main Feedwater.	BOP recognizes feed pump trip and informs crew. ATC performs IOA's of AOP 1.24.1 and verifies Rx power is < 70% BOP performs IOA's of AOP 1.24.1 and verifies 1FW-P-1B remains running. ATC verifies Rx power is NOT < 52%. BOP verifies 2 Condensate pumps are running. ATC refers to ARPs as time permits. SRO directs BOP to stabilize SG levels: • BOP checks if Steam Flow is < AVAILABLE feed flow, if not then crew: Initiates turbine load reduction; • Depress 1st STG IN pushbutton. • Set EHC SETTER for desired load reduction. • Set LOAD RATE thumbwheel to 5%/minute. • Depresses GO. • Reduces power until SG levels stabilize then verifies SG levels are at or trending to program level. ATC reduces Rx power by manually inserting control rods or initiating either a normal or emergency boration.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE

SRO directs load decrease to < 52%, instructs BOP to Initiate turbine load reduction by;

- Depressing 1st STG IN pushbutton.
- Set EHC SETTER to < 50% power equivalent.
- Set LOAD RATE thumbwheel to 5%/minute.
- Depresses GO.

ATC reduces Rx power by manually inserting control rods or initiating either a normal or emergency boration.

BOP:

- Verifies both condensate pumps and one heater drain pump are running.
- Verifies A7-6, "Steam Generator Feed Pump Suct Press Low" - NOT IN ALARM.
- Verifies proper operation of SG Main FW Pump Recirc Vlvs, FCV-1FW-150A,B.
- Verifies MFP < 450 amps on each motor.
- Verifies A7-40, "Steam Generator Feed Pump Disch Equalize Press Low" - NOT IN ALARM.

Crew dispatches an operator to investigate 1FW-P-1A trip.

ROLE PLAY:
5 minutes after being dispatched to investigate 1FW-P-1A trip, report 1FW-P-1A has a severe oil leak, oil reservoir is extremely low.

NOTE:
Event 5 will automatically insert when Rx power lowers to <59%.
Approximately 6 minutes until 1st indication becomes evident to the crew.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENT 5:		
"A" RCP #2 Seal failure **IMF RCS06A (0 0) 100 300** (all following commands preloaded) **TRGSET 8 'fch:156a <= 1'** **TRGSET 9 'in03e13 == 5'** **IMF XMT-SEA015A (9 0) 0.68 600** **IMF XMT-SEA016A (8 0) 0.6715 440** **IMF XMT-RCP003A (8 120) 175 600**	#1 seal leakoff flow, FT-1CH-156A, begins trending down, After ~ 6 minutes from insertion of malfunction A3-101, RCP 1A Seal Vent Pot Lvl Hi. FT-1CH-156B will also indicate a downward trend when it comes on scale. TRB-1CH-131 will begin trending up ~10 minutes after malfunction inserted.	ATC reports Ann A3-101. BOP reviews ARP which directs entry into AOP 1.6.8.
NOTE: RCP parameters will initially indicate that an immediate RCP shutdown is not required, however, as the parameters are continued to be trended, an immediate RCP shutdown will be required due to either "Change of input to 1DG-TK-1 of > 1.1 gpm" OR "Seal leakoff flow being <0.8 gpm with increasing pump radial bearing temperature."	SRO enters AOP 1.6.8 for Abnormal RCP Operation. RCP parameters continue to degrade; After ~12 minutes, Ann. A3-79, Reactor Coolant Pump Seal Leakoff Flow Low, will alarm. After ~13.5 minutes, Seal leakoff flow will be less than 0.8 gpm with pump radial bearing temperature increasing. After ~15 minutes, the change of input to 1DG-TK-1 of > 1.1 gpm will be evident.	SRO directs ATC to review RCP parameters to determine if immediate RCP shutdown IAW AOP 1.6.8 is required. Crew determines immediate RCP shutdown is not required and continues to monitor parameters while the SRO proceeds with AOP instructions. Crew determines that immediate RCP shutdown is now required. SRO directs the ATC to manually trip the reactor. SRO directs the crew to perform the Immediate Operator actions of E-0. SRO additionally directs the ATC that following completion of the IOA's, to note the time, stop 1RC-P-1A and close the "A" spray valve, PCV-1RC-455A.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (all pre-loaded) **NOTE:** When the Rx is manually tripped, there will be a loss of the "A" & "AE" 4Kv buses, which causes the "A" RCP to be lost also. EDG will trip on overspeed so "AE" bus will remain de-energized.	Reactor trip and bypass breakers open Rod bottom lights lit RPI's at zero Neutron flux dropping 300 gpm SBLOCA, Turbine Trip failure, PORV, PCV-1RC-455D and MOV-1SI-867D failures along with a loss of the AE emergency bus. SRO enters E-0, step 1.	ATC manually trips the reactor ATC verifies Reactor trip: • Rx trip and bypass breakers open. • Power range indication is < 5%. • Neutron flux is dropping.
Critical Task: CT-13 (E-0.Q) **Crew manually trips the main turbine before a Severe (orange path) challenge develops to either the Sub-criticality or the Integrity CSF or before transition to ECA-2.1, whichever occurs first.** **Basis for Selection:** SAFETY SIGNIFICANCE -- Failure to trip the main turbine under the postulated plant conditions causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Additionally, such an omission constitutes a demonstrated inability by the crew to "take an action...that would prevent a challenge to plant safety."	GV-2 and TV-2 failed to automatically close.	BOP verifies Turbine trip: • Throttle OR Governor valves ALL closed. BOP reports that the turbine failed to trip, Manual turbine trip was successful in closing valves. • Main Generator output brks - open • Exciter Circuit breaker - open

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 - 9:</u> (continued) **ROLE PLAY:** If dispatched to investigate #1 EDG failure, wait 10 minutes. then report that #1 EDG had tripped on overspeed. The overspeed will not reset.	AE Bus has no power.	BOP verifies Power to AC Emergency Busses: • Using VB-C voltmeters, verifies only DF bus has voltage indicated. Check SI Status: • ATC reports that SI automatically actuated. • ATC manually actuates SI by depressing both Train "A" and Train "B" pushbuttons. ATC/BOP, sounds standby alarm, announces reactor trip and safety injection. Check if SI flow should be reduced: • Verifies CNMT is NOT consistent with pre-event. SRO determines SI flow should not be secured.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
<u>EVENTS 6 - 9:</u> (continued) **<u>Critical Task: CT-6 (E-0.I)</u>** **Crew establishes flow from at least one high head ECCS pump before transition out of E-0.** **Basis for Selection:** SAFETY SIGNIFICANCE -- Failure to manually start at least one high-head ECCS pump under the postulated conditions constitutes "misoperation or incorrect crew performance which leads to degraded ECCS capacity." The critical task could be restated as "manually open valve(s) to establish injection flow from at least one high-head ECCS pump."	AE Bus has no power.	ATC verifies SI System Status: • B charging pump running. • B LHSI pump running. • BIT Flow indicated. ATC identifies and reports that there is no BIT flow indicated. SRO directs ATC to align valves to establish flow. ATC identifies MOV-1SI-867D found closed and opens valve to establish SI BIT flow.
	AE Bus has no power.	BOP verifies AFW status: • B motor-driven pump running. • Turbine-driven pump NOT running -OOS. • AFW throttle valves all FULL OPEN (only "B" train has power, "A" train was full open before power was lost). • Total AFW flow is > 370 gpm.
NOTE: Evaluation of BOP performing Attachment 1-K begins on page 19.	<u>List of Attachment 1-K Discrepancies:</u> • No train A power, #1 EDG failed, only DF 4kv bus is energized. • MOV-1SI-867D failed to auto open.	SRO directs BOP to perform Attachment 1-K in a timely manner.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued)	RCS temperature < 547°F and dropping due to Safety Injection flow.	ATC checks RCS Tavg stable at or trending to 547°F: • ATC verifies no steam release is occurring. • ATC verifies Reheat steam is isolated. • ATC reduces total feedflow to minimize C/D.
Critical Task: CT-10 (E-0.M) **Crew closes the upstream block MOV of the stuck open PRZR PORV prior to completion of the "PRZR PORV check" step of E-0.** **Basis for Selection:** SAFETY SIGNIFICANCE -- Failure to close the block MOV under the postulated plant conditions constitutes "misoperation or incorrect crew performance which leads to degradation of any barrier to fission product release." In this case, the RCS fission-product barrier can be restored to full integrity simply by closing the block MOV. Therefore, failure to close the MOV also represents a "demonstrated inability by the crew to take an action or combination of actions that would prevent a challenge to plant safety."		ATC verifies PRZR isolated: • PORVs – CLOSED. ATC identifies and reports PORV, PCV-1RC-455D has failed open. ATC places CS for PCV-1RC-455D to close. ATC identifies PCV-1RC-455D dual indication. ATC closes MOV-1RC-537. • Spray Valves – CLOSED. • Safety relief valves – CLOSED. • Power to at least one block valve – AVAILABLE (all). • Block valves – AT LEAST ONE OPEN. (2 open)

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued)		ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT). • Criteria for stopping is not met – both remaining RCPs left running. ATC/BOP checks if any SGs are faulted: • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED Crew determines NO SG's are faulted. Crew checks if SG tubes are intact: • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES Crew determines all SG tubes are intact.
	Hi-Hi Radiation alarm is in due to containment radiation levels. Incore room, RM-204 and containment, RM-215A and 215B in Hi-Hi alarm. Containment Pressure is rising. Containment Sump level is rising.	Crew checks if RCS is intact by checking CNMT conditions consistent with pre-event values: • CNMT radiation • CNMT pressure • CNMT sump level Crew determines the RCS is not intact based on CNMT conditions and verifies HHSI valves, MOV-1SI-867C,D open & transitions to E-1.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued)	SRO transitions to E-1, Loss of Reactor or Secondary Coolant.	Crew checks if CREVS should be actuated by checking EITHER of the following: • Control Room Radiation Monitor RM-1RM-218A,B- NOT IN HIGH ALARM. • CIB - HAS NOT OCCURRED. Crew determines CREVS actuation NOT required. ATC checks if RCPs should be stopped: • D/P between RCS pressure and highest SG pressure – < 200 PSID (350 PSID ADVERSE CNMT) • Criteria for stopping RCPs is not met - Leaves RCPs running. ATC checks Recirc Spray Pumps – NONE RUNNING ATC/BOP checks if any SGs are faulted: • Pressures in all SGs – ANY DROPPING IN AN UNCONTROLLED MANNER OR • ANY SG COMPLETELY DEPRESSURIZED Crew determines NO SG's are faulted.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued)		BOP checks intact SG levels: • NR levels > 31% (50% Adverse) BOP controls feed flow to maintain NR level between 31% (50% adverse) and 65%. BOP checks station Instr air hdr press > 100 PSIG. Crew checks if SG tubes are intact: • Check all SG levels – NONE RISING IN AN UNCONTROLLED MANNER. • Check Secondary Radiation – CONSISTENT WITH PRE-EVENT VALUES. Crew determines no SG levels are rising in an uncontrolled manner and Secondary Radiation is consistent with pre-event values, therefore all SG tubes are intact.
	PORV, PCV-1RC-455D previously failed open requiring block valve, MOV-1RC-537 to be closed.	ATC checks PORV's and block valves: • Power to block valves – AVAILABLE. • PORVs – CLOSED. (455D dual indication) Block valves – AT LEAST ONE OPEN. (2 open)

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued) **NOTE:** Due to crew timing and procedural progression, the crew may not meet the requirements to transition to ES-1.1 at this point. If this is the case, then terminate in E-1 at the Lead Evaluators discretion.	SRO transitions to ES-1.1, SI Termination Indicated SI/BIT flow decreases to zero. Only Train "B" components have power, all Train "A" components are in "Pre-Safety Injection" configuration.	Crew checks if SI flow should be reduced. ATC verifies RCS Subcooling is > 46°F (54°F ADVERSE CNMT) based on CETC's BOP confirms secondary heat sink available by >370 gpm of feed flow available OR NR level in at least 1 SG > 31% (50% ADVERSE CNMT). ATC confirms RCS pressure is stable or rising. ATC confirms PRZR level is > 17% (38% ADVERSE CNMT) Crew determines that current plant conditions support SI reduction ATC/BOP resets SI – both trains. ATC/BOP resets CIA and CIB – both trains. ATC verifies only 1 charging pump is running. ATC confirms RCS pressure is stable or rising. SRO directs ATC to isolate the BIT: • ATC closes MOV-1SI-867C, D. ATC verifies HHSI flow is secured.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
EVENTS 6 - 9: (continued)	MOV-1CH-289 was de-energized in the Open position.	SRO directs ATC to establish normal charging flowpath by: • Verifying normal charging is isolated. • Closing FCV-1CH-122. • Opening MOV-1CH-310. • Opening MOV-1CH-289.(crew recognizes valve lost power while it was open and continues with normal charging restoration.) • Controlling FCV-1CH-122 as necessary to maintain PRZR level.
Terminate scenario when the crew establishes normal charging flowpath in ES-1.1 or if ES-1.1 transition criteria not met, terminate at Lead Evaluators discretion in E-1.		

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions'		BOP performs the verifications/actions of Attachment 1-K 'Verification of Automatic Actions' as follows:
	AE Bus has no power.	Verifies power to both Emergency 4KV AC busses. Only DF bus has power.
	#1 EDG is not running and won't start.	Diesel generators – ONLY #2 EDG RUNNING with RW pump running to supply cooling water flow. BOP unsuccessfully attempts to start EDG #1.
		Start CNMT Hydrogen Analyzers: • Using 1OM-46.4.G, gets keys, opens isolation valves (VB-A) and dispatches an operator to continue putting Hydrogen analyzers in service.
		Check at least 1 Leak Collection Exhaust fan running, 1VS-F-4A(4B). BOP verifies that "A" has no power "B" not running. BOP manually starts 1VS-F-4B and verifies exhaust damper opens.
		Station instrument air header pressure > 100 PSIG.
	Ensure Reheat Steam Isolation.	Ensure Reheat Steam Isolation: • Verify MOV-1MS-100A,B – CLOSED. • Reset reheater controller. • Close MOV-1MS-204, gland stm spillover vlv.
		Verify CCR Pumps - ONE RUNNING with recirc pressure >100 psig.

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)	AE Bus has no power.	Align Neutron Flux Monitoring For Shutdown: • When operable IR channels <1E-10 amp, check SR channels energized. • Transfer NR-1NI-45 recorder to operable source and intermediate range displays. Verify River Water System In Service: • RPRW Pumps - TWO RUNNING. • Check CCR Heat EX RW press is > 20 psig. OR (IF CIB has occurred) • Verify RPRW flow to recirc spray hxs. Check If Main Steamline isolation required: • CNMT pressure - > 7 PSIG -OR- • Steamline pressure - < 500 PSIG -OR- • Steamline pressure high rate of change - ANY ANNUNCIATOR LIT (A7-41, A7-49, A7-57) Determines steamline isolation is NOT required. Check CIB And CNMT Spray Status: • Containment press - REMAINED < 11 PSIG. Verify ESF Equipment Status: • Verify SI status by checking all RED SIS marks – LIT. • Verify CIA by checking all ORANGE CIA marks – LIT. • Verify FWI by checking all GREEN FWI marks – LIT.
Critical Task: CT-6 (E-0.I) Crew establishes flow from at least one high head ECCS pump before transition out of E-0.	• MOV-1SI-865D failed to automatically open on SIS, manual open SAT.	

INSTRUCTIONAL GUIDELINES	PLANT STATUS / PROCEDURAL GUIDANCE	EXPECTED STUDENT RESPONSE
Attachment 1-K 'Verification of Automatic Actions' (continued)		When SR's are energized, verify Audible indication: • Verify operating SR Ch selected on Audio Count Rate Channel Selector Switch. • Audible indication functioning properly. • Adjust Multiplier Sw & Volume as necessary.
Attachment 1-K– COMPLETE	Discrepancies: • No train A power, #1 EDG failed, only DF 4kv bus is energized. • MOV-1SI-865D failed to automatically open on SIS, manual open SAT.	Upon completion, reports any discrepancies to SRO.