

PSEG Nuclear LLC

Job Performance Measure

PERFORM CONTROL ROOM LOGS (MODES 1-4) IAW S2.OP-DL.ZZ-0003

JPM Number: 21-01 NRC RO-A1.a

Revision Number: 01

Date: 1/10/23

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>1/10/23</u>
Validated By:	<u>E. Gallagher</u> SME or Instructor	Date:	<u>1/10/23</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>1/19/23</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>1/19/23</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	11/9/22	New JPM.
01	1/10/23	Incorporated NRC comments from Prep week. Modified Answer Key to distinguish which readings were previously recorded.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | | |
|----------------------------|-----|-----------------------------------------------------------------------------------------------------|------------------------|
| <hr style="width: 100%;"/> | RC | 1. Task description and number, JPM description and number are identified. | |
| <hr style="width: 100%;"/> | RC | 2. Knowledge and Abilities (K/A) references are included. | |
| <hr style="width: 100%;"/> | RC | 3. Performance location specified. (in-plant, control room, or simulator) | |
| <hr style="width: 100%;"/> | | 4. Initial setup conditions are identified. | |
| <hr style="width: 100%;"/> | RC | 5. Initiating and terminating cues are properly identified. | |
| <hr style="width: 100%;"/> | RC | 6. Task standards identified and verified by SME review. | |
| <hr style="width: 100%;"/> | RC | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) | |
| <hr style="width: 100%;"/> | RC | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: | |
| | | Procedure(s) S2.OP-DL.ZZ-0003 Rev. 126 | Date Checked: 10/13/22 |
| | | 9. Pilot test the JPM: | |
| | | a. Verify cues both verbal and visual are free of conflict, and | |
| | | b. Ensure performance time is accurate. | |
| <hr style="width: 100%;"/> | N/A | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. | |
| <hr style="width: 100%;"/> | N/A | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page | |

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SME/Instructor	Date

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SME/Instructor	Date

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SME/Instructor	Date

SIMULATOR SETUP INSTUCTIONS

1. Ensure simulator is in IC-246, this is an Admin JPM.
2. Ensure the following overrides are at values desired for the JPM being performed.

ID #	Description	Delay Time	Ramp	RT/ET	CUR/VAL	FINAL VALUE
01	B223 R AO GB223BTI 21 OT DELTA T SETPOINT	N/A	N/A	N/A	75.1	N/A
02	B223 L AO GB223ATI 21 OP DELTA T SETPOINT	N/A	N/A	N/A	67.2	N/A
03	B225 R AO GB223BTI 22 OT DELTA T SETPOINT	N/A	N/A	N/A	78.0	N/A
04	B225 L AO GB223ATI 22 OP DELTA T SETPOINT	N/A	N/A	N/A	70.2	N/A
05	B227 R AO GB223BTI 23 OT DELTA T SETPOINT	N/A	N/A	N/A	80	N/A
06	B227 L AO GB223ATI 23 OP DELTA T SETPOINT	N/A	N/A	N/A	68.1	N/A
07	B229 R AO GB223BTI 24 OT DELTA T SETPOINT	N/A	N/A	N/A	77.1	N/A
08	B229 L AO GB223ATI 24 OP DELTA T SETPOINT	N/A	N/A	N/A	68.2	N/A
09	B224 L AO GB224ATI 21 REACTOR COOLANT LOOP DELTA T	N/A	N/A	N/A	61.3	N/A
10	B226 L AO GB226ATI 22 REACTOR COOLANT LOOP DELTA T	N/A	N/A	N/A	63.9	N/A
11	B228 L AO GB228ATI 23 REACTOR COOLANT LOOP DELTA T	N/A	N/A	N/A	62.1	N/A
12	B230 L AO GB230ATI 24 REACTOR COOLANT LOOP DELTA T	N/A	N/A	N/A	62.9	N/A
13	B234 L AO GB234ATI 21 LOOP AVG TEMPERATURE	N/A	N/A	N/A	573.5	N/A
14	B235 L AO GB235ATI 22 LOOP AVG TEMPERATURE	N/A	N/A	N/A	575.6	N/A
15	B236 L AO GB236ATI 23 LOOP AVG TEMPERATURE	N/A	N/A	N/A	574.3	N/A
16	B237 L AO GB237ATI 24 LOOP AVG TEMPERATURE	N/A	N/A	N/A	573.8	N/A

SPECIAL INSTRUCTIONS

1. Copies of Salem 2 Cycle 26 REM (Rev. 21)
2. Marked up copies of Control Room Logs S2.OP-DL.ZZ-0003, Reactor Coolant Temperatures, pages 22-24
3. Black and Red pens
4. OP-AA-111-101-1001, Rev. 6, USE AND DEVELOPMENT OF OPERATING LOGS

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- During the CRS review of the Control Room Logs, it was discovered that the Reactor Coolant Temperatures section of the Control Room Logs was not completed

INITIATING CUE

- You are directed to complete the log readings IAW S2.OP-DL.ZZ-0003, Control Room Logs (Modes 1-4).
- Notify the CRS (lead examiner) the results of the log readings.

TASK STANDARD:

The task is satisfactorily met when the applicant completes the control room logs, determines that 23 RC Loop OTΔT setpoint channel check is outside the REM OTΔT Setpoint band, and records the reading as UNSAT.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

ATTACHMENT 1

S2.OP-DL.ZZ-0003(Q)

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MONDAY DATE: ___/___/___

AOS KEY

CONTROL ROOM LOG (MODES 1-4)

DESCRIPTION	SURV. RQMT	INSTR NO.	UNITS	MIN	MAX	MON		TUE		WED		THU		FRI		SAT		SUN	
						1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630

REACTOR COOLANT SYSTEM PRESSURE

PRESSURE CHANNEL I-IV CHECK	4.3.1.1.1.9 4.3.1.1.1.10 4.3.2.1.1.1.d	---	---	UNSAT	SAT	SAT													
-----------------------------	----------------------------------------------	-----	-----	-------	-----	-----	--	--	--	--	--	--	--	--	--	--	--	--	--

Previously recorded readings.

REACTOR COOLANT SYSTEM PRESSURE RECORDER

GROUP NOTE - SAT - Channel is within 100 psig of 2PI405 AND recorder is operating (corner rotating).
IF UNSAT, THEN Reference S2.OP-ST.INST-0001 AND T.S.A.S 3.3.3.7

2PR-403 Hot Leg Pressure Recorder	4.3.3.7	---		UNSAT	SAT	SAT													
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REACTOR COOLANT TEMPERATURES

GROUP NOTE: LOOP OPDT, OTDT, and ACTUAL DT Applicable in Modes 1 & 2 only.
GROUP NOTE: LOOP AVERAGE TEMPS, S/R 4.2.5.1 is app in Mode 1 with 4 loops in operation. T/S 3.1.1.4 is app in Mode 1 and 2.
IF the Reactor is critical, TAVE is less than 551 Deg F, AND TAVE-TREF in alarm, THEN REFER to S2.OP-AR.ZZ-0012(Q).

21 - 24 LOOP ACTUAL DT	4.3.1.1.1.7 4.3.1.1.1.8	---	---	UNSAT	SAT	SAT													
------------------------	----------------------------	-----	-----	-------	-----	-----	--	--	--	--	--	--	--	--	--	--	--	--	--

* IF for each loop actual D/T = (Reactor Engineering Manual Data Table 1 Full Power D/T) x (Corrected % Power) ±2.0°F, THEN RECORD "SAT".
** IF the average operable loop D/T is greater than (REM Data average operable Table 1 Full Power D/T) x (Corrected % Power) +0.3F, THEN REDUCE RTP IAW S2.OP-IO.ZZ-0004. During Tave coast down IAW S2.OP-IO.ZZ-0004 att 9 ONLY, IF average operable loop D/T is greater than (REM Data average operable Table 1 Full Power D/T) x (Corrected % Power) +0.2F THEN direct RE to provide new full power D/T values IAW SC.RE-RA.ZZ-0004. (Corrected % Power = [Average NIS Power + S2.RE-RA.ZZ-0012 Figure 9 Correction] / 100).
*** IF this is the first startup following a refueling, THEN refer to SC.RE-IO.ZZ-0002(Q), Low Power Physics Testing and Power Ascension for 21-24 LOOP Actual DT validation. Table 1 of Reactor Engineering Manual Data is not updated until after 100% pwr and state point data is collected.

21 LOOP OPDT STPT CHAN CHECK	4.3.1.1.1.8	TI411B	°F	*	*	67													
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* RECORD Console OPDT indication. Must be within REM (Reactor Engineering Manual Data) OPDT Setpoint (±1.5 °F).

COMMENTS:

AOS KEY

*ANS
KEY*

CONTROL ROOM LOG (MODES 1-4)

DESCRIPTION	SURV. RQMT	INSTR NO.	UNITS	MIN	MAX	MON		TUE		WED		THU		FRI		SAT		SUN	
						1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630
REACTOR COOLANT TEMPERATURES																			
22 LOOP OPDT STPT CHAN CHECK	4.3.1.1.1.8	TI421B	°F	*	*		69.9												
* RECORD Console OPDT indication. Must be within REM (Reactor Engineering Manual Data) OPDT Setpoint (±1.5 °F).																			
23 LOOP OPDT STPT CHAN CHECK	4.3.1.1.1.8	TI431B	°F	*	*		67.8												
* RECORD Console OPDT indication. Must be within REM (Reactor Engineering Manual Data) OPDT Setpoint (±1.5 °F).																			
24 LOOP OPDT STPT CHAN CHECK	4.3.1.1.1.8	TI441B	°F	*	*		67.7												
* RECORD Console OPDT indication. Must be within REM (Reactor Engineering Manual Data) OPDT Setpoint (±1.5 °F).																			
21 LOOP OTDT STPT CHAN CHECK	4.3.1.1.1.7	TI411C	°F	*	*		74.7												
* RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual Data) OTDT Setpoint Band.																			
22 LOOP OTDT STPT CHAN CHECK	4.3.1.1.1.7	TI421C	°F	*	*		77.6												
* RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual Data) OTDT Setpoint Band.																			
23 LOOP OTDT STPT CHAN CHECK	4.3.1.1.1.7	TI431C	°F	*	*		79.6												
* RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual Data) OTDT Setpoint Band.																			
24 LOOP OTDT STPT CHAN CHECK	4.3.1.1.1.7	TI441C	°F	*	*		76.5												
* RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual Data) OTDT Setpoint Band.																			
LOOP 21 AVERAGE TEMP	4.2.5.1 3.1.1.4	TI-412	°F	541	579.9		573.4												

**23 LOOP OPDT STPT
UNSAT READING**



COMMENTS:

*ANS
KEY*

ATTACHMENT 1

S2.OP-DLZZ-0003(Q)

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MONDAY DATE: ___/___/___

ANS
KEY

CONTROL ROOM LOG (MODES 1-4)

DESCRIPTION	SURV. RQMT	INSTR NO.	UNITS	MIN	MAX	MON		TUE		WED		THU		FRI		SAT		SUN	
						1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630	1830	0630

REACTOR COOLANT TEMPERATURES

LOOP 22 AVERAGE TEMP	4.2.5.1 3.1.1.4	TI-422	*F	541	579.9	575.1													
LOOP 23 AVERAGE TEMP	4.2.5.1 3.1.1.4	TI-432	*F	541	579.9	574.8													
LOOP 24 AVERAGE TEMP	4.2.5.1 3.1.1.4	TI-442	*F	541	579.9	573.9													
21 - 24 AVE TEMP CHANNEL CHECK	4.3.2.1.1.f 4.3.2.1.1.4.d	---	---	UNSAT	SAT	SAT													
* S/R 4.3.2.1.1 is applicable in Modes 1, 2, & 3. IF all 4 loop avg temperatures are within 3°F, THEN RECORD "SAT"																			
RX VESSEL FLANGE TEMP	4.4.7.2.1.e	TI-401	*F	---	300	95													

PRIMARY WATER STORAGE TANK

PWST Level	---	LA-5873	%	20	98	60.1													
20% PWST level required for FLEX capability, IF <20% THEN REFER to OP-SA-108-115-1001																			

PRESSURIZER TEMPERATURES

PZR Vapor Temperature	---	TI-454	*F	---	668	652													
Spray Loop 21 Temperature	---	TI-451	*F	475	--	544													
Spray Loop 23 Temperature	---	TI-452	*F	500	--	543													

Previously recorded readings.

ANS
KEY

COMMENTS:

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide marked up copy of Control Room Log to applicant.

Examiners Note: None

Comments: N/A

1.0	*	Records 21-24 LOOP ACTUAL DT	Determines all LOOP ACTUAL DTs readings are SAT.	
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Cue: N/A

Examiners Note: None

Comments:

2.0	*	Records LOOP 21-24 OPDT STPT CHAN CHECKS	Determines all OPDT setpoints are within the REM +/- 1.5 °F criteria and Channel Checks are SAT.	
-----	---	------------------------------------------	--------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: None

Comments:

3.0	*	Records LOOP 21-24 OTDT STPT CHAN CHECKS	Determines all OTDT setpoints are within the REM Fig 5A-D and Channel Checks are SAT, EXCEPT for 23 OTDT which the setpoint is outside the REM Fig 5C and notes that channel as UNSAT.	
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Cue: N/A

Examiners Note: UNSAT reading should be red circled

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<u>Comments:</u>				
4.0	*	Records 21-24 LOOP AVERAGE TEMPs	Determines all LOOP AVERAGE TEMPs are SAT.	
<p>Cue: N/A</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
5.0	*	Records LOOP 21-24 AVE TEMP CHANNEL CHECK	Determines 21-24 AVE TEMP CHANNEL CHECK is SAT.	
<p>Cue: N/A</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
6.0	*	Records RX VESSEL FLANGE TEMP	Determines RX VESSEL FLANGE TEMP is SAT.	
<p>Cue: N/A</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE when the applicant submits the LOGS to the Lead Examiner.			N/A

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO SRO _____

Facility: Salem **JPM No.:** 21-01 NRC RO-A1.a **Revision No.:** 01

Task Title: Perform Control Room Logs (Modes 1-4) IAW S2.OP-DL.ZZ-0003

Task No.: N1150410501 **Source:**

System: Conduct of Operations (Generic) Bank _____ New Mod _____

K/A Number / Description: G2.1.25 Ability to interpret reference materials, such as graphs, curves, tables (reference Potential)

K/A Rating RO 3.9 SRO 4.2

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: S2.OP-DL.ZZ-0003 pages 22-24

Reference(s): S2.OP-DL.ZZ-0003 (R126)

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- During the CRS review of the Control Room Logs, it was discovered that the Reactor Coolant Temperatures section of the Control Room Logs was not completed

INITIATING CUE

- You are directed to complete the log readings IAW S2.OP-DL.ZZ-0003, Control Room Log (Modes 1-4).
- Notify the CRS (lead examiner) the results of the log readings.

PSEG Nuclear LLC

Job Performance Measure

DETERMINE TIME TO MAKEUP TO UNIT 2 RWST

JPM Number: 21-01 NRC RO-A1.b

Revision Number: 0

Date: 08/16/2022

Developed By: R. Chan **Date:** 8/16/22
Instructor

Validated By: J. Militti / J. DeLisle **Date:** 8/16/22
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 11/29/22
Operations Representative

Approved By: M. Wadusky **Date:** 11/29/22
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	8/16/22	New JPM. Converted to new template.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | | |
|-----|--------------|-----------------------------------------------------------------------------------------------------|-----------------------|
| RC | | 1. Task description and number, JPM description and number are identified. | |
| RC | | 2. Knowledge and Abilities (K/A) references are included. | |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) | |
| RC | | 4. Initial setup conditions are identified. | |
| RC | | 5. Initiating and terminating cues are properly identified. | |
| RC | | 6. Task standards identified and verified by SME review. | |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) | |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: | |
| | Procedure(s) | S2.OP-SO.CVC-0006 Rev. 25
S2.RE-RA.ZZ-0012 Rev. 228
S2.OP-TM.ZZ-0002 Rev. 8 | Date Checked: 8/16/22 |
| RC | | 9. Pilot test the JPM: | |
| | a. | Verify cues both verbal and visual are free of conflict, and | |
| | b. | Ensure performance time is accurate. | |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. | |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page | |

R. Chan	8/16/22
SME/Instructor	Date

SME/Instructor	Date
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SME/Instructor	Date
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SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. Copies of S2.OP-SO.CVC-0006 (section 5.8.3 only), S2.RE-RA.ZZ-0012, S2.OP-TM.ZZ-0002, and calculator for each applicant.

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- You are the RO on-shift
- Make-up to the RWST is required to restore level to the Tech Spec minimum
- Current RWST level is 40.0 feet
- Current RWST boron concentration is 2360 ppm
- Current BAST boron concentration is 6900 ppm
- Section 5.8.3 of S2.OP-SO.CVC-0006, Boron Concentration Control, will be used to make-up to the RWST.

INITIATING CUE

- The CRS directs you to perform the following:
 1. DETERMINE the boric acid flowrate to make-up to the RWST from the BAST tanks.
 2. DETERMINE the amount of time required to raise the RWST level to the MINIMUM Tech Spec level.
- Record your response on the Cue Sheet.

TASK STANDARD:

The task is satisfactorily met when the applicant has determined a boric acid flowrate of 26 gpm and will take 59.2 minutes to raise the RWST level to the Tech Spec minimum level.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

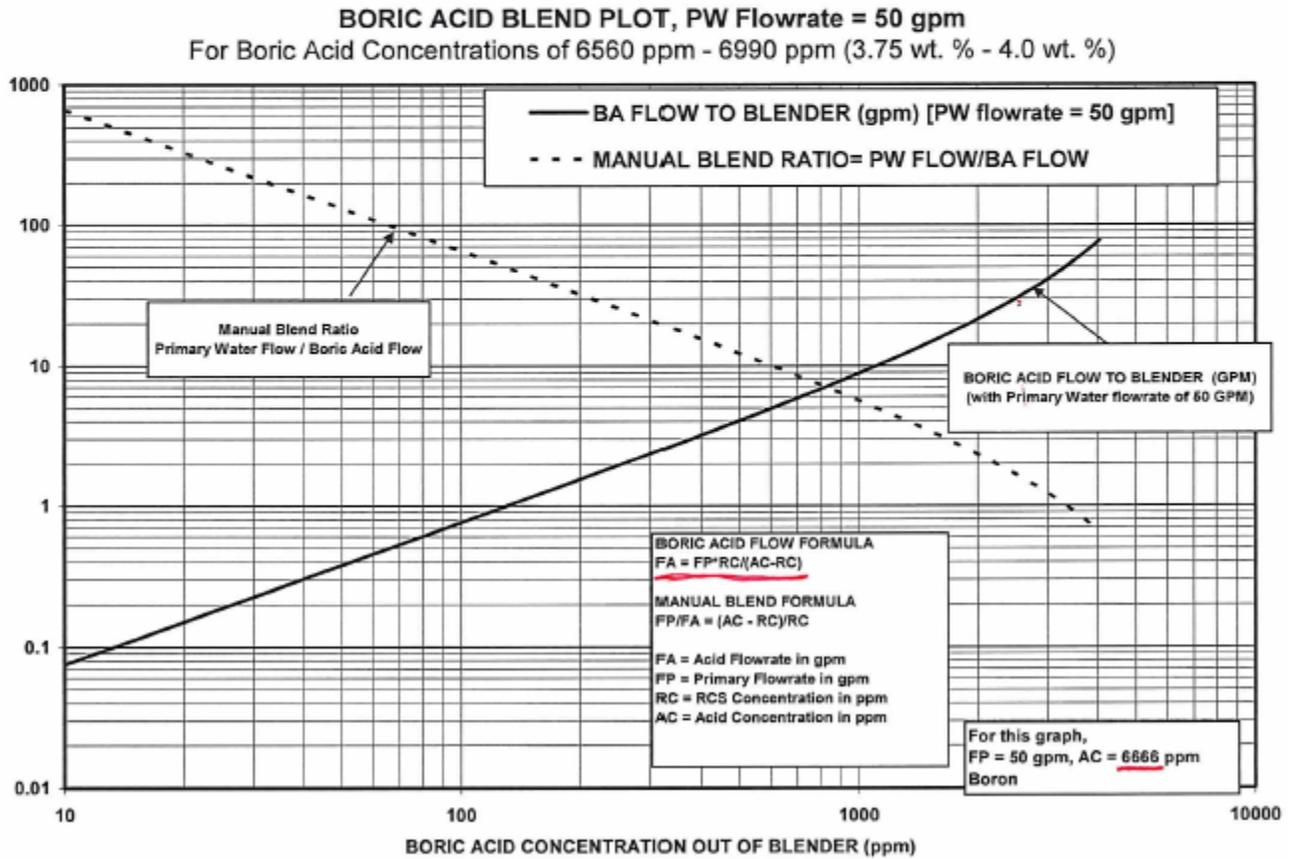
S2.RE-RA.ZZ-0012(Q)

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FIGURES

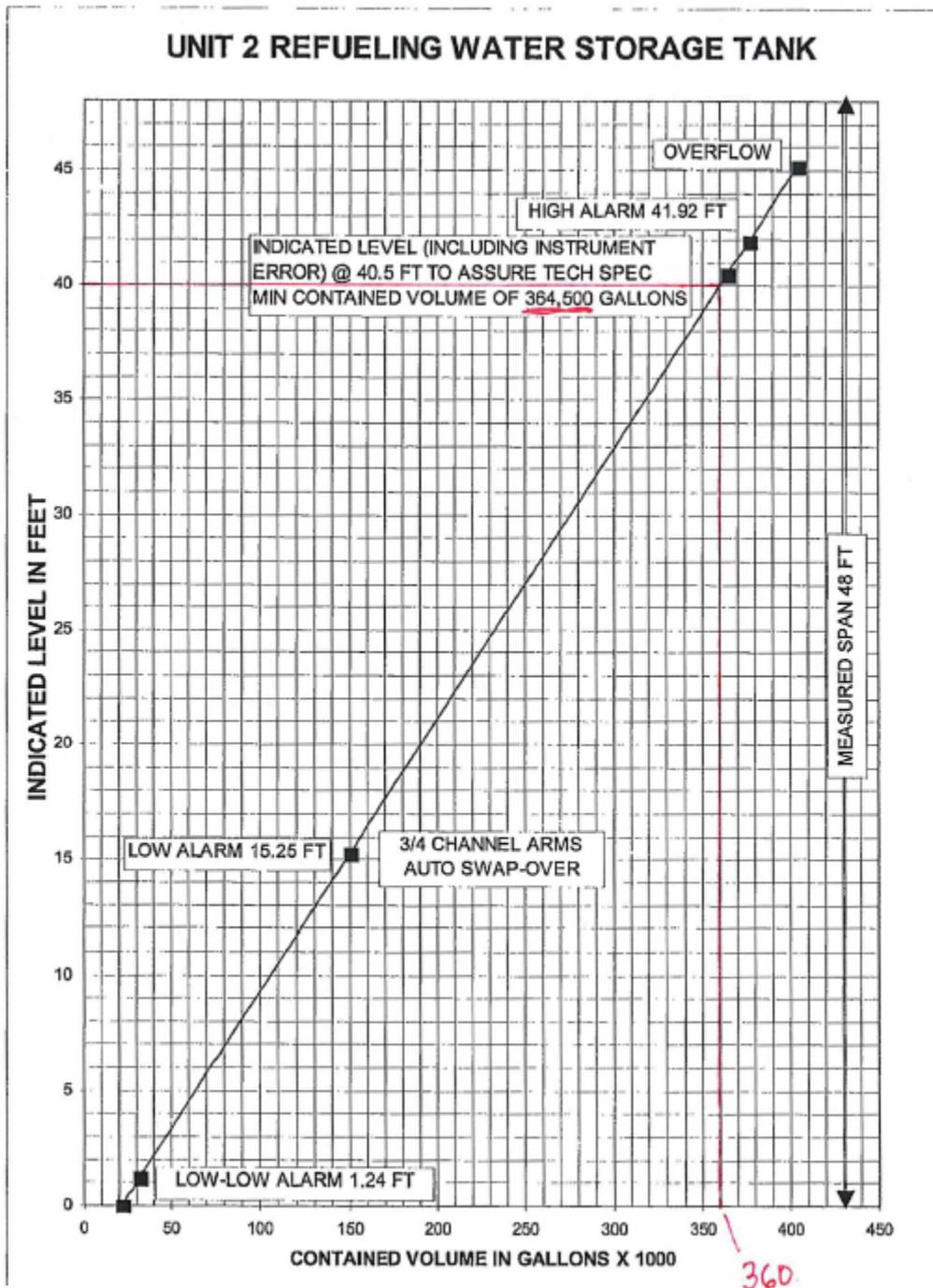
Rev: 228

Attachment 15, Figure 100B - Boric Acid Blend Plot, PW Flowrate = 50 gpm



ANSWER KEY (optional):

S2.OP-TM.ZZ-0002(Q)



ANSWER KEY (optional):

STUDENT HANDOUT/WORKSHEET

Operator's Name: _____

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- You are the RO on-shift
- Make-up to the RWST is required to restore level to the Tech Spec minimum
- Current RWST level is 40.0 feet
- Current RWST boron concentration is 2360 ppm
- Current BAST boron concentration is 6900 ppm
- Section 5.8.3 of S2.OP-SO.CVC-0006, Boron Concentration Control, will be used to make-up to the RWST.

INITIATING CUE

- The CRS directs you to perform the following:
 1. DETERMINE the boric acid flowrate to make-up to the RWST from the BAST tanks.

Formula from Fig 100B: $FA=FP*RC/(AC-RC)$ Evaluator Note- Cue in JPM directs use of formula

FA= Acid flowrate, FP= Primary water Flowrate, RC=Reactor Coolant Boron Conc (in this case RWST Boron Conc), AC=BAST conc

$FA=FP(50)*RC(2360)/(AC(6900)-RC(2360))$, $FA=50*2360/(6900-2360)$, $FA=50*2360/4540$,

$FA=50*(.5198)$

FA=25.99
 2. DETERMINE the amount of time required to raise the RWST level to the MINIMUM Tech Spec level.

From S2.OP-TM.ZZ-0002 for RWST at 40'= 360,000 gal

Chart states 40.5' to insure TS minimum of 364,500 gal

M/U required 4,500 gal

M/U time required = $4500/FP(50)+FA(26)$

= $4500/76$

=59.2 mins

RECORD YOUR RESPONSE ON THIS WORKSHEET

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate copy of S2.OP-SO.CVC-0006, S2.RE-RA.ZZ-0012 (Figures), S2.OP-TM.ZZ-0002 (tank capacity curves), and Calculator.

Examiners Note: None

Comments: N/A

1.0	*	Determine boric acid flowrate.	<p>Per step 5.8.3.A, obtain boric flow setpoint from S2.RE-RA.ZZ-0012, Figures 100B or 100D.</p> <p>Determines a boric acid flowrate of 26 gpm using Figure 100B for PW Flowrate = 50 gpm.</p> <p>$(50 \text{ gpm} \times 2360 \text{ ppm}) \div (6900 \text{ ppm} - 2360 \text{ ppm}) = 26 \text{ gpm}$</p>	
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Cue: **WHEN** the applicant is determining boric acid flowrate using the Figure, state the following:
Use the formula on the Figures and NOT the curve.

Examiners Note: Figures 100B and 100D both state that Primary Water (PW) Flowrate is 50 gpm. Auto Make-up typically has the PW Flowrate set to 61-62 gpm (possible error trap). Step 5.8.3.N will direct adjusting the 2CV179 to 50 gpm.

Comments:

2.0	*	Determine the total makeup flowrate.	<p>Determines that the total make-up flowrate is 76 gpm.</p> <p>Boric acid flowrate + primary water flowrate = 26 gpm + 50 gpm = 76 gpm</p>	
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Cue: None

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
3.0	*	Determines the amount of make-up (in gallons) is required to raise RWTS level from 40.0 feet to Tech Spec minimum level (40.5 feet).	Using Tank Curves for Unit 2 RWST, determines the following: 40.0 feet = 360,000 gallons 40.5 feet = 364,500 gallons 364,500 – 360,000 = 4,500 gallons	
Cue: None Examiners Note: None <u>Comments:</u>				
4.0	*	Determine the amount of time to raise RWST level to the Tech Spec minimum level.	Determines it will take 59.2 minutes to raise the RWST to the minimum Tech Spec level (40.5 feet) 4,500 gallons ÷ 76 gpm = 59.2 minutes	
Cue: None Examiners Note: None <u>Comments:</u>				
Terminating Cue	JPM COMPLETE when the applicant submits the worksheet.			N/A

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO SRO _____

Facility: Salem **JPM No.:** 21-01 NRC RO-A1.b **Revision No.:** 0

Task Title: Determine Time to Makeup to Unit 2 RWST

Task No.: N0040170101 **Source:** Bank _____ New Mod _____

System: Conduct of Operations (Generic)

K/A Number / Description: G2.1.23 Ability to perform general and/or normal operating procedures during any pant condition

K/A Rating RO 4.3 SRO 4.4

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom Simulator _____ In-Plant _____ RCA _____

Required Materials: S2.OP-SO.CVC-0006, S2.RE-RA.ZZ-0012, S2.OP-TM.ZZ-0002, Calculator

Reference(s): S2.OP-SO.CVC-0006 S2.RE-RA.ZZ-0012 S2.OP-TM.ZZ-0002

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

PSEG Nuclear LLC

Job Performance Measure

PERFORM SEVEN DAY AFD SURVEILLANCE

JPM Number: 21-01 NRC RO-A2

Revision Number: 01

Date: 08/16/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>8/16/22</u>
Validated By:	<u>J. Militti / J. DeLisle</u> SME or Instructor	Date:	<u>8/16/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	8/1/22	Converted to new template. Revised JPM based on Salem 2 Cycle 26 REM data measured 4/25/22.
01	8/16/22	Changed task to perform seven day AFD surveillance based on validator feedback that using Attachment 1 would be better and more operationally valid.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | |
|-----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| RC | | 1. Task description and number, JPM description and number are identified. |
| RC | | 2. Knowledge and Abilities (K/A) references are included. |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) |
| RC | | 4. Initial setup conditions are identified. |
| RC | | 5. Initiating and terminating cues are properly identified. |
| RC | | 6. Task standards identified and verified by SME review. |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: |
| | Procedure(s) | S2.OP-ST.NIS-0001 Rev. 14 Date Checked: 8/16/22
Salem 2 Cycle 26 REM Rev. 17
Salem 2 Cycle 26 COLR Rev. 10 |
| RC | | 9. Pilot test the JPM: |
| | a. | Verify cues both verbal and visual are free of conflict, and |
| | b. | Ensure performance time is accurate. |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page |

R. Chan	8/16/22
SME/Instructor	Date

SME/Instructor	Date

SME/Instructor	Date

SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. MARKED UP copy of S2.OP-ST.NIS-0001, Salem 2 Cycle 26 REM (data measured 4/25/22), Salem 2 Cycle 26 COLR, and a calculator for each applicant.

INITIAL CONDITIONS

- At Time 0830 today, Salem Unit 2 is at 73% power to comply with TS LCO 3.1.3.1 Action c.2 due to a single control rod being declared INOPERABLE

INITIATING CUE

- You are the RO on-shift
- The CRS directs you to perform the Seven Day AFD surveillance test per Section 4.1 of S2.OP-ST.NIS-0001, Power Distribution – Axial Flux Difference
- Current AFD Channel Console Readings are:
 - Channel I: -9.5
 - Channel II: -10.1
 - Channel III: -10.6
 - Channel IV: -10.2
- All prerequisites are completed SAT.
- Submit Attachment 1 when complete and print your name.

TASK STANDARD:

The task is satisfactorily met when the applicant has determined that the Seven Day AFD Surveillance is UNSAT because AFD Channel 3 reading is outside the AFD Lower Limit.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

Attachment 1, AFD SEVEN DAY SURVEILLANCE SHEET

DATE:	TIME:
-------	-------

CALCULATION	VALUE
RECORD AFD Target from Reactor Engineering Manual Data Tables, Table 3:	(A) -2.0
RECORD present Reactor Power:	(B) 73 %
CALCULATE AFD Target Value: $[(A) \times (B)] \div 100\% =$	(C) -1.5
NOTE	
The Target Band Upper and Lower Limits shall be the more restrictive of the limits defined in the Core Operating Limits Report (COLR) <u>OR</u> Reactor Engineering Manual Data Tables.	
DETERMINE AFD Upper Limit: $(+) \underline{6} + (C) =$	+4.5
DETERMINE AFD Lower Limit: $(-) \underline{9} + (C) =$	-10.5

RECORD AFD Channel Readings for each in-service and OPERABLE channel:			
Channel I (N41)	Channel II (N42)	Channel III (N43)	Channel IV (N44)
-9.5	-10.1	-10.6	-10.2

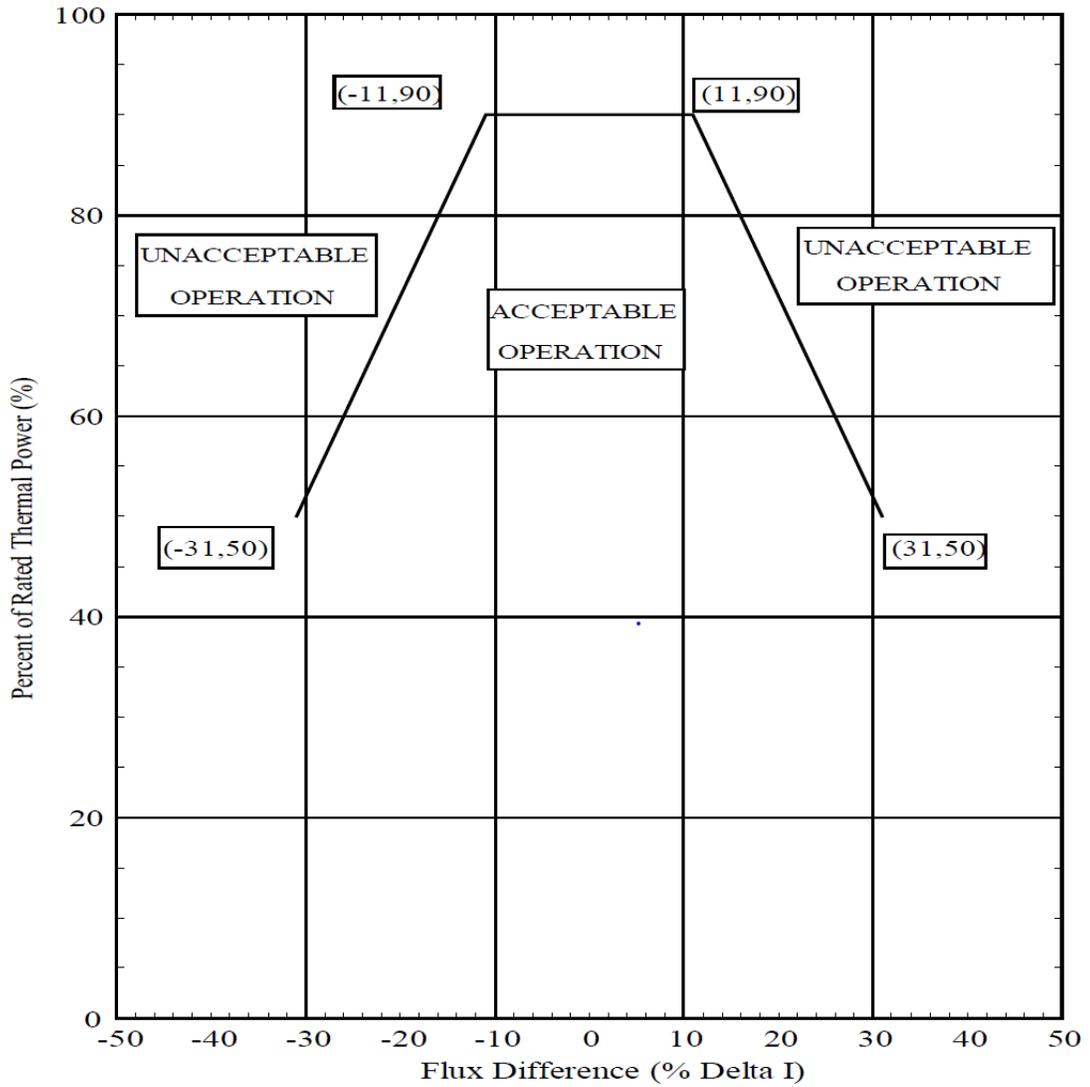
ACCEPTANCE CRITERIA	SAT	UNSAT
At least 3 of 4 NI Channels in-service and OPERABLE. (\$)	X	
Each OPERABLE NI Channel reading is between the Upper and Lower Limits, inclusive. (\$)		X
NOTE		
Core Operating Limits Report, Figure 2 is applicable between 50% and 90% Rated Thermal Power. If power is not within this band then mark N/A.		
Each OPERABLE NI Channel is within the Acceptable Operation region of the Core Operating Limits Report, Figure 2. (\$)	X	

Performed by:	Date:
Verified by:	Date:

ANSWER KEY (optional):

FIGURE 2

AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF RATED THERMAL POWER



RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide MARKED UP copy of S2.OP-ST.NIS-0001, Salem 2 Cycle 26 REM, Salem 2 Cycle 26 COLR, and Calculator.

Examiners Note: None.

Comments: N/A

1	*	RECORD AFD Target from Reactor Engineering Manual Data Tables, Table 3 (A)	Applicant uses Table 3 from the REM and records AFD Target of -2.0 = (A)	
---	---	----------------------------------------------------------------------------	---------------------------------------------------------------------------------	--

Cue: None

Examiners Note: AFD Target (100% Value) is obtained from Salem 2 Cycle 26 REM Table 3 (data measured 4/25/22)

Comments:

2	*	RECORD present Reactor Power (B)	Applicant records present Reactor Power of 73 = (B)	
---	---	----------------------------------	------------------------------------------------------------	--

Cue: None

Examiners Note: None

Comments:

3	*	CALCULATE the AFD Target Value: [(A) X (B)] ÷ 100% = (C)	Calculates AFD Target Value of -1.5 = (C) (C) = -2.0 X 73% ÷ 100% = -1.5	
---	---	-------------------------------------------------------------	------------------------------------------------------------------------------------	--

Cue: None

Examiners Note: Per P&L 2.1.2, When performing calculations, round value to the first decimal place AND ensure the calculator is cleared between calculations.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
		<p align="center">NOTE</p> <p>The Target Band Upper and Lower Limit shall be the more restrictive of the limits defined in the Core Operating Limits Report (COLR) OR Re3actor Engineering Manual Data Tables.</p>		N/A
4	*	DETERMINE AFD Upper Limit: (+) ____ + (C) = Upper Limit	Applicant determines the AFD Target Upper and Lower Limits as: $+6.0 + (-1.5) = \mathbf{+4.5 \text{ Upper Limit}}$	
5	*	DETERMINE AFD Lower Limit: (-) ____ + (C) = Lower Limit	Applicant determines the AFD Target Upper and Lower Limits as: $-9.0 + (-1.5) = \mathbf{-10.5 \text{ Lower Limit}}$	
6		RECORD AFD Channel Readings for each in service and OPERABLE channel: Channel I (N41) = Channel II (N42) = Channel III (N43) = Channel IV (N44) =	Applicant records AFD Channel Readings from the Initiating Cue Channel I (N41) = -9.5 Channel II (N42) = -10.1 Channel III (N43) = -10.6 Channel IV (N44) = -10.2	
Cue: None Examiners Note: None <u>Comments:</u>				
7	*	At least 3 of 4 NI Channels in service and OPERABLE.	Applicant determines all four NI channels are OPERABLE and RECORDs SAT	
Cue: None Examiners Note: Cue Sheet does not indicate any NI channels INOPERABLE. <u>Comments:</u>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
8	*	Each OPERABLE NI Channel reading is between the Upper and lower Limits inclusive.	Applicant determines that NI Channel 3 is outside the AFD lower limit and RECORDs UNSAT .	
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
		<p>NOTE</p> <p>Core Operating Limit Report, Figure 2 is applicable between 50% and 90% Rated Thermal Power. If power is not within this band then mark N/A.</p>		N/A
9	*	Each OPERABLE NI Channel is within the Acceptable Operation region of the Core Operating Limits Report, Figure 2.	Applicant determines that each NI Channel is within the Acceptable Operation region of the COLR and RECORDs SAT.	
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE when the applicant notifies Lead Examiner of surveillance results.		N/A	

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO SRO _____

Facility: Salem **JPM No.:** 21-01 NRC RO-A2 **Revision No.:** 01

Task Title: Perform Seven Day AFD Surveillance

Task No.: N0150010201 **Source:**

System: Equipment Control (Generic) Bank New _____ Mod _____

K/A Number / Description: G2.2.12 Knowledge of surveillance procedures

K/A Rating RO 3.7 SRO 4.1

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom Simulator _____ In-Plant _____ RCA _____

Required Materials: S2.OP-ST.NIS-0001, Unit 2 COLR, Unit 2 REM Data Cycle 26, and Calculator

Reference(s): S2.OP-ST.NIS-0001 Salem Unit 2 COLR Unit 2 REM Data Cycle 26

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT/WORKSHEET

INITIAL CONDITIONS

- At Time 0830 today, Salem Unit 2 is at 73% power to comply with TS LCO 3.1.3.1 Action c.2 due to a single control rod being declared INOPERABLE

INITIATING CUE

- You are the RO on-shift
- The CRS directs you to perform the Seven Day AFD surveillance test per Section 4.1 of S2.OP-ST.NIS-0001, Power Distribution – Axial Flux Difference
- Current AFD Channel Console Readings are:
 - Channel I: -9.5
 - Channel II: -10.1
 - Channel III: -10.6
 - Channel IV: -10.2
- All prerequisites are completed SAT.
- Submit Attachment 1 when complete and print your name.

PSEG Nuclear LLC

Job Performance Measure

Activate ERDS IAW EP-SA-325-F8

JPM Number: 21-01 NRC RO-A4

Revision Number: 04

Date: 1/10/23

Developed By: R. Chan **Date:** 1/10/23
Instructor

Validated By: E. Gallagher **Date:** 1/10/23
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 1/19/23
Operations Representative

Approved By: M. Wadusky **Date:** 1/19/23
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
03	11/28/22	Used bank JPM. Converted to new JPM template and updated procedure references. Plant computer modifications are in progress in the simulator. EP performed validation of the procedure that activates ERDS and procedure has no issues, however, the ERDS system was not connecting to the NRC. EP is working the issue and expect resolution prior to the next EP drill in December 2022.
04	1/10/23	Incorporated NRC comments from Prep Week. Added possible cues to steps 1.2.b.5 and 1.2.b.6 in the event ERDS connectivity to NRC Operations Center cannot be established.

SIMULATOR SETUP INSTUCTIONS

1. See below for special instructions for notifying the NRC Operations Center

SPECIAL INSTRUCTIONS

1. Copies of EP-SA-325 for each applicant.
2. **PRIOR** to conducting this JPM; **CONTACT** the **NRC ERDS Test monitor** and **NOTIFY** ERDS being used for Training. (Day time: 301-287-9386, Night time: [REDACTED], Day time cell: [REDACTED], Erds.resource@nrc.gov)
3. **OPEN** the ERDS program using the SPDS computer terminal in the back computer room. Single click the ERDS program using the mouse and ensure the dialogue box opens. This will now enable the computer in the simulator to connect ERDS to NRC using EP-SA-325-F8.
4. **Log onto the ERDS computer in simulator.**
5. **ENSURE** the "ERDS XXX" computer is available and working.

When all operators have completed this JPM, THEN:

Simulator Operator:

- **NOTIFY** NRC ERDS Test monitor of that Training evolution has ended.
- **CLOSE** the ERDS dialogue box on the SPDS computer in back computer room.

INITIAL CONDITIONS

- Salem Unit 2 experienced a reactor trip and safety injection due to a LOCA
- An **ALERT** has been declared

INITIATING CUE

- You are the Secondary Communicator.
- ACTIVATE ERDS IAW Step 1.2.b of EP-SA-325-F8, Secondary Communicator Log.
- Notify the Shift Manager (Lead Examiner) when ERDS is activated.

TASK STANDARD:

The task is satisfactorily met when the applicant successfully activates ERDS by completing step 1.2.b of EP-SA-325-F8.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

[Page left intentionally blank]

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		<p>Simulator Operator:</p> <ul style="list-style-type: none"> • NOTIFY NRC ERDS Test monitor of pending Training evolution. • OPEN ERDS program on SPDS computer. <p>LOG ON to ERDS computer.</p>		N/A

Cue:

Examiners Note:

Comments:

1.2.b		<p>Within 60 minutes, ACTIVATE ERDS from a LAN computer:</p>	<p>Operator proceeds to ERDS XXX computer located inside Salem Simulator horseshoe area.</p>	
1.2.b.1	*	<p>PROCEED to a computer with its monitor labeled "ERDS XXX" (XXX is the computer's asset tag number) in the Salem Control Room and START the program by SELECTING the ERDS Salem desktop icon.</p>	<p>Operator selects the ERDS_ Salem desktop icon.</p>	

Cue:

Examiners Note:

Comments:

1.2.b.2	*	<p>On the "Login For ERDS Display" popup window ENTER the PASSWORD (Password is the same as the Username) and SELECT "Login" to proceed.</p>	<p>Operator enters the PASSWORD and selects "Login" to proceed.</p>	
---------	---	-------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
1.2.b.3	*	SELECT the Action button labeled <CONNECT> on the appropriate Salem 1 or Salem 2 "ERDS Link Control and Status Display Screen".	Operator selects the button labeled <CONNECT> for Salem 2 "ERDS Link Control and Status Display Screen".	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
1.2.b.4	*	SELECT the <YES> button in the "Current Link Control State is Disconnect. Do You Want To Connect?" box.	Operator selects <YES> button in the "Current Link Control State is Disconnect. Do You Want To Connect?" box.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
1.2.b.5	*	OBSERVE that Status changes to "Transmitting Data."	Operator checks that the Status changes to "Transmitting Data"	
<p>Cue: IF REQUIRED, then state the following, "The status has changed to Transmitting Data"</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
1.2.b.6	*	VERIFY successful communications status by observing that the "Messages Sent" value is increasing from zero "0" to some positive integer > "0".	Operator verifies that the "Message Sent" value is increasing from zero "0" to some positive integer > "0".	
<p>Cue: IF REQUIRED, then state the following, "The Message Sent value is increasing greater than 0"</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
1.2.b.7		INFORM the CRS of successful ERDS activation status <u>OR</u> IF ERDS activation is not successful, THEN CONTACT IT Support: Network Operations (Ext. #7008), EOF IT Supervisor (NETS # 5009), or the IT Help Desk (Ext. 5555) for assistance.	Notifies CRS that ERDS is activated.	
Cue: N/A Examiners Note: N/A <u>Comments:</u>				
Terminating Cue	JPM COMPLETE when the applicant completes the task.	Terminate JPM when operator notifies you that ERDS is activated.	N/A	

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO SRO _____

Facility: Salem **JPM No.:** 21-01 NRC RO-A4 **Revision No.:** 04

Task Title: Activate ERDS per EP-SA-325-F8

Task No.: N1240110501 **Source:**

System: Emergency Procedures/Plan **Bank** **New** _____ **Mod** _____

K/A Number / Description: G2.4.43 Knowledge of emergency communications systems and techniques

K/A Rating RO 3.2 SRO 3.8

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: EP-SA-325-F8

Reference(s): EP-SA-325-F8

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT/WORKSHEET

Operator's Name: _____

INITIAL CONDITIONS

- Salem Unit 2 experienced a reactor trip and safety injection due to a LOCA
- An **ALERT** has been declared

INITIATING CUE

- You are the Secondary Communicator.
- ACTIVATE ERDS IAW Step 1.2.b of EP-SA-325-F8, Secondary Communicator Log.
- Notify the Shift Manager (Lead Examiner) when ERDS is activated.

**ATTACHMENT 8
SECONDARY COMMUNICATOR LOG**

**EP-SA-325-F8
ATT 8
Page 2 of 16
INITIALS**

1.2 **For an Alert or higher Emergency Classification Level:**

- a. **IF** an on-shift SRO is not available to fill the OSC Operations Supervisor position, **CALLOUT** an additional SRO and have him/her report to the OSC.

Name: _____ Time: _____

N/A

CM2

NOTE

OS Activation and Termination is normally performed by the CM2 in the Control Room but if needed, could be performed by any communicator in the TSC or EOF by following the same directions below and substituting TSC or EOF for Control Room

CM2

CM2

- b. Within 60 minutes, **ACTIVATE** ERDS from a **LAN computer:**

1. **PROCEED** to a computer with its monitor labeled "**ERDS XXX**" (XXX is the computer's asset tag number) in the Salem Control Room and **START** the program by **SELECTING** the **ERDS_Salem** desktop icon.
2. On the "Login For ERDS Display" popup window **ENTER** the **PASSWORD** (Password is the same as the Username) and **SELECT** "Login" to proceed.
3. **SELECT** the Action button labeled **<CONNECT>** on the appropriate **Salem 1 or Salem 2** "ERDS Link Control and Status Display Screen".
4. **SELECT** the **<YES>** button in the "Current Link Control State is Disconnect. Do You Want To Connect?" box.
5. **OBSERVE** that Status changes to "Transmitting Data."
6. **VERIFY** successful communications status by observing that the "Messages Sent" value is increasing from zero "0" to some positive integer > "0".
7. **INFORM** the CRS of successful ERDS activation status

CM2

OR

IF ERDS activation is not successful, THEN CONTACT IT Support: Network Operations (Ext. #7008), EOF IT Supervisor (NETS # 5009), or the IT Help Desk (Ext. 5555) for assistance.

CM2

PSEG Nuclear LLC

Job Performance Measure

DETERMINE MINIMUM ECCS INJECTION FLOW

JPM Number: 21-01 NRC SRO-A1.a

Revision Number: 01

Date: 01/18/2023

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>1-18-23</u>
Validated By:	<u>E. Gallagher</u> SME or Instructor	Date:	<u>1-18-23</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>1/19/23</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>1/19/23</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Modified JPM conditions in stem from NRC 17-01 JPM that results in none of the ECCS pumps can be stopped. Converted to new template.
01	1/18/23	Revised JPM to add Figure 1 from EOP-LOCA-5 as a student handout.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | |
|-----|-------------------------------------------|-----------------------------------------------------------------------------------------------------|
| RC | | 1. Task description and number, JPM description and number are identified. |
| RC | | 2. Knowledge and Abilities (K/A) references are included. |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) |
| RC | | 4. Initial setup conditions are identified. |
| RC | | 5. Initiating and terminating cues are properly identified. |
| RC | | 6. Task standards identified and verified by SME review. |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: |
| RC | Procedure(s) 2-EOP-LOCA-5 Sheet 2 Rev. 41 | Date Checked: 8/18/22 |
| RC | | 9. Pilot test the JPM: |
| | | a. Verify cues both verbal and visual are free of conflict, and |
| | | b. Ensure performance time is accurate. |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page |

R. Chan	8/18/22
SME/Instructor	Date

SME/Instructor	Date
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SME/Instructor	Date
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SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. None.

INITIAL CONDITIONS

- At Time 0500, Salem Unit 2 was manually tripped and Safety Injection automatically actuated as a result of a LOCA
- At Time 0600, the RWST Low Level Alarm actuates and the crew transitions to 2-EOP-LOCA-3.
- The crew is unable to transfer to Cold Leg Recirculation and transitions to 2-EOP-LOCA-5, Loss of Emergency Recirculation, due to NO recirculation capability.
- ECCS has been reduced to one train with the following ECCS Pump flow rates:
 - 21 SI Pump – 160 gpm
 - 22 Charging Pump – 220 gpm
 - BOTH RHR Pumps were stopped

INITIATING CUE

You are the CRS at Step 16.1 of 2-EOP-LOCA-5.

- DETERMINE the following:
 1. At Time 0640 hours, what is the MINIMUM SI flow required from Figure 1?
 2. Which ECCS Pumps can be stopped , if any, to reduce injection flow as close as possible to minimum flow determined from Item 1 (assume that ECCS Pump flows remain stable).

TASK STANDARD:

The task is satisfactorily met when the applicant has determined that the minimum flow per Figure 1 is 290 gpm (320 – 280 gpm acceptable band), and NONE of the running ECCS Pumps can be stopped.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

You are the CRS at Step 16.1 of 2-EOP-LOCA-5.

- DETERMINE the following:

1. At Time 0640 hours, what is the MINIMUM SI flow required from Figure 1?

290 gpm (320 – 280 gpm acceptable band)

2. Which ECCS Pumps can be stopped , if any, to reduce injection flow as close as possible to minimum flow determined from Item 1 (assume that ECCS Pump flows remain stable).

NONE of the ECCS Pumps can be stopped because neither an SI nor a Charging Pump alone can supply the minimum required flow injection of 290 gpm. Therefore, 21 SI and 22 Charging are required to remain in service.

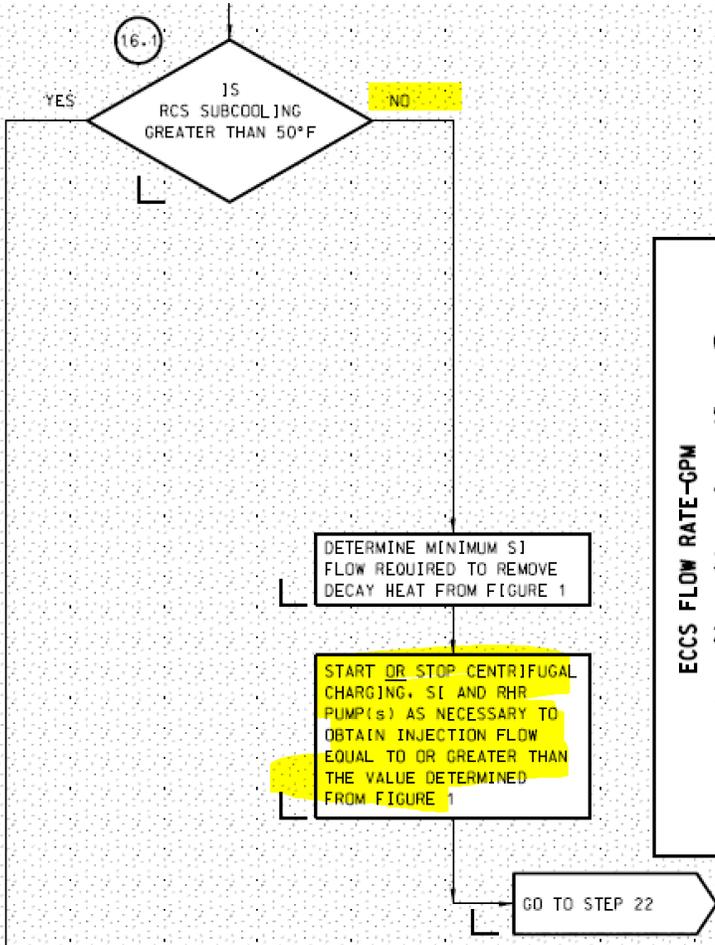
Conditions from the stem:

ECCS has been reduce to one train with the following ECCS Pump flow rates:

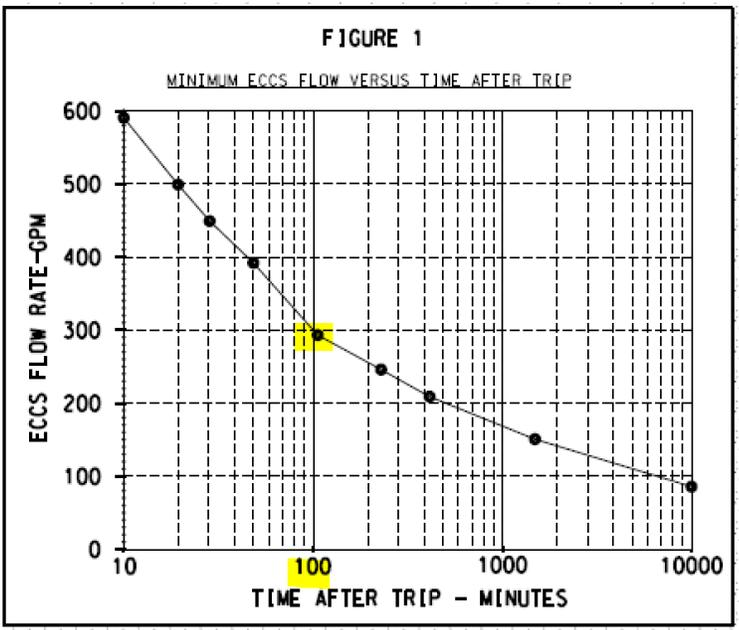
- 21 SI Pump – 160 gpm
- 22 Charging Pump – 220 gpm
- BOTH RHR Pumps were stopped

ANSWER KEY (additional info)

From 2-EOP-LOCA-5, sheet 2 Rev. 41:



2	29%
1	22%
RCPs RUNNING	RVLIS FULL RANGE
NONE	57%



RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate copy of 2-EOP-LOCA-5 sheet 2 (**D size sheet or greater**)

Examiners Note: N/A

Comments: N/A

1.0	*	At Time 0640 hours, what is the MINIMUM SI flow required from Figure 1?	Determines that 100 minutes has elapsed since the Reactor Trip and using Figure 1 determines that 290 gpm (320-280 gpm) is the minimum ECCS flow injection.	
-----	---	-------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: Figure 1 may be hard to read and readability errors will come into play. Lead Examiner will need to evaluate the applicants response to this answer to determine if the flow rate is reasonable based on the size of the figure.

Comments:

2.0	*	Which ECCS Pumps can be stopped ,if any, to reduce injection flow as close as possible to minimum flow determined from Item 1 (assume that ECCS Pump flows remain stable)	Determines that NONE of the ECCS Pumps can be stopped because neither an SI nor a Charging Pump alone can supply the minimum required flow injection of 290 gpm. Therefore, 21 SI and 22 Charging are required to remain in service	
-----	---	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
Terminating Cue	JPM COMPLETE when applicant submits the worksheet.		N/A	

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC SRO-A1.a **Revision No.:** 01

Task Title: Determine Minimum ECCS Injection Flow

Task No.: N1150680502 **Source:**

System: Conduct of Operations (Generic) Bank _____ New _____ Mod X

K/A Number / Description: G2.1.7 Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation

K/A Rating RO 4.4 SRO 4.7

Task Applicability: SRO Only X RO/SRO _____ AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 5 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom X Simulator _____ In-Plant _____ RCA _____

Required Materials: None

Reference(s): 2-EOP-LOCA-5

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT/WORKSHEET

Operator's Name: _____

INITIAL CONDITIONS

- At Time 0500, Salem Unit 2 was manually tripped and Safety Injection automatically actuated as a result of a LOCA
- At Time 0600, the RWST Low Level Alarm actuates and the crew transitions to 2-EOP-LOCA-3.
- The crew is unable to transfer to Cold Leg Recirculation and transitions to 2-EOP-LOCA-5, Loss of Emergency Recirculation, due to NO recirculation capability.
- ECCS has been reduced to one train with the following ECCS Pump flow rates:
 - 21 SI Pump – 160 gpm
 - 22 Charging Pump – 220 gpm
 - BOTH RHR Pumps were stopped

INITIATING CUE

You are the CRS at Step 16.1 of 2-EOP-LOCA-5.

- DETERMINE the following:
 1. At Time 0640 hours, what is the MINIMUM SI flow required from Figure 1?

 2. Which ECCS Pumps can be stopped , if any, to reduce injection flow as close as possible to minimum flow determined from Item 1 (assume that ECCS Pump flows remain stable).

RECORD YOUR ANSWERS ON THIS WORKSHEET

STUDENT HANDOUT - 2-EOP-LOCA-5, Figure 1

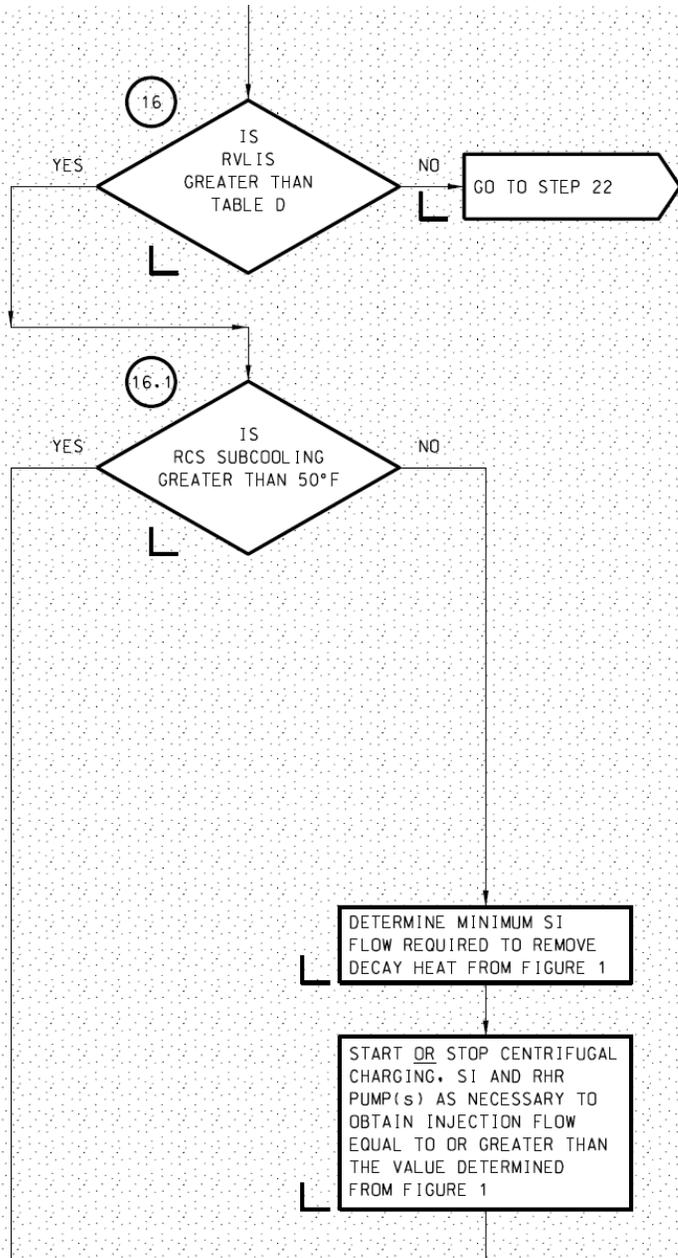
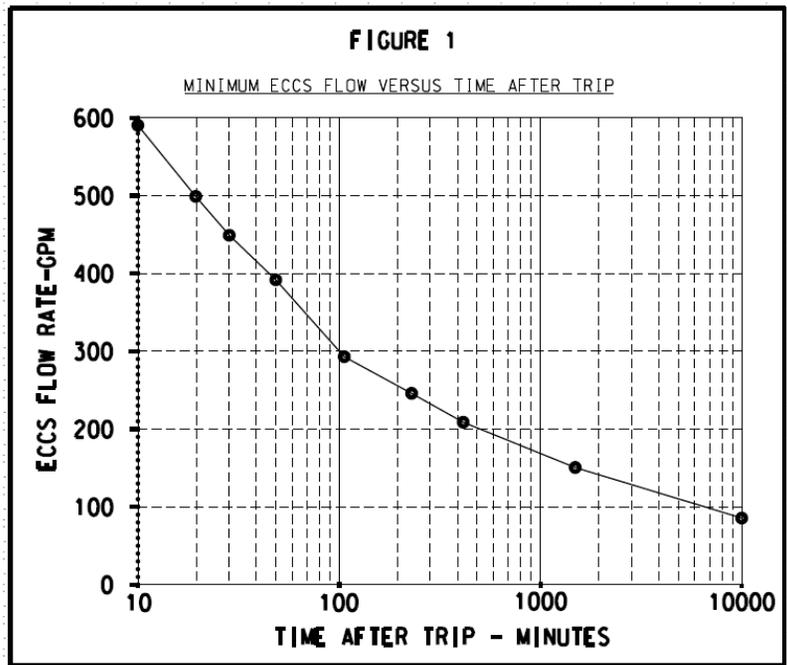


TABLE D
MINIMUM RCS INVENTORY

RCPs RUNNING	RVLIS DYNAMIC RANGE
4	60%
3	41%
2	29%
1	22%
RCPs RUNNING	RVLIS FULL RANGE
NONE	57%



PSEG Nuclear LLC

Job Performance Measure

APPLY OVERTIME LIMIT RESTRICTIONS

JPM Number: 21-01 NRC SRO-A1.b

Revision Number: 0

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>T. Shetrone /</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>M. Winkelspecth</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	New JPM for Salem. Used bank JPM from Diablo Canyon 2020 NRC NRCL181-A5. Converted to new JPM template.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | |
|-----|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| RC | | 1. Task description and number, JPM description and number are identified. |
| RC | | 2. Knowledge and Abilities (K/A) references are included. |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) |
| RC | | 4. Initial setup conditions are identified. |
| RC | | 5. Initiating and terminating cues are properly identified. |
| RC | | 6. Task standards identified and verified by SME review. |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: |
| | Procedure(s) LS-AA-119-1003 Rev. 10 | Date Checked: 8/18/22 |
| RC | | 9. Pilot test the JPM: |
| | a. Verify cues both verbal and visual are free of conflict, and | |
| | b. Ensure performance time is accurate. | |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page |

R. Chan	8/18/22
SME/Instructor	Date

SME/Instructor	Date
----------------	------

SME/Instructor	Date
----------------	------

SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. Copies of LS-AA-119-1003

INITIAL CONDITIONS

- It is 0600 on Monday 2/17
- Salem Unit 1 is at 100% power
- Salem Unit 2 is in a refueling outage and currently defueled
- The oncoming Unit 1 RO has just called in sick
- The Fatigue Rule Management System or EmpCenter is unavailable
- The following licensed operators are currently available (**see Next Page**):

INITIATING CUE

The Shift Manager directs you to perform the following:

- Review the hours worked by the available Operators and determine their ability to fill the watch bill. Document the reason(s) each operator is unavailable, if any. List of available Operators on **Next Page**.

Lists of Available Licensed Operators

Operator #1			
Day	Start Time	End Time	Position
Sunday, 2/9	0700	1900	RO
Monday, 2/10	0700	1900	RO
Tuesday, 2/11	0700	1900	BOP
Wednesday	0900	2200	Work Control NCO
Thursday, 2/13	Day Off		
Friday, 2/14	0700	2000	BOP
Saturday, 2/15	1400	1500	Telecon Personnel Statement
Sunday, 2/16	0700	1900	BOP
Monday, 2/17 (proposed)	0700	1900	RO

Operator #2			
Day	Start Time	End Time	Position
Sunday, 2/9	1900	0700	Work Control NCO
Monday, 2/10	1900	0700	Work Control NCO
Tuesday, 2/11	Day Off		
Wednesday	1900	0700	RO
Thursday, 2/13	1900	0700	Work Control NCO
Friday, 2/14	1900	0700	Work Control NCO
Saturday, 2/15	1900	0700	RO
Sunday, 2/16	Day Off		
Monday, 2/17 (proposed)	0700	1900	RO

Operator #3			
Day	Start Time	End Time	Position
Sunday, 2/9	1000	1700	Work Control NCO
Monday, 2/10	Day Off		
Tuesday, 2/11	0700	2100	BOP
Wednesday	0700	1900	BOP
Thursday, 2/13	0700	1900	RO
Friday, 2/14	0700	2000	BOP
Saturday, 2/15	1000	2000	RO
Sunday, 2/16	Day Off		
Monday, 2/17 (proposed)	0700	1900	RO

TASK STANDARD:

The task is satisfactorily met when the applicant has; (1) determined that Operators 1 and 3 DO NOT meet the work hour rule requirements of LS-AA-119-1003, Calculating Work Hours, AND (2) determines that Operator 2 does MEET the work hour rule requirements and available to take the watch on Monday 2/7. All documentation recorded to the reason why the operator is NOT available is in accordance with the attached answer key.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

Only Operator #2 can accept the watch without a waiver on the allowable work hours during Non-Outage Conditions.

<u>Operator</u>	<u>Available to Fill the Watch (Circle one)</u>	<u>Why NOT selected</u>
1	YES /NO	<ul style="list-style-type: none"> ▪ Cannot exceed 16 hours in any continuous 24 period: Satisfactory (max was 13 hours) ▪ Cannot exceed 26 hours in any continuous 48 period: Satisfactory (max was 25 hours) ▪ Cannot exceed 72 hours in any continuous 168 period: Satisfactory (max was 63 hours) ▪ 34 hour continuous break required in any 9 day period: Unsatisfactory (taking the relief watch at 0700 on Monday would result in a continuous break of 33 hours in the past 9 day period) ▪ 10 hour continuous break minimum break required between shifts: Satisfactory (min was 12 hours)
2	YES /NO	<ul style="list-style-type: none"> ▪ Cannot exceed 16 hours in any continuous 24 period: Satisfactory (max was 12 hours) ▪ Cannot exceed 26 hours in any continuous 48 period: Satisfactory (max was 24 hours) ▪ Cannot exceed 72 hours in any continuous 168 period: Satisfactory (max was 72 hours) ▪ 34 hour continuous break required in any 9 day period: Satisfactory (min was 36 hours) ▪ 10 hour continuous break minimum break required between shifts: Satisfactory (min was 12 hours)
3	YES /NO	<ul style="list-style-type: none"> ▪ Cannot exceed 16 hours in any continuous 24 period: Satisfactory (max was 14 hours) ▪ Cannot exceed 26 hours in any continuous 48 period: Satisfactory (max was 24 hours) ▪ Cannot exceed 72 hours in any continuous 168 period: Unsatisfactory (max was 73.0 hours) ▪ 34 hour continuous break required in any 9 day period: Satisfactory(max was 38 hours) ▪ 10 hour continuous break minimum break required between shifts: Satisfactory (min was 10 hours)

Additional Reference(s): LS-AA-119-1003, Calculating Work Hours

4.1.1. The following limits apply to covered individuals regardless of unit status:

- No more than 16 work hours in any 24-hour period.
- No more than 26 work hours in any 48-hour period.
- No more than 72 work hours in any 7-day period.

NOTE

FRMS conservatively uses 168 hours vs. 7-calendar days for this calculation and may produce deviations that may be overridden following verification that the 7-calendar day limit has not been exceeded.

- At least a 10-hour break between successive work periods or an 8-hour break when a break of less than 10 hours is necessary to accommodate a crew's scheduled transition between work schedules or shifts.
- A 34-hour break in any 9-calendar day period (this limit may be incorporated into the following table of limits).

LS-AA-119-1003
CALCULATING WORK HOURS

Page 28 of 37
Rev: 10

Attachment 1, Examples

1. John Doe normally works a 12-hour shift schedule. He is requested to perform covered work for additional hours from 0700 to 1900 on Friday. What needs to be considered prior to working those additional hours?
 - 1.1. The following five items need to be considered:
 - 1.1.1. Review all hours worked during the 24-hour period prior to the stop time on Friday as reflected in the request to work additional hours to ensure no more than 16 hours in any 24-hour period will be worked.
 - 1.1.2. Review all hours worked during the 48-hour period prior to the stop time on Friday as reflected in the request to work additional hours to ensure no more than 26 hours in any 48-hour period will be worked.
 - 1.1.3. Review all hours worked during the 7-day period prior to the stop time on Friday (i.e., T-168 hours) as reflected in the request to work additional hours to ensure no more than 72 hours in any 7-day period will be worked.
 - 1.1.4. Review the break period(s) between the last day of work before Friday and 0700 on Friday to ensure a 10-hour break has been taken.
 - 1.1.5. Review the break period(s) during the last-nine days prior to the stop time on Friday to ensure a break of at least 34 consecutive hours has been taken.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate copy of LS-AA-119-1003

Examiners Note: N/A

Comments: N/A

1.0	*	Determine if Operator 1 can be selected.	Documented Operator 1 will violate the work hour rule requirement in LS-AA-119-1003 for not having a 34 hour break in any 9 calendar day period. Operator 1 is ELIMINATED .	
-----	---	-------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

2.0	*	Determine if Operator 2 can be selected.	Documented Operator 2 MEETS the work hour rule requirements per LS-AA-119-1003. Operator 2 is AVAILABLE to take the watch.	
-----	---	-------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

3.0	*	Determine if Operator 3 can be selected.	Documented Operator 3 will violate the work hour rule requirement in LS-AA-119-1003 for working more than 72 hours in a 7 day period. Operator 2 is ELIMINATED .	
-----	---	-------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<u>Comments:</u>				
Terminating Cue	JPM COMPLETE when the applicant submits the worksheet.			N/A

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC SRO-A1.b **Revision No.:** 0

Task Title: Apply Overtime Limit Restrictions

Task No.: N1230040302 **Source:**
Bank X New _____ Mod _____

System: Conduct of Operations (Generic)

K/A Number / Description: G2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement or overtime limitations (reference potential).

K/A Rating RO 2.9 SRO 3.9

Task Applicability: SRO Only X RO/SRO _____ AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 30 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom X Simulator _____ In-Plant _____ RCA _____

Required Materials: LS-AA-119-1003

Reference(s): LS-AA-119-1003

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- It is 0600 on Monday 2/17
- Salem Unit 1 is at 100% power
- Salem Unit 2 is in a refueling outage and currently defueled
- The oncoming Unit 1 RO has just called in sick
- The Fatigue Rule Management System or EmpCenter is unavailable
- The following licensed operators are currently available (see Next Page):

INITIATING CUE

The Shift Manager directs you to perform the following:

- Review the hours worked by the available Operators and determine their ability to fill the watch bill. Document the reason(s) each operator is unavailable, if any.
- List of available Operators on Next Page.
- Document your selection and reason on the attached worksheet.

Lists of Available Licensed Operators

Operator #1			
Day	Start Time	End Time	Position
Sunday, 2/9	0700	1900	RO
Monday, 2/10	0700	1900	RO
Tuesday, 2/11	0700	1900	BOP
Wednesday	0900	2200	Work Control NCO
Thursday, 2/13	Day Off		
Friday, 2/14	0700	2000	BOP
Saturday, 2/15	1400	1500	Telecon Personnel Statement
Sunday, 2/16	0700	1900	BOP
Monday, 2/17 (proposed)	0700	1900	RO

Operator #2			
Day	Start Time	End Time	Position
Sunday, 2/9	1900	0700	Work Control NCO
Monday, 2/10	1900	0700	Work Control NCO
Tuesday, 2/11	Day Off		
Wednesday	1900	0700	RO
Thursday, 2/13	1900	0700	Work Control NCO
Friday, 2/14	1900	0700	Work Control NCO
Saturday, 2/15	1900	0700	RO
Sunday, 2/16	Day Off		
Monday, 2/17 (proposed)	0700	1900	RO

Operator #3			
Day	Start Time	End Time	Position
Sunday, 2/9	1000	1700	Work Control NCO
Monday, 2/10	Day Off		
Tuesday, 2/11	0700	2100	BOP
Wednesday	0700	1900	BOP
Thursday, 2/13	0700	1900	RO
Friday, 2/14	0700	2000	BOP
Saturday, 2/15	1000	2000	RO
Sunday, 2/16	Day Off		
Monday, 2/17 (proposed)	0700	1900	RO

STUDENT WORKSHEET

Operator's Name: _____

<u>Operator</u>	<u>Available to Fill the Watch (Circle one)</u>	<u>Why NOT selected</u>
1	YES /NO	
2	YES /NO	
3	YES /NO	

PSEG Nuclear LLC

Job Performance Measure

REVIEW A COMPLETED SURVEILLANCE TEST

JPM Number: 21-01 NRC SRO-A2

Revision Number: 00

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>T. Shetrone</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Converted to new template.

SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. Copies of Unit 2 Tech Specs for each applicant.
2. Copies of drawing 238805 are available if requested by applicant.

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- The BOP operator just completed performing S2.OP-ST.CBV-0001, Inservice Testing Containment Ventilation Valves Modes 1-6.

INITIATING CUE

You are the CRS, complete the review of the completed surveillance procedure for accuracy and completeness starting at Step 5.4.3.A.

Document any discrepancies and evaluate Tech Specs if necessary.

TASK STANDARD:

The task is satisfactorily met when the applicant has determined the 2VC13 stroke time is in the Required Action Range and as a minimum TS LCO 3.6.3 Action 1.a is applicable, and 2VC12 is in the Required Evaluation Range and must be immediately retested with the results evaluated by the IST Implementation Engineer or the valve must be declared inoperable.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional)

s2.OP-ST.CBV-0001(Q)

**ATTACHMENT 2
(Page 1 of 2)**

STROKE TIME DATA

1.0 CONTAINMENT VENTILATION SAMPLE, REGULAR AND BACKUP, ISOLATION VALVES OPERATED FROM 2RP1:

Component Description	Stroke	Stroke Time (sec)	Stopwatch Number	Stroke Date/ Time	Initials	Test Results		
						Acceptable Range SAT	Required Evaluation Range SAT	Required Action Range UNSAT
2VC7 21R Outlet VA	X (1) (3)	1.41	220940	Today	JP	JD		
2VC11 21R Inlet VA	X (1) (3)	1.88	220945	Today	JD	JD		
2VC8 22R Outlet VA	X (1) (3)	2.16	220940	Today	JD	JD		
2VC12 22R Inlet VA	X (1) (3)	2.81	220945	Today	JD	JD		
2VC9 21B Outlet VA	X (2) (3)	1.09	220940	Today	JD	JD		
2VC13 21B Inlet VA	X (2) (3)	2.83	220945	Today	JD	JD		
2VC10 22B Outlet VA	X (2) (3)	1.33	220940	Today	JD	JD		
2VC14 22B Inlet VA	X (2) (3)	2.31	220945	Today	JD	JD		
Acceptance Criteria:		Measured values are within bands specified in S2.RA-ST.CBV-0001(Q), Inservice Testing Containment Ventilation Valves Modes 1-6 Acceptance Criteria OR data represents new baseline data as determined by the IST Implementation Engineer.						

- (1) ENSURE Containment BU Isolation Valves, 2VC9/13 and 2VC10/14, are OPEN.
- (2) ENSURE Containment REG Isolation Valves, 2VC7/11 and 2VC8/12, are OPEN.
- (3) Back Up Isolation Valves must be manually CLOSED from 2RP1 if a Phase A Containment Isolation Signal occurs.

Additional Reference(s):

INSERVICE TESTING CONTAINMENT VENTILATION VALVES MODES
1-6 ACCEPTANCE CRITERIA

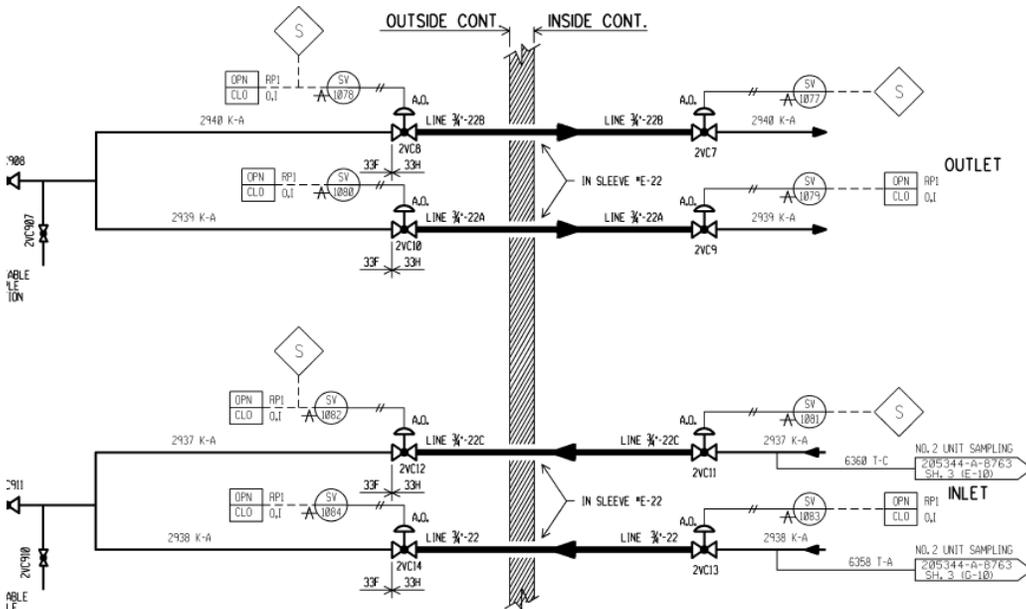
Rev: 7

Attachment 1, STROKE TIME DATA ACCEPTANCE CRITERIA

1.0 VALVE PERFORMANCE DATA:

Component	Stroke	Reference Value (seconds)	Date	Test Results					
				Acceptable Range (seconds)	Required Evaluation (seconds)		Required Action Range (seconds)		TS/FSAR (seconds)
					Low	High	Low	High	
2VC7	X (1)	1.5 (2)	11/21/95	≤ 2.0	N/A	N/A	N/A	> 2.0	≤ 10.0
2VC11	X (1)	1.1 (2)	11/21/95	≤ 2.0	N/A	N/A	N/A	> 2.0	≤ 10.0
2VC8	X (1)	1.5 (6)	06/19/2001	0.8 - 2.3	< 0.8	> 2.3 - 3.0	N/A	> 3.0	≤ 10.0
2VC12	X (1)	1.8 (5)	10/14/00	0.9 - 2.7	< 0.9	> 2.7 - 3.6	N/A	> 3.6	≤ 10.0
2VC9	X (1)	0.9 (2)	11/21/95	≤ 2.0	N/A	N/A	N/A	> 2.0	N/A
2VC13	X (1)	0.9 (2)	11/21/95	≤ 2.0	N/A	N/A	N/A	> 2.0	N/A
2VC10	X (1)	1.9 (2)	01/27/2011	1.0 - 2.9	< 1.0	> 2.9 - 3.8	N/A	> 3.8	N/A
2VC14	X (1)	1.7 (2)	05/06/2009	0.9 - 2.6	< 0.9	> 2.6 - 3.4	N/A	> 3.4	N/A

- (1) Credit is taken for satisfying the fail safe position.
- (2) Reference value based on Order 40026547.
- (5) Reference value based on Order 50027557.
- (6) Reference value based on Order 60020334.



CONTAINMENT RADIATION MONITORING SYSTEM
SAMPLE INLET & OUTLET ISOLATION VALVES
REFERENCE DRAWING 238805-B-9638 (PIPING)

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate completed surveillance procedure (S2.OP-ST.CBV-0001), S2.RA-ST.CBV-0001 **and** Unit 2 Tech Specs.

Examiners Note: Drawing 238805 is available upon request.

Comments: N/A

5.4.3.A		REVIEW this procedure with Attachments 1-4 for completeness and accuracy.	Applicant determines that 2VC13 stroke time was incorrectly recorded as SAT and should be "REQUIRED ACTION RANGE" and 2VC12 was incorrectly recorded as SAT and should be in the "REQUIRED EVALUATION RANGE"	
---------	--	----------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

5.4.3.B		IF valve stroke times are within the ACCEPTABLE RANGE, THEN DECLARE the applicable valve(s) OPERABLE.	Applicant determines that 2VC13 is INOPERABLE.	
---------	--	--------------------------------------------------------------------------------------------------------------	------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.4.3.C	*	IF ANY valve's stroke time is within the REQUIRED EVALUATION RANGE, THEN: Immediately RETEST the respective valve OR Declare the valve inoperable	Determines 2VC12 is in the required evaluation range and must be retested immediately or declared inoperable, results of retest must be evaluated by the IST Implementation Engineer	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
5.4.3.D.1	*	IF ANY valve's stroke time is in the REQUIRED ACTION RANGE, THEN: Immediately DECLARE the respective valve(s) inoperable.	Applicant determines 2VC13 INOPERABLE based on the stroke time in the REQUIRED ACTION RANGE.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
5.4.3.D.2	*	EVALUATE Technical Specification requirements for system operability.	<p>Applicant determine that TS LCO 3.6.3 is NOT MET for 2VC13.</p> <p>TS action 1a – restore the inoperable valve(s) to operable status within 4 hours,</p> <p><u>OR</u></p> <p>TS action 1.b the 2VC14 must be closed and deactivated within four hours of the stroke time.</p> <p><u>OR</u></p> <p>TS action 1.c the penetration must be isolated within four hours of the stroke time.</p> <p><u>OR</u></p> <p>TS action 1.d - HOT STANDBY in the next 6 hours and COLD SHUTDOWN in the following 30 hours.</p>	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
Cue: N/A Examiners Note: N/A <u>Comments:</u>				
Terminating Cue	JPM COMPLETE when the applicant submits the worksheet.			N/A

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC SRO-A2 **Revision No.:** 00

Task Title: Review a Completed Surveillance Test

Task No.: N1230010302 **Source:**
Bank X New _____ Mod _____

System: Equipment Control (Generic)

K/A Number / Description: G2.2.12 Knowledge of surveillance procedures.

K/A Rating RO 3.7 SRO 4.1

Task Applicability: SRO Only X RO/SRO _____ AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom X Simulator _____ In-Plant _____ RCA _____

Required Materials: S2.OP-ST.CBV-0001, S2.RA-ST.CBV-0001, and Salem Unit 2 Tech Specs

Reference(s): S2.OP-ST.CBV-0001 S2.RA-ST.CBV-0001 Salem Unit 2 Tech Specs
DWG 205338, sheet 1

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT/WORKSHEET

Operator's Name: _____

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- The BOP operator just completed performing S2.OP-ST.CBV-0001, Inservice Testing Containment Ventilation Valves Modes 1-6.

INITIATING CUE

You are the CRS, review the completed surveillance procedure for accuracy and completeness starting at Step 5.4.3.A.

Document any discrepancies and evaluate Tech Specs if necessary.

RECORD YOU'RE RESPONSE ON THIS WORKSHEET

PSEG Nuclear LLC

Job Performance Measure

SELECT A VOLUNTEER FOR EMERGENCY RADIATION EXPOSURE

JPM Number: 21-01 NRC SRO-A3

Revision Number: 0

Date: 08/18/2022

Developed By: R. Chan **Date:** 8/18/22
Instructor

Validated By: T. Shetrone / **Date:** 8/18/22
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 11/29/22
Operations Representative

Approved By: M. Wadusky **Date:** 11/29/22
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	8/18/22	New JPM for Salem. Used bank JPM from Commanche Peak 2019 NRC SA4. Converted to new JPM template.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | | |
|-----|--------------|-----------------------------------------------------------------------------------------------------|-----------------------|
| RC | | 1. Task description and number, JPM description and number are identified. | |
| RC | | 2. Knowledge and Abilities (K/A) references are included. | |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) | |
| RC | | 4. Initial setup conditions are identified. | |
| RC | | 5. Initiating and terminating cues are properly identified. | |
| RC | | 6. Task standards identified and verified by SME review. | |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) | |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: | |
| RC | Procedure(s) | NC.EP-EP.ZZ-0304 Rev. 17 | Date Checked: 8/18/22 |
| RC | | NC.EP-EP.ZZ-0102 Rev. 27 | |
| RC | | 9. Pilot test the JPM: | |
| | | a. Verify cues both verbal and visual are free of conflict, and | |
| | | b. Ensure performance time is accurate. | |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. | |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page | |

R. Chan	8/18/22
SME/Instructor	Date

SME/Instructor	Date
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SME/Instructor	Date
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SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. Copies of NC.EP-EP.ZZ-0304 for each applicant.

INITIAL CONDITIONS

- Salem Unit 1 is experiencing a LBLOCA
- Transfer to Cold Leg Recirculation has been established
- An operator venting 11 RHR Pump is injured and needs assistance to exit the RCA
- Emergency Coordinator (EC) authorized one volunteer to attempt lifesaving task
- Rad Pro predicts dose of 15-20 REM given general radiation levels in the area of the injured person

INITIATING CUE

The EC directs you to perform the following:

- Evaluate and select the most preferred volunteer from the list of available volunteers per NC.EP-EP.ZZ-0304, Operational Support Center (OSC) Radiation Protection Response.

List of Available Volunteers

Volunteer 1:	46 year old male, newly hired Custodian. No prior radiation protection training.
Volunteer 2:	27 year old female; informs you she is pregnant.
Volunteer 3:	24 year old male, recently qualified NEO.
Volunteer 4:	52 year old male, lifetime exposure 150 REM, including a Protecting Valuable Property dose of 15 REM at another facility.
Volunteer 5:	49 year old male, works in Maintenance; informs you that he is on prescription medication that may cause dizziness.
Volunteer 6:	42 year old female, not capable of becoming pregnant.
Volunteer 7:	50 year old male, SRO at Salem. Recently removed from License duties due to a failed periodic written exam.

TASK STANDARD:

The task is satisfactorily met when the applicant has; (1) determined that Volunteers 1-6 did NOT meet the requirements of NC.EP-EP.ZZ-0304, AND (2) determines that Volunteer 7 does MEET the requirements of NC.EP-EP.ZZ-0304 to perform lifesaving tasks. All documentation recorded to the reason why or why NOT is in accordance with the attached answer key.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

<u>Volunteer</u>	<u>Selected (Circle one)</u>	<u>Why or Why NOT selected</u>
1	NO	Determined individual NOT familiar with consequences of exposure to radiation.
2	NO	Determined female volunteer has declared pregnancy.
3	NO	Determined individual has NOT reached age of 45 years or older.
4	NO	Determined individual already received emergency exposure for Protecting Valuable Property.
5	NO	Determined individual is NOT physically qualified based on prescription medication that causes dizziness.
6	NO	Determined individual has NOT reached age of 45 years of older.
7	YES	Selected Volunteer 7 as most preferred candidate for Emergency exposure because he is over the age of 45, has not received a previous emergency exposure in his lifetime, he is familiar with the task and consequences of radiation exposure as a licensed operator, and he is not a female capable of reproduction

Additional References:

NC.EP-EP.ZZ-0102:

SM	Station has adequate resources. Until relieved by the EDO, as needed/requested for accident mitigation (25R) or life saving (75R), AUTHORIZE Emergency Dose. <i>(per OSC RP Response, NC.EP-EP.ZZ-0304)</i> <ul style="list-style-type: none">• ENSURE RAC works with the OSC and considers dose savings to the public to expedite OSC team dispatch.• ENSURE backup actions are being planned; (OSC or TSC engineering staff).• ENSURE OSC Coordinator considers pre-staging teams at the control point while plans are being finalized.	Init: ____ Time: ____	Init: ____ Time: ____	Init: ____ Time: ____	Init: ____ Time: ____
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RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate copy of NC.EP-EP.ZZ-0304

Examiners Note: N/A

Comments: N/A

1.0	*	Determine if Volunteer 1 can be selected.	Documented Volunteer 1 is NOT familiar with the consequences of exposure to radiation and/or have attended and passed Rad Worker Training. Volunteer 1 is ELIMINATED.	
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Cue: N/A

Examiners Note: N/A

Comments:

2.0	*	Determine if Volunteer 2 can be selected.	Documented Volunteer 2 is a declared pregnant women and SHALL NOT be allowed to volunteer. Volunteer 2 is ELIMINATED.	
-----	---	--------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

3.0	*	Determine if Volunteer 3 can be selected.	Documented Volunteer 3 is NOT above the age of 45 years, although qualified for the task as an NEO. Volunteer 3 is ELIMINATED.	
-----	---	--------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.0	*	Determine if Volunteer 4 can be selected.	Documented Volunteer 4 already received emergency exposure for Protecting Valuable Property. Volunteer 4 is ELIMINATED.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
5.0	*	Determine if Volunteer 5 can be selected.	Documented Volunteer 5 is NOT physically qualified due to taking prescription medication. Volunteer 5 is ELIMINATED.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
6.0	*	Determine if Volunteer 6 can be selected.	Documented Volunteer 6 is NOT above the age of 45 years. Volunteer 6 is ELIMINATED.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
7.0	*	Determine if Volunteer 7 can be selected.	SELECTED Volunteer 7 for emergency exposure and DOCUMENTED as the most preferred candidate because he is over the age of 45, has not received a previous emergency exposure in his lifetime, he is familiar with the task and consequences of radiation exposure as a	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
			licensed operator, and he is not a female capable of reproduction.	
<p>Cue: N/A</p> <p>Examiners Note: N/A</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE when the applicant submits the worksheet.		N/A	

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC SRO-A3 **Revision No.:** 0

Task Title: Select a Volunteer for Emergency Radiation Exposure

Task No.: _____ **Source:**
Bank X New _____ Mod _____

System: Radiation Control (Generic)

K/A Number / Description: G2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities, such as analysis and interpretation of radiation and activity readings as they pertain to administrative, normal, abnormal, and emergency procedures or to analysis and interpretation of coolant activity, including comparison to emergency plan or regulatory limits (SRO Only).

K/A Rating RO N/A SRO 3.8

Task Applicability: SRO Only X RO/SRO _____ AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 20 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom X Simulator _____ In-Plant _____ RCA _____

Required Materials: NC.EP-EP.ZZ-0304

Reference(s): NC.EP-EP.ZZ-0102 NC.EP-EP.ZZ-0304

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 1 is experiencing a LBLOCA
- Transfer to Cold Leg Recirculation has been established
- An operator venting 11 RHR Pump is injured and needs assistance to exit the RCA
- Emergency Coordinator (EC) authorized one volunteer to attempt lifesaving task
- Rad Pro predicts dose of 15-20 REM given general radiation levels in the area of the injured person

INITIATING CUE

The EC directs you to perform the following:

- Evaluate and select the most preferred volunteer from the list of available volunteers per NC.EP-EP.ZZ-0304, Operational Support Center (OSC) Radiation Protection Response.

List of Available Volunteers

Volunteer 1:	46 year old male, newly hired Custodian. No prior radiation protection training.
Volunteer 2:	27 year old female; informs you she is pregnant.
Volunteer 3:	24 year old male, recently qualified NEO.
Volunteer 4:	52 year old male, lifetime exposure 150 REM, including a Protecting Valuable Property dose of 15 REM at another facility.
Volunteer 5:	49 year old male, works in Maintenance; informs you that he is on prescription medication that may cause dizziness.
Volunteer 6:	42 year old female, not capable of becoming pregnant.
Volunteer 7:	50 year old male, SRO at Salem. Recently removed from License duties due to a failed periodic written exam.

STUDENT WORKSHEET

Operator's Name: _____

<u>Volunteer</u>	<u>Selected (Circle one)</u>	<u>Why or Why NOT selected</u>
1	YES /NO	
2	YES /NO	
3	YES /NO	
4	YES /NO	
5	YES /NO	
6	YES /NO	
7	YES /NO	

PSEG Nuclear LLC

Job Performance Measure

REVIEW INITIAL CONTACT MESSAGE FORM (ICMF)

JPM Number: 21-01 NRC SRO-A4

Revision Number: 0

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>T. Shetrone</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	New JPM. Converted to new JPM template.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- | | | |
|-----|----------------------------------|-----------------------------------------------------------------------------------------------------|
| RC | | 1. Task description and number, JPM description and number are identified. |
| RC | | 2. Knowledge and Abilities (K/A) references are included. |
| RC | | 3. Performance location specified. (in-plant, control room, or simulator) |
| RC | | 4. Initial setup conditions are identified. |
| RC | | 5. Initiating and terminating cues are properly identified. |
| RC | | 6. Task standards identified and verified by SME review. |
| RC | | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*) |
| RC | | 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: |
| RC | Procedure(s) EP-SA-325-F2 Rev. 1 | Date Checked: 7/24/22 |
| RC | | 9. Pilot test the JPM: |
| | | a. Verify cues both verbal and visual are free of conflict, and |
| | | b. Ensure performance time is accurate. |
| N/A | | 10. If the JPM cannot be performed as written with proper responses, then revise the JPM. |
| N/A | | 11. When JPM is revalidated, SME or instructor sign and date JPM cover page |

R. Chan	8/18/22
SME/Instructor	Date

SME/Instructor	Date

SME/Instructor	Date

SIMULATOR SETUP INSTUCTIONS

1. None, this is an Admin JPM.

SPECIAL INSTRUCTIONS

1. Copies of Salem ECG Flowchart and Bases documents for each SRO.
2. Marked up EP-SA-325-F2 Attachment 2 Alert (includes all pages of Attachment 2)

INITIAL CONDITIONS

- At 1055, Salem Unit 2 initiated a manual SI due to a Steam Generator Tube Rupture on 23 SG
- RCS temperature is 543 °F
- BOTH motor driven auxiliary feedpumps failed to start and the Turbine Driven auxiliary feedpump (23 AFW Pump) automatically started and is feeding all intact SGs at 22E4 lbm/hr
- At 1100, the Shift Manager declared an ALERT
- 33 Ft. level wind direction is from 180 degrees at 5 mph
- No additional operator actions have been taken

INITIATING CUE

The Shift Manager directs you to perform an accuracy peer check on the provided Initial Contact Message Form (ICMF).

Document any errors on the attached worksheet, should any exist.

This is a TIME CRITICAL JPM

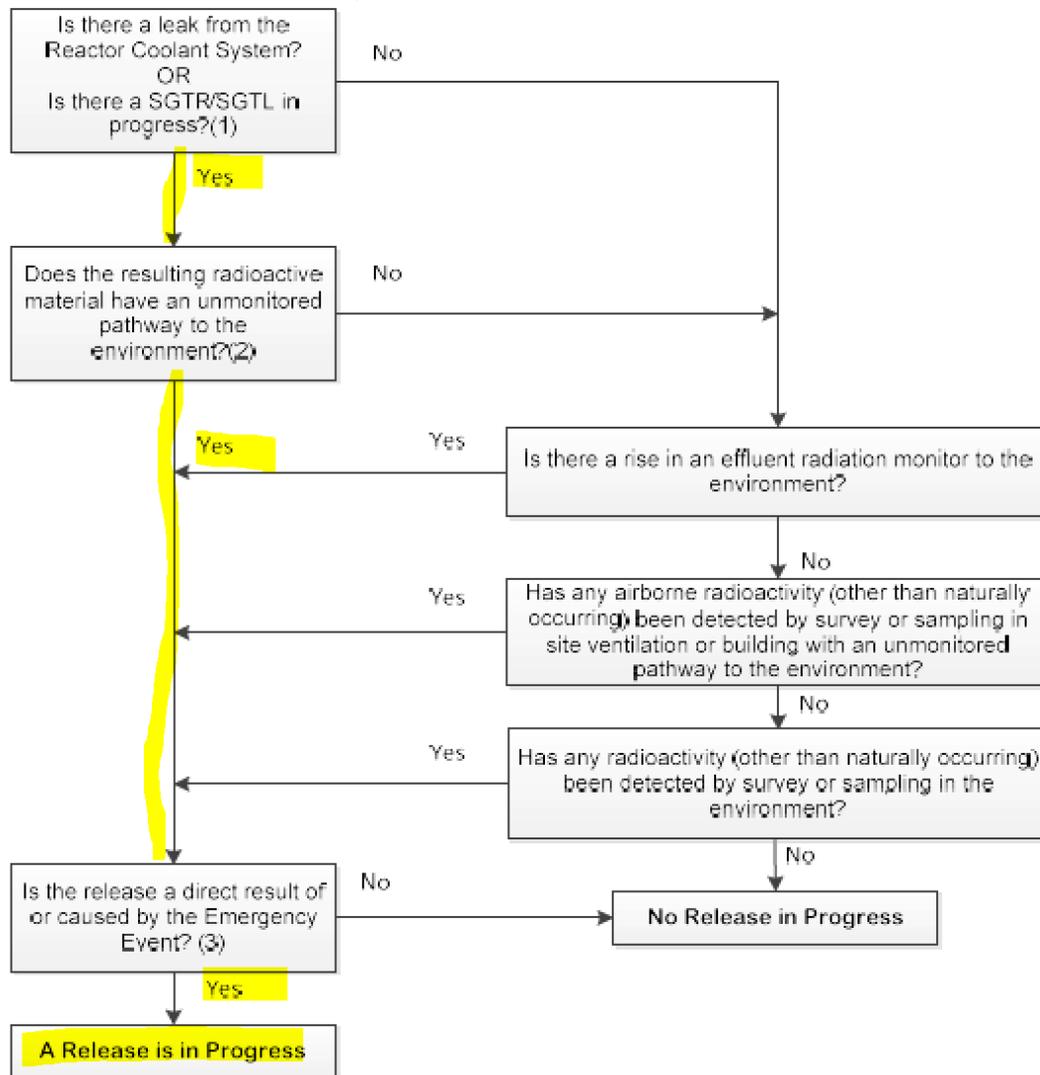
Additional Reference(s): EP-SA-325-F2 Rev. 01

- **Accuracy Peer Check:** Have the STA, TSS, SSM or other knowledgeable individual perform an accuracy peer check of the ICMF. The peer check should include:
 - verification that the correct form has been used for the classification
 - review of all applicable fields that have been completed by the SM during completion of the ICMF (date, time, EAL, Description etc.) to ensure data is correct/accurate
 - EC approval initials have been completed.

- **Classification Timeliness:** Classification must occur after verification and before the 15 minute EAL clock expires. Assessment of an Emergency Condition should be completed in a timely manner, which is considered to be within 15 minutes of when events are known or should have been known. If an EAL specifies a duration time (e.g., loss of annunciators for 15 minutes or longer), the assessment time runs concurrently with the EAL duration time and is the same length. ⁽³⁾

- **Rad Release Determination (Salem):** Any of the following conditions constitutes a release in progress due to the event:
 - Increase in Plant Vent Release Rate (NOT caused by operational transients or ventilation changes) which is caused by the EVENT.
 - A Steam Generator rupture which is faulted to the atmosphere (SRV, Atmospheric Vent or Line Break)
 - Evidence of an UNMONITORED release to atmosphere, examples include:
 - Primary to Secondary leak and the steam driven feed pump is in service
 - Bypass release from the Aux Building through the Electrical Pen
 - Leakage from the Containment directly to atmosphere after a LOCA
 - Elevated background radiation levels downwind from the station as monitored/reported by Radiation Protection Technician at fence line

Additional Reference(s): EP-SA-325-F2 Release in Progress Determination Flowchart



Additional Reference(s): EP-SA-325-102 Rev. 1, page 7, Event Classification Guide Use

4.9 Identify and implement the referenced ECG form based on the Emergency Classification Level.

- Unusual Event Implement EP-SA-325-F1
- Alert Implement EP-SA-325-F2
- Site Area Emergency Implement EP-SA-325-F3
- General Emergency Implement EP-SA-325-F4
- Unusual Event (Common Site) Implement EP-SA-325-F24

Refer to TABLE 1, Salem Emergency Classification Description Table for correct description wording to be used on the Initial Contact Message Form (ICMF) for all EALs.

TASK STANDARD:

The task is satisfactorily met when the applicant has identified the following errors on the ICMF; (1) declaration time is incorrect, (2) description of the event is not in accordance with Table 1 of EP-SA-325-102, and (3) a release not in progress is incorrectly checked off. The ICMF should be in accordance with the attached answer key. **This is a TIME CRITICAL JPM which must be completed ≤ 15 minutes.**

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

EP-SA-325-F2
ATT 2
Pg. 2 of 6

INITIAL CONTACT MESSAGE FORM

- I. THIS IS John Q, COMMUNICATOR IN THE CONTROL ROOM
(NAME) TSC
 EOF

AT THE SALEM NUCLEAR GENERATING STATION, UNIT(s) No. 2

- II. THIS IS NOTIFICATION OF AN ALERT WHICH WAS

DECLARED AT 1100 ON Today
(Time - 24 HR CLOCK) (DATE)

EAL # RB1.L DESCRIPTION OF EVENT Loss of the Reactor Coolant System Barrier

- III. THERE IS A RELEASE IN PROGRESS DUE TO THE EVENT
 THERE IS NO RELEASE IN PROGRESS DUE TO THE EVENT } Any release above normal, attributable to the event. See Basis for examples.

- IV. 33 FT. LEVEL WIND DIRECTION (From): 180 WIND SPEED: 5
(From MET Computer /SPDS) (DEGREES) (MPH)

- V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

Shift Manager / SM
EC Print/Sign
(Approval to Transmit ICMF)

Answer Key

<u>ICMF Section</u>	<u>Errors Identified (Circle one)</u>	<u>Brief Description of Error(s)</u>
I	NO	
II	YES	<ol style="list-style-type: none">1. Declaration time is incorrect should be 1100,2. Description of Event is incorrect should read "Loss of the Reactor Coolant System Barrier" per Table 1 of EP-SA-325-102
III	YES	<ol style="list-style-type: none">1. A release is in progress due to the Turbine Driven auxiliary feedpump the ONLY pump in service and supplied from 21 and 23 SGs. No actions have been taken yet to close the 23MS45 steam supply from 23 SG. Per EP-SA-325-F2, a release is in progress due to a Primary to Secondary leak and the steam driven feedpump in service with no radiation monitor to monitor the release path.
IV	NO	
V	NO	

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate MARKED UP copy of EP-SA-325-F2 Attachment 2 Alert(include all pages from Attachment 2) **and** Salem ECG Flowcharts and Bases Books.

Examiners Note: N/A

Comments: N/A

1.0	*	Determine if Section I has any errors.	No errors	
-----	---	-----------------------------------------------	-----------	--

Cue: N/A

Examiners Note: N/A

Comments:

2.0	*	Determine if Section II has any errors.	Documents that Section II has two errors: (1) declaration time is incorrect should be 1100, and (2) the Description of Event is incorrect should read "Loss of the Reactor Coolant System Barrier".	
-----	---	------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Cue: N/A

Examiners Note: N/A

Comments:

3.0	*	Determine if Section III has any errors.	Documents that Section III incorrectly checked that NO release is in progress. A primary to secondary leak and the steam driven feedpump in service is a release in progress.	
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Cue: N/A

Examiners Note: N/A

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<u>Comments:</u>				
4.0	*	Determine if Section IV has any errors.	No errors	
Cue: N/A Examiners Note: N/A <u>Comments:</u>				
5.0	*	Determine if Section V has any errors.	No errors	
Cue: N/A Examiners Note: N/A <u>Comments:</u>				
Terminating Cue	JPM COMPLETE when the applicant submits the worksheet.			N/A

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC SRO-A4 **Revision No.:** 0

Task Title: Review Initial Contact Message Form (ICMF)

Task No.: N1240010502 **Source:**
Bank _____ New X Mod _____

System: Emergency Procedures/Plan (Generic)

K/A Number / Description: G2.4.40 Knowledge of SRO responsibilities in emergency plan implementing procedures (SRO Only).

K/A Rating RO N/A SRO 4.5

Task Applicability: SRO Only X RO/SRO _____ AO/RO/SRO _____ Other _____

Time-Critical: Yes X No _____ **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom X Simulator _____ In-Plant _____ RCA _____

Required Materials: Salem ECG & Basis Document

Reference(s): Salem ECG

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- At 1055, Salem Unit 2 initiated a manual SI due to a Steam Generator Tube Rupture on 23 SG
- RCS temperature is 543 °F
- BOTH motor driven auxiliary feedpumps failed to start and the turbine driven auxiliary feedpump (23 AFW Pump) automatically started and is feeding all intact SGs at 22E4 lbm/hr
- At 1100, the Shift Manager declared an ALERT
- 33 Ft. level wind direction is from 180 degrees at 5 mph
- No additional operator actions have been taken

INITIATING CUE

The Shift Manager directs you to perform an accuracy peer check on the provided Initial Contact Message Form (ICMF).

Document any errors on the attached worksheet, should any exist.

This is a TIME CRITICAL JPM

STUDENT WORKSHEET

Operator's Name: _____

<u>ICMF Section</u>	<u>Errors Identified (Circle one)</u>	<u>Brief Description of Error(s)</u>
I	YES / NO	
II	YES / NO	
III	YES / NO	
IV	YES / NO	
V	YES / NO	

PSEG Nuclear LLC

Job Performance Measure

Perform Control Rod System Surveillance Test

JPM Number: 21-01 NRC Sim-a

Revision Number: 02

Date: 01/10/23

Developed By: R. Chan **Date:** 1/10/23
Instructor

Validated By: E. Gallagher **Date:** 1/10/23
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 1/19/23
Operations Representative

Approved By: M. Wadusky **Date:** 1/19/23
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
01	7/25/22	Reformat JPM, update procedure rev and task standard after NUREG revision.
02	1/10/23	Incorporated NRC comments.

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-250 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is at 100% power.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	RD0045, Uncontrolled Rod Insert in Auto	N/A	N/A	N/A	ET-1	TRUE

1. Verify Overrides / Remotes:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition / Severity
01	B433 5 DI, Rod Bank Selector Sw in Auto				ET-1	ON

2. Verify Event Triggers:

ET#	Description	Command
1	KB433W1D, Rod bank Selector SW to Auto	

SPECIAL INSTRUCTIONS

1. Rod bank selector switch selected to CBC position.
2. Ensure ARPI screen up on Plant computer.
3. For efficiency, provide procedures to the operators up front to allow time to read and review.
4. If procedures not supplied ahead of time then ensure marked up surveillance and OP-AP-300-1001 procedure are available for students.

INITIAL CONDITIONS

- Unit 2 is at 100% power BOL.
- No major equipment is out of service and no Tech Specs are active.
- The rod control system surveillance is in progress.
- All sections are complete, except for exercising Control Bank D.

INITIATING CUE

- You are the Reactor Operator.
- The CRS directs you to complete the rod control system surveillance IAW S2.OP-ST.RCS-0001, Reactivity Control System Rod Control Assemblies.
- A Maintenance Technician is stationed at the Rod Control Power Cabinets (Relay Room)
- CRS directs that 15 steps of rod insertion will be performed to ensure each rod moves at least 10 steps.
- Notify the CRS when the testing is complete.
- Your evaluator will take care of all alarms not related to your task.

TASK STANDARD:

The task is satisfactorily met when the applicant has exercised Control Bank D at least 10 steps, and upon completion of the test, recognizes unexpected continuous rod movement and manually trips the reactor.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.	Operator reads P&Ls and reviews OP-AP-300-1001 prior to start	

Cue: Provide candidate MARKED UP surveillance procedure (S2.OP-ST.RCS-0001) and OP-AP-300-1001.

Examiners Note:

Comments:

4.1.10.1		IF the reactor is critical, <u>THEN ENSURE</u> TAVG is within $\pm 1^{\circ}\text{F}$ of TREF.	Operator checks Tave/Tref recorder on 2RP4 and determines Tavg is within +/-1 F of Tref.	
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Cue:

Examiners Note:

Comments:

4.1.10.2	*	PLACE Bank Selector Switch in the "CBD" position.	Operator rotates selector switch clockwise to the CBD position	
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Cue:

Examiners Note:

Comments:

4.1.10.3		ENSURE GRP. SELECT "B" lights are illuminated on Rod Control System Power Cabinets 21BD and 22BD.	Contacts Maint Technician at Power Cabinets.	
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STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)

Cue: Technician reports GRP SELECT 'B' lights are illuminated on Cabinets 21 BD and 22BD.

Examiners Note:

Comments:

4.1.10.4		Insert Control Bank D 1 step.	Operator inserts one step.	
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Cue:

Examiners Note: Steps 4.1.10.4 and 4.1.10.5 will be performed three times consecutively prior to the 15 step insertion in step 6.

Comments:

4.1.10.5		Withdraw Control Bank D 1 step.	Operator withdraws one step.	
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Cue:

Examiners Note:

1 2 3

Comments:

4.1.10.6	*	MANEUVER Control Bank D at least 10 steps in any one direction.	Operator inserts Control Bank D 15 +/- 1 steps.	
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Cue:

Examiners Note: OHA E-24 may annunciate. Acknowledge as CRS.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.1.10.7		ENSURE each rod in Control Bank D indicated rod movement of at least 10 steps.	Operator monitors rod position on plant computer and determines D bank rods all moved at least 10 steps.	
<p>Cue: Reactor Engineer reports rods indicate 10 step movement.(optional)</p> <p>Examiners Note: Operator may request to insert rods additional steps, <u>IF</u> so, just restate the request.</p> <p><u>Comments:</u></p>				
4.1.10.8	*	RECORD CONTROL BANK D "Test Results" by initialing the SAT or UNSAT column using the Acceptance Criteria in Attachment 1, Rod Control Assembly Data.	Operator records test results as <u>SAT</u> .	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
4.1.10.9	*	RESTORE Control Bank D to the pre-test position.	Operator withdraws Bank D to previous position (ARO)	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
4.1.11.1		IF the reactor is critical, THEN ENSURE TAVG is within $\pm 1^{\circ}\text{F}$ of TREF.	Operator checks Tave/Tref recorder on 2RP4 and determines Tavg is within 1 F of Tref.	
<p>Cue:</p> <p>Examiners Note:</p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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Comments:

4.1.11.2

IF Turbine Power is $\leq 15\%$, THEN **PLACE** Bank Selector Switch in the "MAN" position.

N/A

Cue:

Examiners Note:

Comments:

ALTERNATE PATH STARTS HERE

4.1.11.3



IF Turbine Power is $> 15\%$, THEN **PLACE** Bank Selector Switch in the "AUTO" OR "MAN" position as directed by the SM/CRS.

Operator determines that Rx power is $> 15\%$ and rotates selector switch counterclockwise to the AUTO position.

Cue #1: IF asked, CRS directs rod bank selected to AUTO.

Cue #2: After rod motion commences: IF operator recommends to CRS to place rods in Manual, THEN state; understand placing rods to manual.

Simulator Operator: ENSURE ET-1 is TRUE when rods selected to Auto. This will insert Malf: RD0045, Uncontrolled Rod Insertion in AUTO AND MANUAL.

Examiners Note: The operator may refer to S2.OP-AB.ROD-0003, Continuous Rod Motion and take the actions in the AB to manually trip the reactor.

JPM Complete once Reactor is Tripped.

Comments:



Operator announces that rods are stepping in and no runback in progress.

Operator Manually trips the Reactor.

Operator places rod bank switch to Manual and reports rod motion has NOT stopped.

Operator recognizes rod insertion is continuing

Cue:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
Examiners Note: <u>Comments:</u>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-a **Revision No.:** 02

Task Title: Perform Rod Control System Surveillance Test

Task No.: N1140340401 **Source:**
Bank New _____ Mod _____

System: 001 Control Rod Drive System (SF1)

K/A Number / Description: A4.16 Ability to manually operate and/or monitor in the control room: Rod speed and direction

K/A Rating RO 3.8 SRO N/A

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes No _____

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: S2.OP-ST.RCS-0001

Reference(s): S2.OP-ST.RCS-0001 OP-AP-300-1001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Unit 2 is at 100% power BOL.
- No major equipment is out of service and no Tech Specs are active.
- The rod control system surveillance is in progress.
- All sections are complete, except for exercising Control Bank D.

INITIATING CUE

- You are the Reactor Operator.
- The CRS directs you to complete the rod control system surveillance IAW S2.OP-ST.RCS-0001, Reactivity Control System Rod Control Assemblies.
- A Maintenance Technician is stationed at the Rod Control Power Cabinets (Relay Room)
- CRS directs that 15 steps of rod insertion will be performed to ensure each rod moves at least 10 steps.
- Notify the CRS when the testing is complete.
- Your evaluator will take care of all alarms not related to your task.

PSEG Nuclear LLC

Job Performance Measure

Transfer To Hot Leg Recirculation

JPM Number: 21-01 NRC Sim-b

Revision Number: 03

Date: 7/26/22

Developed By:	<u>K. Hantho</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>Westlake/Militti</u> SME or Instructor	Date:	<u>8/19/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
03	7/26/22	Update and validate to new JPM format.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- EG 1. Task description and number, JPM description and number are identified.
- EG 2. Knowledge and Abilities (K/A) references are included.
- EG 3. Performance location specified. (in-plant, control room, or simulator)
- EG 4. Initial setup conditions are identified.
- EG 5. Initiating and terminating cues are properly identified.
- EG 6. Task standards identified and verified by SME review.
- EG 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*)
- EG 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure(s) 2-EOP-LOCA-4 Rev. 41 Date Checked: 7/26/22
- RC 9. Pilot test the JPM:
 - a. Verify cues both verbal and visual are free of conflict, and
 - b. Ensure performance time is accurate.
- NA 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- NA 11. When JPM is revalidated, SME or instructor sign and date JPM cover page

E. Gallagher 1-5-23
SME/Instructor Date

SME/Instructor Date

SME/Instructor Date

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-251 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is shutdown.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	RC0001A, RCS rupture of RC loop 21	N/A	N/A	N/A	N/A	TRUE
02	SJ0062B, 22 SI pump trip	N/A	N/A	N/A	N/A	TRUE
03	Rh0026a 21 RHR PUMP TRIP	N/A	N/A	N/A	N/A	TRUE
ID# OVRD or REMT	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
01	RH26D, 21 RHR pump breaker control power					OFF
02	RH27D, 21 RHR pump rack out					TAGGED
ET#	Description	Command				
none						

SPECIAL INSTRUCTIONS

1. Place Bezel cover on 21 RHR pump as C/T

INITIAL CONDITIONS

- You are the **incoming** crew.
- Unit 2 experienced a Large Break LOCA.
- The previous crew completed the actions to transfer to Cold Leg Recirculation IAW EOP-LOCA-3 and have transitioned back to EOP-LOCA-1.
- 22 SI pump tripped following completion of LOCA-3 and is being investigated.
- 21 RHR pump is C/T for scheduled maintenance prior to the event.

INITIATING CUE

- You are the **Reactor Operator**.
- The CRS has directed you to **IMPLEMENT** 2-EOP-LOCA-4, TRANSFER TO HOT LEG RECIRCULATION.
- Your evaluator will respond to all alarms not related to your task.

TASK STANDARD:

The task is satisfactorily met when the applicant has aligned the plant for Hot leg Recirculation IAW Steps 4 and 8 of 2-EOP-LOCA-4

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate sheet of 2-EOP-LOCA-4.

Examiners Note: None

Comments:

LOCA-4		ARE BOTH RHR PUMPS RUNNING?	Determines that ONLY 22 RHR Pump is running. (21 RHR pump is C/T)	
1.0			GOES TO Step 4.	

Cue:

Examiners Note:

Comments:

4.0		IS 22 RHR Pump Running	YES, determines that 22 RHR Pump is running.	
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.0 Cont'd	*	CLOSE 22CS36 (RHR SUPPLY TO CS VALVE)	Operator depresses CLOSE PB for 22CS36 (RHR SUPPLY TO CS VALVE) and verifies CLOSE PB illuminates.	

Cue:

Examiners Note:

Comments:

4.0 Cont'd		IS 21SJ45 (RHR DISCHARGE TO SI PUMPS VALVE) OPEN	NO. Verifies 21SJ45 closed	
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Cue:

Examiners Note:

Comments:

4.0 Cont'd	*	OPEN 22SJ49 (COLD LEG ISOLATION VALVE)	Operator depresses OPEN PB for 22SJ49 (COLD LEG ISOLATION VALVE) and verifies OPEN PB illuminates.	
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Cue:

Examiners Note:

Comments:

ALTERNATE PATH STARTS HERE

5.0		IS 22 SI Pump Running	NO, Verifies 22 SI pump tripped GOES TO Step 8.	
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
8.0	*	STOP 21 SI Pump	Operator depresses 21 SI Pump STOP PB on 2CC1 and verifies STOP PB illuminates.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
8.0 Cont'd	*	CLOSE 21SJ134 (Cold Leg Discharge Valve)	Operator depresses CLOSE PB for 21SJ134 (Cold Leg Discharge Valve) on 2CC1 and verifies CLOSE PB illuminates.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
8.0 Cont'd	*	OPEN 21SJ40 (Hot Leg Discharge Valve)	Operator Opens 21SJ40 (Hot Leg Discharge Valve) by <u>inserting key</u> and <u>rotating</u> ; verifies OPEN PB illuminates.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
8.0 Cont'd	*	START 21 SI Pump	Operator depresses START PB for 21 SI Pump and verifies START PB illuminates.	
Cue: Examiners Note: <u>Comments:</u>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-b **Revision No.:** 03

Task Title: Transfer To Hot Leg Recirculation

Task No.: 1150110501 **Source:**
Bank New _____ Mod _____

System: 006 Emergency Core Cooling System (SF2)

K/A Number / Description: A4.05 Ability to manually operate and/or monitor in the control room: Transfer of ECCS flowpaths

K/A Rating RO 4.1 SRO N/A

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes No _____

Estimated Time to Complete: 6 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: 2-EOP-LOCA-4

Reference(s): 2-EOP-LOCA-4

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- You are the **incoming** crew.
- Unit 2 experienced a Large Break LOCA.
- The previous crew completed the actions to transfer to Cold Leg Recirculation IAW EOP-LOCA-3 and have transitioned back to EOP-LOCA-1.
- 22 SI pump tripped following completion of LOCA-3 and is being investigated.
- 21 RHR pump is C/T for scheduled maintenance prior to the event.

INITIATING CUE

- You are the **Reactor Operator**.
- The CRS has directed you to **IMPLEMENT 2-EOP-LOCA-4, TRANSFER TO HOT LEG RECIRCULATION.**
- Your evaluator will respond to all alarms not related to your task.

PSEG Nuclear LLC

Job Performance Measure

Depressurize RCS using Aux spray IAW EOP-LOCA-2

JPM Number: 21-01 NRC Sim-c

Revision Number: 01

Date: 01/10/23

Developed By: R. Chan **Date:** 1/10/23
Instructor

Validated By: E. Gallagher **Date:** 1/10/23
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 1/19/23
Operations Representative

Approved By: M. Wadusky **Date:** 1/19/23
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	10/12/22	New JPM
01	1/10/23	Incorporated NRC comments from Prep week. Revised step 20 RCS subcooling is now 9 F and lowering.

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-252 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is shutdown.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	RC0002 RCS Leak in Containment					350
02	VL0016 22SJ54 Fails to Position					0
03	VL0016 21SJ54 Fails to Position					0
04	VL0016 23SJ54 Fails to Position					0
05	VL0016 24SJ54 Fails to Position					0
06	PR0019D PZR Spray valve 2PS3 Fails Closed					True
07	VL0298 2PR2 Fails to position					0.00

Place a Bezel Cover over 2PR1, to indicate isolated status

SPECIAL INSTRUCTIONS

1. Marked up copy of 2-EOP-LOCA-2 on center console, complete thru step 19

INITIAL CONDITIONS

- The reactor was tripped when a RCS leak occurred.
- All RCPs have been stopped
- 2PR1 is inoperable with 2PR6 isolated with power removed
- The operating crew has progressed through the EOP's and is now in 2-EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION

INITIATING CUE

- You are the Reactor Operator.
- The CRS directs you to depressurize the RCS to minimize subcooling IAW Step 20 of 2-EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION
- Notify the CRS when Step 20 is completed.
- Your evaluator will take care of all alarms not related to your task.

TASK STANDARD:

The task is satisfactorily met when the applicant has depressurized RCS using Auxiliary spray IAW step 20 of 2-EOP-LOCA-2

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

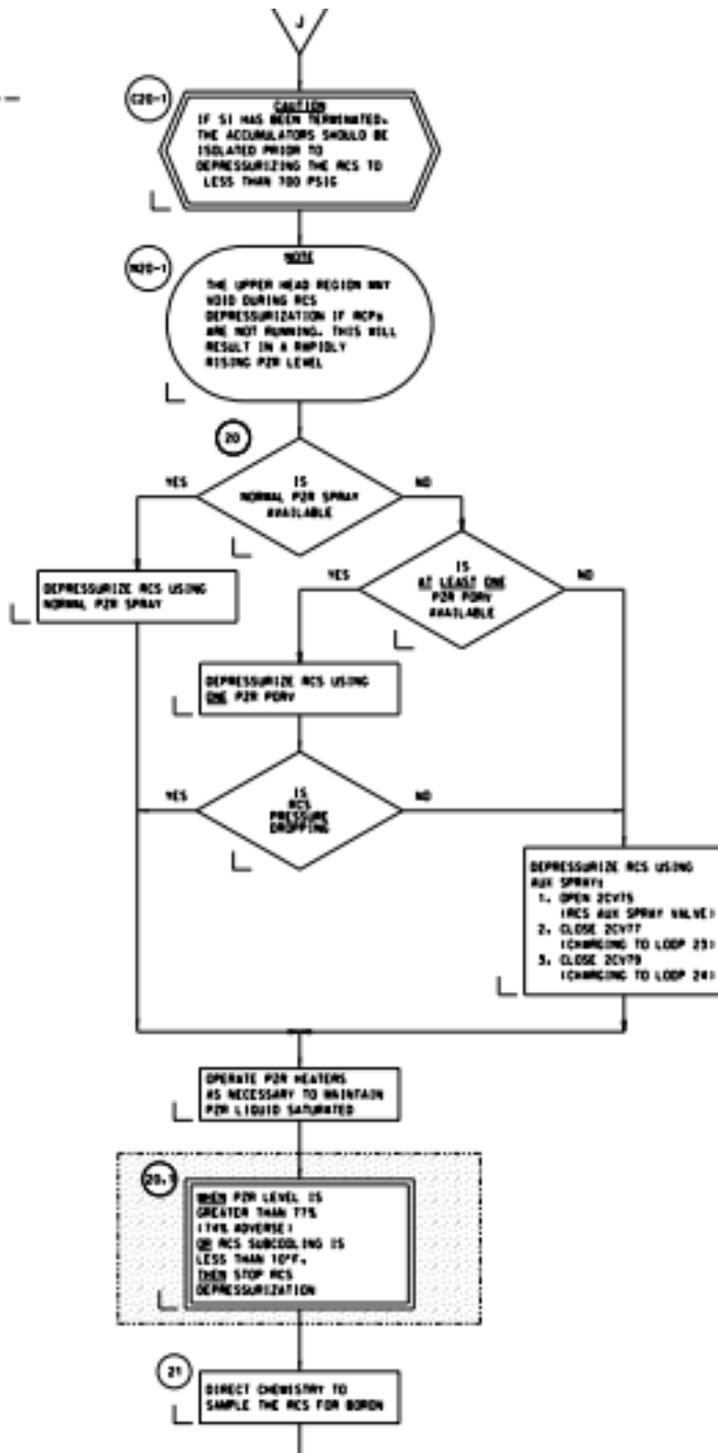
Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (if required):

Flowchart portion below

RCS
DEPRESSURIZATION
TO MINIMIZE
SUBCOOLING



RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate MARKED UP sheet of 2-EOP-LOCA-2.

Examiners Note:

Comments:

C20-1		<p style="text-align: center;">CAUTION IF SI HAS BEEN TERMINATED, THE ACCUMULATORS SHOULD BE ISOLATED PRIOR TO DEPRESSURIZING THE RCS TO LESS THAN 700 PSIG</p>	Verifies 21-24SJ54s closed	
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Cue:

Examiners Note: The 21-24 SJ54s are closed

Comments:

N20-1		<p style="text-align: center;">NOTE THE UPPER HEAD REGION MAY VOID DURING RCS DEPRESSURIZATION IF RCPs ARE NOT RUNNING THIS WILL RESULT IN A RAPIDLY RISING PZR LEVEL.</p>	Acknowledge the Note	
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Cue:

Examiners Note: The 21-24 SJ54s are closed

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
20		IS NORMAL PZR SPRAY AVAILABLE	NO.	

Cue:

Examiners Note: With no RCPs running, normal spray is not available

Comments:

20 CONT'D	*	IS AT LEAST ONE PZR PORV AVAILABLE	YES.	
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Cue:

Examiners Note:

Comments:

20 CONT'D	*	DEPRESSURIZE RCS USING <u>ONE</u> PZR PORV	Operator Opens the 2PR2 to attempt to depressurize the RCS but it will not open. 2PR1 remains isolated and unavailable.	
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Cue:

Examiners Note:

Comments:

ALTERNATE PATH STARTS HERE

20 CONT'D	*	IS RCS PRESSURE DROPPING	NO.	
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Cue:

Examiners Note: Operator observes valve not repositioning. May attempt to depress the OPEN PB again.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
20 CONT'D	*	DEPRESSURIZE RCS USING AUX SPRAY: 1. OPEN 2CV75 (RCS AUX SPRAY VALVE) 2. CLOSE 2CV77 (CHARGING TO LOOP 23) 3. CLOSE 2CV79 (CHARGING TO LOOP 24)	Operator opens 2CV75 and closes 2CV77 and 79. Operator monitors RCS pressure and verifies pressure is lowering.	

Cue :

Examiners Note:

Comments:

20 CONT'D		OPERATE PZR HEATERS AS NECESSARY TO MAINTAIN PZR LIQUID SATURATED	Operator will check PZR temperature and determine if pressurizer heaters are required to be energized	
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Cue : When the operator checks that RCS pressure is lowering, and determines whether or not heaters need to be energized then, provide the following cue:

- RCS subcooling is now 9°F and lowering.

Examiners Note:

Comments:

20.1	*	<u>WHEN</u> PZR LEVEL IS GREATER THAN 77% (74% ADVERSE) <u>OR</u> RCS SUBCOOLING LESS THAN 10°F <u>THEN</u> STOP RCS DEPRESSURIZATION	Operator should realign aux spray to normal as follows: Operator closes 2CV75 and opens 2CV77 or 79.	
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Cue:

Examiners Note:

Comments:

Terminating Cue	JPM COMPLETE			
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RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-c **Revision No.:** 01

Task Title: Depressurize RCS using Aux spray IAW EOP-LOCA-2

Task No.: N1150090501 **Source:**
010 PZR PCS Pressurizer Pressure Control Bank _____ New Mod _____
System: System

K/A Number / Description: A4.05 Ability to manually operate and/or monitor in the control room:
PZR Auxiliary Spray Valves

K/A Rating RO 3.2 SRO N/A

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes No _____

Estimated Time to Complete: 5 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: 2-EOP-LOCA-2

Reference(s): 2-EOP-LOCA-2

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- The reactor was tripped when a RCS leak occurred.
- All RCPs have been stopped
- 2PR1 is inoperable with 2PR6 isolated with power removed
- The operating crew has progressed through the EOP's and is now in 2-EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION

INITIATING CUE

- You are the Reactor Operator.
- The CRS directs you to depressurize the RCS to minimize subcooling IAW Step 20 of 2-EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION
- Notify the CRS when Step 20 is completed.
- Your evaluator will take care of all alarms not related to your task.

PSEG Nuclear LLC

Job Performance Measure

INITIATE BLEED AND FEED USING REACTOR HEAD VENTS

JPM Number: 21-01 NRC Sim-d

Revision Number: 07

Date: 01/10/23

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>1/10/23</u>
Validated By:	<u>E. Gallagher</u> SME or Instructor	Date:	<u>1/10/23</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>1/19/23</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>1/19/23</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
06	7/26/22	Update to new JPM format, update to NUREG 1021 changes.
07	1/10/23	Incorporated NRC comment on pg. 10.

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-253 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is shutdown.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	AF0181A, 21 AFW pump trip	N/A	N/A	N/A	N/A	TRUE
02	AF0181B, 22 AFW pump trip	N/A	N/A	N/A	N/A	TRUE
03	AF0183, 23 AFW pump overspeed trip	N/A	N/A	N/A	N/A	TRUE
04	VL0298, 2PR2 fails to position	N/A	N/A	N/A	N/A	0%

1. Verify the following OVERRIDES / REMOTES:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition / Severity
01	AF20D, 21 AFW control power	N/A	N/A	N/A	N/A	OFF
02	AF25D, 22 AFW control power	N/A	N/A	N/A	N/A	OFF

2. These malfunctions will simulate a total loss of all feed water and reaching the Bleed and Feed criteria of 3 SGs < 20% WR levels IAW FRHS-1. **ALTERNATE PATH:** 2PR2 will fail to open requiring the use of Rx Head Vent valves.

SPECIAL INSTRUCTIONS

1. **ENSURE** four (4) Reactor Head Vent keys are provided to the evaluator.
2. Extra Instructor to respond to alarms.

INITIAL CONDITIONS

- Unit 2 was manually tripped at 90% power due to elevated main turbine vibrations IAW S2.OP-AB.TL-0001.
- An inadvertent feedwater isolation actuation occurred resulting in the loss of all main feedwater.
- Loss of all AFW flow occurred when all AFW pumps tripped.
- The crew has entered 2-EOP-FRHS-1 due to valid RED Path on Heat Sink CFST based on all SG NR levels < 9% and AFW flow < 22E4 lbm/hr.
- Plant conditions have continued to deteriorate and three (3) steam generator Wide Range levels are now less than 20%.
- MSPI AFW pump failed to start.
- The CRS is implementing the CAS action to Initiate Bleed and Feed.

INITIATING CUE

- You are the Reactor Operator.
- The CRS has directed you to Initiate Bleed and Feed starting at **Step 11** IAW 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.
- Your evaluator will respond to all alarms not related to your task.

TASK STANDARD:

The task is satisfactorily met when the applicant has actuated Safety Injection, opened one Pressurizer PORV, and opened 2RC40 - 43 RCS head vent valves IAW steps 11, 13, and 14 of 2-EOP-FRHS-1

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Provide candidate MARKED UP sheet of 2-EOP-FRHS-1.

Examiners Note: None

Comments:

C11-1		CAUTION Steps 11 thru 14 Must Be Performed Quickly in order to establish RCS Heat Removal by RCS Bleed and Feed.	Operator reads the Caution and continues on.	
11	*	Actuate Both trains of SI	Operator initiates SI on both Trains by inserting key and turning switch clockwise until the SI Operate bezel illuminates and the SI Reset bezel extinguishes.	

Cue:

Examiners Note: Operator only needs to initiate SI on one Train.

Comments:

12		Is centrifugal Charging Pump flow indicated on SI systems Charging flow meter	YES. Operator reports BIT flow is established by indication of flow on Charging flowmeter. (During validations flow was about 270 gpm)	
----	--	-------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------	--

Cue:

Examiners Note:

Comments:

12 Cont'd		Are all SI pumps Running	YES. Operator reports that both SI pumps are running by START PBs illuminated Red.	
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STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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Cue:

Examiners Note:

Comments:

13		Is power available to BOTH PZR PORV stop valves	Yes operator reports power is available to both Stop valves	
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Cue:

Examiners Note:

Comments:

13 Cont'd		Are ALL PZR PORV Stop Valves OPEN	Operator reports that both PZR PORV Stop Valves are OPEN as indicated by 2PR6 and 2PR7 OPEN bezels illuminated.	
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Cue:

Examiners Note:

Comments:

ALTERNATE PATH STARTS HERE

13 Cont'd	*	Open ALL PZR PORVs	Operator places both PZR PORVs in Manual and depresses OPEN PBs for 2PR1 and 2PR2. Operator reports that 2PR2 will NOT OPEN.	
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Cue:

Examiners Note: The PZR PORVS may be cycling during this time. The operator should determine that both PORVs are required to be fully open in Manual and maintained open and not credit auto operation.

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<u>Comments:</u>				
14		Are ALL PZR PORVs Open	NO. Operator reports that 2PR2 will NOT OPEN.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
14 Cont'd	*	Open 2RC40 Thru 2RC43 (Reactor Head Vents)	At the 2RP2 backpanel, Operator obtains keys and inserts key into each keyswitch one at a time and turns clockwise until the OPEN indicator illuminates.	
<p>Cue:</p> <p>Examiners Note: Lead Evaluator needs to provide the four (4) keys to the Operator.</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-d **Revision No.:** 07

Task Title: Initiate Bleed and Feed Using Reactor Head Vents

Task No.: 1150290501 **Source:**
Bank New _____ Mod _____

System: 002 Reactor Coolant System (SF4P)

K/A Number / Description: A2.04 Ability to (a) predict the impacts of the following on the Reactor Coolant System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Loss of heat sinks

K/A Rating RO 4.5 SRO 4.5

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes No _____

Estimated Time to Complete: 8 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: 2-EOP-FRHS-1

Reference(s): 2-EOP-FRHS-1

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Unit 2 was manually tripped at 90% power due to elevated main turbine vibrations IAW S2.OP-AB.TL-0001.
- An inadvertent feedwater isolation actuation occurred resulting in the loss of all main feedwater.
- Loss of all AFW flow occurred when all AFW pumps tripped.
- The crew has entered 2-EOP-FRHS-1 due to valid RED Path on Heat Sink CFST based on all SG NR levels < 9% and AFW flow < 22E4 lbm/hr.
- Plant conditions have continued to deteriorate and three (3) steam generator Wide Range levels are now less than 20%.
- MSPI AFW pump failed to start.
- The CRS is implementing the CAS action to Initiate Bleed and Feed.

INITIATING CUE

- You are the Reactor Operator.
- The CRS has directed you to Initiate Bleed and Feed starting at **Step 11** IAW 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.
- Your evaluator will respond to all alarms not related to your task.

PSEG Nuclear LLC

Job Performance Measure

Establish FW flow IAW EOP-FRHS 1 using a Condensate Pump

JPM Number: NRC SIM-e

Revision Number: 01

Date: 01/10/23

Developed By: R. Chan **Date:** 1/10/23
Instructor

Validated By: E. Gallagher **Date:** 1/10/23
SME or Instructor

Reviewed By: M. Winkelspecht **Date:** 1/19/23
Operations Representative

Approved By: M. Wadusky **Date:** 1/19/23
Training Department (Print/Sign)

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	8/19/22	New JPM
01	1/10/23	Incorporated NRC comments, Added examiners note on pg. 9 and modified estimated JPM time to 15 minutes on pg. 12.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- EG 1. Task description and number, JPM description and number are identified.
- EG 2. Knowledge and Abilities (K/A) references are included.
- EG 3. Performance location specified. (in-plant, control room, or simulator)
- EG 4. Initial setup conditions are identified.
- EG 5. Initiating and terminating cues are properly identified.
- EG 6. Task standards identified and verified by SME review.
- EG 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*)
- EG 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure(s) 2-EOP-FRHS-1 rev 42 Date Checked: 11/21/22
- EG 9. Pilot test the JPM:
 - a. Verify cues both verbal and visual are free of conflict, and
 - b. Ensure performance time is accurate.
- NA 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- NA 11. When JPM is revalidated, SME or instructor sign and date JPM cover page

Ed Gallagher 11/21/22
SME/Instructor Date

SME/Instructor Date

SME/Instructor Date

SIMULATOR SETUP INSTUCTIONS

1. IC-254

Malfunctions

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
BF0105A	21 STM Gen Feed Pump trip	N/A	N/A	N/A	N/A	TRUE
BF0105A	22 STM Gen Feed Pump trip	N/A	N/A	N/A	N/A	TRUE
AF0183 AF0181A &B	21-23 AFW pump trips	N/A	N/A	N/A	N/A	TRUE

Remotes

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
BF01A through BF08A	21 through 24 BF19s and 40s	N/A	-1	30s	RT-1 through 8	100

SPECIAL INSTRUCTIONS

1. FRHS-1 EOP

INITIAL CONDITIONS

- Salem Unit 2 is in Mode 3.
- No SGFP's or AFW pumps are available.
- Actions are being implemented IAW 2-EOP-FRHS-1.
- The crew has completed actions through step 7.1

INITIATING CUE

- CRS directs you to continue performing actions of 2-EOP-FRHS-1 at Note 7-2

TASK STANDARD:

The task is satisfactorily met when the applicant has selected and depressurized a steam generator using the steam dumps IAW step 7.3 and 7.4 of 2-EOP-FRHS-1, established flow with a condensate pump and places steam dumps in auto to stabilize pressure less than 575 psig, IAW continuous action step 7.2 of 2-EOP-FRHS-1.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

*** Denotes critical steps**

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
Note 7-2		21 AND 23 SGS SHOULD BE STEAMED LAST TO MAXIMIZE AVAILABILITY OF A STEAM SUPPLY FOR 23 AFW PP	Candidate should pick 22 or 24 to depressurize	

Cue:

Examiners Note:

Comments:

Note 7-3		THE FOLLOWING STEPS MAY RESULT IN A LOW STEAMLIN DIFF PRESS SI	Acknowledge note	
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Cue:

Examiners Note:

Comments:

7.2		WHEN SELECTED SG PRESSURE IS LESS THAN 575 PSIG AND SELECTED SG WIDE RANGE LEVEL IS RISING. THEN STABILIZE SELECTED SG IS LESS THAN 575 PSIG.	Reads CAS	
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
7.2 Contd		SELECT ONLY ONE SG FOR DEPRESSURIZATION TO LESS THAN 575 PSIG	Chooses 22 or 24	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
7.3		ARE CONDENSER STEAM DUMPS AVAILABLE	Should answer yes path	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
7.3 contd	*	ACTUATE MAIN STEAM ISOLATION FOR ALL LOOPS EXCEPT SELECTED SG	Actuate MSLI for 21&23 and 22or 24 MS Lines	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
7.3 contd	*	PLACE STEAM DUMPS IN MANUAL		
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
7.3 contd		ADJUST STEAM PRESSURE VALVE DEMAND TO 0%		
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
7.3 contd	*	PLACE STEAM DUMPS IN MS PRESS CONTROL		
<p>Cue:</p> <p>Examiners Note: Should be at 0 valve demand for MS pressure control</p> <p><u>Comments:</u></p>				
7.4	*	WHEN RCS TAVG LOW LOW IS REACHED THEN DEPRESS BYPASS TAVG PUSHBUTTON	Bypasses if/when reqd	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
7.4 contd	*	ADJUST STEAM PRESSURE VALVE DEMAND TO ESTABLISH MAX RATE	Adjusts to at least 25%	
<p>Cue:</p> <p>Examiners Note: The PO could adjust the steam dump demand to above 25% until Tavg lowers to less than 543 F (P-12) and steam dumps close, then after Tavg is Bypassed, only the Group 1 cooldown dump valves will be available which will limit the depressurization rate to less than 25% steam dump demand.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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7.4 contd	*	SEND OPERATOR TO OPEN SELECTED BF40 Main Feed Bypass Valve	Dispatches operator	
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Cue: when asked tell candidates operator being dispatched

Examiners Note: Insert RT for valve selected

Comments:

7.4 contd	*	OPEN SELECTED BF13 Feed Water Isolation Valve	Opens BF13 Feed Water Isolation Valve	
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Cue:

Examiners Note:

Comments:

7.4 contd		Is selected BF13 Feed Water Isolation Valve OPEN	Will be yes but if they do not push button properly may dispatch operator if reqd.	
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Cue:

Examiners Note:

Comments:

7.4 contd		Release selected BF22 Feed Line Stop Check valve	Verifies open	
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Cue:

Examiners Note:

Comments:

7.4 contd		Open 21 and 22 CN48 Feed Pump Bypass valves	Opens valves	
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Cue:

Examiners Note:

Comments:

7.4 contd		Close 21&22CN32 Feed Pump Suction Valves	Performs this task	
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Cue:

Examiners Note:

Comments:

7.5	*	IS CONDENSATE FLOW ESTABLISHED TO ANY SG	When YES AND WR LEVEL IS RISING then Steam dumps should be placed in auto	
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Cue: Once Steam dumps in auto and WR level rising state JPM complete.

Examiners Note:

Comments:

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** NRC SIM-e **Revision No.:** 01

Task Title: Establish FW flow IN FRHS using Condensate pump

Task No.: N1150290501

System: Radiation Control

K/A Number / Description: 041 Ability to manually operate and/or monitor in the control room:
A4.02 Steam dump cooldown valves

K/A Rating RO 3.6 SRO 3.6

Task Applicability: SRO Only _____ RO/SRO X AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom _____ Simulator X In-Plant _____

Required Materials: EOP-FRHS-1

Reference(s): EOP-FRHS-1

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 2 is in Mode 3.
- No SGFP's or AFW pumps are available.
- Actions are being implemented IAW 2-EOP-FRHS-1.
- The crew has completed actions through step 7.1

INITIATING CUE

- CRS directs you to continue performing actions of 2-EOP-FRHS-1 at Note 7.2

PSEG Nuclear LLC

Job Performance Measure

Perform 22 CFCU surveillance test IAW S2.OP-ST.CBV-0003

JPM Number: 21-01 NRC Sim-f

Revision Number: 01

Date: 07/26/2022

Developed By:	<u>K. Hantho</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>Westlake/Militti</u> SME or Instructor	Date:	<u>8/19/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
01	07/26/22	Reformat JPM, update procedure rev and task standard after NUREG revision and validation performed comments incorporated.

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-255 and VERIFY the below events on the Instructor Station.**
 - Salem Unit 2 is at 100% power.
 - No major equipment are out of service and no Tech Specs are active.
 - The following malfunctions, overrides, and remotes were required to develop this IC.
1. Verify Malfunctions:

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	VL0570, 22SW223 fails to position	00:00:15	N/A	N/A	ET-1	89

2. Verify Overrides / Remotes:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition / Severity

3. Verify Event Triggers:

ET#	Description	Command
1	KAD06PBR, 22 CFCU low speed pushbutton	

SPECIAL INSTRUCTIONS

1. Provide operator marked up copy of S2.OP-ST.CBV-0003 for 22 CFCU.

INITIAL CONDITIONS

- Unit 2 is at 100% power.
- No major equipment out of service and no active Tech Specs are in effect.

INITIATING CUE

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a scheduled surveillance test on 22 CFCU IAW S2.OP-ST.CBV-0003, Containment Systems – Cooling Systems.
- All Prerequisites are completed SAT and all required M&TE are installed in the field.
- A field NEO is standing by to provide SW header differential pressure when directed.
- Notify CRS of test results.

TASK STANDARD:

This task is satisfactorily met when the applicant has placed the CFCU in the required test condition IAW step 4.1.2 of S2.OP-SO.CBV-0001, obtained the required test data, and determines 22 CFCU Test Result is UNSAT due to flow obtained being below the minimum flow for current delta P IAW S2.OP-ST.CBV-0003.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY
ATTACHMENT 2

S2.OP-ST.CBV-0003(Q)

22 CFCU DATA SHEET

1.0 Reason For Test

Date: <i>Today</i>	Post-Maintenance Operability Retest?	Yes	No <input checked="" type="checkbox"/>
	SAP Order Number(s): <i>72650412</i>		

2.0 Calibration Data

Instrument/Test Equipment Description	Calibration Due Date	ID Number	Initials
2FA5495 22 CFCU Outlet Water Flow Indicator	<i>6-22-23</i>	<i>27843</i>	<i>JP</i>
Model HQS-2 Sensor Module 0- <u>200</u> psi	<i>8-14-23</i>	<i>61579</i>	<i>JP</i>
Model HQS-2 Sensor Module 0- <u>200</u> psi	<i>8-14-23</i>	<i>61764</i>	<i>JP</i>
Model PTE-1 Hand Held Heise Pressure Calibrator Gauge	<i>9-22-23</i>	<i>62134</i>	<i>JP</i>

3.0 22 CFCU Performance Data

Component	Test Data		Acceptance Criteria	Test Results	
				SAT	UNSAT
22 CFCU	Start Time		22 CFCU operated for at least 15 minutes in LOW SPEED at \geq 1465 gpm.	<i>X</i>	
	Stop Time				
22SW58	Cooling Water Flow Rate	<i>1785</i>			
22SW72					
22SW223					
21 SW HDR Δ P (78' IPA - 21 SW Piping Room)	<i>106</i>	Cooling Water Flow Rate is \geq the Minimum Flow Rate obtained in Exhibit 1 for Δ P specified.		<i>X</i>	
Minimum Flow Rate (Exhibit 1)	<i>1811</i>				

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
3.0		<p>PRECAUTIONS AND LIMITATIONS</p> <p>3.4 After recording Differential Pressure (DP) reading, select corresponding minimum flow value specified in Exhibit 1.</p> <ul style="list-style-type: none"> • IF measured DP value is between DP values specified in Exhibit 1, THEN select minimum flow value for next higher DP value listed (e.g., if measured DP is 101 psid, use minimum flow required at 105 psid). 	<p>Operator reads and initials all P&Ls.</p> <p>Evaluator's Note: Understanding P&L 3.4 is important to properly determining which DP value to choose from Exhibit 1.</p>	

Cue: Provide candidate MARKED UP surveillance procedure S2.OP-ST.CBV-0003.

Examiners Note:

Comments:

4.0		EQUIPMENT/MATERIAL REQUIRED		
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Cue: Completed SAT by I&C Technicians.

Examiners Note:

Comments:

5.1		CFCU Operability and Service Water Flow Verification		
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.1		PERFORM test on each Containment Fan Coil Unit required to be tested IAW the following instructions:		
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
5.1.1.A		ENSURE CFCU being tested is in LOW SPEED IAW S2.OP-SO.CBV-0001(Q), Containment Ventilation Operation.	Operator places CFCU in LOW SPEED IAW S2.OP-SO.CBV-0001. Operator GOES TO S2.OP-SO.CBV-0001	
<p>Cue:</p> <p>Examiners Note: These next steps are from S2.OP-SO.CBV-0001, Containment Ventilation Operation.</p> <p><u>Comments:</u></p>				
5.1.2.A	*	IF shifting CFCU(s) from High Speed to Low Speed, THEN for each CFCU to be shifted: PRESS FAN HIGH SPEED STOP bezel.	Operator depresses HIGH SPEED STOP bezel for 22 CFCU and verifies STOP bezel illuminates.	
<p>Cue:</p> <p>Examiners Note: Steps 5.1.2B and 5.1.2C should be coordinated for 25 second delay prior to energizing slow speed windings.</p> <p><u>Comments:</u></p>				
5.1.2.B	*	ENSURE FAN STOP bezel is illuminated.	Operator verifies HIGH SPEED STOP bezel is illuminated.	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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Cue:

Examiners Note:

Comments:

5.1.2.C



When 25 seconds have elapsed from pressing HIGH SPEED STOP bezel, **PRESS** FAN LOW SPEED START bezel.

Operator waits 25 seconds from when HIGH SPEED STOP bezel was depressed.

Operator depresses LOW SPEED START bezel for 22 CFCU and verifies START bezel illuminates.

Cue:

Examiners Note:

Simulator Operator: ENSURE **ET-1** is TRUE when low speed start pushbutton is depressed. This will insert MALF: VL0570, 22SW223 fails to position set at 89.

Comments:

5.1.2.D

ENSURE following dampers are in indicated positions:

- ROUGH FLTR DAMPER CLOSED
- HEPA INLET DAMPER OPEN
- HEPA OUTLET DAMPER OPEN

Operator verifies the following for 22 CFCU:

- ROUGH FLT DAMPER CLOSED bezel extinguished.
- HEPA INLET DAMPER OPEN bezel illuminated.
- HEPA OUTLET DAMPER OPEN bezel illuminated.

Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.2.E		<p><u>IF</u> Service Water flow is less than 1465 gm, <u>THEN</u>:</p> <ol style="list-style-type: none"> 1. STOP the CFCU 2. REFER to S2.OP-SO.SW-0005, SW System Operability Guidelines 	Operator determines that SW flow is > 1465 gpm and marks step N/A and continues on.	

Cue:

Examiners Note:

Comments:

5.1.2.F		ENSURE Service Water flow greater than or equal to 1465 gpm.	Operator verifies that SW flow is > 1465 gpm.	
---------	--	---------------------------------------------------------------------	-----------------------------------------------	--

Cue:

Examiners Note: **Operator returns to S2.OP-ST.CBV-0003**

Comments:

5.1.1.B		RECORD Start Time in applicable Attachment(s), Section 3.0, for CFCU being tested.	Operator records START time.	
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
ALTERNATE PATH STARTS HERE				
4.1.11.3	*	<p>WHEN at least 15 minutes has elapsed, THEN RECORD the following in applicable Attachment, Section 3.0, for CFCU being tested:</p> <ul style="list-style-type: none"> • Stop Time • Cooling Water Flow Rate (gpm) • IF testing 21 OR 22 CFCU, THEN RECORD 21 SW HDR DP. • IF testing 23 CFCU, THEN RECORD both 21 SW HDR DP <u>AND</u> 22 SW HDR DP (Refer to Step 3.5). • IF testing 24 <u>OR</u> 25 CFCU, THEN RECORD 22 SW HDR DP. <p>RECORD Test Results by initialing the SAT OR UNSAT column IAW Acceptance Criteria stated in the attachment.</p>	<p>Operator records STOP time.</p> <p>Operator records SW flow on 22 CFCU (1785 +/- 5 gpm)</p> <p>Operator contacts field NEO and Records SW header DP of 106 psi</p> <p>Operator determines that 23, 24, and 25 CFCUs are not being tested.</p> <p>Operator records Test Results as <u>UNSAT</u>. 22 CFCU is Inoperable based on Cooling Water Flow Rate is less than the Minimum Flow Rate (1811 gpm) required in Exhibit 1 selecting a SW DP of 110 psi (refer to P&L 3.4).</p> <p>P&L 3.3 requires CFCU SW flow rate \geq 1465 gpm AND \geq Min Flow Rate specified in Exhibit 1 to be Operable.</p> <p>See Answer Key for completed Attachment 2, Section 3.0</p>	
<p>Cue #1: Inform operator that 15 minutes have elapsed.</p> <p>Cue #2: When field operator is contacted; <u>report 21 SW Header DP is reading 106 psi.</u></p> <p>Examiners Note:</p> <p>Terminate the JPM when the operator Records Test Results as SAT or UNSAT.</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-f **Revision No.:** 01

Task Title: Perform 22 CFCU Surveillance Test IAW S2.OP-ST.CBV-0003

Task No.: N0220130201 **Source:**
Bank New _____ Mod _____

System: 022 Containment Cooling System (SF5)

K/A Number / Description: A1.04 Ability to predict and/or monitor changes in parameters associated with operation of the Containment Cooling System, including: Cooling water flow

K/A Rating RO 3.3 SRO N/A

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: S2.OP-ST.CBV-0003

Reference(s): S2.OP-ST.CBV-0003 S2.OP-SO.CBV-0001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Unit 2 is at 100% power.
- No major equipment out of service and no active Tech Specs are in effect.

INITIATING CUE

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a scheduled surveillance test on 22 CFCU IAW S2.OP-ST.CBV-0003, Containment Systems – Cooling Systems.
- All Prerequisites are completed SAT and all required M&TE are installed in the field.
- A field NEO is standing by to provide SW header differential pressure when directed.
- Notify CRS of test results.

PSEG Nuclear LLC

Job Performance Measure

Respond to a failed high RCS T-avg channel IAW S2.OP-AB.ROD-0003

JPM Number: 21-01 NRC Sim-g

Revision Number: 00

Date: 10/12/22

Developed By:	<u>K. Hantho</u> Instructor	Date:	<u>10/12/22</u>
Validated By:	<u>Gallagher/Saulsbery</u> SME or Instructor	Date:	<u>11/21/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	10/12/22	New JPM

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

EG 1. Task description and number, JPM description and number are identified.

EG 2. Knowledge and Abilities (K/A) references are included.

EG 3. Performance location specified. (in-plant, control room, or simulator)

EG 4. Initial setup conditions are identified.

EG 5. Initiating and terminating cues are properly identified.

EG 6. Task standards identified and verified by SME review.

EG 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*)

EG 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:

Procedure(s) S2.OP-AB.ROD-0003 R23

Date Checked: 10/12/22

EG 9. Pilot test the JPM:

a. Verify cues both verbal and visual are free of conflict, and

b. Ensure performance time is accurate.

NA 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

NA 11. When JPM is revalidated, SME or instructor sign and date JPM cover page

Ed Gallagher
SME/Instructor

11-21-22
Date

SME/Instructor

Date

SME/Instructor

Date

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-256 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is at 100%.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
RC0014a	21 HOT LEG RTD AVG SUMMATOR FAILS	NA	NA	NA	RT-1	630

SPECIAL INSTRUCTIONS

1. None.

INITIAL CONDITIONS

- Salem unit 2 is at 100%
- No major equipment is out of service and no Tech Specs are active.

INITIATING CUE

- You are the Reactor Operator.
- Respond to all alarms and indications.
- Your evaluator will respond to all alarms not related to your task.

TASK STANDARD:

The task is satisfactorily met when the applicant has taken the Rod control system to manual IAW step 3.1 of S2.OP-AB.ROD-0003, restored Tavg IAW step 3.5 of S2.OP-AB.ROD-0003, stabilized PZR level and defeated the failed Tavg channel IAW step 3.10 thru 3.12 of S2.OP-AB.ROD-0003.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: Insert RT-1

Examiners Note: Operator recognizes unwarranted rod motion and takes rod control to manual

Comments:

N/A	*	Operator attempts to identify failure, and will take action to stop rod insertion if not evident immediately by verifying no runback in progress	Operator verifies no runback in progress and takes rods to manual.	
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Cue:

Examiners Note:

Comments:

3.1		Enter S2.OP-AB.ROD-0003 and Place the rod bank selector switch in Manual	Enters AB.ROD-3 and Places the Rod control bank selector switch in Manual.	
-----	--	--------------------------------------------------------------------------	----------------------------------------------------------------------------	--

Cue:

Examiners Note:

Comments:

3.2		Did rod motion stop	Operator states Yes and continues to step 3.4	
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Cue:

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
ALTERNATE PATH STARTS HERE				
3.4		MONITOR Tav _g for necessary adjustments until the cause of the transient is known and the Plant is stable.	Operator will initial and monitor T _{avg}	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.5	*	ADJUST Rods in manual to control Tav _g within 1.5°F of T _{avg} program. (Attachment 1, Tav _g Program VS % Reactor Power)	Operator will verify within 1.5 and continue or adjust to within 1.5 ° F by withdrawing rods and then move on.	
<p>Cue: If asked CRS directs you to restore Rods to ≤ 1 ° F</p> <p>Examiners Note: Tav_g may be within 1.5°F depending on how quickly rods were placed in manual.</p> <p><u>Comments:</u></p>				
3.6		Has a NIS channel Failed High?	Operator verbalizes and initials NO and goes to step 3.8	
<p>Cue :</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.8		STOP any dilution of the Reactor Coolant System.	Operator verifies makeup system Out of service and states no dilution in progress	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.9		Has a Tav _g channel failed high?	Answers Yes and goes to step 3.10	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.10		<p>RETURN Pressurizer level to program as follows: (Attachment 2, Pressurizer Level Program)</p> <p>___ A. PLACE the Charging System Master Flow Controller in MANUAL.</p> <p>___ B. ADJUST Charging System Master Flow Controller to restore Pressurizer level to program.</p>	Places Master flow controller or CV55 in manual and adjusts to restore level to program band	
<p>Cue:</p> <p>Examiners Note: The PZR level will remain at 59% as the control signal is capped at the 100% value</p> <p><u>Comments:</u></p>				
3.11	*	<p>SELECT DEVIATION DEFEAT for the affected LOOP at the following 2CC2 bezel section:</p> <ul style="list-style-type: none"> ◆ REACTOR COOLANT DIFFERENTIAL TEMPERATURES 	Selects deviation defeat on 2CC2 for channel 1 Differential temperature. and average temperature.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.11 cont.	*	<p>SELECT DEVIATION DEFEAT for the affected LOOP at the following 2CC2 bezel section:</p>	Selects deviation defeat on 2CC2 for channel 1 average temperature.	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
		♦ REACTOR COOLANT AVERAGE TEMPERATURES		
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.12	*	SELECT a valid Channel on the Recorder Select at the Control Console for the following: ♦ REACTOR COOLANT DIFFERENTIAL TEMPERATURES	Selects recorder to Channel 2, 3 or 4 for Differential temperature.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.12 cont.	*	SELECT a valid Channel on the Recorder Select at the Control Console for the following: ♦ REACTOR COOLANT AVERAGE TEMPERATURES	Selects recorder to Channel 2, 3 or 4 for average temperature.	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.13		When pressurizer level has been restored to program, RETURN the Charging System Master Flow Controller in AUTO.	Verifies level is at program and returns charging master flow controller to Auto	

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<p>Cue: If desired, may walkthrough remaining steps or provide cue that level has been returned to program</p> <p>Examiners Note: depending on level error this step may take a while to restore</p> <p><u>Comments:</u></p>				
3.14		Are control rods above Rod Insertion Limits?	Verifies Rods are above insertion limits	
<p>Cue:</p> <p>Examiners Note:</p> <p><u>Comments:</u></p>				
3.16		IF manual rod control is NOT required, THEN PLACE the Rod Control System in automatic control.	Places rod control in Auto	
<p>Cue: CRS directs rods restored to auto control</p> <p>Examiners Note: May restore the rods to the all rods out position before returning to AUTO</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-g **Revision No.:** 00

Respond to a failed high RCS T-avg channel and defeat the failed channel IAW

Task Title: S2.OP-AB.ROD-0003

Task No.: N1150090501

Source:

Bank _____ New X Mod _____

System: 012 RPS Reactor Protection System

K/A Number / Description: A4.05 Ability to manually operate and/or monitor in the control room:
Channel defeat controls

K/A Rating RO 3.8 SRO N/A

Task Applicability: SRO Only _____ RO/SRO X AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 6 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance X

Location: Classroom _____ Simulator X In-Plant _____ RCA _____

Required Materials: S2.OP-AB.ROD-0003

Reference(s): S2.OP-AB.ROD-0003

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem unit 2 is at 100%
- No major equipment is out of service and no Tech Specs are active.

INITIATING CUE

- You are the Reactor Operator.
- Respond to all alarms and indications.
- Your evaluator will respond to all alarms not related to your task.

PSEG Nuclear LLC

Job Performance Measure

PERFORM A CONTAINMENT PRESSURE RELIEF

JPM Number: 21-01 NRC Sim-h

Revision Number: 00

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>M. Wilcox / J. DeLisle</u> SME or Instructor	Date:	<u>1/9/23</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>1/19/23</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u> </u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Converted to new JPM template.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE

All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

EG 1. Task description and number, JPM description and number are identified.

EG 2. Knowledge and Abilities (K/A) references are included.

EG 3. Performance location specified. (in-plant, control room, or simulator)

EG 4. Initial setup conditions are identified.

EG 5. Initiating and terminating cues are properly identified.

EG 6. Task standards identified and verified by SME review.

EG 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*)

EG 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:

Procedure(s) S2.OP-SO.CBV-0002 Rev. 18
S2.OP-AB.RAD-0001 Rev. 30
S2.OP-AR.ZZ-0001 Rev. 60

Date Checked: 1/05/23

EG 9. Pilot test the JPM:

- a. Verify cues both verbal and visual are free of conflict, and
- b. Ensure performance time is accurate.

EG 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

EG 11. When JPM is revalidated, SME or instructor sign and date JPM cover page

Ed Gallagher
SME/Instructor

01-09-23
Date

SME/Instructor

Date

SME/Instructor

Date

SIMULATOR SETUP INSTUCTIONS

- **RESET simulator to IC-257 and VERIFY the below events on the Instructor Station.**
- Salem Unit 2 is at 100% power.
- No major equipment are out of service and no Tech Specs are active.
- The following malfunctions, overrides, and remotes were required to develop this IC.

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Final Value
01	VL0282 2VC6 fails to position(0-100%)	N/A	N/A	N/A	ET-1	100
02	VL0283 2VC5 fails to position(0-100%)	N/A	N/A	N/A	ET-1	100
03	RM0203C Process Rad mon 2R41A fails anywhere	20 sec	Current	1 minute	ET-3	300
04	VL0284 2CBV36 fails to position(0-100%)	5 sec	N/A	N/A	ET-3	100
05	RC0002 RCS LEAK INTO CONTAINMENT	N/A	N/A	N/A	ET-3	2
06	RM0209C PROCESS RAD MON 2R31 FAILS ANY	N/A	N/A	N/A		1.00E+7

REM	Description	Delay	Init Val	Ramp	Trigger	Final
01	RC07A RCS Activity Factor	N/A	N/A	N/A	N/A	20

OVR	Description	Assigned value
01	AB14 A1 LO	ON

ET #	Description	Assigned malfunction
1	KAB13PNR//2VC6 CNTMNT pressure vacuum reli	VL0282
2	KAB14PNR//2VC5 CNTMNT pressure vacuum reli	VL0283
3	KAB14ANR//CNTMNT pressure relief damper open	RM0203C
4	KAB13TCR//2VC6 CNTMNT pressure vacuum reli Optional command DMF VL0282	DMF VL0282
5	KAB14TCR//2VC5 CNTMNT pressure vacuum reli optional command DMF VL0283	DMF VL0283
6	KAB14DCR//CNTMT pressure relief damp clos	DMF VL0284
7	KAB14DCR//CNTMT pressure relief damp clos	DOR QAB14ARR

SPECIAL INSTRUCTIONS

1. S2.OP-SO.CBV-0002 is MARKED UP in the simulator book with all sections completed up to section 5.2.

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- Preparations to perform a containment pressure relief per Section 5.1 of S2.OP-SO.CBV-0002, Containment Pressure – Vacuum Relief System Operation, are complete.

INITIATING CUE

The CRS directs you to perform a containment pressure relief per Section 5.2 of S2.OP-SO.CBV-0002.

TASK STANDARD:

The task is satisfactorily met when the applicant has placed containment pressure relief in service per step 5.2.3.B of S2.OP-SO.CBV-0002, and upon a high radiation alarm, manually closes 2VC5 and 2VC6 valves to isolate the radiological release from containment per step 5.2.5 of S2.OP-SO.CBV-0002 OR per Attachment 1 of S2.OP-AB.RAD-0001.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: MARKED UP copy of S2.OP-SO.CBV-0002 using the controlled copy in the simulator.

Examiners Note: None.

Comments: N/A

5.2.2		RECORD the following Release Data on Attachment 2, Section 1.0: <ul style="list-style-type: none"> ◆ Pressure Relief Start ◆ Initial Containment Pressure ◆ Initial reading on available radiation monitors 2R41D (preferred) and 2R12A 	Operator records the required data.	
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Cue: None.

Examiners Note: None

Comments:

5.2.3.A		INITIATE Containment Relief as follows: MONITOR available radiation monitors 2R41D (preferred) and 2R12A.	Operator can setup a trend using the Plant Computer OR monitor the Radiation Monitors on 2RP1.	
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Cue: None.

Examiners Note: 2R12A and 2R41D are located on 2RP1 Panel.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.3.B	*	IF Containment pressure is <0.5 psig, THEN: 1. OPEN 2VC6, ISOL VLV 2. OPEN 2VC5, ISOL VLV 3. OPEN PRESSURE RELIEF DAMPER	Operator confirms containment pressure is less than 0.5 psig by reading the containment pressure indicators on 2CC1. Operator depresses the OPEN bezels for 2VC6, 2VC5, and the PRESSURE RELIEF DAMPER on 2CC1 and verifies the Red OPEN bezels are LIT.	

Cue: None

Examiners Note: None

Comments:

5.2.3.C		Step is N/A	Pressure is <0.5	
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Cue: None.

Examiners Note: None

Comments:

5.2.4		RECORD time 2VC5 and 2VC6 are OPENED in Control Room Narrative Log IAW OP-SA-470-1001, CYCLIC Data Monitoring Program.		
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Cue: The extra NCO will record the open time for 2VC5 and 2VC6.

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
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ALTERNATE PATH STARTS HERE

Cue: SIMULATOR OPERATOR ensure ET-3 is true and MALF 03 RM0203C is ramping in.

This will cause the 2R41D Rad Monitor channel to go into Alarm, actuate OHA A-6 RMS HI RAD OR TRBL, previous malfunctions have been enabled to prevent the automatic closures of the pressure relief dampers, 2VC5 and 2VC6 valves on a high radiation alarm.

Examiners Note: The candidate may take the action per step 5.2.5 of S2.OP-SO.CBV-0002, **OR** refer to the OHA A-6 and then take the actions per S2.OP-AB.RAD-0001, Abnormal Radiation, to manually close the dampers per Attachment 1 step 10, both paths are acceptable.

Comments:

ACTIONS PER S2.OP-SO.CBV-0002

5.2.5	*	When Containment pressure decreases to required value: A. CLOSE PRESSURE RELIEF DAMPER B. CLOSE 2VC6, ISOL VLV C. CLOSE 2VC5, ISOL VLV	Operator depresses the CLOSE bezel pushbuttons for PRESSURE RELIEF DAMPER, 2VC6, and 2VC5 and verifies the Green bezel is LIT.	
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Cue: None

Examiners Note: The candidate is required to close 2VC5 and 2VC6 to satisfy the Task Standard.

Comments:

ACTIONS PER S2.OP-AB.RAD-0001

3.1		DETERMINE affected Radiation monitor.	Operator determines 2R41D is the affected monitor	
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Cue: None

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
3.2		Is the alarm, warning, or rising indication valid? (EVALUATE the following): <ul style="list-style-type: none"> ◆ Chemistry Sampling ◆ Rising activity on related Radiation Monitors ◆ Maintenance activities in vicinity of radiation detector ◆ Transfer of radioactive resins or other materials in affected area ◆ No indication of failure or fault on affected Radiation Monitor ◆ Radioactive release from Salem or Hope Creek 	Operator determines the alarm is VALID.	
<p>Cue: IF operator questions if alarm is VALID or Not, THEN state: CRS directs continuing with procedure since Rad Monitor does not appear to be failed.</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
3.3		ANNOUNCE the following on Plant PA system: <ul style="list-style-type: none"> ◆ Affected Radiation Monitor number and name ◆ Location of Radiation Monitor area with elevated indication 	Operator makes page announcement	
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
3.4		IF a release to the environment is in progress, THEN DIRECT Shift Radiation Protection Technician to complete and provide Page 2 of the Station Status Checklist (SSCL) for release rate determination.	Operator notifies Rad Pro of actions.	

Cue: CRS will direct Radiation Protection to perform Station Status Checklist.

Examiners Note: None

Comments:

3.5		NOTIFY SM/CRS to REFER TO Event Classification Guide, ODCM and Technical Specifications.	Notifies CRS of required actions.	
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Cue: CRS will refer to ECG, Tech Specs, and ODCM.

Examiners Note: None

Comments:

3.6		INITIATE the applicable attachment for affected Radiation Monitor:	Operator initiates Attachment 1 Step 10 based on 2R41D in alarm.	
-----	--	---------------------------------------------------------------------------	------------------------------------------------------------------	--

Cue: None.

Examiners Note: None

Comments:

10.0		IF 2R41D, Plant Vent Release Rate is the affected monitor, <u>THEN:</u>		
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Cue: None

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
10.1	*	ENSURE 2VC1, 2VC4, 2VC5 <u>AND</u> 2VC6 are CLOSED.	Operator depresses the CLOSE bezel pushbuttons for 2VC5 and 2VC6 and verifies Green bezel is LIT.	
<p>Cue: None</p> <p>Examiners Note: Only 2VC5 and 2VC6 are required to be CLOSED to satisfy the Task Standard.</p> <p><u>Comments:</u></p>				
Terminating Cue		JPM COMPLETE		

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC Sim-h **Revision No.:** 00

Task Title: Perform a Containment Pressure Relief

Task No.: N0220080101 **Source:**
Bank _____ New Mod _____

System: 029 Containment Purge System (SF8)

K/A Number / Description: A2.02 Ability to (a) predict the impacts of the following on the Containment Purge System and (b) based on those predictions,, use procedures to correct, control, or mitigate the consequences of those abnormal operations: Adverse environmental conditions affecting radioactive release

K/A Rating RO 3.0 SRO 3.0

Task Applicability: SRO Only _____ RO/SRO AO/RO/SRO _____ Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes No _____

Estimated Time to Complete: 10 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance _____ Actual Performance

Location: Classroom _____ Simulator In-Plant _____ RCA _____

Required Materials: S2.OP-SO.CBV-0002

Reference(s): S2.OP-SO.CBV-0002 S2.OP-AB.RAD-0001 S2.OP-AR.ZZ-0001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 2 is at 100% power
- Preparations to perform a containment pressure relief per Section 5.1 of S2.OP-SO.CBV-0002, Containment Pressure – Vacuum Relief System Operation, are complete.

INITIATING CUE

- The CRS directs you to perform a containment pressure relief per Section 5.2 of S2.OP-SO.CBV-0002.

PSEG Nuclear LLC

Job Performance Measure

Start the SBO Air Compressor IAW AB.LOOP-1

JPM Number: 21-01 NRC IP-i

Revision Number: 1

Date: 10/14/2022

Developed By:	<u>K. Hantho</u> Instructor	Date:	<u>10/14/22</u>
Validated By:	<u>N/A (see revision comment)</u> SME or Instructor	Date:	<u>11/28/22</u>
Reviewed By:	<u>M. Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>M. Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
01	11/28/22	Converted to new JPM template. No validation required since previously used during annual exams and procedure has not changed since last use.

SIMULATOR SETUP INSTUCTIONS

1. None, this is an In-plant JPM.

SPECIAL INSTRUCTIONS

- **This JPM is NOT located inside the RCA.**
- **Need L-3 key to unlock SBO Compressor Building**

INITIAL CONDITIONS

- Both Salem Units have tripped due to a loss of off-site power. Equipment problems have resulted in NO Emergency Control Air Compressors (ECACs) running.

INITIATING CUE

- The Unit 2 CRS has directed you to start the Station Blackout Compressor (SBO) IAW SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor, starting with Step 5.1.3.
- The Component Off Normal and Off Normal Tagged review has been performed SAT.
- It is **NOT** the summer operating period.
- The inspection covers have already been removed, Step 5.1.1 was performed SAT, and the inspection covers replaced IAW Step 5.1.2

TASK STANDARD:

The task is satisfactorily met when the applicant starts the SBO Diesel Control Air Compressor IAW step 5.1.10 of SC.OP-SO.CA-0001, aligns the discharge to the air headers IAW steps 5.1.13 thru 5.1.15 of SC.OP-SO.CA-0001, and loads the compressor IAW step 5.1.16 of SC.OP-SO.CA-0001.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue: READ TO APPLICANT: No plant controls or equipment are to be operated during the performance of this JPM. All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator.

Examiners Note: The candidate may wish to review all P&Ls prior to start.

Comments: N/A

N/A		Provide marked up copy of the SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor with Prerequisites signed off. Additionally, Step 5.1.1 for removing Inspection Covers will be previously completed, as will Step 5.1.2 to re-install inspection covers.	Operator reviews and signs Precautions and Limitations. Operator <u>must</u> address obtaining hearing protection per P&L 3.1 All other P&Ls require no action other than reading and initialing with the exception of P&L 3.10 is verified at the SBO.	N/A
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Cue:

Examiners Note: None

Comments:

5.1.3		OPEN both Engine intake louvers (located outside building on west wall.)	Locates louvers and demonstrates how to open.	
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Cue: After locating and describing how to open Engine intake louvers, state that the Engine intake louvers are open.

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.4		OPEN 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, to drain any water accumulation, then CLOSE 1CA1920.	Since the cue would be the same whether or not the drain cap was removed (nothing came out the end of pipe) only comment here for review if pipe cap was not removed.	

Cue: After locating 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, and describing how to open, including that the drain cap must be removed, state 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, has been cycled and no water came out of pipe.

Examiners Note: None

Comments:

5.1.5		OPEN 2FZSBO10, BATTERY CHARGER, breaker.	Locates 2FZSBO10, BATTERY CHARGER, and simulates opening.	
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Cue: 2FZSBO10, BATTERY CHARGER, breaker, is open.

Examiners Note: breaker in Panel 2FZSBO, SBO Compressor Bldg Distribution Panel

Comments:

5.1.6		PLACE SBO Control Air Dryer switch in ON position.	Locates SBO Control Air Dryer switch and simulates turning switch to ON position.	
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Cue: SBO Control Air Dryer switch is ON, and Control Air On light is illuminated.

Examiners Note:

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.7		RECORD Engine Hourmeter reading on Attachment 1, Section 1.0, and in log book at SBO compressor.	Locates Engine Hourmeter, 1XA16993, Tachometer/Hourmeter, inside engine control panel labeled Compressor Noise Emission Control Information, and records current reading in Section 1.0 of Att. 1. Locates logbook hanging from side of panel 2FZSBO, SBO Compressor Bldg Distribution Panel, and identifies where Engine Hourmeter should be logged.	

Cue:

Examiners Note:

Comments:

5.1.8		PLACE UNLOADER VALVE selector switch in START position.	Locates UNLOADER VALVE selector switch, and ensures switch in START position.	
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Cue: None

Examiners Note: UNLOADER VALVE selector switch is normally in Start when engine is shutdown.

Comments:

5.1.9	*	PRESS AND HOLD BY-PASS VALVE pushbutton.	Locates BY-PASS VALVE pushbutton in control panel, and simulates depressing AND holding depressed.	
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Cue: None

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.10	*	PLACE SBO-IGN-SWT, ENGINE IGNITION SWITCH in START position until engine starts, then RELEASE to RUN position.	<p>While keeping the Bypass Valve pushbutton depressed, simulates placing the SBO-IGN-SWT SBO Air Comp Inst Pnl Engine Ignition Switch in START.</p> <p>After cue is given, releases SBO-IGN-SWT SBO Air Comp Inst Pnl Engine Ignition Switch to RUN.</p>	

Cue: Engine has started.

Examiners Note: If also releases the BYPASS VALVE pushbutton at this point, without checking oil pressure >15 psig, then CUE that the engine has stopped.

Comments:

5.1.11	*	When engine oil pressure is >15 psig, RELEASE BY-PASS VALVE pushbutton.	<p>Identifies oil pressure reading on gauge labeled" oil pressure" gauge inside control panel.</p> <p>After cue releases BY-PASS VALVE pushbutton.</p>	
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Cue: Oil pressure is 40 psig.

Examiners Note: None

Comments:

5.1.12		ALLOW engine to run for 5 minutes to warm up.		N/A
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Cue: 5 minutes has elapsed.

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.13	*	OPEN 1CA1913 SBO COMPRESSOR DISCHARGE VALVE, to pressurize Control Air header.	Locates and describes opening 1CA1913 SBO COMPRESSOR DISCHARGE VALVE.	
<p>Cue: 1CA1913, SBO COMPRESSOR DISCHARGE VALVE, is open.</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
5.1.14	*	OPEN 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION.	Locates and describes opening 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION.	
<p>Cue: 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION is open.</p> <p>Examiners Note: 1CA1886 is located near the entrance to Service Building on right side past the U2 mixing bottle.</p> <p><u>Comments:</u></p>				
5.1.15	*	OPEN 2CA584, YARD CONTROL AIR SUPPLY VALVE, to pressurize Aux. Building 1A and 2A Control Air headers.	Locates and describes opening 2CA584, YARD CONTROL AIR SUPPLY VALVE.	
<p>Cue: 2CA584, YARD CONTROL AIR SUPPLY VALVE is open.</p> <p>Examiners Note: 2CA584 is located near the entrance to Service Building on right side past the U2 mixing bottle.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.1.16	*	PLACE UNLOADER VALVE selector switch in RUN position.	Returns to SBO Compressor Building and points out UNLOADER VALVE selector switch and describes placing it in RUN position.	
<p>Cue:</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC IP-i **Revision No.:** 1

Task Title: Start the SBO Air Compressor IAW AB.LOOP-1

Task No.: N1150140501 **Source:**
Bank New _____ Mod _____

System: 056 Loss of Offsite Power

K/A Number / Description: AA 1.37 Ability to operate and/or monitor the following as they apply to Loss of Offsite Power: Instrument Air

K/A Rating RO 3.4 SRO N/A

Task Applicability: SRO Only _____ RO/SRO _____ AO/RO/SRO Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance Actual Performance _____

Location: Classroom _____ Simulator _____ In-Plant RCA _____

Required Materials: SC.OP-SO.CA-0001

Reference(s): SC.OP-SO.CA-0001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Both Salem Units have tripped due to a loss of off-site power. Equipment problems have resulted in NO Emergency Control Air Compressors (ECACs) running.

INITIATING CUE

- The Unit 2 CRS has directed you to start the Station Blackout Compressor (SBO) IAW SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor, starting with Step 5.1.3.
- The Component Off Normal and Off Normal Tagged review has been performed SAT.
- It is **NOT** the summer operating period.
- The inspection covers have already been removed, Step 5.1.1 was performed SAT, and the inspection covers replaced IAW Step 5.1.2

PSEG Nuclear LLC

Job Performance Measure

START UP AND PARALLEL A ROD DRIVE M-G SET

JPM Number: 21-01 NRC IP-j

Revision Number: 0

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>Shetrone/Militti/Westlake</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Converted to new JPM template.

SIMULATOR SETUP INSTUCTIONS

1. None, this is an In-plant JPM.

SPECIAL INSTRUCTIONS

1. Marked up copies of S1.OP-SO.RCS-0001.
2. This JPM is located in the 84 ft. Unit 1 Switchgear Room (No RCA entry).

INITIAL CONDITIONS

- Salem Unit 1 is at 75% power.
- 12 Rod Drive M-G set is in service.
- 11 Rod Drive M-G Set tripped 3 days ago.
- Maintenance has completed repairs and is requesting 11 M-G set be placed in service.

INITIATING CUE

The CRS directs you to place 11 Rod Drive M-G set in service and parallel with 12 M-G set using section 4.4 of S1.OP-SO.RCS-0001, Rod Control System Operation.

TASK STANDARD:

The task is satisfactorily met when the applicant has started and paralleled 11 Rod Drive M-G set IAW S1.OP-SO-RCS-0001 section 4.4.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

ANSWER KEY (optional):

[Page Left Intentionally Blank]

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue #1: Provide candidate MARKED UP copy of S1.OP-SO-RCS-0001.

Cue #2: READ TO APPLICANT: No plant controls or equipment are to be operated during the performance of this JPM. All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator.

Examiners Note: The candidate may wish to review all P&Ls prior to start.

Comments: N/A

4.4.1		<p>ENSURE the following:</p> <ol style="list-style-type: none"> 1. A <u>AND</u> B REACTOR TRIP BREAKERS are CLOSED. 2. Running Rod Drive Motor Generator Set GENERATOR LINE VOLTS is 260V (247V - 273V) AND GENERATOR LINE AMPS is ~80 DC AMPS. 	<p>Operator locates A AND B REACTOR TRIP BREAKERS and verifies the CLOSED indicator on each breaker.</p> <p>Operator locates 12 Rod Drive Motor Generator Set GENERATOR LINE VOLT AND GENERATOR LINE AMPS meters and check readings.</p>	
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Cue #1: A and B Reactor Trip Breakers indicate CLOSED.

Cue #2: 12 M-G set volts is reading 260V and Generator Line Amps is 80 DC amps.

Examiners Note: 11 and 12 Rod Drive M-G sets are located in the 84 ft. Switchgear Room.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.2		ALIGN MG Set Controls for MG Set to be started IAW Attachment 1.	Operator aligns M-G set controls per Attachment 1.	

Cue:

Cue the following for each component alignment when performed:

- Voltmeter selector switch is on 'A-B' position
- Voltage adjust is in 'Vertical' position
- Ammeter selector switch is in 'A' position
- Motor Breaker Control Switch target is 'GREEN'
- Motor Breaker is 'OPEN'.
- Synchronize switch is in 'OFF' position
- Generator Breaker Control Switch target is 'GREEN'.
- Generator Breaker is 'OPEN'.

Examiners Note: None

Comments:

4.4.3	*	CLOSE MOTOR Breaker <u>AND ALLOW</u> at least 20 seconds for MG Set to reach rated speed.	Operator simulates closing 11 M-G set breaker by rotating the MOTOR Breaker switch to CLOSE.	
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Cue: 11 M-G set MOTOR Breaker is CLOSED.

Examiners Note: None

Comments:

4.4.4	*	PRESS AND HOLD GEN FIELD FLASH pushbutton <u>UNTIL</u> Generator voltage stops rising (GENERATOR LINE VOLTS should indicate ~260V).	Operator simulates pressing <u>and</u> holding the GEN FIELD FLASH pushbutton until Generator voltage stops rising.	
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Cue: Generator Lines Volts indicates 260 Volts

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.5		CHECK VOLTAGE ADJUST range of adjustment as follows:		
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.1		ADJUST VOLTAGE ADJUST full counterclockwise to LOW. (GENERATOR LINE VOLTS meter should indicate ~220V.)	Operator simulates adjusting VOLTAGE ADJUST full counterclockwise to LOW	
<p>Cue: Generator Line Volts is 220 volts</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.2		ADJUST VOLTAGE ADJUST full clockwise to HIGH. (GENERATOR LINE VOLTS meter should indicate ~300V)	Operator simulates adjusting VOLTAGE ADJUST full clockwise to HIGH.	
<p>Cue: Generator Line Volts is 295 volts</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.3		ADJUST VOLTAGE ADJUST UNTIL GENERATOR LINE VOLTS meter indicates ~260V.	Operator simulates adjusting VOLTAGE ADJUST (counterclockwise) until GENERATOR LINE VOLTS meter indicates ~260V.	
<p>Cue: Generator Line Volts is 260 volts.</p> <p>Examiners Note: Adjusting VOLTAGE ADJUST in the COUNTERCLOCKWISE direction will LOWER the voltage.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
		<p align="center">NOTE</p> DMM (<u>OR</u> equivalent, set to voltage) voltage readings will be less (by $\approx \frac{1}{2}$) than installed voltmeter readings.		
4.4.5.4		Direct Maintenance to obtain voltage reading on Running MG Set using a DMM (<u>OR</u> equivalent, set to voltage), at back of installed voltmeter.	Operator directs Maintenance to obtain voltage reading on Running MG Set using a DMM at back of installed voltmeter.	
<p>Cue: Maintenance reports voltage reading on Running MG Set is 130 V.</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.5		Direct Maintenance to monitor voltage reading on In-coming MG Set using a DMM (<u>OR</u> equivalent, set to voltage), at back of installed voltmeter.	Operator directs Maintenance to monitor voltage reading on In-coming MG Set using a DMM at back of installed voltmeter.	
<p>Cue: Maintenance is monitoring voltage reading on In-coming M-G set and reports value of 129.5V.</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
4.4.5.6	*	ADJUST the VOLTAGE ADJUST <u>UNTIL</u> indicated voltage on DMM (<u>OR</u> equivalent, set to voltage), is 0-2.5 volts higher than the reading obtained in Step 4.4.5.4.	Operator simulates adjusting the VOLTAGE ADJUST in the CLOCKWISE direction until indicated voltage on DMM is 0-2.5 volts higher than the reading obtained in step 4.4.5.4.	
<p>Cue: Maintenance reports voltage reading on In-coming MG Set is now <u>130.25 V</u></p> <p>Examiners Note: Voltage from step 4.4.5.4 was <u>130 V</u>. Range is 0-2.5V higher than 130 V.</p> <p>IF OPERATOR DOES NOT ADJUST, THEN DIRECT OPERATOR TO ADJUST VOLTAGE ABOVE 130 V (0-2.5V). Adjusting the VOLTAGE ADJUST switch in the CLOCKWISE direction will raise voltage.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.5.7		DIRECT Maintenance to REMOVE DMM (OR equivalent, set to voltage), AND CLOSE panel doors.	Operator directs Maintenance to remove DMM AND close panel doors.	
<p>Cue: Maintenance has removed DMM AND closed panel doors.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
		<p style="text-align: center;">NOTE</p> <p>A single handle is shared between both MG set SYNCHRONIZE switches. The handle can only be removed when the switch is in the OFF position.</p> <p>The Generator Pistol Grip indication will remain GREEN when the Generator Breaker auto closes. This indicates a neutral position and is expected since the Pistol Grip has not been physically turned to the CLOSED position.</p>		
		<p style="text-align: center;">CAUTION</p> <p>Do NOT attempt to manually close generator output breaker. Manually closing generator output breaker could result in both MG Sets tripping. If the MG Sets are NOT closely synchronized, automatic breaker closure could take as long as 60 seconds</p>		

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
4.4.6	*	PLACE MG Set SYNCHRONIZE Switch to ON, AND OBSERVE following: <ul style="list-style-type: none"> • GENERATOR Breaker automatically closes • Load is divided equally between MG Sets (~40 DC Amps each) 	IF required, operator simulates moving the Synchronize Switch from 12 MG set and inserting into 11 MG set and places it in ON.	
<p>Cue: 11 MG set generator breaker is closed and load stabilizes at 40 amps on each generator.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
4.4.7		PLACE MG Set SYNCHRONIZE Switch to OFF.	Operator simulates rotating the SYNCHRONIZE Switch to the OFF position.	
<p>Cue: SYNCHRONIZE Switch is in the OFF position.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
Terminating Cue	JPM COMPLETE			

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO _____

Facility: Salem **JPM No.:** 21-01 NRC IP-j **Revision No.:** 0

Task Title: Start Up and Parallel a Rod Drive M-G Set

Task No.: N0015010104 **Source:**
Bank New _____ Mod _____

System: 012 Reactor Protection System (SF7)

K/A Number / Description: A4.07 Ability to manually operate and/or monitor in the control room: M/G set breakers

K/A Rating RO 3.8 SRO N/A

Task Applicability: SRO Only _____ RO/SRO _____ AO/RO/SRO Other _____

Time-Critical: Yes _____ No **Alternate Path:** Yes _____ No

Estimated Time to Complete: 15 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance Actual Performance _____

Location: Classroom _____ Simulator _____ In-Plant RCA _____

Required Materials: S1.OP-SO.RCS-0001

Reference(s): S1.OP-SO.RCS-0001

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Salem Unit 1 is at 75% power.
- 12 Rod Drive M-G set is in service.
- 11 Rod Drive M-G Set tripped 3 days ago.
- Maintenance has completed repairs and is requesting 11 M-G set be placed in service.

INITIATING CUE

The CRS directs you to place 11 Rod Drive M-G set in service and parallel with 12 M-G set using Section 4.4 of S1.OP-SO.RCS-0001, Rod Control System Operation.

PSEG Nuclear LLC

Job Performance Measure

PERFORM A RADIOACTIVE WASTE GAS RELEASE

JPM Number: 21-01 NRC IP-k

Revision Number: 0

Date: 07/26/2022

Developed By:	<u>R. Chan</u> Instructor	Date:	<u>7/26/22</u>
Validated By:	<u>Shetrone/Militti/Westlake</u> SME or Instructor	Date:	<u>8/18/22</u>
Reviewed By:	<u>Winkelspecht</u> Operations Representative	Date:	<u>11/29/22</u>
Approved By:	<u>Wadusky</u> Training Department (Print/Sign)	Date:	<u>11/29/22</u>

REVISION RECORD (Summary)

Revision Number	Date	Reason
00	7/26/22	Converted to new JPM template.

SIMULATOR SETUP INSTUCTIONS

1. None, this is an In-plant JPM.

SPECIAL INSTRUCTIONS

1. Marked up copies of S2.OP-SO.WG-0008.
2. SPDS screenshot of MET DATA
3. This JPM is located at the 64 ft. Elev. Unit 2 Auxiliary Building (**RCA entry required**).

INITIAL CONDITIONS

- Both Salem Units are operating at 100% power
- 21 Waste Gas Decay Tank is in Standby at 90 psig
- 22 Waste Gas Decay Tank is in Holdup at 15 psig
- 23 Waste Gas Decay Tank is O/S at 15 psig
- 24 Waste Gas Decay Tank is O/S at 15 psig
- 2R41 Plant Vent radiation monitor is OPERABLE
- Plant vent flow rate and sample flow rate monitors are OPERABLE

INITIATING CUE

The CRS directs you to RELEASE 21 Waste Gas Decay Tank starting at Step 5.2.11 of S2.OP-SO.WG-0008, 21 Gas Decay Tank to Plant Vent.

- Sections 5.1 and Steps 5.2.1 through 5.2.10 are complete.

TASK STANDARD:

The task is satisfactorily met when the applicant has aligned the release path from 21 Waste Gas Decay Tank (WGDT) IAW step 5.2.11 of S2.OP-SO.WG-0008, released the radioactive gas from 21 WGDT IAW step 5.2.12 of S2.OP-SO.WG-0008, and upon REACHING 10 PSIG, terminates the release by locally closing the 2WG41 IAW step 5.2.14 of S2.OP-SO.WG-0008.

Information for Evaluators Use:

UNSAT requires written comments on the respective step.

(*) Denotes critical steps

If Time Critical, estimated time is the Time Critical time.

The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

RECORD JPM Start Time: _____

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
N/A		RECORD the JPM Start Time when the operator acknowledges READY TO START JPM.		N/A

Cue #1: Provide candidate MARKED UP copy of S2.OP-SO.WG-0008.

Cue #2: READ TO APPLICANT: No plant controls or equipment are to be operated during the performance of this JPM. All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator.

Examiners Note: The candidate may wish to review all P&Ls prior to start.

Comments: N/A

5.2.11		PERFORM the following preparations at Panel 104-2 for the GDT release:		
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Cue: None.

Examiners Note: 104-2 Panel is located at the 64 ft. Elev. inside the Auxiliary Building (RCA entry required).

Comments:

5.2.11.A		ENSURE 21 GDT is <u>NOT</u> in service		
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Cue: 21 GDT is NOT in service.

Examiners Note: None

Comments:

5.2.11.B		ENSURE 21 GDT is <u>NOT</u> selected for "Standby".		
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Cue: 21 GDT is NOT selected for STANDBY.

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.11.C		RECORD 21 GDT "Initial Pressure" (PIS1036) on Attachment 3.		
<p>Cue: 21 GDT pressure (PIS1036) indicates 90 psig.</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
5.2.11.D		LATCH AND SET 2WG41, GDT VENT CONT VALVE, as follows:		
<p>Cue: None</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
5.2.11.D.1	*	TURN 2WG41 Waste Gas Vent Valve Flow Bias fully counterclockwise until indicator <0%.	Operator simulates turning the Waste Gas Vent Valve Flow Bias knob fully COUNTER-CLOCKWISE until indicator is less than 0%.	
<p>Cue: 2WG41 flow bias is less than 0%</p> <p>Examiners Note: None</p> <p><u>Comments:</u></p>				
5.2.11.D.2	*	POSITION Selector Switch to OPEN AND RELEASE to AUTO position (spring return to AUTO).	Operator simulates positioning the selector switch to the OPEN position and then RELEASE to AUTO position.	
<p>Cue: Selector switch move to the OPEN position <u>and</u> now is released back to the AUTO position.</p> <p>Examiners Note: 2WG41-SWT is the selector switch "2WG41 local control switch" at 104-2 panel</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.11.D.3	*	TURN 2WG41 Waste Gas Vent Valve Flow Bias clockwise until indicator $\geq 100\%$.	Operator simulates turning 2WG41 flow bias CLOCKWISE until indicator reads $\geq 100\%$	

Cue: 2WG41 flow bias indicates 100%.

Examiners Note: None.

Comments:

N/A		NOTE 2WG41 will not immediately open.		N/A
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Cue: None

Examiners Note: The 2WG41 will NOT go full open until the flow bias is adjusted to 100%.

Comments:

5.2.11.D.4		ENSURE with Unit 2 Control Room that 2WG41 valve has lost the CLOSED indication AND audible alarm received	Operator calls Control Room to verify 2WG41 has lost the closed indication and audible alarm received.	
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Cue: Control Room reports they've lost 2WG41 CLOSED indication and audible alarm was received.

Examiners Note: None

Comments:

5.2.11.D.5	*	TURN 2WG41 Waste Gas Vent Valve Flow Bias fully counterclockwise until indicator $< 0\%$.	Operator simulates turning 2WG41 flow bias COUNTER-CLOCKWISE until indicator reads $< 0\%$.	
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Cue: 2WG41 flow bias reads less than 0%.

Examiners Note: None

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.11.D.6		ENSURE with Unit 2 Control Room that 2WG41 has closed indication	Operator calls Control Room to verify 2WG41 has closed indication.	
<p>Cue: Control Room reports that 2WG41 has CLOSED indication</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.11.D.7	*	POSITION 2WG41 Selector Switch to CLOSE.	Operator simulates positioning 2WG41 selector switch to CLOSE.	
<p>Cue: 2WG41 selector switch is in the CLOSED position.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.11.E		PERFORM an Independent Verification of the 2WG41 Waste Gas Vent Valve Flow Bias position, AND RECORD the Independent Verification on Attachment 1, Section 2.0.	Operator request another operator perform IV of the 2WG41 Waste Gas Vent Valve Flow Bias position.	
<p>Cue: IV completed SAT.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.11.F	*	OPEN 21WG31, GDT INLET VALVE	Operator simulates rotating valve COUNTER-CLOCKWISE to open 21WG31.	
<p>Cue: 21WG31 is Open and Tag is released.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
<p style="text-align: center;">NOTE</p> <p>While 2WG41 is opening, pressure downstream of 2WG38 will fluctuate between "0" psig and "10" psig until 2WG41 is fully open (100%). Once 2WG41 is fully open, 2WG38 will throttle to maintain <8 psig during the release.</p>				
5.2.11.G	*	Slowly OPEN 21WG34	Operator simulates slowly rotating COUNTER-CLOCKWISE to open 21WG34	
<p>Cue: 21WG34 is Open.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.11.H		RECORD Independent Verification (IV) of 21 GDT discharge valves 21WG31 and 21WG34 on Attachment 1, Section 3.0, prior to commencing 21 GDT release	Operator request IV of 21 GDT discharge valve 21WG31 and 21WG34.	
<p>Cue: IVs completed SAT.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.12		COMMENCE 21 GDT release as follows:		
<p>Cue: None</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.12.A	*	POSITION 2WG41 Selector Switch to OPEN AND RELEASE to AUTO position (spring return to AUTO).	Operator simulates rotating the selector switch to the Open position and then release to the Auto position.	

Cue: Selector switch moved to the OPEN position and now is released back to the AUTO position.

Examiners Note: None.

Comments:

5.2.12.B	*	SLOWLY SET 2WG41 Waste Gas Vent Valve Flow Bias to $\leq 100\%$ position which corresponds to a maximum release rate of 32 SCFM	Operator simulates adjusting the 2WG41 Waste Gas Vent Valve Flow Bias to $\leq 100\%$.	
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Cue: 2WG41 flow bias is 100%.

Examiners Note: None.

Comments:

5.2.12.C		PERFORM an Independent Verification of the positioning of 2WG41 Waste Gas Vent Valve Flow Bias on Attachment 1, Section 4.0.	Operator request IV on 2WG41 flow bias position.	
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Cue: IV completed SAT.

Examiners Note: None.

Comments:

5.2.12.D		RECORD In Progress Release Data on Attachment 2, Section 5.1	Operator records Data on Attachment 2	
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Cue: None.

Examiners Note: None.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.13		PERFORM the following during 21 GDT release		
<p>Cue: None.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
5.2.13.A		CALCULATE 21 GDT Average Release Rate every 10 minutes on Attachment 3, <u>AND</u> ADJUST 2WG41 Waste Gas Vent Valve Flow Bias position as required based on results.	Operator reads step and action required every 10 minutes. No action is required at this time.	
<p>Cue: None.</p> <p>Examiners Note: No action is required at this time, every 10 minutes.</p> <p><u>Comments:</u></p>				
5.2.13.B		RECORD Meteorological Data in Attachment 2, Section 5.2. IF Meteorological Monitor is NOT OPERABLE, THEN NOTIFY the SM/CRS (UFSAR 7.7.2.12).	Applicant records the MET Data from the SPDS screenshot	
<p>Cue: <u>PROVIDE</u> the following MET DATA screenshot to applicant</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.13.C		IF Plant Vent Flow Rate Monitor is inoperable, THEN RECORD Plant Vent Flow Rate Discharge Estimation on Attachment 4 at least once every four hours during GDT release	Applicant records step as N/A since Plant Vent Flow Rate Monitor is Operable.	

Cue: Plant Vent Flow Rate Monitor is OPERABLE.

Examiners Note: None.

Comments:

5.2.13.D		<p>IF at any time during the release pressure downstream of 2WG38 is >8.0 psig (2PL8678), <u>OR</u> 2WG41 CLOSES, THEN TERMINATE the GDT release as follows:</p> <ol style="list-style-type: none"> 1. TURN 2WG41 Waste Gas Vent Valve Flow Bias fully counter-clockwise until indicator is <0%. 2. PLACE 2WG41-SWT in CLOSE position, AND ENSURE 2WG41 is CLOSED. 3. CLOSE 22WG34. 4. RECORD Final Release Data in Attachment 2, Section 5.3. 5. INITIATE an NOTF to correct the malfunction. 	Applicant reads step and continues.	
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Cue: None.

Examiners Note: None.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.14		When 21 GDT pressure \approx 10 psig <u>OR</u> as directed by SM/CRS, SECURE the GDT release:		

Cue: 21 GDT pressure is now **10 psig**.

Examiners Note: None.

Comments:

5.2.14.A	*	TURN 2WG41 Waste Gas Vent Valve Flow Bias fully counter-clockwise until indicator is <0%.	Operator simulates adjusting the Flow Bias fully COUNTER-CLOCKWISE until indicator is <0%.	
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Cue: 2WG41 flow bias is now 0%.

Examiners Note: None.

Comments:

5.2.14.B	*	PLACE 2WG41-SWT in CLOSE position, AND ENSURE 2WG41 is CLOSED	Operator simulates placing switch 2WG41-SWT in the CLOSED position and verifies that 2WG41 is CLOSED.	
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Cue: Switch 2WG41-SWT is in the CLOSED position and the 2WG41 is now CLOSED.

Examiners Note: None.

Comments:

5.2.14.C	*	CLOSE 21WG34	Operator simulates closing the 21WG34 by turning the valve in the CLOCKWISE direction.	
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Cue: 21WG34 is now CLOSED.

Examiners Note: None.

Comments:

STEP	CRITICAL	ELEMENT	STANDARD	GRADE (S/U)
5.2.14.D		RECORD Final Release Data in Attachment 2, Section 5.3		
<p>Cue: None.</p> <p>Examiners Note: None.</p> <p><u>Comments:</u></p>				
Terminating Cue		JPM COMPLETE		

RECORD JPM Stop Time: _____

Operator's Name: _____ **Job Title:** RO _____ SRO X

Facility: Salem **JPM No.:** 21-01 NRC IP-k **Revision No.:** 0

Task Title: Perform a Radioactive Waste Gas Release

Task No.: N0715070104 **Source:**
Bank X New _____ Mod _____

System: 071 Waste Gas Disposal System (SF9)

K/A Number / Description: A1.03 Ability to predict and/or monitor changes in parameters associated with operation of the Waste Gas Disposal System, including: Holdup tank pressure and level

K/A Rating RO 2.6 SRO N/A

Task Applicability: SRO Only _____ RO/SRO _____ AO/RO/SRO X Other _____

Time-Critical: Yes _____ No X **Alternate Path:** Yes _____ No X

Estimated Time to Complete: 20 Minutes

Actual Time Used: _____ Minutes

Method of Testing: Simulated Performance X Actual Performance _____

Location: Classroom _____ Simulator _____ In-Plant X RCA X

Required Materials: S2.OP-SO.WG-0008

Reference(s): S2.OP-SO.WG-0008

EVALUATION SUMMARY:

Were all the Critical Elements (steps) performed satisfactorily? Yes _____ No _____

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: Satisfactory _____ Unsatisfactory _____

Comments:

Evaluator's Name: _____

Evaluator's Signature: _____ **Date:** _____

STUDENT HANDOUT

INITIAL CONDITIONS

- Both Salem Units are operating at 100% power
- 21 Waste Gas Decay Tank is in Standby at 90 psig
- 22 Waste Gas Decay Tank is in Holdup at 15 psig
- 23 Waste Gas Decay Tank is O/S at 15 psig
- 24 Waste Gas Decay Tank is O/S at 15 psig
- 2R41 Plant Vent radiation monitor is OPERABLE
- Plant vent flow rate and sample flow rate monitors are OPERABLE

INITIATING CUE

The CRS directs you to RELEASE 21 Waste Gas Decay Tank starting at Step 5.2.11 of S2.OP-SO.WG-0008, 21 Gas Decay Tank to Plant Vent.

- Sections 5.1 and Steps 5.2.1 through 5.2.10 are complete.

SIMULATOR EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: NRC-1 [AB.COND-1, AB.NIS-1, AB.RC-1, TRIP-1, LOCA-1, LOCA-3]
SCENARIO NUMBER: 21-01 NRC ESG-1
EFFECTIVE DATE: See Approval Dates
EXPECTED DURATION: 80 minutes
REVISION NUMBER: 06
PROGRAM: L.O. REQUAL
 INITIAL LICENSE
 STA
 OTHER _____

Revision Summary:

- ❖ Rev 05 Incorporated NRC comments following phone call on 10-2-21 to delete SG pressure channel failure and modify RCS leak to 20 gpm to allow observing actions in AB.RC-1 and exercise Tech Specs.
- ❖ Rev 6 Modified scenario guide for use in Next ILOT exam 21-01

PREPARED BY:	K. Hantho _____ Lead Regulatory Exam Author	9-15-22 _____ Date
APPROVED BY:	M. Wadusky _____ Operations Training Manager or designee	_____ Date
APPROVED BY:	M. Winkelspecht _____ Facility Representative	_____ Date

SCAN OF SIGNED SCENARIO COVER SHEET

Form 3.3-1 Scenario Outline

Facility:	<u>Salem</u>	Scenario #:	<u>1</u>
Scenario Source:	<u>20-01 ESG-1</u>	Op. Test #:	<u>21-01</u>
Examiners:	_____	Applicants/	_____
	_____	Operators:	_____
	_____		_____

Initial Conditions: Salem Unit 2 is at 100% power BOL

Turnover: The crew is directed to reduce power to 89% power at 10% per hour IAW S2.OP-IO.ZZ-0004 using boration, control rods and turbine load control in preparation for Main Turbine Valve testing.

Critical Tasks:

1. Close one Phase A isolation valve before transition out of TRIP-1
2. Transfer to Cold Leg Recirculation before receiving RWST Lo-Lo Alarm or ECCS pump cavitation

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ATC(R) BOP(R) CRS(N)	Load reduction to 89% at 10%/hr IAW IOP-4 for turbine valve testing
2	VC0087	BOP (C,MC) CRS (C)	24 Vacuum Pump trips
3	NI0193A	ATC(I,MC,R) CRS(I,TS)	2N41 fails HIGH
4	RC0002	ATC (C) CRS (C,TS)	RCS leak (20 gpm) inside containment
5	RC0002 RC0001A	ALL (M)	RCS leak worsens to 350 gpm/ Large Break LOCA (CT-2)
6	RP0108	ATC (I,MC) CRS (I)	Automatic SI fails to actuate
7	RP318M1	ALL(I,MC)	#2 ECAC fails to start.
8	VL0045 VL0046	ATC(C,MC) CRS(C)	Two Phase A valves fail to close (CT-1)
		ABs	AB.COND-1 → AB.NIS-1 → AB.RC-1
		EOPs	TRIP-1 → LOCA-1 → LOCA-3

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

I. OBJECTIVES

- A. Given the order, perform a turbine load reduction in accordance with station procedures.
- B. Given indications of a loss of vacuum, perform actions as the nuclear control operator to RESPOND to the malfunction, IAW approved station procedures.
- C. Given indications of a loss of vacuum, DIRECT the response to the malfunction IAW approved station procedures.
- D. Given indications of a Power range nuclear instrument failure, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures.
- E. Given indications of a Power range nuclear instrument failure, DIRECT the response to the malfunction in accordance with approved station procedures.
- F. Given an RCS leak at power, respond to the event IAW approved station procedures.
- G. Given the indications of a reactor coolant system (RCS) malfunction or leak, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
- H. Given the indications of a reactor coolant system (RCS) malfunction or leak, DIRECT the response to the malfunction in accordance with the approved station procedures.
- I. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.
- J. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.
- K. Given the order or indications of a safety injection perform actions as the nuclear control operator to RESPOND to the safety injection in accordance with the approved station procedures.
- L. Given indication of a safety injection DIRECT the response to the safety injection in accordance with the approved station procedures.
- M. Given a safety injection has occurred and equipment has failed to start, START equipment that has failed to automatically start in accordance with station procedures.
- N. Given the order or indications of a loss of coolant accident (LOCA), complete actions as the nuclear control operator to PERFORM the immediate response to the LOCA in accordance with the approved station procedures.
- O. Given indication of a loss of coolant accident (LOCA), DIRECT the immediate response to the LOCA in accordance with the approved station procedures.
- P. Given the order or a loss of coolant accident (LOCA) and plant conditions to support cold leg recirculation, perform actions as the nuclear control operator to TRANSFER to cold leg recirculation in accordance with the approved station procedures.
- Q. Given a loss of coolant accident (LOCA) and plant conditions to support cold leg recirculation, DIRECT actions to transfer to cold leg recirculation in accordance with the approved station procedures.
- R. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

1. Planned Load Reduction to 89% at 10%/hour
2. 24 Vacuum Pump trips
3. 2N41 Fails High (TS)
4. RCS Leak (20 gpm) (TS)
5. LBLOCA
6. Auto SI fails to actuate
7. #2 ECAC Fails to Start on SEC Signal
8. Two Phase A valves 2CV116, and 284 fail to close

III. SCENARIO SUMMARY

1. The crew assumes the watch at 100% power, EOL.
2. After assuming the watch, the crew will brief a planned load reduction to 89% at 10%/hour IAW **S2.OP-IO.ZZ-0004**, Power Operation, in preparation for Main Turbine Valve testing next shift.
3. After the power reduction has commenced, 24 condenser vacuum pump will trip. The crew will recognize that condenser backpressure is slowly rising and enter **S2.OP-AB.COND-0001**, Loss of Condenser Vacuum. The crew will start all available vacuum pumps and stabilize condenser back pressure. The 25AR25 will fail to open and the operator will manually open from control room.
4. After the crew addresses the vacuum pump trip, 2N41 Power Range channel will fail high. The operator will respond by placing rod control in Manual. The crew will enter **S2.OP-AB.NIS-0001**, NIS Malfunction, and perform actions to remove channel from service. The CRS will evaluate Tech Specs.
5. Once actions for 2N41 Power Range channel are addressed, a RCS leak (20 gpm) will occur resulting in lowering PZR level and rising counts on the 2R11A containment radiation monitor. The CRS will enter **S2.OP-AB.RC-0001**, **RCS Leak**, and adjust Charging flow to stabilize PZR level. The CRS will evaluate TS and enter TS 3.4.7.2.b, Action b. Once TS has been evaluated, the RCS leak will worsen to 350 gpm. The crew will take CAS actions in S2.OP-AB.RC-0001 and manually trip the reactor, at which time the RCS leak will escalate into a Large Break LOCA.
6. Immediately following the Rx Trip a malfunction will prevent Auto Safety Injection from actuating. The crew will respond by manually initiating SI. The crew will enter **EOP-TRIP-1**, Reactor Trip or Safety Injection.
7. While in EOP-TRIP-1, the crew will recognize that #2 ECAC failed to start on SEC signal. The crew will block and reset 2C SEC, then manually start #2 ECAC, additionally two Phase A valves will fail to close and the crew will take action to close at least one valve in the penetration. **[Critical Task #1]**.
8. The crew will perform diagnostics in EOP-TRIP-1 and eventually transition to **EOP-LOCA-1**, Loss of Reactor Coolant and **EOP-LOCA-3**, Transfer to Cold leg recirculation. While in LOCA-3

they will establish cold leg recirculation. [**Critical Task #2 – this CT includes time critical operator actions**].

9. The scenario can be terminated when the crew reduces ECCS to one train, stops all ECCS pumps taking suction from the RWST if the Lo-Lo level alarm is received, or by direction from Lead Examiner.

IV. INITIAL CONDITIONS

___ IC-240

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers ,tagged equipment)

<i>Initial</i>	Description
___ 1	2VC1and 2VC4 C/T
___ 2	RCPs (SELF CHECK)
___ 3	RTBs (SELF CHECK)
___ 4	21-24MS167s (SELF CHECK)
___ 5	500 KV SWYD (SELF CHECK)
___ 6	21 and 22 SGFP Trip (SELF CHECK)
___ 7	Suggested Protected Equipment: <ul style="list-style-type: none">▪ none
___ 8	Complete Attachment 2 “Simulator Ready-for-Training/Examination Checklist.”

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description
	1	EVENT ACTION: kck05anz //25AR25 25 VACUUM PUMP-CONDENSER COMMAND: DMF VL0440 PURPOSE: <update as needed>
	2	EVENT ACTION: MONP254 < 10. //CONT ROD BANK C < 10 (RX TRIP) COMMAND: PURPOSE: <update as needed>
	3	EVENT ACTION: kb116tcb //2CV116 SEAL W TO VCT CLOSE COMMAND: DMF VL0045 PURPOSE: <update as needed>
	4	EVENT ACTION: kb117tcb //2CV284 SEAL W TO VCT CLOSE COMMAND: DMF VL0046 PURPOSE: <update as needed>
	5	EVENT ACTION: KCK02PBZ //22 VACUUM PUMP-START COMMAND: PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
___ 01	VC0087C TRIP OF VACUUM PUMP 24	N/A	N/A	N/A	RT-1	
___ 02	VC0087A TRIP OF VACUUM PUMP 22	00:00:15	N/A	N/A	ET-5	
___ 03	VL0440 25AR25 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	0
___ 04	NI0193A PR CH N41 FAILS HI/LO	N/A	N/A	N/A	RT-2	150
___ 05	RC0002 RCS LEAK INTO CONTAINMENT (equiv to 0-4 inches)	N/A	N/A	N/A	RT-3	20
___ 06	RC0001A RCS RUPTURE OF RC LOOP 21	N/A	N/A	N/A	ET-2	
___ 07	RP0108 FAILURE OF AUTOMATIC SI	N/A	N/A	N/A	N/A	
___ 08	RP318M1 EMER Contrl Air Compressor Fails to Start on SEC	N/A	N/A	N/A	N/A	
___ 09	VL0045 2CV116 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	100
___ 10	VL0046 2CV284 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	100

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
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OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity

OTHER CONDITIONS:

	Description
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- ___ 1. None

V. SEQUENCE OF EVENTS

- A. State shift job assignments.
- B. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet)
- C. Inform the crew “The simulator is running. You may commence panel walkdowns at this time. SM please inform me when your crew is ready to assume the shift”.
- D. Allow sufficient time for panel walk-downs. When informed by the SM that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
1. Power Reduction to 89%			
	CRS briefs crew on power reduction to 89% at 10%/hour IAW S2.OP-IO.ZZ-0004, Section 4.3 Power Reduction.		
Note: Turnover states to add 120 gal of boric acid, Crew may decide to do multiple batches or 120 gal at a slow rate.	RO briefs boration plan for load reduction.		
	PO briefs turbine load control plan.		
RO will most likely use boration “hard card” Attachment 3 of S2.OP-SO.CVC-0006	RO initiates boration IAW S2.OP-SO.CVC-0006. <ul style="list-style-type: none"> • PRESS Make up mode STOP • ADJUST 2CV172 boric acid flow setpoint to desired value • SET boric acid flow register to desired gallons • PRESS Makeup control mode BORATE pushbutton • PRESS Makeup control mode START • ENSURE boric acid flow register indicates flow 		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
<p>PO will most likely use Routine Load Reduction “hard card” Attachment 3 of S2.OP-SO.TRB-0002</p> <p>Note: PO must toggle ramp rates from Per minute to per hour</p>	<p>PO initiates turbine load reduction IAW S2.OP-SO.TRB-0002, Turbine Generator Shutdown Operation.</p> <ul style="list-style-type: none"> • ENSURE Main Turb data display on Plant computer • ADJUST turbine ramp rate for TIP control to 10%/hr • ADJUST setter to 89% • Select GO • ENSURE setter – actual and Reference displays are updating 		
	RO monitors Tavg and control rods for proper response.		
Proceed to next event by direction from Lead Examiner.			
<p>Examiner’s Note: The crew may at any time stop the load reduction to respond to the next events.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
2. 24 Vacuum Pump Trips:			
Simulator Operator: At direction from Lead Evaluator insert RT-1 . This will trip 24 vacuum pump: VC0087C, Trip of Vacuum Pump 24			
	PO reports unexpected trip of 24 Vacuum Pump.		
	CRS enters S2.OP-AB.COND-0001, Loss of Condenser Vacuum.		
	PO initiates Attachment 1 CAS.		
	CRS dispatches operator to perform Attachment 2, Loss of Vacuum Local Checks.		
Role Play: When dispatched to perform Attachment 2, THEN after 2-5 minutes report the following: <i>I've completed Attachment 2 and have found no abnormal conditions except for the vacuum pump breaker being tripped open on 22 and 24 vacuum pumps.</i>			
	PO reports 24 Vacuum pump is stopped and the 24AR25 is closed.		
	PO reports condenser backpressure is rising rapidly.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
22 Vacuum Pump trips following start:	PO reports rising backpressure is not attributed to CW System malfunctions.		
	PO starts all available (22 and 25) vacuum pumps.		
Simulator Operator: Ensure ET-2 is TRUE IF 22 Vacuum pump is started. This will cause the pump to trip following start.			
25AR25 fails to open following start of 25 Vacuum Pump:			
	IF 22 Vacuum Pump is started, the PO reports that the pump started then tripped seconds later.		
Role Play: IF requested to check local indications at the Vacuum Pump, THEN report that <i>the local gauge reading is within the normal band and all other parameters are within their normal bands.</i>	PO reports that 25 Vacuum Pump started but the 25AR25 failed to open.		
	PO manually opens 25AR25.		
Proceed to next event at direction from Lead Examiner.	PO reports that condenser back pressure is improving.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments	
<p>3. 2N41 Power Range Channel fails high</p> <p>Simulator Operator: Enter RT-2 on direction of Lead Evaluator.</p> <p>MALF: NI0193A PR CH41 Fails High Severity: 150</p>				
	RO reports rods stepping in and no runback in progress			
	RO places rod control in Manual			
	CRS enters S2.OP-AB.NIS-0001, NIS Malfunction.			
	<p>Evaluator's Note: The crew may enter S2.OP-AB.ROD-0003 which will transition you to AB.NIS-0001</p>			
		RO reports rod control is in Manual		
PO reports no turbine load change in progress				
RO reports that 2N41 channel is failed high				
RO reports the following OHA alarms are in: <ul style="list-style-type: none"> ▪ E-15 PR HI RNG FLUX HI ▪ E-31 PR OVRPWR ROD STOP ▪ E-39 PR CH DEV ▪ E-47 PR NEUT FLUX RATE HI 				

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	CRS directs PO to remove PR channel from service IAW S2.OP-SO.RPS-0001, NI Channel Trip/Restoration		
<p>Evaluator's Note: At the direction of the Lead Evaluator, performing removing of 2N41 from service is optional.</p> <p>Performing these steps takes about <u>10 minutes</u>.</p>			
Placing 2N41 in Tripped Condition IAW S2.OP-SO.RPS-0001, Steps 4.1.1 to 4.1.5:			
	PO ensures that tripping of associated bistable(s) will NOT result in an ESF OR RPS actuation		
	PO ensures 2N41 Channel is NOT selected on NIS Recorder 2NR45		
	PO ensures Rod Control is in Manual		
	CRS enters T/S 3.3.1.1, Actions 2 and 6 (72 hours) Reactor Trip System Instrumentation for 2N41		
	At NI Rack No. 81, PO performs the following:		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO places DETECTOR CURRENT COMPARATOR, UPPER SECTION, switch in PRN41 position AND ENSURE the following: ___ CHANNEL DEFEAT lamp illuminates. ___ OHA E-38, UPPER SECT DEV ABV 50% PWR, clears. <u>Note</u> : E-38 was not in.		
	PO places DETECTOR CURRENT COMPARATOR, LOWER SECTION, switch in PRN41 position AND ENSURE the following: ___ CHANNEL DEFEAT lamp illuminates. ___ OHA E-46, LOWER SECT DEV ABV 50% PWR, clears. <u>Note</u> E-46 was not in.		
	PO places POWER MISMATCH BYPASS switch in BYPASS PR N41. (Defeats input to Rod Control)		
	PO places ROD STOP BYPASS switch in BYPASS PR N41 AND ENSURE the following: ___ 2RP4 - OVER POWER ROD STOP MANUAL BYPASS, CH I is illuminated. ___ OHA E-31, PR OVERPWR ROD STOP, is clear		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO places COMPARATOR CHANNEL DEFEAT switch in N41 AND ENSURE the following: ___ COMPARATOR DEFEAT lamp is illuminated. ___ OHA E-39, PR CH DEV, is clear		
<p>Evaluator's Note: After Step 4.1.5 is complete Maintenance support is needed to complete the rest of the procedure for tripping bistables.</p> <p>Rod control can be placed in Auto at this time if the CRS directs. Leaving Rods in Manual has no effect to the outcome of the scenario.</p>			
	CRS directs Maintenance to remove 2N41 channel from service IAW S2.OP-SO.RPS-0001.		
	RO withdraws rods as required to maintain band prescribed.		
	CRS may elect to restore rod control to Auto <u>or</u> leave in Manual until the bistables are tripped.		
Proceed to next event after rods are withdrawn to ARO or by direction from Lead Evaluator.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
4. RCS Leak (20 gpm)			
Simulator Operator: Insert RT-3 by direction from Lead Examiner.			
RC0002, RCS Leakage			
Value = 20			
Ramp = None			
	RO reports counts on the 2R11A containment radiation monitor is rising.		
	RO reports PZR level is lowering and/or RCS pressure is lowering.		
	RO reports RCS leak inside containment.		
	RO determines RCS leak rate.		
Examiners Note: The CRS can also enter S2.OP-AB.RAD-0001, Abnormal Radiation, in response to OHA A-6. If so, the CRS can direct the PO to perform actions of AB.RAD-1 while the CRS directs actions in AB.RC-1.			
	CRS enters S2.OP-AB.RC-0001, RCS Leakage.		
	PO initiates Attachment 1 CAS		
	RO reports RCS temperature is above 350 °F.		
	RO reports Unit is not in Mode 3.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports PZR level is lowering.		
	RO swaps to a centrifugal charging pump in service. <ul style="list-style-type: none"> • CLOSE 2CV55 CHARG FLOW CONTR VALVE • START 21 or 22 CHG pp • LOWER 23 Chg PP speed while ADJUSTING 2CV55 • STOP 23 Chg pp • ADJUST 2CV55 to control PZR lvl • ENSURE seal injection flow 6-12 gpm/pump not to exceed 40 total 		
	CRS directs RO to adjust charging flow to stabilize PZR level.		
	RO adjusts charging flow to stabilize PZR level and then determines RCS leak rate.		
TS evaluation #2:	CRS enters: <ul style="list-style-type: none"> • TS 3.4.7.2.b (1 gpm unidentified leakage), action b (reduce leakage rate to within limits within 4 hours or be in Hot Standby) 		
Proceed on to next event after TS has been evaluated or by direction from the Lead Examiner			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
5. RCS leak worsens to 350 gpm and Large Break LOCA (Major Transient):			
Simulator Operator: Modify <u>RT-3</u> to 350 at the direction of the Lead Examiner. RC0002, RCS Leakage Value = 350 Ramp = None			
	RO reports PZR level is lowering rapidly.		
	RO attempts to maintain PZR level by adjusting charging flow.		
	RO reports RCS leak rate exceeds make up capability.		
	CRS implements the Attachment 1 CAS action and briefs the RO to Trip the Reactor and actuate Safety Injection.		
	RO trips the reactor and actuates SI.		
Simulator Operator: Ensure <u>ET-2</u> is TRUE following Rx Trip. This will insert LBLOCA malfunction.			
RC0001A, RCS rupture on RC loop 21			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
6. Auto SI fails to actuate on both trains:			
	RO may report SI failed to Auto actuate (depending on where RCS pressure is at during time SI is manually actuated)		
	RO manually actuates SI on one Train and verifies the other train actuated.		
	RO continues Immediate Actions of TRIP-1: <ul style="list-style-type: none"> ▪ Reports the Main Turbine is tripped and backs up Main Turbine trip. ▪ Reports all 4KV vital busses energized. ▪ Reports SI has been initiated. 		
	CRS and RO verify Immediate Actions complete.		
	CRS directs initiation of the following EOP-TRIP-1 CAS actions when RCS pressure meets the criteria: <ul style="list-style-type: none"> • Stops RCPs (1240(1350 adverse) psig) • Close Charging Mini-flows (1500 psig) 		
	PO reports ALL Vital Buses are energized.		
	PO reports SEC loading for 2B and 2C vital bus is NOT complete.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
7. # 2 ECAC fails to start on SEC signal			
	PO reports # 2 ECAC failed to start.		
	PO blocks and resets 2C SEC.		
	RO Starts #2 ECAC.		
	PO throttles AFW flow to no less than 22E4lbm/hr while SG NR levels remain <9%. (15% adverse)		
	RO reports containment pressure has NOT remained <15 psig.		
	RO reports Phase B and Spray actuation Auto initiated.		
	RO reports 21 and 22 CS pumps are running.		
	RO reports MSLI Auto initiated.		
	RO reports all valves groups in Table B are in the safeguards positions.		
	RO Stops all RCPs.		
	PO reports 2RP4 indicates High-High Containment Pressure.		
	RO reports both trains of MSLI has actuated.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO reports all valves in Table D are closed.		
	RO reports 2 CCW pumps are running.		
	RO reports both CCW HXs are in Auto.		
	RO reports 2CC131 (Thermal Barrier Return) is closed.		
	RO reports Phase B has occurred and 2CC131 should not be opened.		
	CRS notifies WCC to monitor Spent Fuel Pool temperature and level.		
	RO reports RWST Lo Level Alarm has not actuated (this is a CAS step)		
	PO reports 2CV116 and 284 in Table E are NOT in the safeguards positions.		
	Critical task #1 - RO closes the 2CV116 and 284 from the 2CC2 console pushbuttons		
Critical Task-1 (CT-11): Close at least one valve on each phase A penetration before transition out of EOP-TRIP-1, Reactor Trip or Safety Injection. SAT _____ UNSAT _____			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports 21 and 22 CA330s are closed.		
	RO reports CAV is in Accident Pressurize Mode.		
	RO reports CAV is not in Maintenance Mode Alignment		
	RO reports two switchgear fans and one switchgear exhaust fan are running		
	RO reports Charging, SI pump and RHR pump flows are consistent with RCS pressure.		
	PO maintains total AFW flow >22E4 lbm/hr until at least one SG NR level is > 9% (15% adverse), then maintains SG NR levels between 19% and 33%.		
Examiner's Note: Based on the pace of the crew, they may perform the following CAS steps sooner or later in EOP-TRIP-1.			
	RO closes charging pump mini flows IAW TRIP-1 CAS when RCS pressure is < 1500 psig with BIT flow established. [TRIP-1 CAS]		
	RO stops RCPs IAW TRIP-1 CAS when RCS pressure is <1240(1350 adverse) psig with ECCS flow established. [TRIP-1 CAS]		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments	
Examiner's Note: SG pressure could be lowering slowly based on the break flow from the LBLOCA.	RO reports RCP status, and CRS determines whether a MSLI for temperature control is required.			
	RO reports PZR spray valves response are normal.			
	RO reports RCS pressure < 1240(1350 adverse) psig and ECCS flow established.			
	PO reports NO indications of a Faulted SG exist.			
	PO reports NO indications of a SGTR exist.			
	RO reports two or more channels in Table J are NOT indicating normal on the P250 computer OR reports Containment Pressure > 4 psig.			
	Evaluator's Note: IF RWST low level (15.2 ft.) is reached during TRIP-1, THEN go to page 27 for LOCA-3 steps.			
		EOP-LOCA-1 steps here:		
		CRS transitions to 2-EOP-LOCA-1, Loss of Reactor Coolant.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Examiner's Note: During LOCA-1, the crew will reach the low RWST alarm (15.2 feet) and then transition to EOP-LOCA-3.			
Examiners Note: A CFST PURPLE Path on Thermal Shock may exist during LOCA-1, if so, the crew will enter and exit FRTS-1 with no actions performed.			
	RO reports all RCPs are stopped.		
	PO reports no indications of faulted SGs.		
	PO maintains total AFW flow >22E4 lbm/hr until at least one SG NR level is > 9% (15% adverse), then maintains SG NR levels between 19% and 33%.		
	RO resets Phase A.		
	RO opens 21 and 22 CA330s.		
	RO resets SG B/D Sample Isolation Bypass		
	RO opens 21 thru 24 SS94s (SG B/D Sample Valves)		
	PO reports ALL secondary radiation monitors in Table B are indicating Normal.		
	RO reports both PZR PORVs are Closed and Block valves are Open.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports subcooling is NOT greater than 0 F.		
	RO reports both CS Pumps are running.		
	RO resets both trains of SI.		
	PO resets each SECs.		
	RO reports RCS pressure is not greater than 300 psig.		
	Crew stops unloaded EDG's		
	Crew determines LOCA 5 and 6 transition not required and consult with the TSC		
	Crew will now loop back around to Step 11 or transition to LOCA-3.		
	CRS enters 2-EOP-FRTS-1, Response to Imminent Pressurized Thermal Shock Conditions.		
	STA verifies procedure transition.		
	RO reports RCS pressure is < 420 psig and RHR flow is at least 300 gpm.		
	CRS returns to procedure in effect (LOCA-1).		

FRTS-1 steps here:

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Record Time RWST Lo Level Alarms Actuated: Time: ____:____:____			
8. Transfer to Cold Leg Recirculation (EOP-LOCA-3) Evaluator's Note: A predetermined Critical Task which includes Time Critical Operator Actions			
RO reports Containment Sump CH A (B) Level > 62% is illuminated.			
RO depresses SUMP AUTO ARMED PB for 21 and 22 SJ44s.			
PO removes lockouts from 2SJ67, 2SJ68, 2SJ69.			
RO reports 21 and 22 SJ44s open.			
RO reports both RHR pumps running.			
RO closes 2SJ69.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Mark time 2SJ69 close PB depressed. _____ : _____ : _____ ≤ 3.7 mins after RWST lo level			
	RO verifies or performs SI reset actions.		
	RO resets SECs and 230V MCCs.		
	RO stops 22 Containment Spray Pump.		
Mark time 22 CS pump stopped. _____ : _____ : _____ ≤ 5.5 mins after RWST Lo Level			
	RO closes 21 and 22 RH19s.		
	RO stops 23 charging pump.		
	CRS goes to Step 11 based on all Vital Buses energized.		
	RO reports 3 SW pumps running.		
	PO reports both CCHXs are in service <u>OR</u> being restored to service per EOP-APPX-1.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports that 22 CS pump is NOT running.		
	RO reports that 21 and 22 CC16 are open.		
	RO performs the following: <ul style="list-style-type: none"> ▪ Closes 2SJ67 and 2SJ68. ▪ Reports 2RH1 and 2RH2 are closed. 		
	RO opens 21 and 22 SJ45s.		
	RO reports 21 and 22 SJ113's are open.		
	RO reports 21 and 22 SI pumps <u>and</u> 21 and 22 Charging pumps are running.		
<div style="border: 1px solid black; padding: 5px;"> <p>Mark time ECCS pumps verified in operation.</p> <p>____:____:____</p> <p>≤ 11.2 mins after RWST Lo Level</p> </div>			
	PO removes lockout for 2SJ30		
	RO closes 2SJ30, 2SJ1, and 2SJ2		
	RO places 21RH29 and 22RH29 in MANUAL and reports both valves are closed.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
<p>Critical Task-2 (CT-36): Transfer to Cold Leg Recirculation before RWST Lo-Lo Level (1.2 feet) is reached or ECCS pump cavitation. This CT also includes accomplishing operator time critical actions as specified below:</p> <p>Time Critical Operator Actions:</p> <p>Transfer to Cold Leg Recirculation such that at least one train of ECCS is in operation in the recirculation mode within the following time frames:</p> <ol style="list-style-type: none"> 1. From RWST lo level alarm to initiating closed on 2SJ69 - ≤ 3.7 minutes 2. From RWST lo level alarm to one containment spray pump stop ≤ 5.5 minutes 3. From RWST lo level alarm to switchover completion (includes restarting ECCS pumps if stopped on RWST lo-lo level) ≤ 11.2 minutes. <p>SAT _____ UNSAT _____</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
<u>Terminate</u> scenario when the crew initiates close or verifies closed for RH29s <u>or</u> at Lead Evaluator direction.			

VI. SCENARIO REFERENCES

- A. Alarm Response Procedures (various)
- B. Technical Specifications
- C. Emergency Plan (ECG)
- D. S2.OP-AB.COND-0001, Loss of Condenser Vacuum
- E. S2.OP-AB.ROD-0003, Continuous Rod Motion
- F. S2.OP-AB.NIS-0001, Nuclear Instrumentation System Malfunctions
- G. S2.OP-AB.RC-0001, RCS Leak
- H. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
- I. 2-EOP-LOCA-1, Loss of Reactor Coolant
- J. 2-EOP-LOCA-3, Transfer to Cold leg recirculation

MODE: 1 POWER: 100% RCS BORON: 967 ppm MWe 1220

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

NA

REACTIVITY PARAMETERS:

- Rx Plan: To lower Rx power to 89% at 10%/hour add 120 gallons of boric acid along with inserting control rods to maintain Tav_g on program. Reactor Engineering directs the crew to perform a boration first. Expect D bank at 193 steps when load reduction is complete.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

- None

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- Load reduction to 89% at 10%/hour in preparation for Main Turbine valve testing.

ABNORMAL PLANT CONFIGURATIONS:

- None

CONTROL ROOM:

- Hope Creek and Salem 1 are at 100% power.

PRIMARY:

- none

SECONDARY:

- Heating Steam is aligned to Unit 1
- Polisher is in service
- Blowdown is 35K per loop to 23 Condenser / Flashtank

RADWASTE:

- No discharges in progress

CIRCULATING WATER/SERVICE WATER:

ATTACHMENT 2

SIMULATOR READY-FOR-TRAINING CHECKLIST

- ___ 1. Verify simulator is in "TRAIN" Load
- ___ 2. Simulator is in RUN
- ___ 3. Overhead Annunciator Horns ON
- ___ 4. All required computer terminals in operation
- ___ 5. Simulator clocks synchronized
- ___ 6. All tagged equipment properly secured and documented
- ___ 7. TSAS Status Board up-to-date
- ___ 8. Shift manning sheet available
- ___ 9. Procedures in progress open and signed-off to proper step
- ___ 10. All OHA lamps operating (OHA Test) and burned out lamps replaced
- ___ 11. Required chart recorders advanced and ON (proper paper installed)
- ___ 12. All printers have adequate paper AND functional ribbon
- ___ 13. Required procedures clean
- ___ 14. Multiple color procedure pens available
- ___ 15. Required keys available
- ___ 16. Simulator cleared of unauthorized material/personnel
- ___ 17. All charts advanced to clean traces and chart recorders are on.
- ___ 18. Rod step counters correct (channel check) and reset as necessary
- ___ 19. Exam security set for simulator
- ___ 20. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter
With Baseline Data filled out
- ___ 21. Shift logs available if required
- ___ 22. Recording Media available (if applicable)
- ___ 23. Ensure ECG classification is correct
- ___ 24. Reference verification performed with required documents available
- ___ 25. Verify phones disconnected from plant after drill.
- ___ 26. Verify EGC paperwork is marked "Training Use Only" and is current revision.
- ___ 27. Ensure sufficient copies of EGC paperwork are available.

ATTACHMENT 3 CRITICAL TASK METHODOLOGY

In reviewing each proposed CT, the examination team assesses the task to ensure, that it is essential to safety. A task is essential to safety if, in the judgment of the examination team, the improper performance or omission of this task by a licensee will result in direct adverse consequences or in significant degradation in the mitigative capability of the plant.

The examination team determines if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a task by an individual necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

- I. Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...
 - degradation of any barrier to fission product release
 - degraded emergency core cooling system (ECCS) or emergency power capacity
 - a violation of a safety limit
 - a violation of the facility license condition
 - incorrect reactivity control (such as failure to initiate Emergency Boration or Standby Liquid Control, or manually insert control rods)
 - a significant reduction of safety margin beyond that irreparably introduced by the scenario
- II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...
 - Effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition described in the previous paragraph.
 - Recognize a failure or an incorrect automatic actuation of an ESF system or component.
 - Take one or more actions that would prevent a challenge to plant safety.
 - Prevent inappropriate actions that create a challenge to plant safety (such as an unintentional Reactor Protection System (RPS) or ESF actuation).

**ATTACHMENT 4
SIMULATOR SCENARIO REVIEW CHECKLIST**

SCENARIO IDENTIFIER: 21-01 NRC Scenario #1 REVIEWER: K. Hantho

Initials	Qualitative Attributes
K	1. The scenario has clearly stated objectives in the scenario.
K	2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
K	3. The scenario consists mostly of related events.
K	4. Each event description consists of: <ul style="list-style-type: none">• the point in the scenario when it is to be initiated• the malfunction(s) that are entered to initiate the event• the symptoms/cues that will be visible to the crew• the expected operator actions (by shift position)• the event termination point
K	5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.
K	6. The events are valid with regard to physics and thermodynamics.
K	7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
K	8. The simulator modeling is not altered.
K	9. All crew competencies can be evaluated.
K	10. The scenario has been validated.
NA	11. If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
K	12. ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

**ATTACHMENT 5
ESG CRITICAL TASKS**

20-01 NRC Scenario #1

CT-1 (CT-11)

Critical Task

Close containment isolation valves such that at least one valve is closed on each Phase A penetration before transition out of TRIP-1.

Safety Significance

The containment isolation system preserves the ability of the containment boundary to minimize the release of fission products following a LOCA or a fuel handling accident within the containment. The Phase A containment isolation signal serves to actuate the containment isolation system following a LOCA. The Phase A containment isolation signal actuates all power operated valves that are not required to be open for the operation of essential equipment during an accident and that can be immediately closed without increasing the potential for damage to the containment equipment.

Cues:

- Indication and/or annunciation that SI is actuated

AND

- One or more of the following:
 - Absence of annunciation that Phase A isolation is actuated
 - Absence of closed valve position indication on all (both) containment isolation valves on one or more Phase A penetrations
 - Open valve position indication on all (both) containment isolation valves on one or more Phase A penetrations
 - ESF system status lamps show that all (both) containment isolation valves on one or more Phase A penetrations are not closed

Measurable Performance Indicator

Manipulation of controls as required to close at least one containment isolation valve on each Phase A penetration

- Closed valve position indication for at least one containment isolation valve on each Phase A penetration

Feedback

- ESF system status lamps show that at least one containment isolation valve is closed on each Phase A penetration

CT-2 (CT-36)

Critical Task

Transfer to cold leg recirculation before receiving the RWST Lo-Lo alarm or cavitation to ECCS Pumps (this CT includes time critical operator actions per OP-SA-102-106-F1)

Safety Significance

Failure to transfer to cold leg recirculation before the RWST inventory is totally depleted results in the loss of all pumped safety injection and containment spray when the RWST empties.

Cues:

- Indication and/or annunciation that safety injection is actuated

AND

- Indication and/or annunciation that RWST level is at or below the Low Level Alarm

AND

- Indication that containment sump level is at or above the minimum level (62%) required for transfer to cold leg recirculation

Measurable Performance Indicator

Manipulation of controls as required to transfer to cold leg recirculation and establish ECCS recirculation flow that at least meets the assumptions of the plant-specific LOCA analyses:

- Valve position indication that the cold leg recirculation flow path is established
- Control switch indication that the circuit breakers or contactors for the low-head injection pumps (and other ECCS injection pumps as necessary) are closed
- These operator time critical actions are accomplished as follows from the time from RWST Lo Level:
 - Initiating close on 2SJ69 ≤ 3.7 minutes
 - Stopping one Containment Spray Pump ≤ 5.5 minutes
 - Switch over to recirculation complete ≤ 11.2 minutes

Feedback

- Flow indication of the recirculation of containment sump water through the RHR heat exchangers and into the RCS

ATTACHMENT 6

ESG – PSA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

<u>Y/N</u>	<u>Event</u>	<u>Y/N</u>	<u>Event</u>
<u>N</u>	TRANSIENTS with PCS Unavailable	<u>N</u>	Loss of Service Water
<u>N</u>	Steam Generator Tube Rupture	<u>N</u>	Loss of CCW
<u>N</u>	Loss of Offsite Power	<u>N</u>	Loss of Control Air
<u>N</u>	Loss of Switchgear and Pen Area Ventilation	<u>N</u>	Station Black Out
<u>Y</u>	LOCA		

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>	<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>
<u>N</u>	Containment Sump Strainers	<u>N</u>	Gas Turbine
<u>N</u>	SSWS Valves to Turbine Generator Area	<u>N</u>	Any Diesel Generator
<u>N</u>	RHR Suction Line valves from Hot Leg	<u>N</u>	Auxiliary Feed Pump
<u>N</u>	CVCS Letdown line Control and Isolation Valves	<u>N</u>	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

<u>Y/N</u>	<u>OPERATOR ACTION</u>
<u>N</u>	Restore AC power during SBO
<u>N</u>	Connect to gas turbine
<u>N</u>	Trip Reactor and RCPs after loss of component cooling system
<u>Y</u>	Re-align RHR system for re-circulation
<u>N</u>	Un-isolate the available CCW Heat Exchanger
<u>N</u>	Isolate the CVCS letdown path and transfer charging suction to RWST
<u>N</u>	Cooldown the RCS and depressurize the system
<u>N</u>	Isolate the affected Steam Generator that has the tube rupture(s)
<u>N</u>	Early depressurize the RCS
<u>N</u>	Initiate feed and bleed

SCAN OF SIGNED SCENARIO COVER SHEET

Form 3.3-1 Scenario Outline

Facility:	<u>Salem</u>	Scenario #:	<u>2</u>
Scenario Source:	<u>20-01 ESG-2</u>	Op. Test #:	<u>21-01</u>
Examiners:	_____	Applicants/	_____
	_____	Operators:	_____
	_____		_____

Initial Conditions: Salem Unit 2 is at 100% power MOL

Turnover: The crew is directed to reduce power to 95% power at 10% per hour IAW S2.OP-IO.ZZ-0004 using boration, control rods and turbine load control in preparation for removing 21 Heater drain pump from service. The 21 Service Water pump is C/T for maintenance.

Critical Tasks:

1. Isolate faulted Steam Generator prior to exiting LOSC-1
2. Terminate safety injection before transition out of TRIP-3

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ATC(R) BOP(R) CRS(N)	Load reduction to 95% at 10%/hr IAW IOP-4 for heater drain pump removal from service
2	PR0017A	ATC (I,MC) CRS (I,TS)	Pressurizer level control channel fails high
3	N/A	ATC(N) CRS(N)	21 RCP standpipe level low
4	SW0215C SW0339F	BOP (C,MC) CRS (C,TS)	23 SW pump trips and 26 SW pump fails to start.
5	CN0017	ALL(C)	23 Condensate pump trips
6	MS0088Ar	ALL(C)	Steam leak inside containment
7	MS0088Ar	ALL(M)	Steam leak worsens requiring Rx Trip & MSLI (CT-1 and CT-2)
8	RP0279A or B	ATC(I,MC) CRS(I)	Train initially selected for MSLI fails to manually actuate other train will actuate MSLI
		ABs	AB.CVC-1 → ARP → AB.SW-1 → AB.CN-1 → AB.LOAD-1 →AB.STM-1
		EOPs	TRIP-1 → LOSC-1 → TRIP-3

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

I. OBJECTIVES

- A. Given the order or indications of a charging system malfunction, PERFORM actions as the nuclear control operator to RESPOND to the loss or malfunction of the charging system in accordance with the approved station procedures.
- B. Given indication of a loss or malfunction of the Charging system DIRECT corrective action for a Charging System malfunction in accordance with the approved station procedures.
- C. Given indication of a loss of a SW Pump, PERFORM actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures.
- D. Given indication of a loss of a SW Pump, DIRECT corrective action for a SW System malfunction in accordance with the approved station procedures.
- E. Given indication of a loss of a Condensate Pump, PERFORM actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures
- F. Given indication of a loss or malfunction of the Condensate system DIRECT corrective action for a Condensate System malfunction in accordance with the approved station procedures
- G. Given the order or indications of a reactor trip, PERFORM actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.
- H. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures
- I. Given the order or indications of a safety injection PERFORM actions as the nuclear control operator to RESPOND to the safety injection in accordance with the approved station procedures.
- J. Given indication of a safety injection DIRECT the response to the safety injection in accordance with the approved station procedures.
- K. Given the order or indications of a loss of secondary heat sink, perform actions as the nuclear control operator to RESPOND to the loss of heat sink in accordance with the approved station procedures.
- L. Given indication of a loss of secondary heat sink, DIRECT the response to the heat sink loss in accordance with the approved station procedures.
- M. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

1. PZR Level channel I fails high (2LT-459)
2. 21 RCP standpipe level Low
3. 23 SW Pump trips and 26 SW Pump fails to auto start
4. 23 Condensate Pump trips
5. 21 Steam Line break (inside containment)
6. MSLI fails on first train actuated
7. Isolate faulted SG
8. Terminate SI

III. SCENARIO SUMMARY

- A. The crew will receive the unit at 100% power MOL. 21 SW Pump is C/T for pump repack.
- B. The crew will perform a load reduction to 95% in preparation for removing 21 Heater Drain pump from service for planned maintenance.
- C. Following the down power the controlling PZR level channel will fail high. The crew will respond per **S2.OP-AB.CVC-0001**, Loss of Charging, and take manual control of charging to raise charging flow. The crew will select an operable control channel. The CRS will evaluate Tech Specs and enter 3.3.1.1 action 6.
- D. After Tech Specs have been evaluated 21 RCP standpipe level low will alarm, operators will take actions to makeup to the standpipe IAW **S2.OP-AR.ZZ-0011**, Control Console 2CC1 alarm response. Alarm will clear once actions are taken to align flow and complete the makeup to the standpipe.
- E. The 23 SW pump will trip and the standby SW pump in Auto (26 SW Pump) will fail to auto start. The crew will manually start 26 SW pump to restore SW header pressure. The CRS may enter **S2.OP-AB.SW-0001**, Loss of SW Header Pressure, but the only action is to start a SW pump. The CRS will evaluate Tech Specs with 21 SW pump C/T and the trip of 23 SW pump and enter TS 3.7.4 for an inoperable SW loop.
- F. After Tech Specs are evaluated, the 23 condensate pump will trip. The CRS will enter **S2.OP-AB.CN-0001**, Main Feedwater/Condensate System Abnormality, and take actions to bypass the condensate polisher and initiate a turbine load reduction to 1080 MWe per Attachment 2. The crew performs load reduction IAW **S2.OP-AB.LOAD-0001**, Rapid Load Reduction.
- G. After the turbine load reduction is complete, there will be a steam leak inside containment on 21 steamline upstream of the orifice. Operators will observe reactor power rising and containment pressure and temperatures begin to rise. The crew will diagnose a steam leak inside containment

and enter **S2.OP-AB.STM-0001**, Excessive steam flow. Actions will need to be taken to maintain power less than 75% limit in place from tripped condensate pump.

- H. Once actions have been discussed about an additional downpower then the larger leakrate will be entered requiring the unit to be tripped and MS isolation to be completed. The crew will trip the reactor and enter **2-EOP-TRIP-1**, Reactor Trip or Safety Injection. The crew will initiate MSLI for faulted SG, the first train of main steam isolation selected will fail to actuate, the crew must actuate the other train.
- I. Following the MSLI, the crew will recognize that 21 SG is the faulted SG and isolate AFW flow by closing 21AF21 and 21AF11 [**Critical Task #1, this includes a time critical action to isolate AFW flow to the faulted SG by closing the AF21 and AF11 ≤ 10 minutes**]. The crew will transition to **2-EOP-LOSC-1**, Loss of Secondary Coolant.
- J. Once all actions are completed to isolate the faulted SG the crew will transition to **2-EOP-TRIP-3**, Safety injection termination to terminate safety injection [**Critical Task #2**].
- K. In **EOP-TRIP-3**, Safety Injection Termination, the crew will terminate SI by stopping ECCS pumps, isolating BIT flow and placing normal letdown in service.
- L. The scenario may be terminated when the crew places normal letdown in service or at direction by Lead Examiner.

M. INITIAL CONDITIONS

_____ IC-241

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers ,tagged equipment)

<i>Initial</i>	Description
_____	VC1and VC4 C/T
_____	RCPs (SELF CHECK)
_____	RTBs (SELF CHECK)
_____	MS167s (SELF CHECK)
_____	500 KV SWYD (SELF CHECK)
_____	SGFP Trip (SELF CHECK)
_____	23 CV PP (SELF CHECK)
_____	21 SW Pump C/T
_____	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description
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1	EVENT ACTION: COMMAND: PURPOSE:	kaj02pnh //21WR62 21 RCP STANDPIPE SUPPLY DMF RC009A <update as needed>
2	EVENT ACTION: COMMAND: PURPOSE:	ka505ava //TRAIN "A" - LOOP 21 MAINSTEAM IS DOR ka705ava <update as needed>
3	EVENT ACTION: COMMAND: PURPOSE:	ka705ava //TRAIN "B" - LOOP 21 MAINSTEAM IS DOR ka505ava <update as needed>
4	EVENT ACTION: COMMAND: PURPOSE:	ka505dva //TRAIN "A" - LOOP 22 MAINSTEAM IS DOR ka705dva <update as needed>
5	EVENT ACTION: COMMAND: PURPOSE:	ka705dva //TRAIN "B" - LOOP 22 MAINSTEAM IS DOR ka505dva <update as needed>
6	EVENT ACTION: COMMAND: PURPOSE:	ka505hva //TRAIN "A" - LOOP 23 MAINSTEAM IS DOR ka705hva <update as needed>
7	EVENT ACTION: COMMAND: PURPOSE:	ka705hva //TRAIN "B" - LOOP 23 MAINSTEAM IS DOR ka505hva <update as needed>
8	EVENT ACTION: COMMAND: PURPOSE:	ka505lva //TRAIN "A" - LOOP 24 MAINSTEAM IS DOR ka705lva <update as needed>
9	EVENT ACTION: COMMAND: PURPOSE:	ka705lva //TRAIN "B" - LOOP 24 MAINSTEAM IS DOR ka505lva <update as needed>
10	EVENT ACTION: COMMAND: PURPOSE:	et_array(2).and.ET_array(3) //Event trigger DMF MS0092E <update as needed>
11	EVENT ACTION: COMMAND: PURPOSE:	et_array(4).and.et_array(5) //Event trigger DMF MS0092F <update as needed>
12	EVENT ACTION: COMMAND: PURPOSE:	et_array(6).and.et_array(7) //Event trigger DMF MS0092G <update as needed>
13	EVENT ACTION: COMMAND: PURPOSE:	et_array(8).and.et_array(9) //Event trigger DMF MS0092H <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	PR0017A PZR LEVEL CH I (LT459) FAILS H/L	N/A	N/A	N/A	RT-1	100
02	RC009A 21 RC PUMP - #3 SEAL FAILS - w/ DEGRADATION	N/A	N/A	N/A	RT-2	100
03	SW0339F 26 SW PUMP- Press SW Fails H/L	N/A	N/A	N/A	N/A	PRESS SW FAIL HI
04	SW0215C 23 SERVICE WATER PUMP TRIP	N/A	N/A	N/A	RT-3	
05	CN0117C 23 CONDENSATE PUMP TRIP	N/A	N/A	N/A	RT-4	
06	MS0088Ar 21 Main Steam Line Leak Inside Cont BEFORE orifice	N/A	N/A	N/A	RT-5	1
07	RP0279A AUTO MSLIS FAILS TO ACT, TRN A	N/A	N/A	N/A	N/A	
08	RP0279B AUTO MSLIS FAILS TO ACT, TRN B	N/A	N/A	N/A	N/A	
09	MS0092E 21MS167 FAILS OPEN	N/A	N/A	N/A	N/A	
10	MS0092F 22MS167 FAILS OPEN	N/A	N/A	N/A	N/A	
11	MS0092G 23MS167 FAILS OPEN	N/A	N/A	N/A	N/A	
12	MS0092H 24MS167 FAILS OPEN	N/A	N/A	N/A	N/A	

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
01	SW32D 23 SW PUMP BKR CONTROL POWER	00:00:15	N/A	N/A	RT-9	OFF
02	SW31D 23 SW PUMP RACK OUT	N/A	N/A	N/A	RT-9	TAGGED
03	MS05A 21MS45 21 STM GEN STM SUP-23 AFP	N/A	100	00:01:00	RT-11	0

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
01	CG01 F DI KCG01TC1 21MS167 21 SG STOP VALVE CLOSE	N/A	N/A	N/A	N/A	OFF
02	CG02 F DI KCG02TC1 22MS167 22 SG STOP VALVE CLOSE	N/A	N/A	N/A	N/A	OFF
03	CG03 F DI KCG03TC1 23MS167 23 SG STOP VALVE CLOSE	N/A	N/A	N/A	N/A	OFF
04	CG04 F DI KCG04TC1 24MS167 24 SG STOP VALVE CLOSE	N/A	N/A	N/A	N/A	OFF
05	BD12 B DI KBD12DC1 21MS167 HYDRAULIC CLOSE	N/A	N/A	N/A	N/A	OFF
06	BE12 B DI KBE12DC1 22MS167 HYDRAULIC CLOSE	N/A	N/A	N/A	N/A	OFF
07	BM12 B DI KBM12DC1 23MS167 HYDRAULIC CLOSE	N/A	N/A	N/A	N/A	OFF

_____08	BN12 B DI KBN12DC1 24MS167 HYDRAULIC CLOSE	N/A	N/A	N/A	N/A	OFF
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OTHER CONDITIONS:

Description

SEQUENCE OF EVENTS

- a. State shift job assignments.
- b. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).
- c. Inform the crew “The simulator is running. You may commence panel walkdowns at this time. SM please inform me when your crew is ready to assume the shift”.
- d. Allow sufficient time for panel walk-downs. When informed by the SM that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>1. Load Reduction to Remove 21 Heater Drain Pump from Service:</p>			
<p>Note: Crew will use reactivity plan and should determine approx. 85 gals of boron to be added</p>	<p>Crew briefs reactivity plan to reduce load to 95%.</p>		
<p>RO will most likely use boration "hard card" Attachment 3 of S2.OP-SO.CVC-0006</p>	<p>RO initiates a boration and/or inserts control rods.</p> <ul style="list-style-type: none"> • PRESS Make up mode STOP • ADJUST 2CV172 boric acid flow setpoint to desired value • SET boric acid flow register to desired gallons • PRESS Makeup control mode BORATE pushbutton • PRESS Makeup control mode START • ENSURE boric acid flow register indicates flow 		
<p>PO will most likely use Routine Load Reduction "hard card" Attachment 3 of S2.OP-SO.TRB-0002</p>	<p>PO initiates a turbine load reduction to 95%.</p> <ul style="list-style-type: none"> • ENSURE Main Turb data display on Plant computer • ADJUST turbine ramp rate for TIP control to 10%/hr • ADJUST setter to 89% • Select GO • ENSURE setter – actual and Reference displays are updating 		
<p>Proceed on to next event following load reduction or as directed by Lead Examiner.</p>	<p>RO monitors Tavg and control rods for proper response.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>2. Pressurizer Level CH 1 fails high:</p>			
<p>Simulator Operator: Insert RT-1 at direction from Lead Examiner.</p>			
<p>PR0017A, PZR LEVEL CH I (LT459) fails H/L Value = 100</p>			
	<p>RO reports unexpected alarms OHA E-4 PZR LVL HI, E-20, PZR HTR ON LVL HI.</p>		
	<p>PO refers to 2CC1 ARP</p>		
	<p>RO reports PZR Level Channel I has failed high.</p>		
	<p>RO reports charging flow has lowered.</p>		
	<p>RO places Master Flow Control in Manual and raises charging flow to restore PZR level to program.</p>		
	<p>CRS enters S2.OP-AB.CVC-0001</p>		
	<p>PO initiates Attachment 1 CAS.</p>		
	<p>RO reports charging pump is running and no signs of cavitation.</p>		
	<p>RO reports that a PZR level controlling channel has failed high.</p>		
	<p>CRS directs RO to take manual control of charging</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
3. 21 RCP standpipe level low			
<p>Simulator Operator: Insert RT-2 on direction from Lead Examiner. This will insert the following malfunction:</p> <p>RC009A 21 RC PUMP - #3 SEAL FAILS - w/ DEGRADATION Value = 100</p>	<p>Crew reports unexpected console alarm, 21 RCP Standpipe level low.</p>		
<p>Simulator Operator: Verify ET-1 is true when 21 WR62 is opened, this will delete MALF RC009A</p>	<p>Crew refers to alarm response and makes up to standpipe and monitors for leakage IAW S2.OP-AR.ZZ-0011.</p> <ul style="list-style-type: none"> • RO VERIFIES Seal Water Leakoff alarm is clear • START 21 or 22 Primary Water Pump • OPEN 2WR80 PW to Contmt Stop Valve • OPEN 21WR62 Standpipe Supply Valve • LOG RCP standpipe Fill <p>When low level clears and high level alarms:</p> <ul style="list-style-type: none"> • STOP Primary Water Pump • CLOSE 2WR80 PW to Contmt Stop Valve • CLOSE 21WR62 Standpipe Supply Valve 		
	<p>Crew will monitor parameters and possibly initiate a Reactor coolant leakrate surveillance procedure.</p>		
<p>Proceed to next event when direction by Lead Examiner.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>4. 23 SW Pump trips and 26 SW fails to Auto start:</p>			
<p>Simulator Operator: Enter RT-3 on direction from Lead Examiner.</p> <p>SW0215C, 23 SW pump trips SW0339F, 26 SW pressure switch fails high</p>			
	<p>RO reports unexpected OHA alarms for:</p> <ul style="list-style-type: none"> • B-13, 21 SW HDR PRESS LO • B-14, 22 SW HDR PRESS LO • B-15, TURB AREA SW HDR PRESS LO 		
<p>Examiner's Note: Crew does not have to enter S2.OP-AB.SW-0001 since the only action that the AB requires is to start standby SW Pump.</p>			
	<p>RO reports 23 SW Pump tripped and 26 SW Pump in Auto failed to start.</p> <p>RO starts 26 SW pump.</p> <p>RO reports low SW pressure alarms are cleared.</p>		
	<p>CRS enters S2.OP-AB.SW-0001, Loss of SW Header Pressure</p> <p>PO initiates Attachment 1 CAS</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports no indication of SW Bay leak.		
	PO starts SW Pumps to maintain header pressure between 95-150 psi.		
	PO reports all SW OHA alarms are cleared.		
	PO reports no indication of leak or valve malfunction on the turbine header.		
<p>Role Play: IF an operator is dispatched to investigate the trip of 23 SW Pump, then report back in 2 minutes the following: “the 4KV breaker for 23 SW Pump is open and no relay flags are up”, if dispatched to SW report no abnormalities locally at the pump after 4 minutes.</p>			
<p>Insert RT-9 to tag SW pump if requested</p>			
TS evaluation #2:			
	<p>CRS enters:</p> <ul style="list-style-type: none"> TS 3.7.4 (72 hours). This is due to having 21 and 23 SW Pumps inoperable in one bay resulting in only one operable SW loop (refer to S2.OP-SO.SW-0005 Attachment 2) 		
<p>Proceed to next event at Lead Examiner direction.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
5. 23 Condensate Pump trips:			
Simulator Operator: Insert RT-4 by direction from Lead Examiner. CN0117C, 23 condensate pump trips			
	PO reports 23 Condensate Pump tripped.		
	CRS enters S2.OP-AB.CN-0001, Main Feedwater/Condensate Abnormality.		
	PO initiates Attachment 1 CAS		
	PO reports SGFP did not trip		
	PO reports 23 Condensate Pump tripped.		
Role Play: IF an operator is dispatched, then report the following after 1-2 minutes; <i>“23 Condensate Pump breaker is open and the overcurrent relay flag is up”</i> .			
	PO reports SGFP suction pressure is less than 320 psig.		
	PO opens 21-23 CN108's (Polisher Bypass valves)		
	PO reports 2CN47 is not open.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Boration should be approx. 17gal/%power at a rate commensurate with selected power reduction rate</p>	<p>CRS evaluates plant conditions IAW Attachment 2 section 4.0</p>		
	<p>CRS determines that a load reduction to 85% Rx power at $\leq 5\%/min$ is required.</p>		
	<p>CRS brief load reduction and Reactivity plan.</p>		
	<p>RO initiates boration IAW S2.OP-SO.CVC-0006, Boration Concentration Control.</p> <ul style="list-style-type: none"> • PRESS Make up mode STOP • ADJUST 2CV172 boric acid flow setpoint to desired value • SET boric acid flow register to desired gallons • PRESS Makeup control mode BORATE pushbutton • PRESS Makeup control mode START • ENSURE boric acid flow register indicates flow 		
	<p>PO initiates load reduction using turbine load control IAW S2.OP-SO.TRB-0002, Turbine-Generator Shutdown Operations</p> <ul style="list-style-type: none"> • ENSURE Main Turb data display on Plant computer • ADJUST turbine ramp rate for TIP control to desired %/minute • ADJUST setter to 85% • Select GO <p>ENSURE setter – actual and Reference displays are updating</p>		
<p>CRS enters S2.OP-AB.LOAD-0001, Rapid Load Reduction.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Proceed to next event after the load reduction is complete or at Lead Examiner's direction.	PO initiates Attachment 1 CAS		
	RO maintains Tavg on program IAW Attachment 3		
	CRS directs WCC to transfer heating steam to Unit 1 IAW SC.OP-SO.HS-0001.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>6. 21 SG Steam Line Break (inside containment):</p>			
<p>Simulator Operator: Insert RT-5 by direction from Lead Examiner.</p> <p>MS0088Ar 21 Main Steam Line Leak Inside Cont BEFORE orifice Value = 1</p>			
	<p>RO reports unexpected alarms for C-38 CFCU LK DET HI, CONT PRESS HI, and then shortly after C-30 for CFCU LK DET HI-HI.</p>		
	<p>PO determines no rise in CNTMT radiation and that leak is inside containment based on rising containment pressure.</p>		
	<p>RO reports C-2 CNTMT SUMP PUMP START</p>		
<p>Evaluator's Note: Around this time Cntmt Pressure is <u>rising quickly</u> and Rx power is slowly rising.</p>			
	<p>CRS enters S2.OP.AB.STM-0001, Excessive Steam Flow.</p>		
	<p>CRS directs initiation of Attachment 1 of S2.OP-AB.STM-0001.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Evaluator's Note: It will be apparent quickly that a unit shutdown will not be performed before a Rx trip is required based on rising containment pressure.</p>	PO verifies EHC system operating correctly, and MS10s and Steam Dumps are closed.		
	PO reports no SG Safety Valve is open or leaking		
	RO reports Rx Power is not stable.		
	RO reports normal cntmt radiation levels AND the following alarms and indications: <ul style="list-style-type: none"> ▪ Rising Cntmt pressure ▪ OHA C-38 CFCU LK DET HI ▪ OHA C-30 CFCU Lk DET HI-HI ▪ OHA C-2 CNTMT SUMP START 		
	RO places all CFCUs in SLOW speed		
	RO reports steam leak in containment is not isolable		
	CRS determines a Unit shutdown is required and plans rate and reactivity management strategy.		
RO calculates boration required.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>7. Unisolable steam leak inside containment (Initiate Rx Trip, MSLI and SI):</p>			
	<p>CRS determines need to implement CAS of AB.STM-1 based on CNTMT Pressure rising towards Auto SI (4 psig)</p>		
	<p>RO Trips the Rx and confirms Rx is Tripped</p>		
	<p>RO manually initiates MSLI.</p>		
<p>Simulator Operator: Once 21 MS167 is closed then modify <u>MALF MS0088Ar to 20%</u>.</p>			
<p>Record time when steam leak is modified to steam break:</p> <p>Time: _____; _____; _____</p>			
	<p>RO verifies steam leak is not isolated</p>		
	<p>RO initiates SI.</p>		
	<p>RO reports steam leak is on 21 SG.</p>		
	<p>PO throttles AFW flow to no less than 22E4 lbm/hr.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Critical Task # 1 (CT-17): Isolate feed and steam flow to faulted SG before transition out of EOP-LOSC-1, Loss of Secondary Coolant. This CT also includes a time critical action for isolating AFW feedflow to the ruptured SG by closing the respective AF21 and AF11 ≤ 10 minutes.</p> <p>SAT _____ UNSAT _____</p> <p>This CT is comprised of 2 parts; isolate feed flow (Part 1) and then steam flow (Part 2) later in EOP-LOSC-1.</p>			
	<p>Critical Task #1 Part 1 - PO closes 21AF21 and 21AF11 to isolate faulted 21 SG.</p>		
<p>Record time AFW valves are closed:</p> <p>Time: _____ : _____ : _____</p>			
	<p>RO reports SEC loading is not complete for B vital bus, but that all available equipment started.</p>		
	<p>PO reports 21 and 22 AFW pumps are operating.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 21 and 22 CA330s are closed.		
	RO reports containment pressure has NOT remained less than 15 psig.		
	PO reports main steam line isolation requirements were met and MSLI previously initiated.		
	PO reports all 4KV vital busses are energized.		
	RO reports CAV is in Accident Pressurized mode.		
	RO reports correct switchgear room ventilation operation.		
	RO reports 2 CCW pumps are running.		
	RO reports both CCW HXs are in Auto.		
	RO reports correct ECCS pump alignment and expected flows for RCS conditions.		
Examiner's Note: PO should have lowered AFW flow to as close to 22E4 lbm/hr as possible.			
	PO reports AFW flow is >22E4 lbm/hr.		
	RO reports all RCPs are stopped because of phase B actuation.		
	RO reports Tavg is not stable and is rising.		
	RO reports Tavg is trending to 547 F.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports both PZR PORVs are closed and block valves are open.		
	PO reports 21 SG pressure is lowering in an uncontrolled manner or completely depressurized.		
	RO reports that MSLI was previously initiated.		
	CRS transitions to 2-EOP-LOSC-1, Loss of Secondary Coolant.		
	RO reports MSLI has been initiated.		
	PO reports all valves in Table A are closed.		
	PO reports 21 SG pressure is dropping in an uncontrolled manner.		
	PO reports that all SGs pressures are NOT dropping in an uncontrolled manner OR completely depressurized.		
	Critical Task #1 - PO closes or verifies closed the following valves: 21BF13, 21BF19, 21BF40, 21MS7, 21MS10, 21MS18, 21MS167, and 21GB4 [Critical Task #2, Part 2 complete]		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Critical Task #1, Part 2 (CT-17): Isolate feed and steam flow to faulted SG before transition out of EOP-LOSC-1, Loss of Secondary Coolant.</p> <p>SAT _____ UNSAT _____</p>			
<p>Simulator Operator: Insert RT-11 to close 21MS45.</p> <p>MS05A 21 STM GEN SUP-23 AFP Final = 0 Ramp = 1 min</p>	<p>PO reports that 21 SG is faulted.</p> <p>PO reports that both 21 and 23 SGs are NOT faulted.</p> <p>CRS dispatches operator to close 21MS45.</p>		
	<p>RO resets Phase A.</p> <p>RO opens 21 and 22 CA330s.</p> <p>RO resets SG sample isolation bypass.</p> <p>RO opens 21 thru 24 SS94's.</p> <p>CRS directs Chemistry to sample 21-24 SGs for activity.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
8. SI Termination EOP-TRIP-3:			
	CRS transitions to EOP-TRIP-3, SI Termination.		
	RO resets SI & SEC, Phase A, and Phase B		
Critical Task-2, (CT-48): Terminate ECCS flow before transition out of EOP-TRIP-3. SAT _____ UNSAT _____ Shaded steps are required to satisfy CT			
	RO Stops all but one Charging Pump [Critical Task-2, Part 1]		
Critical Task-2, Part 1 (CT-48): Secure all but 1 charging Pump before transition out of EOP-TRIP-3 SAT _____ UNSAT _____ Shaded steps are required to satisfy CT			
	RO reports RCS pressure is stable or rising.		
	RO reports Charging pump suction is aligned to RWST.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<div style="border: 1px solid black; padding: 5px;"> <p>Critical Task-2, Part 2 (CT-48): Isolate the BIT by closing 2SJ4 and 2SJ5 or 2SJ12 and 2SJ13</p> <p>SAT _____ UNSAT _____</p> <p>Shaded steps are required to satisfy CT</p> </div>	RO opens 2CV139 and 2CV140		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Critical Task-2, Part 3 (CT-48): Secure SI Pumps before transition out of EOP-TRIP-3 SAT _____ UNSAT _____ Shaded steps are required to satisfy CT			
	RO reports both RHR pump suction aligned to RWST.		
Critical Task-2, Part 4 (CT-48): Secure RHR Pumps before transition out of EOP-TRIP-3 SAT _____ UNSAT _____ Shaded steps are required to satisfy CT	RO stops 21 and 22 RHR pumps [Critical Task 2, Part 4]		
Scenario may be terminated when CT-2 is completed or by direction from Lead Examiner.			

N. SCENARIO REFERENCES

- A. Alarm Response Procedures (Various)
- B. Technical Specifications
- C. Emergency Plan (ECG)
- D. OP-AA-101-111-1003, Use of Procedures
- E. 2-EOP-TRIP-1, Rx Trip or Safety Injection
- F. 2-EOP-LOSC-1, Loss of Secondary Coolant
- G. 2-EOP-TRIP-3, SI Termination
- H. S2.OP-AB.SW-0001, Loss of SW Header Pressure
- I. S2.OP-AB.CVC-0001, Loss of Charging
- J. S2.OP-SO.CN-0001, Main Feedwater/Condensate System Abnormality
- K. S2.OP-AB.LOAD-0001, Rapid Load Reduction
- L. S2.OP-IO.ZZ-0004, Power Operation
- M. S2.OP-AR.ZZ-0011, Control Console 2CC1

MODE: 1 POWER: 100% RCS BORON: 802 MWe 1220

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

NA

REACTIVITY PARAMETERS

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

1. Load reduction to 95% to support removal of 21 Heater Drain Pump

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.
No penalty minutes in the last 24 hrs.

PRIMARY:

SECONDARY:

- Polisher in service
- Blowdown 35K per loop to 23 Condenser

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

- 21 SW Pump C/T for pump repack.

- ___ 1. Verify simulator is in "TRAIN" Load
- ___ 2. Simulator is in RUN
- ___ 3. Overhead Annunciator Horns ON
- ___ 4. All required computer terminals in operation
- ___ 5. Simulator clocks synchronized
- ___ 6. All tagged equipment properly secured and documented
- ___ 7. TSAS Status Board up-to-date
- ___ 8. Shift manning sheet available
- ___ 9. Procedures in progress open and signed-off to proper step
- ___ 10. All OHA lamps operating (OHA Test) and burned out lamps replaced
- ___ 11. All printers have adequate paper AND functional ribbon
- ___ 12. Required procedures clean
- ___ 13. Multiple color procedure pens available
- ___ 14. Required keys available
- ___ 15. Simulator cleared of unauthorized material/personnel
- ___ 16. All charts advanced to clean traces and chart recorders are on.
- ___ 17. Rod step counters correct (channel check) and reset as necessary
- ___ 18. Exam security set for simulator
- ___ 19. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter
with Baseline Data filled out
- ___ 20. Recording Media available (if applicable)
- ___ 21. Ensure ECG classification is correct
- ___ 22. Reference verification performed with required documents available
- ___ 23. Verify phones disconnected from plant after drill.
- ___ 24. Ensure ECG related paperwork is marked "For Training Use Only".

In reviewing each proposed CT, the examination team assesses the task to ensure, that it is essential to safety. A task is essential to safety if, in the judgment of the examination team, the improper performance or omission of this task by a licensee will result in direct adverse consequences or in significant degradation in the mitigative capability of the plant. The examination team determines if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a task by an individual necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

- I. Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...
 - degradation of any barrier to fission product release
 - degraded emergency core cooling system (ECCS) or emergency power capacity
 - a violation of a safety limit
 - a violation of the facility license condition
 - incorrect reactivity control (such as failure to initiate Emergency Boration or Standby Liquid Control, or manually insert control rods)
 - a significant reduction of safety margin beyond that irreparably introduced by the scenario
- II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...
 - effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition described in the previous paragraph.
 - recognize a failure or an incorrect automatic actuation of an ESF system or component.
 - take one or more actions that would prevent a challenge to plant safety.
 - prevent inappropriate actions that create a challenge to plant safety (such as an unintentional Reactor Protection System (RPS) or ESF actuation).

SCENARIO IDENTIFIER: 21-01 NRC Scenario 2 REVIEWER: K. Hantho

Initials Qualitative Attributes

- | | | |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K | 1. | The scenario has clearly stated objectives in the scenario. |
| K | 2. | The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events. |
| K | 3. | The scenario consists mostly of related events. |
| K | 4. | Each event description consists of: <ul style="list-style-type: none">• the point in the scenario when it is to be initiated• the malfunction(s) that are entered to initiate the event• the symptoms/cues that will be visible to the crew• the expected operator actions (by shift position)• the event termination point |
| K | 5. | No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event. |
| K | 6. | The events are valid with regard to physics and thermodynamics. |
| K | 7. | Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives. |
| K | 8. | The simulator modeling is not altered. |
| K | 9. | All crew competencies can be evaluated. |
| K | 10. | The scenario has been validated. |
| N/A | 11. | If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario. |
| K | 12. | ESG-PSA Evaluation Form is completed for the scenario at the applicable facility. |

21-01 NRC Scenario 2

Critical Tasks:

CT-1 (CT-17)

Isolate the faulted SG before transition out of LOSC-1 (this CT includes time critical operator action time for isolating AFW flow to faulted SG ≤ 10 minutes per OP-SA-102-106-F1)

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 failure by the crew to “demonstrate the ability to recognize a failure or an incorrect automatic actuation of an ESF system or component.”

Failure to isolate a faulted SG can result in challenges to the following CSFs:

- Integrity
- Subcriticality
- Containment (if the break is inside containment)

Cues:

- Both of the following:
 - Indication of uncontrolled depressurization of multiple SGsAND
 - Valve position or flow rate indication that:
 - Main steamline isolation has not actuated
 - Feedline isolation has not actuatedOR
 - Both of the following:
 - Steam pressure and flow rate indications that make it possible to identify a single SG as faultedAND
 - Valve position and flow rate indication that AFW continues to be delivered to the faulted SG

Measurable Performance Indicator

Manipulation of controls as required to isolate the faulted SG

- MSIVs indicate closed
- Indication of feedline isolation
 - Feedwater control valves indicate closed (**respective AF21 and AF11 are closed ≤ 10 minutes**)
 - Feedline isolation valves indicate closed
 - Main feed pumps indicate tripped
- Indication that AFW flow to the faulted SG is stopped
 - AFW flow control valves for faulted SG indicate closed

Feedback

- Any depressurization of intact SGs stops
- Steam flow indication from faulted SG decreases to zero
- RCS cooldown stops
- Main feedwater flow rate indication of zero

- AFW flow rate indication to faulted SG of zero

CT-2 (CT-48)

Critical Task

Terminate ECCS flow before transition out of TRIP-3

Safety Significance

Failure to terminate ECCS flow when SI termination criteria are met causes the PRZR to fill and RCS pressure to increase. Additionally, the unnecessary continuation of ECCS flow needlessly aggravates the thermal stress on the reactor vessel. This constitutes an incorrect performance that causes a "significant reduction of safety margin beyond that irreparably introduced by the scenario."

Cues:

- Indication and/or annunciation of an extreme (RED path) or severe (ORANGE path) challenge to the integrity CSF

AND

- Indication and/or annunciation of reactor trip and SI

AND

- Indication and/or annunciation that SI termination criteria are met

Measurable Performance Indicator

Manipulation of controls as necessary to terminate ECCS flow

- Breaker position lamps for all but one charging/SI pump indicate open

AND

- Breaker position lamps for all high-head ECCS pumps indicate open

AND

- Breaker position lamps for all low-head ECCS pumps indicate open

AND

- Valve position lamps for BIT isolation valves indicate closed

Feedback

- Indication of charging/SI ECCS flow rate through BIT decreasing or zero
- Indication of high-head ECCS flow rate decreasing or zero
- Indication of low-head ECCS flow rate decreasing or zero

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

<u>Y/N</u>	<u>Event</u>	<u>Y/N</u>	<u>Event</u>
N	TRANSIENTS with PCS Unavailable	N	Loss of Service Water
N	Steam Generator Tube Rupture	N	Loss of CCW
N	Loss of Offsite Power	N	Loss of Control Air
N	Loss of Switchgear and Pen Area Ventilation	N	Station Black Out
N	LOCA		

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>	<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>
N	Containment Sump Strainers	N	Gas Turbine
N	SSWS Valves to Turbine Generator Area	N	Any Diesel Generator
N	RHR Suction Line valves from Hot Leg	N	Auxiliary Feed Pump
N	CVCS Letdown line Control and Isolation Valves	N	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

<u>Y/N</u>	<u>OPERATOR ACTION</u>
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

SIMULATOR EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: NRC-3 [AR.ZZ-11, AB.CVC-1, AB.PZR-1, AB.TRB-1, TRIP-1, FRSM-1 using BAT pumps, TRIP-2]
SCENARIO NUMBER: 21-01 NRC ESG-3
EFFECTIVE DATE: See Approval Below
EXPECTED DURATION: 60 minutes
REVISION NUMBER: 0
PROGRAM: L.O. REQUAL
 INITIAL LICENSE
 STA
 OTHER _____

Revision Summary:
❖ Rev. 0

PREPARED BY:	K. Hantho _____ Lead Regulatory Exam Author	9-16-22 _____ Date
APPROVED BY:	M. Wadusky _____ Operations Training Manager or designee	_____ Date
APPROVED BY:	M. Winkelspecht _____ Facility Representative	_____ Date

SCAN OF SIGNED SCENARIO COVER SHEET

Form 3.3-1 Scenario Outline

Facility:	<u>Salem</u>	Scenario #:	<u>3</u>
Scenario Source:	<u>New</u>	Op. Test #:	<u>21-01</u>
Examiners:	_____	Applicants/	_____
	_____	Operators:	_____
	_____		_____

Initial Conditions: Unit 2 is at 93% power MOL

Turnover: The crew is directed to raise power to 98% power at 10% per hour IAW S2.OP-IO.ZZ-0004 using dilution, control rods and turbine load control. The 23 Charging pump is C/T for maintenance.

Critical Tasks:

1. Insert negative reactivity into the core by inserting control rods and/or performing emergency boration and dispatching operators to locally trip the reactor and/or the turbine
2. Close pressurizer PORV block valve prior to step 7 of EOP-TRIP-2

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ATC(R) BOP(R) CRS(N)	Raise load to 98% at 10%/hr IAW IOP-4.
2	CC0172A	ATC (C,MC) CRS (C)	21 CCW Pump trips and 23 CCW fails to Auto start
3	CV0208A	ATC(C) CRS(C,TS)	21 Charging Pump trips
4	PR0016A	ATC(I,MC) CRS(I,TS)	PZR Pressure Controlling Channel fails HIGH
5	TU0083A	All(M)	Main Turbine high vibrations
6	RP058 RP0059A RP0059B RP0060A RP0060B	ATC(C) BOP(C) CRS(C)	Rx fails to trip by all means from the control room
7	RD0061	ATC(I,MC) CRS(I)	Rods speed controller fails to 8 spm (CT-1)
8	VL0298	ATC(C,MC) CRS(C)	2PR2 PZR PORV fails open following exiting EOP-FRSM-1 (CT-2)
		ABs	ARP → AB.CVC-1 → AB.PZR-1 → AB.TURB-1
		EOPs	TRIP-1 → FRSM using BAT pumps → TRIP-2

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control

I. OBJECTIVES

- A. Given the order, the crew will commence a power ascension IAW S2.OP-IO.ZZ-0004.
- B. Given the indication of a CCW component or system malfunction, perform actions to RESPOND to the loss of a CCW pump in accordance with S2.OP-AB.CC-0001.
- C. Given the order or indications of a charging system malfunction, perform actions as the nuclear control operator to RESPOND to the loss or malfunction of the charging system in accordance with the approved station procedures.
- D. Given indication of a loss or malfunction of the Charging system DIRECT corrective action for a Charging System malfunction in accordance with the approved station procedures.
- E. Given a failure of PZR pressure malfunction, the crew will take corrective action, IAW S2.OP-AB.PZR-0001.
- F. Given the order or indications of a PZR pressure system malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
- G. Given indication of a PZR pressure problem, system malfunction DIRECT the response to the malfunction in accordance with the approved station procedures.
- H. Given the order or indications of a main turbine or generator malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
- I. Given indications of a main turbine or generator malfunction, DIRECT the response to the malfunction in accordance with the approved station procedures.
- J. Given the order or indications of an anticipated transient without trip (ATWT), complete actions as the nuclear control operator to PERFORM the immediate response to the ATWT in accordance with the approved station procedures.
- K. Given indication of an anticipated transient without trip (ATWT), DIRECT the immediate response to the ATWT in accordance with the approved station procedures.
- L. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.
- M. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.
- N. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

1. Power ascension to 100% at 10%/hour.
2. 21CCW pump will trip requiring manual start of 23 CCW pump
3. 21 Charging pump trips
4. Pressurizer pressure channel 1 fails high
5. Main turbine rising vibrations
6. Reactor fails to TRIP by all means in the control room
7. 2PR2 pressurizer PORV fails open

III. SCENARIO SUMMARY

1. The crew will continue the power ascension to raise reactor power to 98% at 10% per hour. The reactivity plan calls for performing a dilution first, before raising turbine load. After the crew commences the power ascension, Event #2 will be entered.
2. 21 CCW pump will trip. The crew will receive multiple console alarms for pump trip and note backflashing stop pushbutton for 21 CCW pump. The crew will take actions as directed in the Alarm Response Procedure to start 23 CCW pump. Once the 23 CCW pump is started, Event #3 can be entered.
3. 21 charging pump trips. The crew will respond IAW S2.OP-AB.CVC-0001, Loss of Charging, and start the only remaining charging pump. The crew will then restore letdown flow. The CRS will evaluate Tech Specs and enter 3.5.2.a action a, 3.1.2.2.b, and 3.1.2.4. After Tech Specs have been evaluated, Event #4 will be entered.
4. The controlling PZR pressure channel will fail high. The crew will respond per S2.OP-AB.PZR-0001, Pressurizer Pressure malfunction, and take manual control of the master pressure controller. The crew will select an operable control channel. The CRS will evaluate Tech Specs and enter 3.3.1.1 action 6, and 3.3.2.1.b action 19, 3.4.5 action b and 3.2.5.b. After Tech Specs have been evaluated, Event #5 and 6 will be entered.
5. Main turbine vibrations will begin to rise and the crew will enter S2.OP-AB.TRB-0001, Main Turbine abnormality. The crew will recognize the degrading conditions and recommend a downpower to remove the turbine from service.
6. Main turbine vibrations will continue to rise requiring the operators to trip the turbine and reactor based on power level greater than 49%. The crew will perform the trip using guidance in the abnormal procedure and enter 2-EOP-TRIP-1, Reactor Trip or safety injection. The Reactor will fail to trip using the trip switches and reactor trip breaker Bezel pushbuttons requiring entry into 2-EOP-FRSM 1, Response to nuclear power generation-ATWS.
7. While in 2-EOP-TRIP-1, Reactor Trip or safety injection actions will be required to insert negative reactivity and rods will not step in automatically. The crew will be required to take control rods to manual and begin inserting negative reactivity using the Rod control manual pushbutton for rod insertion. Once actions have been completed in 2-EOP-FRSM 1, Response to nuclear power

generation-ATWS to establish a boration CT#1 then the reactor trip breakers will be open locally by the dispatched operator. Event #8 will be entered once the transition is made back to 2-EOP-TRIP-2, Reactor Trip response.

8. During EOP-TRIP-2 Reactor trip response, the crew will recognize that 2PR2 is open and attempt to close and when it will not close the crew will close the 2PR7 block valve CT#2.

A. INITIAL CONDITIONS

___ IC-242

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers ,tagged equipment)

<i>Initial</i>	Description
___	VC1and VC4 C/T
___	RCPs (SELF CHECK)
___	RTBs (SELF CHECK)
___	MS167s (SELF CHECK)
___	500 KV SWYD (SELF CHECK)
___	SGFP Trip (SELF CHECK)
___	21 CV PP (SELF CHECK)
___	23 CV Pump C/T
___	Suggested Protected Equipment:
___	▪ None
___	Complete Attachment 2 “Simulator Ready-for-Training/Examination Checklist.”

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description
	2	EVENT ACTION: PCRTIME > 5200 COMMAND: PURPOSE: <update as needed>
	3	EVENT ACTION: KB440TTD //REACTOR TRIP BREAKER "A"-TRIP COMMAND: PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
___ 01	CC0361C 23 COMPONENT COOLING PUMP Fails to Start on Low Pressure	N/A	N/A	N/A	N/A	
___ 02	CC0172A 21 COMPONENT COOLING PUMP TRIP	N/A	N/A	N/A	RT-1	
___ 03	CV0208A 21 CHARGING PUMP TRIP	N/A	N/A	N/A	RT-2	
___ 04	TU0083A MN TURBINE HI VIBRATION - BRG #	N/A	0	00:05:00	RT-4	10
___ 05	RP0060A FAILURE OF TRAIN "A" RX TRIP BREAKER TO TRIP	N/A	N/A	N/A	N/A	
___ 06	RP0060B FAILURE OF TRAIN "B" RX TRIP BREAKER TO TRIP	N/A	N/A	N/A	N/A	
___ 07	RP0058 FAILURE OF AUTOMATIC RX TRIP	N/A	N/A	N/A	N/A	
___ 08	RP0059A FAILURE OF MANUAL RX TRIP	N/A	N/A	N/A	N/A	
___ 09	RP0059B FAILURE OF MANUAL SI/RX TRIP	N/A	N/A	N/A	N/A	
___ 10	RD0061 ROD SPEED CONTROL PROGRAM FAILS	N/A	N/A	N/A	ET-3	8
___ 11	VL0298 2PR2 Fails to Position (0-100%)	N/A	N/A	N/A	RT-5	100
___ 12	PR0016A PZR PRESS CH I (PT455) FAILS H/L	N/A	0	00:00:10	RT-3	2500

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
___ 01	PR34D PORV STOP VALVE 2PR6 TAGGED	N/A	N/A	N/A	RT-13	TAGGED
___ 02	RP07D 21 MG SET MOTOR BKR	N/A	N/A	N/A	RT-10	STOP
___ 03	RP08D 22 MG SET MOTOR BKR	N/A	N/A	N/A	RT-10	STOP
___ 04	RP09D 21 MG SET GEN OUTPUT BKR	N/A	N/A	N/A	RT-10	TRIPPED

05	RP10D 22 MG SET GEN OUTPUT BKR	N/A	N/A	N/A	RT-10	TRIPPED
06	RP18D Open MAIN RX TRIP BKR A	N/A	N/A	N/A	RT-9	TRIP OPEN
07	RP19D Open MAIN RX TRIP BKR B	N/A	N/A	N/A	RT-9	TRIP OPEN

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
01	C310 F DI KC310TN0 2E6D PRESSURE HEATER BUS 480V-OPEN	N/A	N/A	N/A	N/A	OFF
02	C510 F DI KC510TN0 2G6D PRESSURE HEATER BUS 480V-OPEN	N/A	N/A	N/A	N/A	OFF

OTHER CONDITIONS:

Description

SEQUENCE OF EVENTS

- a. State shift job assignments.
- b. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).
- c. Inform the crew “The simulator is running. You may commence panel walkdowns at this time. SM please inform me when your crew is ready to assume the shift”.
- d. Allow sufficient time for panel walk-downs. When informed by the SM that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
1. Power Ascension to 98%			
	CRS briefs crew on power ascension to 98% at 10%/hour IAW S2.OP-IO.ZZ-0004, Power Operation.		
	RO briefs reactivity plan for power ascension.		
	PO briefs turbine load control plan.		
<p>Turnover reactivity plan calls for 1000 gal dilution to be performed for Load increase</p> <p>RO will most likely use boration "hard card" Attachment 3 of S2.OP-SO.CVC-0006 and select Alternate Dilute</p>	<p>RO initiates dilution IAW S2.OP-SO.CVC-0006 and uses control rods.</p> <ul style="list-style-type: none"> • PRESS Make up mode STOP • ADJUST 2CV179 primary water flow setpoint to desired value • SET primary water flow register to desired gallons • PRESS Makeup control mode DILUTE or Alternate Dilute pushbutton • PRESS Makeup control mode START • ENSURE 2CV172 Boric Acid Flow closes • ENSURE Primary Water flow register indicates flow 		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
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<p>PO initiates turbine load control IAW S2.OP-SO.TRB-0001, Turbine Generator Startup Operation.</p> <ul style="list-style-type: none"> • ADJUST turbine ramp rate for TIP control to 10%/hr • ADJUST setter to 98% • Select GO • ENSURE setter – actual and Reference displays are updating 	
<p>RO monitors Tavg and control rods for proper response.</p>	

Proceed to next event by direction from Lead Examiner.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
2. 21 CCW pump trips, 23 CCW pump fails to Auto start			
Simulator Operator: Insert RT-1 at the direction from Lead Evaluator. CC0172A, 21 CCW pump trip			
	RO reports unexpected console alarms for 21 CC HDR Pressure Lo and RCP Thermal Barrier Discharge Flow Lo.		
	RO reports 21 CCW pump tripped and the standby pump failed to Auto start.		
	CRS enters S2.OP-AB.CC-0001.		
Evaluator's Note: The crew can also enter the console ARP procedure and take actions to start the standby CCW pump.			
	RO places 23 CCW in Manual and starts 23 CCW pump.		
	RO reports Discharge Flow Lo is cleared.		
Proceed to next event at Lead Examiner's direction.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
3. 21 Charging pump trip			
Simulator Operator: Insert RT-2 on direction from Lead Evaluator.			
MALF: CV0208A 21 CHARGING PUMP TRIP			
	RO reports 21 charging pump trip.		
	RO reports letdown is isolated as expected.		
	CRS enters S2.OP-AB.CVC-0001, Loss of Charging.		
	PO initiates AB.CVC-1 CAS.		
	CRS initiates S2.OP-AB.RCP-0001 from CAS item 4.0. (No action will be performed in AB other than monitoring RCP parameters.)		
	RO reports No charging pumps are running.		
	RO reports no indication of cavitation prior to 21 charging pump trip.		
	RO reports letdown is isolated.		
	RO reports 21 Charging pump tripped.		
	RO reports 22 Charging pump is available.		
	RO verifies RCP seal inlet temps <225°F		
	RO closes 2CV55		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Role Play: If dispatched by crew then report back after 2-3 minutes that 21 CVpp breaker is tripped and nothing abnormal noted at the pump or the breaker.</p>	RO Starts 22 Charging Pump		
	RO adjusts 2CV55 to desired flow and insures RCP seal injection is 6-12 gpm		
	RO ensures open 2CV7		
	RO opens 2CV2 and 2CV277 and places in Auto.		
	RO adjusts charging flow to 85-90 gpm		
	RO opens one letdown orifice and maintains letdown pressure < 300 psig by adjusting 2CV18 in manual.		
	RO places 2CV18 in Auto when one orifice valve is in service.		
	RO reports PZR level can be maintained stable or rising, and returns 2CV55 to auto when PZR level is on program.		
	<p>TS evaluation #1:</p>	CRS enters TS 3.5.2.a act a (72 hours) 3.1.2.4 (72 hours) and 3.1.2.2 (72 hours).	
<p>Proceed to next event after Tech Specs has been evaluated or by direction from Lead Examiner.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
4. PZR Pressure Channel 1 Fails High			
Simulator Operator: Insert RT-3 on direction from Lead Evaluator. MALF: PR0016A, PZR PRESS CH I FAILS H/L Severity: 2500 Ramp: 10 seconds			
	RO reports unexpected OHA alarms D-8 RC Press HI, and E-42 2PR1 ½ Trip.		
	RO determines actual pressure is not high and reports spray valves open and heaters off, and recommends placing Master Pressure Controller in manual.		
	CRS directs RO to place Master Pressure Controller (MPC) in manual.		
	RO places MPC to Manual and lowers demand (increase pressure) to close sprays and energize PZR heaters.		
	CRS enters S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.		
	CRS directs initiation of Att. 1 CAS.		
	CRS gives band for control of PZR pressure.		
	RO reports PZR Press Channel I failed high.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Evaluator's Note: The requirement to shut 2PR6 and deenergize it is within one hour of the PZR Pressure Channel I instrument failure IAW Tech Specs.	RO selects Channel III for control.		
	RO matches MPC demand to current pressure and returns Master Pressure Controller to AUTO.		
	RO closes 2PR6 to comply with Tech Specs.		
Simulator Operator: Insert RT-13 2 minutes after being directed to remove power from 2PR6 PR34D PORV Stop Valve 2PR6 Condition: Tagged	CRS directs WCC to remove control power from 2PR6.		
	CRS directs PO to initiate removing failed channel from service and contact I&C for support IAW S2.OP-SO.RPS-0003.		
Evaluator's Note: Crew may wait for I&C response before performing any actions in S2.OP-SO.RPS-0003.	PO checks that tripping associated bistables will not result in an ESF or RPS actuation.		
	PO verifies that Channel III is selected for Master Pressure Control.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
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TS evaluation #1:

<p>PO selects PZR Pressure recorder to channel other than I.</p>	
<p>CRS enters LCOs 3.3.1.1 Action 6 (72 hours), 3.3.2.1.b Action 19* (72 hours), 3.4.5.b (1 hour), and 3.2.5.b DNB (2 hours).</p>	
<p>Proceed to next event after Tech Specs has been evaluated or by direction from Lead Examiner.</p>	

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
5. Main turbine high vibrations			
Simulator Operator: Insert RT-4 when directed by lead examiner.			
Evaluators Note: OHA G-35 TSI trouble will alarm with high vibration approx. 3 minutes after malfunction is entered.			
	PO will announce unexpected alarm G-35 TSI Trouble and dispatch secondary operator to evaluate		
	PO will check vibrations on plant computer and note that vibrations have risen and continue to rise		
	CRS will hold brief to discuss limits and requirements to trip the turbine when > 9 Mills on any bearing		
	CRS may direct a downpower to reduce the vibrations		
Vibrations will continue to rise and reach the turbine trip required setpoint of > 9 mils			
	CRS will direct reactor trip and turbine trip when vibrations continue to rise and are rising above the trip criteria.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
6. Reactor fails to trip by all means from the control room			
	RO attempts to trip Rx and it fails to trip		
	Crew announces ATWT		
Simulator operator: Ensure ET-3 is true when RO attempts to open A Rx trip breaker. This will insert MALF RD0061 ROD SPEED CONTROL PROGRAM FAILS and fail the auto rod speed insertion rate to 8 steps per minute.			
	RO attempts to trip using Both Rx trip switches and Rx trip breaker bezels		
	RO recommends entering EOP-FRSM-1		
Evaluator note: If RO allows rods to insert in auto the speed will be failed to 8 steps per minute, should recognize failure and place in manual and insert rods.	CRS enters EOP-FRSM-1, Response to Nuclear Power Generation.		
	RO initiates manual rod insertion. [This action also satisfies CT-1]		
The crew dispatches NEO to locally open the Reactor Trip Breakers and M-G Set breakers			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports PZR heater bus breakers will not open.		
	PO trips the Main Turbine.		
	PO starts 21 and 22 AFW pumps.		
	PO reports three S/G's greater than 14%		
	PO reports total AFW flow.		
	RO reports immediate actions of EOP-TRIP-1 and FRSM-1 are complete.		
	RO ensures 22 Charging pump is running. (21 CV is C/T).		
	RO reports SI has not actuated.		
	RO starts both boric acid pumps in fast speed.		
	RO opens 2CV175 Rapid Boration Valve		
	RO closes 21 and 22CV160s		
	RO reports flow is indicated on Rapid Borate flowmeter.		
	RO places 2CV55 or Master flow controller in manual and verifies flow from charging pump is greater than 87 gpm		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Critical Task-1 (CT-52): Insert negative reactivity into to the core by at least one of the following methods, <u>and</u> dispatch operators to locally trip the reactor and/or the turbine:</p> <ul style="list-style-type: none"> • De-energize RDMG sets • Insert control rods • Establish Emergency Boration flow to the RCS <p>SAT _____ UNSAT _____</p>			
<p>Locally Open Rx Trip breakers:</p>			
<p>Simulator Operator: Insert RT-9 to open both RTBs breakers when directed by lead evaluator. Timeframe from being dispatched may need to be delayed to ensure the evaluators have time evaluate completion of Critical task-1(CT-52) by the crew</p> <p>NOTIFY control room when RTBs are open.</p>			
<p>Simulator Operator: Insert RT-10. To open the Rod Drive MG set motor and generator breakers.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports PZR pressure is less than 2335 psig.		
	RO reports 2VC5 and 2VC6 are closed.		
	RO reports RTBs and bypass breakers are open.		
Evaluator's Note: The crew will continue in FRSM-1 but should recognize that the RTBs are now open and report PRNI < 5% and IR SUR negative (step 7 CAS) and then <u>GO TO step 16</u> to exit procedure.			
	PO reports all turbine stop valves are closed.		
	RO reports PRNIs indicate < 5%.		
	RO reports IRNI SUR is negative.		
	CRS GOES TO Step 16.		
	CRS directs boration to continue to obtain Adequate SDM		
	CRS returns to procedure in effect, EOP-TRIP-1.		
	CRS transitions to EOP-TRIP-2		
Proceed to next event after CRS has transitioned to EOP-TRIP-2, RO has acknowledged or silenced alarms and RCS pressure has recovered to >2100 psig or as directed by lead evaluator			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
7. PZR PORV (2PR2) fails open:			
Simulator Operator: Insert RT-5 at direction from Lead Evaluator.			
MALF: VL0298 2PR2 fails to position (0-100%) Final Value: 100	RO reports unexpected OHA for 2PR1/2 NOT CLSD.		
	RO reports PZR pressure is not stable or trending to 2235 psig.		
	RO reports PZR pressure is not > 2235 psig.		
	RO reports PZR pressure lowering, and identifies 2PR2 failed open.		
	RO reports 2PR2 will NOT close in manual.		
<div style="border: 2px solid black; padding: 5px;"> Critical Task-2 (CT-10): Close the block valve upstream of the stuck open PZR PORV. SAT _____ UNSAT _____ </div>			
	<div style="border: 2px solid black; padding: 5px;"> RO closes PZR PORV block valve 2PR7. [Critical Task-2] </div>		
The scenario may be terminated after the crew has Completed CT-2 or by direction from Lead Examiner.			

B. SCENARIO REFERENCES

- A. Alarm Response Procedures (Various)
- B. Technical Specifications
- C. Emergency Plan (ECG)
- D. OP-AA-101-111-1003, Use of Procedures
- E. S2.OP-IO.ZZ-0004, Power Operation
- F. S2.OP-AB.CVC-0001, Loss of Charging
- G. S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality
- H. S2.OP-AB.RCP-0001, RCP Abnormality
- I. S2.OP-AR.ZZ-0011, 2CC1 Alarm Response Procedure
- J. S2.OP-AR.ZZ-0013, 2CC2 Alarm Response Procedure
- K. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
- L. 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink

MODE: 1 POWER: 90% RCS BORON: 750 MWe 1090
SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED): N/A

REACTIVITY PARAMETERS

- Rx Plan: To raise Rx power to 98% in preparation for calorimetric at 10%/hour add 1000 gallons of water along with withdrawing control rods to maintain Tavg on program. Reactor Engineering directs the crew to start a dilution first. Fuel is conditioned no rod withdrawal limitations apply.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

- None

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- Continue power ascension to 98% at 10%/hour IAW S2.OP-IO.ZZ-0004, Power Operation
- Engineering is monitoring BF19s vibrations during startup
- .

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.
No penalty minutes in the last 24 hrs.

PRIMARY:

- 23 CV Pump C/T for lube.

SECONDARY:

- Blowdown 35K per loop to 23 condenser / flashtank
- Polisher in service

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

None

- ___ 1. Verify simulator is in "TRAIN" Load
- ___ 2. Simulator is in RUN
- ___ 3. Overhead Annunciator Horns ON
- ___ 4. All required computer terminals in operation
- ___ 5. Simulator clocks synchronized
- ___ 6. All tagged equipment properly secured and documented
- ___ 7. TSAS Status Board up-to-date
- ___ 8. Shift manning sheet available
- ___ 9. Procedures in progress open and signed-off to proper step
- ___ 10. All OHA lamps operating (OHA Test) and burned out lamps replaced
- ___ 11. Required chart recorders advanced and ON (proper paper installed)
- ___ 12. All printers have adequate paper AND functional ribbon
- ___ 13. Required procedures clean
- ___ 14. Multiple color procedure pens available
- ___ 15. Required keys available
- ___ 16. Simulator cleared of unauthorized material/personnel
- ___ 17. All charts advanced to clean traces and chart recorders are on.
- ___ 18. Rod step counters correct (channel check) and reset as necessary
- ___ 19. Exam security set for simulator
- ___ 20. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter
with Baseline Data filled out
- ___ 21. Shift logs available if required
- ___ 22. Recording Media available (if applicable)
- ___ 23. Ensure ECG classification is correct
- ___ 24. Reference verification performed with required documents available
- ___ 25. Verify phones disconnected from plant after drill.
- ___ 26. Verify EGC paperwork is marked "Training Use Only" and is current revision.
- ___ 27. Ensure sufficient copies of ECG paperwork are available.

In reviewing each proposed CT, the examination team assesses the task to ensure, that it is essential to safety. A task is essential to safety if, in the judgment of the examination team, the improper performance or omission of this task by a licensee will result in direct adverse consequences or in significant degradation in the mitigative capability of the plant. The examination team determines if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a task by an individual necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

- I. Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...
 - degradation of any barrier to fission product release
 - degraded emergency core cooling system (ECCS) or emergency power capacity
 - a violation of a safety limit
 - a violation of the facility license condition
 - incorrect reactivity control (such as failure to initiate Emergency Boration or Standby Liquid Control, or manually insert control rods)
 - a significant reduction of safety margin beyond that irreparably introduced by the scenario
- II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...
 - effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition described in the previous paragraph.
 - recognize a failure or an incorrect automatic actuation of an ESF system or component.
 - take one or more actions that would prevent a challenge to plant safety.
 - prevent inappropriate actions that create a challenge to plant safety (such as an unintentional Reactor Protection System (RPS) or ESF actuation).

SCENARIO IDENTIFIER: 21-01 NRC Scenario #3 REVIEWER: K. Hantho

Initials Qualitative Attributes

- | | | |
|----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KH | 1. | The scenario has clearly stated objectives in the scenario. |
| KH | 2. | The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events. |
| KH | 3. | The scenario consists mostly of related events. |
| KH | 4. | Each event description consists of: <ul style="list-style-type: none">• the point in the scenario when it is to be initiated• the malfunction(s) that are entered to initiate the event• the symptoms/cues that will be visible to the crew• the expected operator actions (by shift position)• the event termination point |
| KH | 5. | No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event. |
| KH | 6. | The events are valid with regard to physics and thermodynamics. |
| KH | 7. | Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives. |
| KH | 8. | The simulator modeling is not altered. |
| KH | 9. | All crew competencies can be evaluated. |
| KH | 10. | The scenario has been validated. |
| NA | 11. | If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario. |
| KH | 12. | ESG-PSA Evaluation Form is completed for the scenario at the applicable facility. |

ATTACHMENT 5
ESG CRITICAL TASKS

21-01 NRC Scenario 3

CT-1 (CT-52)

Critical Task

Insert negative reactivity into the core by at least one of the following methods, and dispatch operators to locally trip the reactor and/or the turbine:

- De-energize the control rod drive MG sets
- Insert control rods
- Establish emergency boration flow to the RCS

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 misoperation or incorrect crew performance which fails to prevent “incorrect reactivity control (such as failure to initiate emergency boration... or manually insert control rods).”

Cues:

- Indication of ATWS

AND

- Indication that the reactor is not tripped and that a manual reactor trip is not effective

Measurable Performance Indicator

Manipulation of controls in the control room as required to initiate the insertion of negative reactivity into the core

- For scenarios in which it is possible for the crew to de-energize the rod drive MG sets from the control room:
 - Circuit breaker position indication lamps show the appropriate breakers to be open
 - Individual rod position indication system shows control rods to be on the bottom
- For scenarios in which it is possible for the crew to insert control rods:
 - Group and individual rod position indication systems show control rods moving inward
 - Control rod banks sequentially reach core bottom
- For scenarios in which it is possible for the crew to initiate emergency boration
 - Valve position indication that the emergency boration flow path is established
 - Indication that the appropriate pump(s) are running
 - Flow rate indication of emergency boration

Feedback

- Indication of a negative SUR on the intermediate range of the excore NIS
- Indication of less than 5% power on the power range of the excore NIS

CT-2 (CT-10)

Critical Task

Close the block MOV upstream of the stuck open PRZR PORV by completion of the first step in the ERG network that directs the crew to close the block MOV

Safety Significance

Closing the block MOV under the postulated plant conditions constitutes a task that “is essential to safety,” because “its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant.” In particular, the crew has failed to prevent “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 failure by the crew to “take one or more actions that would prevent a challenge to plant safety.”

Degradation of the RCS fission product barrier is not initiated by operator action. However, the crew’s failure to close the block MOV results in unnecessary continuation of the degraded condition of the RCS barrier.

Cues:

- Valve position indication and/or annunciation that the PRZR PORV is open, even after attempts to close it manually from the control room

AND

- Indication and/or annunciation of decreasing RCS pressure

AND

- Indication and/or annunciation consistent with the discharge of PRZR fluid to the PRT
 - PRT temperature, level, pressure
 - Tailpipe RTDs and/or acoustic monitors

AND

- Valve position indication that the block MOV upstream of the stuck open PRZR PORV is Open

Measurable Performance Indicator

Manipulation of controls as required to close the block MOV for the stuck open PRZR PORV

- Valve position indication that the block MOV upstream of the stuck open PRZR PORV is Closed

Feedback

Valve position indication that the block MOV upstream of the stuck open PRZR PORV is closed

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

<u>Y/N</u> <u>Event</u>	<u>Y/N</u> <u>Event</u>
<u>N</u> TRANSIENTS with PCS Unavailable	<u>N</u> Loss of Service Water
<u>N</u> Steam Generator Tube Rupture	<u>N</u> Loss of CCW
<u>N</u> Loss of Offsite Power	<u>N</u> Loss of Control Air
<u>N</u> Loss of Switchgear and Pen Area Ventilation	<u>N</u> Station Black Out
<u>N</u> LOCA	

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

<u>Y/N</u> <u>COMPONENT, SYSTEM, OR TRAIN</u>	<u>Y/N</u> <u>COMPONENT, SYSTEM, OR TRAIN</u>
<u>N</u> Containment Sump Strainers	<u>N</u> Gas Turbine
<u>N</u> SSWS Valves to Turbine Generator Area	<u>N</u> Any Diesel Generator
<u>N</u> RHR Suction Line valves from Hot Leg	N Auxiliary Feed Pump
<u>N</u> CVCS Letdown line Control and Isolation Valves	<u>N</u> SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

<u>Y/N</u> OPERATOR ACTION
<u>N</u> Restore AC power during SBO
<u>N</u> Connect to gas turbine
<u>N</u> Trip Reactor and RCPs after loss of component cooling system
<u>N</u> Re-align RHR system for re-circulation
<u>N</u> Un-isolate the available CCW Heat Exchanger
<u>N</u> Isolate the CVCS letdown path and transfer charging suction to RWST
<u>N</u> Cooldown the RCS and depressurize the system
<u>N</u> Isolate the affected Steam Generator that has the tube rupture(s)
<u>N</u> Early depressurize the RCS
<u>N</u> Initiate feed and bleed

SCAN OF SIGNED SCENARIO COVER SHEET

Form 3.3-1 Scenario Outline

Facility:	<u>Salem</u>	Scenario #:	<u>4</u>
Scenario Source:	<u>20-01 ESG-4</u>	Op. Test #:	<u>21-01</u>
Examiners:	_____	Applicants/	_____
	_____	Operators:	_____
	_____		_____
<u>Initial Conditions:</u> Salem Unit 2 is at 2% power BOL; 21 SGFP in service			
<u>Turnover:</u> The crew is directed to continue power ascension to 10% reactor power IAW S2.OP-IO.ZZ-0003 using control rods, steam dumps, and turbine load control.			
<u>Critical Tasks:</u>			
1. Establish 220,000 lbm/hr AFW flow before steam generator dryout occurs (WR ≤ 11%) during SBO			
2. Depressurize the intact SG(s) such that a maximum of 100°F per hour cooldown rate is established and SG pressure(s) does not go below 310 psig			

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ATC(R) BOP(R) CRS(N)	Continue power ascension to 10% IAW IOP-3 and enter MODE 1.
2	VC0311A	ATC (I) CRS (I,TS)	Containment pressure channel fails high
3	CV0035	ATC(C,MC) CRS(C)	Charging Master flow controller fails low
4	SW0216A	BOP(C) CRS(I,TS)	# 2 SW bay leak
5	EL0134	All(M)	Loss of offsite power
6	EL0144 EL0145 EL0163	ATC(C) BOP(C) CRS(C)	Loss of all AC power(CT-2)
7	AF0353C	BOP(I,MC) CRS(I)	23 AFW pump fails to start(CT-1)
		ABs	IOP-3 → ARP → AB.CVC-1 → AB.SW-2
		EOPs	LOPA-1
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS)Tech Spec, (MC)Manual Control			

I. OBJECTIVES

1. Given the order, perform actions to raise reactor power IAW S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.
2. Given the order or indications of a Containment Pressure Channel malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
3. Given the order or indications of a charging system malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
4. Given the order or indications of a charging system malfunction, DIRECT the response to the malfunction in accordance with the approved station procedures.
5. Given the unit at power and a leak of a Service Water Bay, take corrective action IAW AB.SW-0003.
6. Given the order or indications of a SW Bay leak, perform actions as the nuclear control operator to RESPOND to the malfunction, IAW approved station procedures.
7. Given the order or indications of a SW Bay leak, DIRECT the response to the malfunction IAW approved station procedures.
8. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.
9. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.
10. Given the order or indications of a loss of all AC power, complete actions as the nuclear control operator to PERFORM the immediate response in accordance with the approved station procedures.
11. Given the order with the immediate response to a loss of all AC accident completed and no safety injection actuated or required, perform actions as the nuclear control operator to RECOVER from the loss of AC in accordance with the approved station procedures.
12. Given indication of a loss of all AC power, DIRECT the immediate response in accordance with the approved station procedures.
13. Given the plant with the immediate response completed for a loss of all AC power which did not result in a required safety injection, DIRECT the recovery of the loss of AC in accordance with the approved station procedures.

II. MAJOR EVENTS

1. Power Ascension
2. Containment pressure channel 1 fails high
3. Charging master flow controller failure requiring manual control of charging
4. #2 SW bay leak
5. Loss of Offsite power
6. Loss of all AC Power
7. Failure of 23 AFW pump to auto start

III. SCENARIO SUMMARY

1. The crew will take the watch with the unit stable at 3% reactor power during a plant startup, BOL. 21 SGFP is in service and 22 SGFP is not in service. Steam dumps are in Main Steam Pressure Control, Automatic, set at 1000 psig. The crew will be instructed to raise power to 10% and enter Mode 1.
2. The crew will initiate power ascension to 10%, and enter Mode 1, using Main Steam Dumps and control rods IAW **S2.OP-IO.ZZ-0003**, Hot Standby to Minimum Load and S2.OP-SO.MS-0002, Steam Dump System Operation, Attachments 3 or 4.
3. Containment pressure channel 1 will fail high. Operators will respond IAW S2.OP-AR.ZZ-0003, Overhead annunciator window C alarm response procedure. CRS will evaluate TS and Enter TS 3.3.2.1 Act b 16. After Tech Specs has been evaluated, Event #3 will be entered.
4. After the containment Pressure channel is addressed, The Charging Master flow controller fails LOW. The crew will enter S2.OP-AB.CVC-0001, Loss of Charging, the crew will take actions place the master flow controller in manual and adjust flow. The CRS will establish band for operation of the Charging Master flow controller. The crew will hold a brief after band established and AB actions completed, upon completion of the brief or update event #4 will be entered.
5. After the Master flow controller failure is addressed, the number 2 Service water bay will experience a leak and require isolation IAW S2.OP-AB.SW-0003, Service Water bay leak. The crew will start all bay 4 pumps and shutdown all bay 2 pumps, as well as performing isolation of the bay utilizing MOV's operated from the control room. The CRS will evaluate Tech Specs with the Service Water bay isolated and enter TS 3.7.4. The crew will direct removal of a CCHX from service and removal of control power from all bay 2 pumps. After Tech Specs is evaluated, Event #5 can be entered.
6. A loss of offsite power will occur. The crew will experience an automatic trip of the unit 2 reactor when all offsite power is lost. The crew will enter EOP-TRIP -1, Reactor Trip response, and transition to EOP-LOPA-1, Loss of all AC power, when it is recognized that no vital buses have power. In LOPA-1 the crew will take actions to check plant conditions, restore AC power, maintain conditions for optimal recovery, Determine if ELAP declaration is required, Commence cooldown when AC power is not yet available. **(CT-2)**

7. While in the EOP network the 23 AFW pump will fail to start. The 23 AFW pump should automatically start with the Loss of offsite power. The crew will take the actions to start the 23 AFW pump to maintain a source of inventory control for the Steam generators. **(CT-1)**
8. The scenario may be terminated when cooldown has been commenced and CT 2 evaluated or by direction from the Lead Examiner.

IV. INITIAL CONDITIONS

___ IC-239

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers ,tagged equipment)

<i>Initial</i>	Description
___ 1	VC1and VC4 C/T
___ 2	RCPs (SELF CHECK)
___ 3	RTBs (SELF CHECK)
___ 4	MS167s (SELF CHECK)
___ 5	500 KV SWYD (SELF CHECK)
___ 6	SGFP Trip (SELF CHECK)
___ 7	23 CV PP (SELF CHECK)
___ 8	21 SGFP is in service
___ 9	IOP-3 open and complete up to step 4.3.16, Power Operation. Attachment 4 is marked up.
___ 10	Steam Dumps are in MS Pressure Mode and Auto, and S2.OP-SO.MS-0002 is open and marked up to step 4.4.1
___ 11	Rod control in manual.
___ 12	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description
	1	EVENT ACTION: kb423dmj //CHARGING FLOW DEM-MANUAL (MAST COMMAND: DMF CV0035 PURPOSE: <update as needed>
	2	EVENT ACTION: MONP254 < 10. //CONT ROD BANK C < 10 (RX TRIP) COMMAND: PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
___ 01	VC0311A Containment Presssure CH I (PT948D) FAILS (NR only)	N/A	N/A	N/A	RT-1	55
___ 02	CV0035 CHRG MASTER FLO CNTRLR FAILS H/L	N/A	37	00:05:00	RT-2	0
___ 03	SW0216A 21 SW HDR LEAK IN SW STRUCTURE	N/A	500	00:03:00	RT-3	8000
___ 04	EL0134 LOSS OF ALL 500KV OFF-SITE POWE	N/A	N/A	N/A	RT-4	
___ 05	AF0353C 23 AFP FAILURE TO AUTO START ON ANY (ALL) SIGNALS	N/A	N/A	N/A	N/A	
___ 06	EL0144 LOSS OF 2A 4160V VITAL BUS	N/A	N/A	N/A	ET-2	
___ 07	EL0145 LOSS OF 2B 4160V VITAL BUS	N/A	N/A	N/A	ET-2	
___ 08	EL0163 2C EMERG DIESEL GENERATOR TRIP	00:00:20	N/A	N/A	ET-2	
___ 09	VL0045 2CV116 Fails to Position (0-100%)	N/A	N/A	N/A	RT-13	0
___ 10	VL0087 2CC131 Fails to Position (0-100%)	N/A	N/A	N/A	RT-13	0

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
___ 01	SW23D 21 SW PUMP BKR CONTROL POWER	00:00:30	N/A	N/A	RT-10	OFF
___ 02	SW27D 22 SW PUMP BKR CONTROL POWER	00:01:00	N/A	N/A	RT-10	OFF
___ 03	SW32D 23 SW PUMP BKR CONTROL POWER	00:01:30	N/A	N/A	RT-10	OFF
___ 04	DG01D DEENERGIZE "A" SEC CABINET	N/A	N/A	N/A	RT-9	YES
___ 05	DG02D DEENERGIZE "B" SEC CABINET	00:00:30	N/A	N/A	RT-9	YES
___ 06	DG03D DEENERGIZE "C" SEC CABINET	00:01:00	N/A	N/A	RT-9	YES
___ 07	AF20D 21 AFW PUMP BKR CONTROL POWER	N/A	N/A	N/A	RT-12	OFF
___ 08	AF25D 22 AFW PUMP BKR CONTROL POWER	N/A	N/A	N/A	RT-12	OFF
___ 09	AF28D 22 AFW PUMP BKR LOCAL TRIP	N/A	N/A	N/A	RT-12	TRIP
___ 10	AF23D 21 AFW PUMP BKR LOCAL TRIP	N/A	N/A	N/A	RT-12	TRIP
___ 11	CV28A 21CV98 RCP SEAL INJ MAN ISOL	N/A	N/A	N/A	RT-11	0
___ 12	CV29A 22CV98 RCP SEAL INJ MAN ISOL	N/A	N/A	N/A	RT-11	0

13	CV30A 23CV98 RCP SEAL INJ MAN ISOL	N/A	N/A	N/A	RT-11	0
14	CV31A 24CV98 RCP SEAL INJ MAN ISOL	N/A	N/A	N/A	RT-11	0
15	ANCGA289 CGA HW&CNDS-CPD COND HI ALARM	N/A	N/A	N/A	N/A	OVRD OFF
16	MT02D MAIN TURB TURNING GEAR ENGAGE	N/A	N/A	N/A	N/A	ENGAGE

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity

OTHER CONDITIONS:

	Description
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1. None

V. SEQUENCE OF EVENTS

1. State shift job assignments.
2. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).
3. Inform the crew “The simulator is running. You may commence panel walkdowns at this time. CRS please inform me when your crew is ready to assume the shift”.
4. Allow sufficient time for panel walk-downs. When informed by the CRS that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
1. Power Ascension			
<p>Examiner's Note: The crew will be using S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load, to perform the power ascension.</p> <p>Step 4.3.16 provides guidance on raising reactor power using Steam Dumps IAW S2.OP-SO.MS-0002. The crew can use Attachments 3 or 4 of S2.OP-SO.MS-0002 to operate Steam Dumps.</p> <p>The intent is for the crew to enter Mode 1, ≈ 6% Rx power, THEN; proceed to next event.</p>			
<p>Examiner's Note: IF console alarm RC LOOPS Tavg – Tref DEVIATION is in at the time the crew takes the watch, the crew will be provided instructions during turnover that verification of Tavg is 541 F once per 30 minutes until alarm is reset in Control Room Narrative Log is being performed by the extra NCO.</p> <p>This alarm will clear during the power ascension into Mode 1.</p>			
	<p>CRS directs power ascension using Main Steam Dumps in MS Pressure Control and control rods.</p>		
<p>Examiner's Note: The CRS will direct the crew in the order in which to raise Rx power by withdrawing control rods or raising steam dump demand first.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Crew will most likely make steam dump adjustments in Manual due to Caution: “Small adjustments on the Steam Dump controller while in automatic may not produce the expected results.”</p>	<p>PO raises steam dump demand IAW S2.OP-SO.MS-0002, section 5.4 using Attachments 3 or 4. Slowly ADJUST STM DUMP PRESSURE SETPOINT to maintain less than 1000 psig IAW Attachment 3, MS PRESS CONTROL MODE in AUTO:</p> <ul style="list-style-type: none"> • SELECT PRESSURE MODE - MANUAL. • Slowly ADJUST VALVE DEMAND until desired setpoint is reached. • SELECT PRESSURE MODE - AUTO. <p>OR</p> <p>ADJUST Steam Dumps to raise Reactor Power Demand IAW Attachment 4, MS PRESS CONTROL MODE in MANUAL:</p> <ul style="list-style-type: none"> • Slowly ADJUST VALVE DEMAND until desired setpoint is reached. 		
<p>Examiner’s Note: Program Tavg at 10% Rx power is about 549 F.</p> <p>During simulator runs, Steam Dump pressure setting was about 982 psig for a Rx Power of 5.4%.</p>	<p>RO withdraws control rods at the specified increments to maintain Tave on program.</p>		
<p>Proceed on to next event when Reactor Power is 6% or by direction from Lead Examiner.</p>	<p>RO announces when NIS indicates 5% Reactor Power and RECORDs time of Mode 1 entry in Control Room Narrative Log.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
2. Containment pressure channel fails high:			
Simulator Operator: Insert RT-1 on direction from Lead Examiner. VC0311 A, Containment press channel 1 Value = 55			
	RO announces unexpected OHA alarm for CNTMT PRESS HI-HI OHA C-6.		
	CRS places power ascension on hold.		
	RO reports actual containment pressure is normal and appears the channel is failed.		
	PO reviews S2.OP-AR-ZZ-0003, and determines notification must be written and TS evaluation performed		
	CRS enters: <ul style="list-style-type: none"> • TS 3.3.2.1 Act b 16 		

TS evaluation #1:

Proceed to next event after CRS evaluates Tech Specs or by direction from Lead Examiner.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
3. Charging Master Flow Controller fails low			
Simulator Operator: Insert RT-2 on direction from Lead Evaluator. MALF: CV0035 CHRG MASTER FLO CNTRLR FAILS H/L Starting Value: 37 Final Value: 0 Ramp: 5 minutes	 RO reports lowering charging flow and/or low RCP seal injection flow. RO diagnoses Master Flow Controller (MFC) output lowering with PZR level on (or below) program. CRS directs RO to place Master Flow Controller in manual and restore charging flow.		
Simulator Operator: Ensure ET-2 is true when MFC is placed in manual this will delete MALF CV0035			
	 RO places MFC in manual, and adjusts demand to required flow. CRS enters S2.OP-AB.CVC-0001, Loss of Charging, based on the reduction of charging flow. CRS directs initiation of Attachment 1 CAS. RO reports 23 charging pump in service with no indication of cavitation.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
4. #2 SW Bay Leak			
Simulator Operator: Insert RT-3 on direction from Lead Evaluator. MALF: SW0216A, 21 SW LEAK IN SW STRUCTURE Ramp = 3 min Final Value = 8000			
Evaluator's Note: The first OHA will annunciate ~1 minute after the leak is inserted.			
	RO reports unexpected OHA alarm B-29, followed shortly by B-13 and B-14.		
	ARP for OHA B29, 21-23 SW PMP SUMP AREA LVL HI, directs entry into S2.OP-AB.SW-0003 if alarm is concurrent with OHA B-13, 21 SW HDR PRESS LO.		
	RO either starts a SW pump based on lowering SW header pressure, or announces the auto start of 25 SW pump when it occurs, and the clearing of the low SW header pressures alarms.		
Evaluator's Note: OHA B-29 also directs entry into S2.OP-AB.ZZ-002, Flooding.			
	CRS enters S2.OP-AB.SW-0003 SW Bay Leak per ARP direction or enters S2.OP-AB.SW-001, Loss of SW Header Pressure, then transitions to S2.OP-AB.SW-0003, and initiates CAS.		
	RO reports both SW Bays are in service and dispatches NEO to investigate 2 Bay alarms.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Role Play: 2 minutes after being contacted, report as NEO that <i>there is a large leak in the back of #2 SW bay. The water level is approx. 2.5 feet above the pump pedestal and rising.</i> (Bay is considered disabled at 2 ft.)</p>	<p>PO monitors Main Turbine / SGFP temps on SPDS and Plant Computer per CAS.</p> <p>PO opens 21 and 22 SW23's.</p> <p>PO closes 21 and 22 SW17's.</p> <p>PO starts all Bay 4 SW pumps.</p> <p>PO reports all Bay 4 SW pumps are running.</p> <p>PO stops all Bay 2 SW pumps.</p> <p>Crew dispatches NEO to open control power bkrs for 21-23 SW pumps.</p>		
<p>Simulator Operator: Call for First Check (IF directed), THEN insert RT-10 to open control power.</p> <p>SW23D, 21 SW pump control power SW27D, 22 SW pump control power SW32D, 23 SW pump control power</p> <p>NOTIFY control room after last remote is active and report control power breakers have been opened for 21, 22 and 23 SW pumps.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment	
<p>Role Play: Once 2 SW Bay is isolated, NEO reports that the leak has stopped. IF ask about the water level, state the water level is up to the bottom of the motor housing.</p>				
	PO closes 21SW22 and 21SW20.			
	PO reports the leak is isolated.			
	PO reports SW remains available to the EDGs.			
	PO reports SW is being supplied to the Turbine Building through 23SW20.			
	PO monitors Main Turbine parameters on SPDS and the Plant Computer.			
	PO initiates action to remove one CCHX from service IAW CAS item 4.0.			
	<p>TS evaluation #2:</p>			
<p>Proceed to next event after Tech Spec and ECG classification has been identified or at Lead Evaluators direction.</p>	CRS enters LCO 3.7.4 (72 hours) due to having only one operable SW loop.			
	CRS may enters S2.OP-AB.ZZ-002, Flooding, due to flooding in 2 Bay.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>5. Manual Rx Trip AND Loss of All AC Power (LOPA)</p> <p>Simulator Operator: Insert RT-4 at the direction of the lead examiner this will cause the Loss of Offsite power and automatic Reactor trip.</p>	<p>CRS directs RO to trip the Rx and perform immediate actions of EOP-TRIP-1, Reactor Trip or Safety Injection.</p> <p>RO turns reactor trip switch to backup the automatic Rx Trip.</p>		
<p>Simulator Operator: Ensure ET-2 is TRUE following the Rx trip.</p> <p>This Inserts the following malfunctions:</p> <p>EL0144: Loss of 2A 4KV bus EL0145: Loss of 2B 4KV bus EL0163: 2C EDG trip</p>	<p>RO performs Immediate Actions for EOP-TRIP-1:</p> <ul style="list-style-type: none"> ▪ Confirms the reactor tripped ▪ Trips the main turbine 		
	<p>PO reports NO Vital Busses are Energized and entry into EOP-LOPA-1 required</p> <p>CRS and RO verify performance of immediate actions.</p> <p>CRS transitions to EOP-LOPA-1, Loss of All AC Power.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO performs immediate actions of LOPA-1: <ul style="list-style-type: none"> ▪ Trip the Reactor ▪ Trip the Turbine 		
	CRS and RO verify performance of immediate actions.		
	RO may close 2CV2 and 2CV277		
	RO reports both PORVs closed		
	RO reports Excess letdown is isolated		
	PO reports that 23 AFW pump failed to Auto start.		
<div style="border: 1px solid black; padding: 5px;"> <p>CT-1 (CT-23)</p> <p>Critical Task Establish 22E4 lbm/hr AFW flow before steam generator dryout occurs (WR ≤ 11%)</p> <p>SAT _____ UNSAT _____</p> </div>			
	<div style="border: 1px solid black; padding: 2px;"> PO manually starts 23 AFW pump. CT #1 </div>		
	<div style="border: 1px solid black; padding: 2px;"> PO throttles AFW flow to no less than 22E4 lbm/hr. CT #1 </div>		
	CRS assigns CAS for loss of 23 AFW pump		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Evaluator's Note: 2A & 2B 4KV vital buses are deenergized with a bus differential. 2C EDG tripped on overspeed. Crew should determine that 2A and B EDG need to be stopped.</p>			
<p>Role Play (2C EDG): IF dispatched, report that <i>2C EDG tripped on overspeed and the linkage looks bent.</i></p> <p>Role Play (Maintenance on 2A and B 4KV Bus): When contacted about status <i>state that you will go to the field to get a status.</i></p>	<p>PO reports 2A and B EDG running with breaker open and 2C EDG tripped.</p>		
	<p>PO reports no vital buses energized.</p>		
	<p>RO reports SI has not been actuated.</p>		
	<p>RO actuates SI.</p>		
	<p>CRS assigns CAS for SI reset and AB.SSP-1 action if required.</p>		
<p>Evaluator's Note: Around this point the crew should be discussing strategy to recover a vital bus. 2C EDG tripped on overspeed and will take some time to troubleshoot. 2A and 2B vital bus is deenergized on Bus Differential protection and therefore not expected back soon. Crew should determine that success path is to restore 2C EDG with maintenance assistance.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment			
<p>Deenergize SECs:</p> <p>Simulator Operator: After being contacted, Insert RT-9 to deenergize all SECs with a time delay.</p> <p>REMOTES: DG01D Deenergize A SEC DG02D Deenergize B SEC DG03D Deenergize C SEC</p> <p>NOTIFY CRS when complete.</p>	<p>After 74 seconds a crew member performs reset of SI.</p>					
	<p>PO reports no vital buses energized</p>					
	<p>CRS assigns CAS to stop EDG's without SW once SEC's deenergized.</p>					
	<p>CRS reads Continuous Caution C6-1 When power is restored to any 4KV vital bus. Recovery actions should continue starting with Step 26.</p>					
	<p>CRS dispatches operator to deenergize all SECs.</p>					
	<p>CRS directs performance of S2.OP-AB.LOOP-1</p>					

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Role Play for AB.LOOP-1 (Attachment 2 Part A): If called by a crew member</p> <p>Section 1.A (Field Operator) - After 10-15 minutes report back as field operator that Steps 1.A.1 thru 1.A.4 are complete.</p> <p>Section 1.B steps are performed by the NCO in the control room if resources available. CRS may direct WCC to do this, if so then report back after 20 minutes that Section 1.A and 1.B are complete (simulate that panels and doors are open)</p>			
	<p>CRS directs WCC to ensure 21 and 22 AFW pump breakers open and remove control power for 21 and 22 AFW pumps.</p>		
<p>Simulator Operator: Insert RT-12 to open 21 and 22 AFW pump breakers and remove control power to 21 and 22 AFW pumps.</p> <p>Remote: AF20D and AF23D – 21 AFW AF25D and AF28D – 22 AFW</p>			
<p>Stop running EDGs:</p>	<p>Crew waits until all SECs are deenergized.</p>		
	<p>CRS receives report that all SECs are deenergized.</p>		
	<p>PO stops 2A and 2B EDG based on no service water pump running IAW CAS of LOPA-1.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment	
Simulator Operator: Notify crew when RT-12 has been completed to open 21 and 22 AFW pump breakers and remove control power from 21 and 22 AFW pumps.	RO depresses stop pushbutton for all loads in Table A of LOPA-1.			
	Crew waits until report from WCC that 21 and 22 AFW pump breakers are open and control power removed			
	PO reports status of 4 KV Vital Busses and priority should be placed on restoring 2C EDG with help from maintenance.			
	PO reports that no EDG's are available and no EDG's running			
	CRS dispatch operator for local start when EDG becomes available.			
	CRS assigns CAS to PO for vital bus energization, SW pump start, and turbine header isolation.			
	Evaluator's Note: There will be no console indications to verify valve positions during LOPA-1 only field reports.			
PO reports 23 and 24 SPT are deenergized				
CRS has SM contact ESO for power availability				
CRS directs crew to restore power IAW S2.OP-AB.LOOP-0001, Loss of Offsite Power, while continuing with LOPA-1.				

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	SM discusses with TSC additional power source availability/strategy.		
	CRS dispatches operator for Seal injection isolation and seal return and CCW thermal barrier isolation.		
<p>Simulator Operator: Insert RT-11 to close 21-24 CV98. This will simulate closure for 2CV83, 2CV89 and 2CV95 to isolate seal injection filters.</p> <p>Remotes: CV28A – 21CV98 fails to position CV29A – 22CV98 fails to position CV30A – 23CV98 fails to position CV31A – 24CV98 fails to position Final = 0 Ramp: 1 min Delay = 0-3 mins</p>			
<p>Simulator Operator: Insert RT-13 to close 2CC131 and 2CV116 valves. VL0045 2CV116 fails to position Final = 0 Ramp = 1 min</p> <p>VL0087 2CC131 fails to position Final = 0 Ramp: 01:00 min</p>			
	Crew contacts WCC/SM/DSM for status of 2C EDG and 2A and 2B Vital buses.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Simulator Operator: Notify crew that maintenance has investigated the 2C EDG trip mechanism and believe they can restore it in 2 hours.</p>			
	<p>PO reports valves in Table B are closed except 21-24 MS167 crew closes 21-24 MS167</p>		
	<p>PO places 21-24 BF19 and 40s in manual and closed</p>		
	<p>RO states 21-24 SS94 closed</p>		
	<p>PO states 21-24 GB4s closed</p>		
	<p>PO states NO SG pressures are dropping in an uncontrolled manner or completely depressurized</p>		
	<p>PO gives AFW status to CRS and current SG levels, if less than 9% will feed at max rate to allow cooldown to establish greater than 9% for cooldown later</p>		
	<p>PO reports secondary rad monitors normal</p>		
	<p>CRS dispatches personnel to perform checkoff sheet 3</p>		
<p>PO reports AFWST greater than 21%</p>			
<p>PO reports SG levels greater than 9%</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>CT-2 (CT-26) Depressurize the intact SG(s) such that all the following limiting conditions are met:</p> <ul style="list-style-type: none"> • The cooldown rate in all RCS cold legs is maintained less than 100°F per hour • SG depressurization is not initiated until narrow-range level in at least one intact SG is greater than 9%(15% for adverse containment) • If narrow-range level cannot be maintained greater than 9%(15% for adverse containment) in at least one intact SG (after depressurization is commenced), then SG depressurization is stopped until narrow-range level is restored to greater than 9%(15% for adverse containment) in at least one intact SG <p>SAT _____ UNSAT _____</p>			
	<p>PO opens 21-24MS10s and begins cooldown at less than 100 degrees per hour. CT #2</p>		
	<p>PO monitors SGWL and stops if required and maintains achievable cooldown rate.</p>		
<p>The scenario maybe terminated when CT # 2 has been evaluated or as directed by the Lead Examiner.</p>			

VI. SCENARIO REFERENCES

1. Alarm Response Procedures (Various)
2. Technical Specifications
3. Emergency Plan (ECG)
4. OP-AA-101-111-1003, Use of Procedures
5. S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load
6. S2.OP-AB.CVC-0001, Loss of Charging
7. S2.OP-SO.MS-0002, Steam Dump System Operation
8. S2.OP-AB.SW-0003, Service Water Bay Leak
9. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
10. 2-EOP-LOPA-1, Loss of All AC Power

MODE: 2 POWER: 3% RCS BORON: 1311 MWe 0

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

N/A

REACTIVITY PARAMETERS

- Control Bank D at 130 steps.
- Reactor Engineering directs use of control rods and steam dumps to raise power to 10%. No Fuel Conditioning Limits are imposed until 50%.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

None

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load complete up to Section 4.3, step 4.3.18 and S2.OP-SO.MS-0002, Steam Dump System Operation is open at (4.4.1)
- IF RC Loop Tavg – Tref Deviation console alarm is in, then extra NCO will log Tavg > 541 F once per 30 minutes.
- Crew to continue Power ascension to 10% using control rods and steam dumps, and enter Mode 1.
- Reactor Engineering is standing by to support power ascension.
- Mode 1 entry is authorized.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.

PRIMARY:

SECONDARY:

- On main feedwater using 21 SGFP; 22 SGFP is Out of Service

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

- ___ 1. Verify simulator is in "TRAIN" Load
- ___ 2. Simulator is in RUN
- ___ 3. Overhead Annunciator Horns ON
- ___ 4. All required computer terminals in operation
- ___ 5. Simulator clocks synchronized
- ___ 6. All tagged equipment properly secured and documented
- ___ 7. TSAS Status Board up-to-date
- ___ 8. Shift manning sheet available
- ___ 9. Procedures in progress open and signed-off to proper step
- ___ 10. All OHA lamps operating (OHA Test) and burned out lamps replaced
- ___ 11. Required chart recorders advanced and ON (proper paper installed)
- ___ 12. All printers have adequate paper AND functional ribbon
- ___ 13. Required procedures clean
- ___ 14. Multiple color procedure pens available
- ___ 15. Required keys available
- ___ 16. Simulator cleared of unauthorized material/personnel
- ___ 17. All charts advanced to clean traces and chart recorders are on.
- ___ 18. Rod step counters correct (channel check) and reset as necessary
- ___ 19. Exam security set for simulator
- ___ 20. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter with Baseline Data filled out
- ___ 21. Shift logs available if required
- ___ 22. Recording Media available (if applicable)
- ___ 23. Ensure ECG classification is correct
- ___ 24. Reference verification performed with required documents available
- ___ 25. Verify phones disconnected from plant after drill.
- ___ 26. Verify EGC paperwork is marked "Training Use Only" and is current revision.
- ___ 27. Ensure sufficient copies of ECG paperwork are available.

In reviewing each proposed CT, the examination team assesses the task to ensure, that it is essential to safety. A task is essential to safety if, in the judgment of the examination team, the improper performance or omission of this task by a licensee will result in direct adverse consequences or in significant degradation in the mitigative capability of the plant. The examination team determines if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a task by an individual necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

- I. Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...
 - degradation of any barrier to fission product release
 - degraded emergency core cooling system (ECCS) or emergency power capacity
 - a violation of a safety limit
 - a violation of the facility license condition
 - incorrect reactivity control (such as failure to initiate Emergency Boration or Standby Liquid Control, or manually insert control rods)
 - a significant reduction of safety margin beyond that irreparably introduced by the scenario
- II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...
 - effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition described in the previous paragraph.
 - recognize a failure or an incorrect automatic actuation of an ESF system or component.
 - take one or more actions that would prevent a challenge to plant safety.
 - prevent inappropriate actions that create a challenge to plant safety (such as an unintentional Reactor Protection System (RPS) or ESF actuation).

SCENARIO IDENTIFIER: 21-01 NRC Scenario #4 REVIEWER: K. Hantho

Initials Qualitative Attributes

- | | | |
|----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KH | 1. | The scenario has clearly stated objectives in the scenario. |
| KH | 2. | The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events. |
| KH | 3. | The scenario consists mostly of related events. |
| KH | 4. | Each event description consists of: <ul style="list-style-type: none">• the point in the scenario when it is to be initiated• the malfunction(s) that are entered to initiate the event• the symptoms/cues that will be visible to the crew• the expected operator actions (by shift position)• the event termination point |
| KH | 5. | No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event. |
| KH | 6. | The events are valid with regard to physics and thermodynamics. |
| KH | 7. | Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives. |
| KH | 8. | The simulator modeling is not altered. |
| KH | 9. | All crew competencies can be evaluated. |
| KH | 10. | The scenario has been validated. |
| NA | 11. | If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario. |
| KH | 12. | ESG-PSA Evaluation Form is completed for the scenario at the applicable facility. |

21-01 NRC Scenario #4

Critical Tasks:

CT-1 (CT-23)

Critical Task

Establish 220,000 lbm/hr AFW flow before steam generator dryout occurs ($WR \leq 11\%$) during SBO

Safety Significance

Establishing the minimum required AFW flow rate, under the postulated plant conditions, constitutes a task that "is essential to safety," because "its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant."

Failure to establish minimum AFW flow (under the postulated conditions) is a violation of the basic objective of ECA-0.0 and of the assumptions of the analyses upon which ECA-0.0 is based. Both intend to mitigate deterioration of RCS conditions while ac emergency power is not available. Without AFW flow, the SGs could not support any significant plant cooldown. Thus, the crew would lose the ability to delay the adverse consequences of core uncover. Also without AFW flow, decay heat would still open the SG safety valves and would rapidly deplete the SG inventory, leading to a loss of secondary heat sink, or SG dryout. Decay heat would then increase RCS temperature and pressure until the pressurizer PORVs open, imposing a larger LOCA than RCP seal leakage. Both of these examples violate the basic assumptions of the analyses on which ECA-0.0 is based, complicating the mitigation actions.

Cues:

- Indication and/or annunciation of station blackout

AND

- Indication and/or annunciation that insufficient AFW flow to SGs is present

Measurable Performance Indicator

Manipulation of controls in the control room as required to establish the minimum required AFW flow rate to the SGs

- Valve position indication

OR

- Pump speed increasing

Feedback

Indication that at least the minimum required AFW flow is being delivered to the SGs

CT-2 (CT-26)

Critical Task

Depressurize the intact SG(s) such that all the following limiting conditions are met:

- The cooldown rate in all RCS cold legs is maintained less than 100°F per hour
- SG depressurization is not initiated until narrow-range level in at least one intact SG is greater than 9%(15% for adverse containment)
- If narrow-range level cannot be maintained greater than 9%(15% for adverse containment) in at least one intact SG (after depressurization is commenced), then SG depressurization is stopped until narrow-range level is restored to greater than 9%(15% for adverse containment) in at least one intact SG
- SG pressure does not decrease to less than 310 psig
- RCS cold leg temperature does not decrease to less than 280 Degrees F
- If a positive SUR is indicated on either the source range or the intermediate range (after depressurization is commenced), then SG depressurization is stopped and the RCS is allowed to heat up

Safety Significance

Failure to depressurize the secondary and cool down the RCS, under the postulated plant conditions, results in a greater possibility for core damage. Depressurization and cooldown provide the following benefits, which extend the time to core uncover and maximize the time available to restore ac power:

- Reduction in the rates of RCS inventory loss and RCP seal degradation
- Replenishment (temporary) of RCS inventory by injection of accumulator liquid

Failure to perform the critical task denies these benefits, reducing the time available to restore AC power before the core uncovers.

Failure to depressurize the secondary and cool down the RCS results in “adverse consequence(s)” and in a “significant degradation in the mitigative capability of the plant.” Such a failure constitutes misoperation or incorrect crew performance which leads to “degradation of {the RCS} barrier to fission product release” and to a “significant reduction of safety margin beyond that irreparably introduced by the scenario.”

Cues:

- Indication and/or annunciation that all ac emergency buses are de-energized
 - Bus-energized lamps extinguished
 - Circuit breaker position
 - Bus voltage
 - EDG status

AND

- Step 17 of ECA-0.0 is reached

Measurable Performance Indicator

Manipulation of controls as required to depressurize the intact SG(s) at the highest rate achievable within the 100°F per hour RCS cold leg cooldown limit

- Valve position indication that the PORV(s) on the intact SG(s) are open the maximum amount consistent with controllability and the 100°F per hour RCS cold leg cooldown limit
- Indication that the RCS cold leg cooldown rate remains less than 100°F per hour Indication that narrow-range level in at least one intact SG is greater than 9%(15% for adverse containment)
- Indication that SG pressure remains above 310 psig
- Indication that RCS cold leg temperature remains above 280 Degrees F
- Indication of a zero or a negative SUR on the source and intermediate ranges

Feedback

- Indication of decreasing pressure in the intact SG(s)
- Indication of decreasing RCS pressure and temperature
- Accumulators inject

ATTACHMENT 6

ESG-PRA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

<u>Y/N</u>	<u>Event</u>	<u>Y/N</u>	<u>Event</u>
N	TRANSIENTS with PCS Unavailable	N	Loss of Service Water
N	Steam Generator Tube Rupture	N	Loss of CCW
N	Loss of Offsite Power	N	Loss of Control Air
N	Loss of Switchgear and Pen Area Ventilation	Y	Station Black Out
N	LOCA		

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>	<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>
N	Containment Sump Strainers	N	Gas Turbine
N	SSWS Valves to Turbine Generator Area	Y	Any Diesel Generator
N	RHR Suction Line valves from Hot Leg	N	Auxiliary Feed Pump
N	CVCS Letdown line Control and Isolation Valves	N	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

<u>Y/N</u>	<u>OPERATOR ACTION</u>
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
Y	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

Complete this evaluation form for each ESG