

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Conduct of Operations - Administrative		
TASK:	Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001		
TASK NUMBER:	N0150010201		
JPM NUMBER:	16-01 NRC RO-A1		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.1.25
APPLICABILITY:	IMPORTANCE FACTOR:		3.9
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	S2.OP-ST.NIS-0001, Rev. 13 Salem Unit 2 Core Operating Limits Report Cycle 23, Rev. 7 Salem 2 Cycle 23 REM, Rev 17 (checked 10-6-17)		
TOOLS AND EQUIPMENT:	Calculator		
VALIDATED JPM COMPLETION TIME:	<u>10 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolf Chan</i> Instructor	Date: 12-11-17	
Validated By:	<i>N/A</i> ^R 12-11-17 SME or Instructor	Date: <i>N/A</i>	
Approved By:	Training Department <i>McNally</i>	Date: 12/15/17	
Approved By:	Operations Department <i>Myers</i>	Date: 12/15/17	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

JPM NUMBER: 16-01 NRC RO-A1

Rev #	Date	Description	Validation Required
00	10-6-17	Added revision history and simulator setup pages. Updated NI currents from Rev. 5 of REM dated 6/4/17. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated comments from NRC Prep week.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

TASK NUMBER: N0150010201

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

TASK NUMBER: N0150010201

INITIAL CONDITIONS:

- Salem Unit 2 completed a down power to 73% power today at 0830 IAW TSAS 3.1.3.1.c.3.d due to a single control rod being declared inoperable.
- The AFD Monitor Alarm for the Auxiliary Annunciator was determined to be inoperable at 0840.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to perform a manual AFD calculation IAW Section 5.3 of S2.OP-ST.NIS-0001(Q), Power Distribution – Axial Flux Difference.
- Current AFD Channel Console Readings are:
 - Channel I: -9.8
 - Channel II: -9.7
 - Channel III: -10.3
 - Channel IV: -10.5
- All prerequisites are completed SAT.
- **NOTIFY** the CRS of the results of the surveillance after completing Step 5.3.1.F.

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Completes applicable portion of Attachment 3 of S2.OP-ST.NIS-0001, and determines Channel III and IV is outside the AFD Target Band.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following materials: <ul style="list-style-type: none"> ▪ S2.OP-ST.NIS-0001, Power Distribution – Axial Flux Difference, ▪ Salem Unit 2 Core Operating Limits Report (COLR), and ▪ S2.RE-RA.ZZ-0011 (Salem 2 Cycle 23 REM, Rev 17, DATE TAKEN: 07-31-17) 	Note: The data tables from S2.RE-RA.ZZ-0011(Q), TABLES have been removed. The data tables from this procedure are now on Sharepoint and are located as follows: Main Nuclear Webpage→Quick Links→Operations–Salem→Reactor Engineering Manual→Salem Unit 2→REM Data Salem Unit 2 Cycle ## Rev #.pdf		
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	3.0	Precautions and Limitations	Operator reviews and initials Precautions and Limitations.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.1	IF AFD Monitor (XA-8740), OR Monitor Alarm (Auxiliary Annunciator) is inoperable, THEN COMPLETE Attachment 3, AFD Data Log Sheet as follows:	Operator uses Attachment 3 to determine AFD.		
	5.3.1.A	ENTER present Reactor Power	Operator enters 73% power		
	5.3.1.B	ENTER AFD Target from S2.RE-RA.ZZ-0011, Tables, Table 3	Operator enters (-1.5) for AFD Target using the Salem 2 Cycle 23 REM, Table 3		
*	5.3.1.C	CALCULATE the AFD Target Value IAW the following: $(A) \times (B) = \text{AFD Target Value (present power)} = (C)$ 100% Where: (A)= Present Reactor Power (B)= AFD Target (100% Value) (C)= AFD Target (present power)	Calculates AFD Target for present power level as: $\frac{(73) \times (-1.5)}{(100)} = -1.095$ IAW P&L 3.2, round value to first decimal place (-1.1)		
	NOTE	The Target Band Upper and Lower Limit shall be the more restrictive of the limits defined in the Core Operating Limits Report (COLR) OR S2.RE-RA.ZZ-0011 (Q), Tables.	Operator reads the Note and continues on.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.1.D	DETERMINE AFD Target Band Upper and Lower Limits as follows: ___ +(C)= Upper Limit ___ +(C)= Lower Limit	Determines Upper Limit using Target Band values from Salem 2 REM Table 3: +6.0 +(-1.1)= +4.9 Determines Lower Limit is: -9.0 + (-1.1)= -10.1		
	NOTE	When the AXIAL FLUX DIFFERENCE (AFD) Monitor is inoperable, the logged values shall be assumed to exist during the interval preceding each logging. (4.2.1.1.b)	Operator reads Note and continues on.		
	5.3.1.E	ENTER AFD Channel Readings.	Enters AFD values from initial conditions on Attachment 3.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Manual AFD Calculation IAW S2.OP-ST.NIS-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.1.F	DETERMINE if any Channel is operating outside of the Target Band Upper or Lower Limits (inclusive)	<p>Determines Channels III and IV (-10.3 and 10.5) is operating outside the Lower Target Band.</p> <p>JPM is Complete once the operator determines status of channels.</p> <p>Cue: <u>I</u>F operator does not verbalize the results, THEN state: CRS requests the results of the calculation.</p> <p>Possible Cue: With two AFD channels outside the target band, the operator may state that action is needed to reduce Rx power (also see Note on page 7 of procedure that states the TS action required with 2 channels outside the band). State to operator that CRS will refer Tech Specs for required action.</p>		
	CUE:	<p>JPM is Complete.</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate JPM when operator performs Step 5.3.1.F</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JPM #: 16-01 NRC RO-A1

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.

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

INITIAL CONDITIONS:

- Salem Unit 2 completed a down power to 73% power today at 0830 IAW TSAS 3.1.3.1.c.3.d due to a single control rod being declared inoperable.
- The AFD Monitor Alarm for the Auxiliary Annunciator was determined to be inoperable at 0840.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to perform a manual AFD calculation IAW Section 5.3 of S2.OP-ST.NIS-0001(Q), Power Distribution – Axial Flux Difference.
- Current AFD Channel Console Readings are:
 - Channel I: -9.8
 - Channel II: -9.7
 - Channel III: -10.3
 - Channel IV: -10.5
- All prerequisites are completed SAT.
- **NOTIFY** the CRS of the results of the surveillance after completing Step 5.3.1.F.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Conduct of Operations - Administrative		
TASK:	Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003		
TASK NUMBER:	S302000115		
JPM NUMBER:	16-01 NRC RO-A2		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.1.18
APPLICABILITY:		IMPORTANCE FACTOR:	3.6
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	S2.OP-DL.ZZ-0003, Rev. 109 Salem 2 Cycle 23 REM, Rev 17 (checked 10-11-17)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>5 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 10-11-17	
Validated By:	<i>[Signature]</i> BARNIK SME or Instructor	Date: 10/11/2017	
Approved By:	<i>[Signature]</i> Training Department	Date: 11/13/17	
Approved By:	<i>[Signature]</i> Operations Department	Date: 11/13/17	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:	DATE:		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

JPM NUMBER: 16-01 NRC RO-A2

Rev #	Date	Description	Validation Required
00	10-11-17	New JPM. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

TASK NUMBER: S302000115

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Conduct of Operations - Administrative

TASK: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

TASK NUMBER: S302000115

INITIAL CONDITIONS:

- Salem Unit 2 is at 100% reactor power.
- Control room log readings IAW S2.OP-DL.ZZ-0003, Control Room Log (Modes 1-4), is in progress.

INITIATING CUE:

- You are the Reactor Operator.
- **PERFORM** the 1830 log readings using the control room log sheet provided.
- 2CC1 Console Readings for OTDT Setpoint are:

RC Loop	OTDT (deg F)
21 (TI411C)	74
22 (TI421C)	78
23 (TI431C)	75
24 (TI441C)	72

- **NOTIFY** the CRS when log readings are complete.

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Completes the 1830 log readings for 21 thru 24 OTDT Setpoints and Tavg Channel Checks.**
2. **Determines 24 Loop OTDT Setpoint is UNSAT.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following materials: <ul style="list-style-type: none"> ▪ S2.OP-DL.ZZ-0003, Control Room Log (Modes 1-4), and ▪ S2.RE-RA.ZZ-0011 (Salem 2 Cycle 23 REM, Rev 17, DATE TAKEN: 07-31-17) 	<p><u>Note:</u> The data tables from S2.RE-RA.ZZ-0011(Q), TABLES have been removed. The data tables from this procedure are now on Sharepoint and are located as follows:</p> <p><u>Note:</u> Tavq readings for each RC loop must be provided on the log sheet.</p> <p>Main Nuclear Webpage→Quick Links→Operations–Salem→Reactor Engineering Manual→Salem Unit 2→REM Data Salem Unit 2 Cycle ## Rev #.pdf</p>		
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
		REACTOR COOLANT TEMPERATURES (Page 35 of 87 from S2.OP-DL.ZZ-0003)			

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	RC LOOP AVERAGE TEMP	Cue: The following Tavg Temps should be provided on the log sheet: Loop 21 = 573.2 F Loop 22 = 575.2 F Loop 23 = 574.5 F Loop 24 – 574.8 F		
		21 – 24 AVE TEMP CHANNEL CHECK *S/R 4.3.2.1.1 is applicable in Modes 1, 2, & 3. IF all 4 loop avg temperatures are within 3 degrees F, TEHN RECORD "SAT".	Operator determines all Tavg temps within 3 degrees F and records "SAT".		
*		21 LOOP OTDT STPT CHAN CHECK *RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual) OTDT Sepoint Band.	Operator records the OTDT sepoint on the log sheet. Operator evaluates OTDT setpoint using REM FIGURE 5A and determines 21 Loop OTDT sepoint is within the OTDT setpoint band.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		22 LOOP OTDT STPT CHAN CHECK *RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual) OTDT Sepoint Band.	Operator records the OTDT sepoint on the log sheet. Operator evaluates OTDT setpoint using REM FIGURE 5B and determines 22 Loop OTDT sepoint is within the OTDT setpoint band.		
*		23 LOOP OTDT STPT CHAN CHECK *RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual) OTDT Sepoint Band.	Operator records the OTDT sepoint on the log sheet. Operator evaluates OTDT setpoint using REM FIGURE 5C and determines 23 Loop OTDT sepoint is within the OTDT setpoint band.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Conduct of Operations - Administrative

Task: Perform a Channel Check of Reactor Coolant Temperatures IAW S2.OP-DL.ZZ-0003

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		24 LOOP OTDT STPT CHAN CHECK *RECORD Console OTDT indication. Must be within REM (Reactor Engineering Manual) OTDT Sepoint Band.	Operator records the OTDT setpoint on the log sheet and may indicate a red- circled reading is required to denote OTDT setpoint is UNSAT <u>OR</u> notification to the CRS (either method is acceptable). Operator evaluates OTDT setpoint using REM FIGURE 5D and determines 24 Loop OTDT sepoint is <u>NOT</u> within the OTDT setpoint band. Operator informs CRS that Loop 24 OTDT setpoint is outside the REM setpoint band.		
	CUE:	JPM is Complete. RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator identifies 24 Loop OTDT sepoint is <u>NOT</u> within the REM sepoint band <u>OR</u> when the operator provides the results of the Channel Check of 21 - 24 Loops OTDT.		

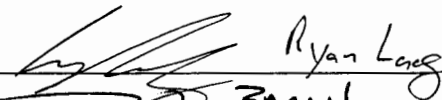
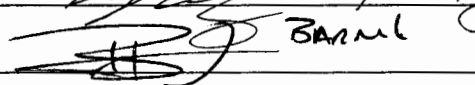
OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JPM #: 16-01 NRC RO-A2

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.

- NL 1. Task description and number, JPM description and number are identified.
- NL 2. Knowledge and Abilities (K/A) references are included.
- NL 3. Performance location specified. (in-plant, control room, or simulator)
- NL 4. Initial setup conditions are identified.
- NL 5. Initiating and terminating Cues are properly identified.
- NL 6. Task standards identified and verified by SME review.
- NL 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- NL 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 109 Date 10-11-17
- NL 9. Pilot test the JPM:
 - a. verify Cues both verbal and visual are free of conflict, and
 - b. ensure performance time is accurate.
- ~IA 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- ~IA 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor:  Ryan Long Date: 10-11-17
SME/Instructor:  [unclear] Date: 10/11/2017
SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- Salem Unit 2 is at 100% reactor power.
- Control room log readings IAW S2.OP-DL.ZZ-0003, Control Room Log (Modes 1-4), is in progress.

INITIATING CUE:

- You are the Reactor Operator.
- **PERFORM** the 1830 log readings using the control room log sheet provided.
- 2CC1 Console Readings for OTDT Setpoint are:

RC Loop	OTDT (deg F)
21 (TI411C)	74
22 (TI421C)	78
23 (TI431C)	75
24 (TI441C)	72

- **NOTIFY** the CRS when log readings are complete.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Equipment Control - Administrative		
TASK:	Perform a Manual QPTR		
TASK NUMBER:	N0150020201		
JPM NUMBER:	16-01 NRC RO-A3		
ALTERNATE PATH:	<input checked="" type="checkbox"/>	K/A NUMBER:	G 2.1.43
APPLICABILITY:		IMPORTANCE FACTOR:	4.1
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	S2.OP-ST.NIS-0002 Rev. 14 (checked 10-11-17) S2 Reactor Engineering Manual Data, Cycle 23 Rev .17 Tech Spec 3.2.4 (QPTR)		
TOOLS AND EQUIPMENT:	Calculator		
VALIDATED JPM COMPLETION TIME:	20 min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date:	12-11-17
Validated By:	N/A ^R 12-11-17 SME or Instructor	Date:	N/A ^R
Approved By:	Training Department <i>McHugh</i>	Date:	12/15/17
Approved By:	Operations Department <i>Myers</i>	Date:	12/15/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
	GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:	DATE:		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC RO-A3

Rev #	Date	Description	Validation Required
00	10-11-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA. Added pre-determined 100% NI Current Values.	Yes
01	12-11-17	Incorporated NRC Prep week comments. Removed 100% NI current values from Initial Conditions, operator to use provided REM sheets.	No

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Equipment Control - Admin

TASK: Perform a QPTR

TASK NUMBER: N0150020201

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

1. **PROVIDE** operator a copy of the REM ensuring the Date Taken date of 7-31-17. **DO NOT USE** the REM in the simulator or classroom.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Equipment Control - Admin

TASK: Perform a QPTR

TASK NUMBER: N0150020201

INITIAL CONDITIONS:

- Unit 2 was operating at 100% power when rod 2D4 dropped fully into the core.
- OHAs E-46, LOWER SECT DEV ABV 50% PWR, and E-38 UPPER SECT DEV ABV 50% PWR, are both illuminated.
- The crew has entered S2.OP-AB.ROD-0002, Dropped Rod, and is making preparations to perform a load reduction to < 75% Rated Thermal Power to comply with Tech Spec 3.1.3.1, Action c.3.d.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIATING CUE:

- The CRS has directed you to **PERFORM** a Manual QPTR Calculation IAW S2.OP-ST.NIS-0002, Power Distribution – Quadrant Power Tilt Ratio.
- The Lower and Upper NI Detector current readings are:

	<u>Upper Detectors</u>	<u>Lower Detectors</u>
N41	184	181
N42	192	198
N43	182	174
N44	139	142

- **NOTIFY** the CRS with the results of the surveillance.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Perform the QPTR and calculates the highest QPTR as UNSAT (highest N42T AND N42B) with a value of 1.025 and 1.023 respectively (acceptable range +/- 0.002).
2. Identifies Maximum Power Tilt exceeds 1.02 and enters T/S 3.2.4.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Equipment Control - Administrative

TASK: Perform a QPTR

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following: <ul style="list-style-type: none"> • S2.OP-ST.NIS-0002, Power Distribution - Quadrant Power Tilt Ratio. • Reactor Engineering Manual Data, Salem 2 Cycle 23, Rev. 17, DATE TAKEN: 07-31-17 	Evaluator's Note: The operator will NOT be given the current REM document. All data required to perform this task is provided on the Initial Condition Sheet provided to the operator.		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	2.1	IDENTIFY sections of this procedure that are <u>NOT</u> to be performed with "N/A".	Cue: CRS has already removed sections of the procedure not related to your task.		
	3.0	<u>PRECAUTIONS AND LIMITATIONS</u>	Reads and initials PRECAUTIONS AND LIMITATIONS 3.1-3.5		
	5.1.1	IF one PR channel is inoperable, <u>AND</u> RTP is >75%, THEN...	Determines all PR channel are operable and step is N/A.		
	5.1.2	RECORD the following data on Attachment 2 <ul style="list-style-type: none"> • Date • Time • Reactor Power • Reason for performing QPTR Calculation 	Records current date, current time, 100% reactor power and checks OHA E-46 as reason for performance in Attachment 2.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Equipment Control - Administrative

TASK: Perform a QPTR

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.3	<p>RECORD the following data on Attachment 1:</p> <ul style="list-style-type: none"> • NI Channels N-41, N-42, N43 and N-44 Upper Detector current readings • NI Channels N-41, N-42, N43 and N-44 Lower Detector current readings • Respective 100% NI Current Values for Channels N-41, N-42, N43 and N-44 Detectors from S2.RE-RA.ZZ-0011, Table 2 	<p>Records on Attachment 1: (From initial conditions)</p> <ul style="list-style-type: none"> • NI channels N41-44 Upper Detector Current Readings • NI channels N41-44 Lower Detector Current Readings • 100% NI Current Values from S2.RE-RA.ZZ-0011, TABLES <p>NOTE: Attachment 1, Section 3 is NOT required to be performed to determine detector currents. It was added at Rev. 12 to use "when any NIS meter is suspect."</p> <p>If asked, CUE that all Power Range Detectors are Operable.</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Equipment Control - Administrative

TASK: Perform a QPTR

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.4	COMPLETE Attachment 1 calculations.	<p>Correctly performs calculations using Attachment 1 (numbers as per ANSWER KEY)</p> <ul style="list-style-type: none"> • Calculates Detector Ratio for each top and bottom detector. • Adds detector ratios to get Sum of detector ratios. • Divides Sum by number of operable detectors (4) to get Average Detector Ratios. • Places Average Detector Ratios in 4th column of Att. 1 • Divides each detector ratio by the average ratio to get the power tilt for each detector. <p>Cue: <u>IV is complete</u> when asked for IV of calculations</p>		
*	5.1.5	RECORD the following on Attachment 2 1. "Power Tilt" for each detector. 2. "Maximum Power Tilt" and applicable detector identification information. 3. Test Results by initialing SAT or UNSAT column IAW stated Acceptance Criteria.	<p>Records information on Attachment 2 (as per ANSWER KEY)</p> <p>Maximum Power Tilt for N42T OR N42B will be marked UNSAT at 1.025 and 1.023 respectively (acceptable range of +/- 0.002 was provided to allow for rounding in calculation and Excel).</p>		
	5.1.6	DIRECT a second Operator to perform Independent Verification of calculations in Attachment 1, Sections 1.0, 2.0 and 3.0 as applicable.	Cue: IV is complete SAT.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Equipment Control - Administrative
TASK: Perform a QPTR

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.7	IF the Maximum Power Tilt for any detector exceeds 1.02, THEN REFER to T/S 3.2.4 for corrective actions.	Determines maximum power tilt exceeds 1.02 and determines entry into Tech Spec 3.2.4 IS required.		
	5.3.1	This surveillance is satisfactory when Attachment 2 or 3 is completed with the Test data meeting the Acceptance Criteria stated.	Determines surveillance is UNSAT and marks step N/A.		
*	5.3.2	This surveillance is unsatisfactory. A. INITIATE NOTF(s) to correct the unsatisfactory condition(s). B. RECORD the NOTF number(s) AND the reason for unsatisfactory completion on Attachment 4 in the Comments Section. C. NOTIFY Reactor Engineering.	Determines surveillance is UNSAT. Cue: The CRS will initiate the NOTF and Notify Reactor Engineering. JPM is Complete.		
	CUE:	JPM is Complete. REPEAT BACK any message from the operator on the status of the JPM, and then state "This JPM is complete". STOP TIME: _____	Terminate JPM when operator notifies evaluator results of surveillance.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC RO-A3

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

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

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- Unit 2 was operating at 100% power when rod 2D4 dropped fully into the core.
- OHAs E-46, LOWER SECT DEV ABV 50% PWR, and E-38 UPPER SECT DEV ABV 50% PWR, are both illuminated.
- The crew has entered S2.OP-AB.ROD-0002, Dropped Rod, and is making preparations to perform a load reduction to < 75% Rated Thermal Power to comply with Tech Spec 3.1.3.1, Action c.3.d.

INITIATING CUE:

- The CRS has directed you to **PERFORM** a Manual QPTR Calculation IAW S2.OP-ST.NIS-0002, Power Distribution – Quadrant Power Tilt Ratio.
- The Lower and Upper NI Detector current readings are:

	<u>Upper Detectors</u>	<u>Lower Detectors</u>
N41	184	181
N42	192	198
N43	182	174
N44	139	142

- **NOTIFY** the CRS with the results of the surveillance.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Emergency Plan - Administrative		
TASK:	Activate ERDS IAW EP-SA-111-F8		
TASK NUMBER:	N1240110501		
JPM NUMBER:	16-01 NRC RO-A4		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.4.43
APPLICABILITY:	IMPORTANCE FACTOR:		3.2
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input type="checkbox"/>
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	EP-SA-111-F8, Rev ⁰⁴ 03 R 11-9-17 (checked 10-11-17)		
TOOLS AND EQUIPMENT:	"ERDS XXX" LAN Computer		
VALIDATED JPM COMPLETION TIME:	5 min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date:	10-11-17
Validated By:	SME or Instructor	Date:	10/24/17
Approved By:	<i>[Signature]</i> Training Department	Date:	11/13/17
Approved By:	Operations Department <i>[Signature]</i>	Date:	11/13/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

JPM NUMBER: 16-01 NRC RO-A4

Rev #	Date	Description	Validation Required
00	10-11-17	New JPM. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Emergency Plan - Administrative

TASK: Activate ERDS IAW EP-SA-111-F8

TASK NUMBER: N1240110501

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

- **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: 240-888-2326, Day time cell: 301-731-2581, alternate number 301-873-6322, Erds.resource@nrc.gov)
- **OPEN** the ERDS program using the SPDS computer terminal in the back computer room. Single click the ERDS program using the mouse, this will now enable the computer in the simulator to connect ERDS to NRC using EP-SA-111-F8.
- Log onto the ERDS computer in simulator.
- **ENSURE** the "ERDS XXX" computer is available and working.

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan - Administrative

TASK: Activate ERDS IAW EP-SA-111-F8

TASK NUMBER: N1240110501

INITIAL CONDITIONS:

- Salem Unit 2 was manually tripped from 100% power due to an RCS leak.
- Safety Injection was manually initiated and all ECCS pumps are running
- The Shift Manager has declared an **ALERT**.

INITIATING CUE:

- You are the Work Control NCO and designated Secondary Communicator.
- **ACTIVATE** ERDS IAW Step 1.2.b of EP-SA-111-F8, Secondary Communicator Log.
- Notify the Shift Manager when ERDS is activated.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Activates ERDS IAW EP-SA-111-F8.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Activate ERDS IAW EP-SA-111-F8

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<u>Simulator Operator:</u> <ul style="list-style-type: none"> • NOTIFY NRC ERDS Test monitor of pending Training evolution. • OPEN ERDS program on SPDS computer. 			
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	1.2.b	Within 60 minute, ACTIVATE ERDS from a LAN computer			
*	1.2.b.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.	Operator proceeds to ERDS XXX computer located inside Salem Simulator horseshoe area. Operator selects the ERDS_ Salem desktop icon.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Activate ERDS IAW EP-SA-111-F8

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	1.2.b.2	On the "Login For ERDS Display" popup window ENTER the PASSWORD (Password is the same as the Username) and SELECT "Login" to proceed.	Operator enters the PASSWORD and selects "Login" to proceed.		
*	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".		
*	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.		
*	1.2.b.5	OBSERVE that Status changes to "Transmitting Data."	Operator checks that the Status changes to "Transmitting Data"		
*	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".		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Activate ERDS IAW EP-SA-111-F8

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	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.	Terminate JPM when CRS/SM is notified ERDS is activated.		
	CUE:	JPM is Complete. RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator notifies you that ERDS is activated.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Activate ERDS IAW EP-SA-111-F8

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<p>When all operators have completed this JPM, THEN:</p> <p><u>Simulator Operator:</u></p> <ul style="list-style-type: none"> • NOTIFY NRC ERDS Test monitor of that Training evolution has ended. • CLOSE the ERDS program on the SPDS computer in back computer room. 	N/A		


OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

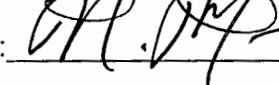
JPM #: 16-01 NRC RO-A4

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.

- 1. Task description and number, JPM description and number are identified.
- 2. Knowledge and Abilities (K/A) references are included.
- 3. Performance location specified. (in-plant, control room, or simulator)
- 4. Initial setup conditions are identified.
- 5. Initiating and terminating Cues are properly identified.
- 6. Task standards identified and verified by SME review.
- 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 4 Date 10/24/17
- 9. Pilot test the JPM:
 - a. verify Cues both verbal and visual are free of conflict, and
 - b. ensure performance time is accurate.
- 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor:  MYERS JT Date: 10/24/17

SME/Instructor:  N. M. Ford Date: 10/24/17

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- Salem Unit 2 was manually tripped from 100% power due to an RCS leak.
- Safety Injection was manually initiated and all ECCS pumps are running
- The Shift Manager has declared an **ALERT**.

INITIATING CUE:

- You are the Work Control NCO and designated Secondary Communicator.
- **ACTIVATE** ERDS IAW Step 1.2.b of EP-SA-111-F8, Secondary Communicator Log.
- Notify the Shift Manager when ERDS is activated.

JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Conduct of Operations - Administrative

TASK: Identify and Isolate Non-Essential Chilled Water Loads IAW S2.OP-SO.CH-0001, Attachment 2

TASK NUMBER: 0980020202

JPM NUMBER: 16-01 NRC SRO-A1

ALTERNATE PATH: K/A NUMBER: G 2.1.25

IMPORTANCE FACTOR: 4.2

APPLICABILITY: RO SRO

EO RO STA SRO

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S2.OP-SO.CH-0001 Rev. 34 (checked 10-3-17)
Salem 2 Tech Specs

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan *Rudolph Chan* Date: 10-3-17
Instructor

Validated By: *Mahn* Date: 10-4-17
SME or Instructor

Approved By: *[Signature]* Date: 11/13/17
Training Department

Approved By: *[Signature]* Date: 11/13/17
Operations Representative

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: SAT UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: DATE:

JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRCSRO-A1

Rev #	Date	Description	Validation Required
00	10-3-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	No

JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Conduct of Operations - Administrative
TASK: Identify and Isolate Non-Essential Chilled Water Loads IAW S2.OP-SO.CH-0001
TASK NUMBER: 0980020202
SIMULATOR IC: N/A
MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

JOB PERFORMANCE MEASURE

SYSTEM: Conduct of Operations - Administrative

TASK: Identify and Isolate Non-Essential Chilled Water Loads IAW S2.OP-SO.CH-0001

TASK NUMBER: 0980020202

INITIAL CONDITIONS:

- It is July 15th time 1800 and you have just assumed the watch as the Unit 2 CRS. It was turned over that both 21 and 22 Chillers tripped at 1600 and you are currently in T/S 3.7.10 action 'b', entered at 1600.
- To comply with the T/S action, the crew is implementing S2.OP-SO.CH-0001, Chilled Water System Operation, Section 4.6, Isolation of Non-Essential Heat Loads.
- During preparations to align #2 ECAC cooling to Service Water IAW S2.OP-SO.CA-0001, Control Air System Operation, it was reported that the spool pieces required to align to service water cannot be located.
- Unit 2 CREACS has been removed from service IAW step 4.6.2 of S2.OP-SO.CH-0001.
- CW Inlet Water Temperature Readings from SC.OP-DL.ZZ-0008(Q), Circulating / Service Water Log are:

2TL3756 = 83.4°F

2TL3757 = 83.6°F

INITIATING CUE:

- You are the Unit 2 CRS.
- The Shift Manager directs you to NOT isolate the #2 ECAC and to re-perform the Non-Essential heat load determination IAW Attachment 2.

DETERMINE the total Non-Essential heat load and **SELECT** the required components for isolation IAW S2.OP.SO-CH-0001, Chilled Water System Operation, Attachment 2 to comply with Tech Specs.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Determines the Total Heat Load Isolation value required is 902.8 kBTU / HR.
2. Selects the required components on Table B for isolation and ensures that the total value is greater than 902.8 kBTU / HR.

JOB PERFORMANCE MEASURE

System: Conduct of Operations - Administrative

Name:

Task: Identify and Isolate Non-Essential Heat Loads IAW S2.OP-SO.CH-0001

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following: <ul style="list-style-type: none"> ▪ blank copy of TS 3.7.10, Chilled Water System – Auxiliary Building Subsystem, and ▪ S2.OP-SO.CH-0001(Q), Chilled Water System Operation. 			
	CUE:	<p>PROVIDE the operator the initiating cue AND ENTER START TIME AFTER operator repeats back the Initiating Cue.</p> <p>START TIME: _____</p>			

JOB PERFORMANCE MEASURE

System: Conduct of Operations - Administrative

Name:

Task: Identify and Isolate Non-Essential Heat Loads IAW S2.OP-SO.CH-0001

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	1.C	RECORD the TOTAL HEAT LOAD ISOLATION from Table A: _____ kBTU / HR	From Table A, Determines 902.8 kBTU / HR. (Based on Inlet water temp of 85.1 F, 2 chillers Inoperable and in Maintenance Mode with Unit 2 EACS Out of Service)		
	1.D	IDENTIFY the components to be isolated in Table B as follows:			
*	1.E	RECORD the value from the HEAT LOAD column into the Isolation column for the components selected for isolation.	Selects the value of heat load by annotating the values in Table B to ensure value greater than value recorded in step 1.C. 21 PACU = 145.7 22 PACU = 145.7 23 PACU = 145.7 Secondary Lab = 192.1 Primary Lab = 165.9 Counting Room = 73.0 PASS = 38.5		
*	1.F	RECORD "N/A" for the components selected to remain available.	Selects N/A for Emergency Control Air Compressor (ECAC)		

JOB PERFORMANCE MEASURE

System: Conduct of Operations - Administrative

Name:

Task: Identify and Isolate Non-Essential Heat Loads IAW S2.OP-SO.CH-0001

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	1.G	ADD the values recorded in the Isolation column <u>AND RECORD</u> the Total Isolation value in Table B.	Determines that the Total Heat Load Isolation value per Table B is 906.6 kBTU / HR.		
*	1.H	ENSURE that the Total Isolation value recorded in Table B is \geq the Total Heat Load Isolation recorded in Step C of this attachment.	Determines the Total Heat load Isolation value recorded in Table B (906.6 kBTU / HR) is greater than or equal to the Total Heat Load Isolation in Step C (902.8 kBTU / HR).		
	1.I	ISOLATE the selected components IAW Section 4.6 of this procedure.	CUE: The NCO will isolate the selected components IAW Section 4.6.		
	CUE:	JPM is Complete <u>THEN RECORD</u> the STOP TIME. STOP TIME: _____	Terminate JPM when operator determines the loads that need to be isolated.		

JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM #: 16-01 NRCSRO-A1

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

- MA 1. Task description and number, JPM description and number are identified.
- MA 2. Knowledge and Abilities (K/A) references are included.
- MA 3. Performance location specified. (in-plant, control room, or simulator)
- MA 4. Initial setup conditions are identified.
- MA 5. Initiating and terminating Cues are properly identified.
- MA 6. Task standards identified and verified by SME review.
- MA 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- MA 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 34 Date 10-3-17
- MA 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.

SME/Instructor: Mahm Morales

Date: 10/4/17

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- It is July 15th time 1800 and you have just assumed the watch as the Unit 2 CRS. It was turned over that both 21 and 22 Chillers tripped at 1600 and you are currently in T/S 3.7.10 action 'b', entered at 1600.
- To comply with the T/S action, the crew is implementing S2.OP-SO.CH-0001, Chilled Water System Operation, Section 4.6, Isolation of Non-Essential Heat Loads.
- During preparations to align #2 ECAC cooling to Service Water IAW S2.OP-SO.CA-0001, Control Air System Operation, it was reported that the spool pieces required to align to service water cannot be located.
- Unit 2 CREACS has been removed from service IAW step 4.6.2 of S2.OP-SO.CH-0001.
- CW Inlet Water Temperature Readings from SC.OP-DL.ZZ-0008(Q), Circulating / Service Water Log are:

2TL3756 = 83.4°F

2TL3757 = 83.6°F

INITIATING CUE:

- You are the Unit 2 CRS.
 - The Shift Manager directs you to NOT isolate the #2 ECAC and to re-perform the Non-Essential heat load determination IAW Attachment 2.
1. **DETERMINE** the total Non-Essential heat load value and **SELECT** the required components for isolation IAW S2.OP-SO-CH-0001, Chilled Water System Operation, Attachment 2, to comply with Tech Specs.

JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Conduct of Operations		
TASK:	Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111		
TASK NUMBER:	N1220400302		
JPM NUMBER:	16-01 NRC SRO-A2		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.1.26
APPLICABILITY:		IMPORTANCE FACTOR:	3.6
EO <input type="checkbox"/>	RO <input type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	SA-AA-111 Rev. 12 (checked 10-3-17)		
TOOLS AND EQUIPMENT:	Calculator		
VALIDATED JPM COMPLETION TIME:	10 min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A		
Developed By:	R. Chan <i>Rudolf Chan</i> Instructor	Date:	12-11-17
Validated By:	N/A <i>N/A</i> 12-11-17 SME or Instructor	Date:	N/A
Approved By:	Training Department <i>[Signature]</i>	Date:	12/15/17
Approved By:	Operations Representative <i>[Signature]</i>	Date:	12/15/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC SRO-A2

Rev #	Date	Description	Validation Required
00	10-3-17	New JPM. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated NRC Prep week comments. Added information in Initial Conditions to better describe task as a High Work rate.	No

JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Conduct of Operations

TASK: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

TASK NUMBER: N1220400302

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

JOB PERFORMANCE MEASURE

SYSTEM: Conduct of Operations

TASK: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

TASK NUMBER: N1220400302

INITIAL CONDITIONS:

- Unit 2 is at 100% power.
- 2PS3, PZR Spray Valve, is operating erratically and a decision has been made to enter containment to isolate the 2PS3 by closing the manual isolation valve (2PS28).
- The 2PS28 is located inside the PZR housing (dog house), upper elevation, and is known to be very physically demanding on the operators to operate. Two operators will be required to simultaneously operate the valve using a valve wrench during the entire valve operation. Operators will also have to climb ladders to access the 2PS28 in the dog house.
- The Shift Manager needs to determine the amount of resources needed to close this valve given the Heat Stress conditions.
- Rad Pro has provided a Wet Bulb Globe Thermometer (WBGT) temperature of 89 F for the work area.
- Rad Pro has determined that operators will need to wear double PCs.

INITIATING CUE:

- You are the Unit 2 Control Room Supervisor.
- **DETERMINE** the following using SA-AA-111, Heat Stress Control:
 1. What is the **Stay Time**?
 2. Assume the task will need more time and Check Times will be used. What is the **Maximum Extended Stay Time**?
 3. Assume the task required the use of the maximum extended stay time. What is the **Recovery Time**?
- Provide your answers on the Initiating Cue sheet.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Determines; Stay Time = 20 mins, Maximum Extended Stay Time = 30 mins, and Recovery Time = 90 mins.

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide blank copy of SA-AA-111, Heat Stress Control procedure.			
	CUE:	PROVIDE the operator the initiating cue <u>AND ENTER START TIME AFTER</u> operator repeats back the Initiating Cue. START TIME: _____			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.1.1	<p>OBTAIN the Dry Bulb or Wet Bulb Globe Temperatures in the location where employees will be physically performing work activities. Heat Stress surveys may be conducted in conjunction with radiation surveys. Remote temperature monitors may be used to obtain dry bulb temperatures. RECORD the temperatures in lines 1 and 2 of Attachment 4.</p> <p>1. For locations such as the drywell, areas with multiple elevations, areas with changing ventilation or areas where work is being performed in various physical locations, temperatures should be obtained, at a minimum, at the location where most work activities will be performed (>50% of work time).</p> <p>2. In areas where varied environmental conditions exist or if the worker may be exposed to varied environmental conditions, due to the type of activity performed, the worst case area WBGT must be used for determining Stay Times. This method represents the only practical solution to this set of circumstances.</p>	<p>CRS records Wet Bulb Globe Temperature given from Initiating Cue as 89 F on Attachment 4.</p>		

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.1.2	<p>CLASSIFY the work environment as High Temperature (HT), Very High Temperature (VHT) or Extremely High Temperature (EHT). RECORD in line 3 of Attachment 4.</p> <p>1. High Temperature: Environmental and work conditions that result in a calculated Stay Time.</p> <p>2. Very High Temperatures: Work areas with dry bulb temperatures between 145°F and 160°F or WBGT between 110°F and 115°F.</p> <p>3. Extremely High Temperature: Dry bulb temperatures great than 160°F or WBGT greater than 115°F refer to Attachment 7.</p>	<p>CRS classifies the work environment as High Temperature based on work area temperature of 89 F.</p>		
	4.2	<p>Evaluation of Work Rate as Low, Moderate or High</p>			
	4.2.1	<p>DETERMINE Work Rate through the use of Attachment 2, Work Rate Metabolism Guideline. RECORD results in line 4 of Attachment 4.</p>			
		<p>1. When determining the work rate, the clothing ensemble for the exposed employees should not be considered. Determination should be limited to the physical effort of activities.</p>			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<p>2. Low Work Rate activities involving the use of negative pressure, air-purifying respirators should, at minimum, be classified as Moderate Work Rate activities. Moderate Work Rate activities should be classified as High Work Rate if they involve the use of negative pressure, air-purifying respirators.</p>			
		<p>3. When determining the work rate using Attachment 2, Work Rate Metabolism Guideline, the evaluator should use the most frequent workload activity (>50% of work time) to characterize the overall activity as being Low, Moderate or High exertion. Higher exertion levels result in higher metabolic body heat generation.</p> <p>A. Low Work Rate is defined as sedentary activities involving sitting, standing still, and low physical effort. These include inspections and operation of instruments and powered equipment.</p> <p>B. Moderate Work Rate is defined as activities that are easily accomplished in a thermally comfortable environment. These types of tasks include pump and valve rebuilds and the sorting of materials. Additionally, heavy exertion activities that are broken up by periods of light activity or rest and do not involve the use of negative pressure, air-purifying respirators should be classified as Moderate Work Rate.</p>			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		C. High Work Rate is defined as demanding physical work for greater than 50% of work time. Activities characterized as High Work Rate include lifting and movement of heavy objects and manual decontamination of internal plant locations. Additionally, all Moderate Work Rate activities involving the use of negative pressure, air-purifying respirators should be classified as High Work Rate activities.	CRS determines that this task is a HIGH work rate. This can be based on the initial condition provided that the 2PS28 is historically very hard to operate and physically demanding on them giving the high temperatures inside the PZR dog house.		
*	4.3	Identification of Clothing Ensemble	Determines the clothing ensemble to be Double Cloth Coveralls (also known as double PCs) and the adjustment factor to add 9 F to the WBGT.		
	4.4	Determination of Stay Times			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.4.1	<p>DETERMINE the Stay Time by using the WBGT/Dry Bulb values obtained in 4.1, the work rate determined in 4.2, and the clothing ensemble identified in 4.3 by the following step-by-step process:</p> <p>1. LOCATE the table in Attachment 3, Heat Stress Stay Time Limits.</p> <p>2. LOCATE the clothing ensemble most applicable to the work activity as described in 4.3.</p> <p>3. The left side of the table has WBGT/Dry Bulb value. FIND the WBGT/Dry Bulb value.</p> <p>4. DETERMINE the Stay Time by adding the WBGT/Dry Bulb plus the Clothing Adjustment Factor and determining the work demand. Record this value in line 6 of Attachment 4.</p>	<p>CRS uses the following information and Attachment 3 to determine Stay Time:</p> <p>4.1 – WBGT = 89 F 4.2 – Work Rate = High 4.3 – Clothing = Double PCs</p> <p>CRS adds adjustment factor to WBGT (89 F + 9 F = 98 F)</p> <p>Using Attachment 3; CRS uses the WBGT value of 98 F and a High work demand to determine a Stay Time = 20 min.</p>		
	4.6	Extending the Stay Time through the use of Check Times			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.6.1	<p>The following limitations apply to the use of Check Times.</p> <p>1. USE Check Times only for work activities involving Stay Times contained in Attachment 3, Heat Stress Stay Time Limits.</p> <p>2. Check Times cannot be used to extend beyond 1.5 times the established Stay Time for a given work activity. (1.5 X ST)</p> <p>3. The Check Time process is designed to supplement self-determination by employees. Essentially, the process allows Stay Times to be extended if a set method of determining the physical condition of employees has been established.</p> <p>4.....</p>	CRS reads step and continues on.		
*	4.6.3	<p>RECORD the Maximum Extended Stay Time in line 8 of Attachment 4, Job Evaluation Worksheet.</p> <p>1. The maximum extended Stay Time when using the Check Time Process is 1.5 times the Stay Time determined in 4.4.1. (1.5 X ST)</p>	<p>CRS calculates Maximum Extended Stay Time (1.5 x ST) of:</p> <p>1.5 x 20 mins = 30 mins</p>		
	4.8	Determination and Application of Recovery Times			

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.8.1	DETERMINE the Recovery Time. RECORD the Recovery Time in line 12 of Attachment 4, Job Evaluation Worksheet.			
*	4.8.1.1	The Recovery Time calculation is used to determine the amount of time necessary for employees to recover from a high temperature job exposure. A. CALCULATE the Recovery Time (RT) as follows: 1. (Actual Work Time / Stay Time) x 60 minutes 2. When using liquid cooling garments under high metabolic rate conditions or when using ice vests, use four times the Attachment 3 Stay Time for computing recovery time. 3. If the Attachment 3 Stay Time is less than 15 minutes and cooling garments are worn, then use a Stay Time of 60 minutes for calculating Recovery Time.	Stay Time (ST) = 20 mins Max Extended ST = 30 mins (in this case this is the actual ST) Recovery Time = 30/20 x 60 Recovery Time = 90 mins		

JOB PERFORMANCE MEASURE

System: Conduct of Operations

Name:

Task: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

Date:

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	<p><u>WHEN</u> operator informs you the task is complete, OR the JPM has been terminated for other reasons, <u>THEN</u> RECORD the STOP TIME.</p> <p>REPEAT BACK any message from the operator on the status of the JPM and then state "This JPM is complete"</p> <p>STOP TIME: _____</p>			

JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC SRO-A2

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

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

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Unit 2 is at 100% power.
- 2PS3, PZR Spray Valve, is operating erratically and a decision has been made to enter containment to isolate the 2PS3 by closing the manual isolation valve (2PS28).
- The 2PS28 is located inside the PZR housing (dog house), upper elevation, and is known to be very physically demanding on the operators to operate. Two operators will be required to simultaneously operate the valve using a valve wrench during the entire valve operation. Operators will also have to climb ladders to access the 2PS28 in the dog house.
- The Shift Manager needs to determine the amount of resources needed to close this valve given the Heat Stress conditions.
- Rad Pro has provided a Wet Bulb Globe Thermometer (WBGT) temperature of 89 F for the work area.
- Rad Pro has determined that operators will need to wear double PCs.
- Cooling Garments will not be used.

INITIATING CUE:

- You are the Unit 2 Control Room Supervisor.
- **DETERMINE** the following using SA-AA-111, Heat Stress Control:
 1. What is the **Stay Time**?
 2. Assume the task will need more time and Check Times will be used. What is the **Maximum Extended Stay Time**?
 3. Assume the task required the use of the maximum extended stay time. What is the **Recovery Time**?

[Provide your answers on this sheet]

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Equipment Control - Administrative		
TASK:	Review a Tagging Request and Evaluate Tech Specs		
TASK NUMBER:	N1220050302		
JPM NUMBER:	16-01 NRC SRO-A3		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.2.13
APPLICABILITY:	IMPORTANCE FACTOR:		4.3
EO <input type="checkbox"/>	RO <input type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	OP-AA-109-115, Rev. 12 (checked 10-24-17) DWG 205228 Sheet 2, Rev 85 S1.OP-SO.CVC-0002, Rev 41		
TOOLS AND EQUIPMENT:	Marked up PI&D Drawing 205228 Sheet 2		
VALIDATED JPM COMPLETION TIME:	8 min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A		
Developed By:	R. Chan Instructor	<i>Rubold Chan</i>	Date: 12-11-17
Validated By:	SME or Instructor	<i>N/A R 12-11-17</i>	Date: <i>N/A R</i>
Approved By:	Training Department	<i>McKough</i> <i>[Signature]</i>	Date: <i>12/15/17</i>
Approved By:	Operations Department	<i>[Signature]</i> <i>WEEKS</i>	Date: <i>12/15/17</i>
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:	DATE:		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

REVISION HISTORY

JPM NUMBER: 16-01 NRCSRO-A3

Rev #	Date	Description	Validation Required
00	10-24-17	New JPM. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated comments from NRC Prep week.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Equipment Control - Administrative
TASK: Review a Tagging Request and Evaluate Tech Specs
TASK NUMBER: N1220050302
SIMULATOR IC: N/A
MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

1. **ENSURE** available copies of drawings 205228 sheet 1 (for Note 11), 205227 Sheet 1 (Drain Header), and 600658 (Legend Sheet), IF requested by operator.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Equipment Control - Administrative
TASK: Review a Tagging Request and Evaluate Tech Specs
TASK NUMBER: N1220050302

INITIAL CONDITIONS:

- Unit 1 is at 100% power.
- No Tech Specs are currently active.
- 11 Charging pump 405p surveillance was just completed.
- Following the surveillance, excessive leakage from the pump seal was noted by the field operator.
- The Work Control NCO is preparing a Tagout package as part of the TAGOUT INITIATION section of OP-AA-109-115 and has requested you to review the marked up drawing for adequate blocking points.
- The charging pump will be removed from service IAW S1.OP-SO.CVC-0002, CHARGING PUMP OPERATION.

INITIATING CUE:

- You are the extra SRO.
- **REVIEW** the blocking points on the supplied drawing **AND DETERMINE** the following using ONLY the provided drawing and procedures:
 1. Are the blocking points on the supplied drawing adequate to isolate the equipment to be worked?
 2. Justify your answer.
 3. What are the applicable Tech Specs for the removal of the component?

Successful Completion Criteria:

1. All critical steps completed
2. All sequential steps completed in order
3. All time-critical steps completed within allotted time
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. Identifies the following discrepancies from 205228 and Tech Specs:
 - a. 1CV81 is not a selected Blocking Point.
 - b. 1CV136 is not a selected Blocking Point.
 - c. 1CV356 is not a selected Blocking Point (2nd vent path)
2. Identifies T/S 3.5.2 as applicable LCO's.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Equipment Control - Administrative

Task: Review a Tagging Request and Evaluate Tech Specs

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	PROVIDE the following: <ul style="list-style-type: none"> • marked up DWG 205228 Sheet 2, and • OP-AA-109-115, Safety Tagging Operations • S1.OP-SO.CVC-0002, Charging Pump Operation 			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
1		Review provided Drawing for adequate Blocking Points.	Operator reviews drawing and identifies the following discrepancies: Cue: IF operator requests to see the complete tagging package, THEN state: the package is still be developed by the NCO and you are being requested to <u>ONLY</u> review the drawing and procedures provided.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Equipment Control - Administrative

Task: Review a Tagging Request and Evaluate Tech Specs

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		Discrepancy # 1	<p>1CV81, 11 CHG PUMP DISCH VALVE, is NOT listed as a Blocking Point and position should be CLOSED. [see S1.OP-SO.CVC-0002 step 4.9.4.2]</p> <p>Both 1CV48 and 1CV81 are required to be closed to isolate the discharge of 11 Charging pump.</p>		
			<p>Evaluator's Note: The operator may identify that the discharge piping between the 1CV47 (check valve) and the 1CV81 and 1CV48 (discharge valves) has no vent or drain path to release energy. This would make the Tagout "exceptional". Also double isolation on the discharge side of the pump is not possible and would make it exceptional as well.</p> <p>Identifying the tagout as "exceptional" is not required to complete the JPM Task.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Equipment Control - Administrative

Task: Review a Tagging Request and Evaluate Tech Specs

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		Discrepancy # 2	<p>1CV136, 11 CHG PUMP RECIRC STOP VALVE, is NOT listed as a Blocking Point and position should be CLOSED. [see S1.OP-SO.CVC-0002 step 4.9.4.4]</p> <p>1CV135 is a check valve and incorrectly used a Blocking Point on the recirc flow line.</p> <p><u>Note:</u> The operator may also identify 1CV382 and 1CV370 as vent paths for the recirc line.</p>		
*		Discrepancy # 3	<p>1CV356, CHG PUMP SUCT VENT, is NOT listed as a Blocking Point and position should be OPEN. [see S1.OP-SO.CVC-0002 step 4.9.4.7]</p> <p>Both 1CV356 and 1CV45 need to be OPEN to properly vent and drain.</p> <p>OP-AA-109-115, Attachment 2, page 71, specifies liquid systems shall have a minimum of one vent and drain tagged.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Equipment Control - Administrative

Task: Review a Tagging Request and Evaluate Tech Specs

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	Note 11 for 1CV45 Found on 205228 Sheet 1.	Cue: <u>IF</u> operator request to see Note 11, THEN provide drawing 205228 Sheet 1. Cue: <u>IF</u> the operator asks about the status of the flange connection <u>or</u> spool piece downstream of 1CV45, THEN state; the spool piece will be installed as part of a separate Tagout to connect the 1CV45 to the drain header.		
*		Applicable Tech Specs from removal of component.	Operator evaluates Tech Specs and identifies T/S 3.5.2, action 'a', is applicable.		
		Operator identifies and records discrepancies.	Operator RECORDS any discrepancies and applicable Tech Specs on Initiating Cue Sheet.		
	CUE:	JPM is Complete RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator records the discrepancies and Tech Specs.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRCSRO-A3

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

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

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- Unit 1 is at 100% power.
- No Tech Specs are currently active.
- 11 Charging pump 405p surveillance was just completed.
- Following the surveillance, excessive leakage from the pump seal was noted by the field operator.
- The Work Control NCO is preparing a Tagout package as part of the TAGOUT INITIATION section of OP-AA-109-115 and has requested you to review the marked up drawing for adequate blocking points.
- The charging pump will be removed from service IAW S1.OP-SO.CVC-0002, CHARGING PUMP OPERATION.

INITIATING CUE:

- You are the extra SRO.
- **REVIEW** the blocking points on the supplied drawing AND DETERMINE the following using ONLY the provided drawing and procedures:
 1. Are the blocking points on the supplied drawing adequate to isolate the equipment to be worked?
 2. Justify your answer.
 3. What are the applicable Tech Specs for the removal of the component?

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Radiation Control		
TASK:	Authorize a Radioactive Gas Release Form		
TASK NUMBER:	N1120650302		
JPM NUMBER:	16-01 NRC SRO-A4		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.3.6
APPLICABILITY:	IMPORTANCE FACTOR:		3.8
EO <input type="checkbox"/>	RO <input type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	S1.OP-SO.WG-0010 Rev. 31 (checked 10-4-17)		
TOOLS AND EQUIPMENT:			
VALIDATED JPM COMPLETION TIME:	<u>10 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date:	12-11-17
Validated By:	<i>N/A</i> R 12-11-17 SME or Instructor	Date:	<i>N/A</i> R
Approved By:	Training Department <i>McHugh</i> <i>McHugh</i>	Date:	12/15/17
Approved By:	Operations Department <i>MERS</i> <i>MERS</i>	Date:	12/15/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

REVISION HISTORY

JPM NUMBER: 16-01 NRCSRO-A4

Rev #	Date	Description	Validation Required
00	10-4-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated NRC Prep week comments.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Radiation Control - Administrative

TASK: Authorize a Radioactive Gas Release Form

TASK NUMBER: N1120650302

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

Evaluator's Note: A cue directing the performer to review the entire procedure is embedded several places in body of JPM, based on previous performance of this JPM where an operator will find the first flaw and discontinue reviewing the remainder of the procedure. **If required**, stress during initiating cue that the entire procedure is to be reviewed to ensure the candidate is allowed to identify all deficiencies.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Radiation Control - Administrative

TASK: Authorize a Radioactive Gas Release Form

TASK NUMBER: N1120650302

INITIAL CONDITIONS:

- 13 WGDT is in holdup in preparation for performing a gas release via the Plant Vent.
- Chemistry has performed all required sampling and authorized the gas release.
- The release procedure, S1.OP-SO.WG-0010, Discharge of 13 Gas Decay Tank to Plant Vent, has just been handed to you by the Unit 1 Plant Operator, who informs you the release is ready for CRS approval.
- All procedure sections are complete up to Step 5.2.9.

INITIATING CUE:

- You are the Unit 1 Control Room Supervisor (CRS).
- **REVIEW** all completed sections of the procedure for accuracy and completeness.
- **DETERMINE** the following:
 - a. Can you authorize the gas release?
 - b. If No release is authorized; identify ALL issues to be corrected.

Successful Completion Criteria:

1. All critical steps completed
2. All sequential steps completed in order
3. All time-critical steps completed within allotted time
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. Review Gas Release and identify that:

- a. Pre-Release verification has not been performed in Attachment 1, Section 1.0.
- b. Calculated Maximum Allowable Release Rate is not > 32 SCFM.
- c. CRS does not authorize the gas release.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

System: Radiation Control - Administrative

Task: Authorize a Radioactive Gas Release Form

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide marked up S1.OP-SO.WG-0010 to operator.			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
			Operator reviews procedure. Possible Cue Required: On page 17, the Estimated Total Volume of Waste Gas to be released is entered by Chemistry during performance of Attachment 2, section 3.0, DOSE, VOLUME ESTIMATES AND APPROVAL. IF an operator requests the Release Permit, or questions the estimated release volume or ANY aspect of Section 3.0, THEN provide the following cue: Cue: The data provided in Section 3 of Attachment 2 was <u>transferred</u> properly by Chemistry from the Radioactive Gaseous Release Permit.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Radiation Control - Administrative

Task: Authorize a Radioactive Gas Release Form

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.8 AND ATT. 1 Sect 1.0		The first error in the procedure is that the PRE-RELEASE VERIF in Attachment 1, Section 1.0 has not been performed at step 5.2.8, prior to the procedure being given to the CRS for release approval.		
*	ATT 2 3.4 AND 4.1		The second error is that the Maximum Allowable Release Rate of 32 SCFM recorded in Step 3.4 and 4.1 is not > 32 SCFM. IAW NOTE in Step 3.4; Tanks with a calculated maximum allowable release rate of ≤ 32 SCFM cannot be released.		
		Operator identifies and records discrepancies.			
	CUE:	JPM is Complete RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator determines if release is authorized, records discrepancies, AND the entire procedure has been reviewed.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRCSRO-A4

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

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

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- 13 WGDT is in holdup in preparation for performing a gas release via the Plant Vent.
- Chemistry has performed all required sampling and authorized the gas release.
- The release procedure, S1.OP-SO.WG-0010, Discharge of 13 Gas Decay Tank to Plant Vent, has just been handed to you by the Unit 1 Plant Operator, who informs you the release is ready for CRS approval.
- All procedure sections are complete up to Step 5.2.9.

INITIATING CUE:

- You are the Unit 1 Control Room Supervisor (CRS).
- **REVIEW** all completed sections of the procedure for accuracy and completeness.
- **DETERMINE** the following:
 - a. Can you authorize the gas release?

 - b. If No release is authorized; identify ALL issues to be corrected.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Emergency Plan - Administrative		
TASK:	Classify an Event and Complete ICMF IAW EP-SA-111-101		
TASK NUMBER:	1240020502		
JPM NUMBER:	16-01 NRC SRO-A5		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	G 2.4.41
APPLICABILITY:		IMPORTANCE FACTOR:	
EO <input type="checkbox"/>	RO <input type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Classroom		
REFERENCES:	EP-SA-111-101, Rev. 23 (checked 10-2-17) EP-SA-111-121, Rev 00 EP-SA-111-F3, Rev 03		
TOOLS AND EQUIPMENT:	ECG Books		
VALIDATED JPM COMPLETION TIME:	<u>10 mins</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>15 mins</u>		
Developed By:	R. Chan <i>Rudolph Chan</i>	Date: 12-11-17	
	Instructor		
Validated By:	<i>N/A</i> ^R 12-11-17	Date: <i>N/A</i> ^R	
	SME or Instructor		
Approved By:	<i>Michael</i>	Date: 12/15/17	
	Training Department		
Approved By:	<i>[Signature]</i>	Date: 12/15/17	
	Operations Department		
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

JPM NUMBER: 16-01 NRC SRO-A5

Rev #	Date	Description	Validation Required
00	10-2-17	Added revision history and simulator setup pages. Updated NI currents from Rev. 5 of REM dated 6/4/17. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated NRC Prep week comments.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Emergency Plan - Administrative

TASK: Classify an Event and Complete ICMF IAW EP-SA-111-101

TASK NUMBER: 1240020502

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

- **ENSURE** copy of Attachment 3 (SAE).
- **ENSURE** copies of Attachments 2 (ALERT) and 4 (GE) ICMFs are available if requested. Note: these are the incorrect Attachments to use.

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan - Administrative

TASK: Classify an Event and Complete ICMF IAW EP-SA-111-101

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

- Salem 2 was manually tripped and Safety Injection Auto actuated due to a RCS leak inside containment.
- The crew is implementing **2-EOP-TRIP-1**.
- RCS pressure < 60 psig.
- RCS Subcooling is 0 degrees F.
- All ECCS pumps are running.
- Containment pressure is 35 psi and 21 Containment Spray pump failed to start. Attempts to start 21 CS pump from the control room are unsuccessful.
- 21 CFCU is C/T for cooler leak and 22 and 23 CFCUs failed to start in LOW SPEED. Attempts to start 22 and 23 CFCUs from the control room are unsuccessful.
- Meteorological data is as follows: Wind Direction: 180 degrees, Wind Speed: 5 mph
- 2R41D, Plant Vent Release Rate, radiation monitor is **NOT** indicating elevated readings.

INITIATING CUE:

- You are the Unit 2 Control Room Supervisor (CRS).
- **CLASSIFY** the event AND **COMPLETE** the ICMF IAW EP-SA-111-101 and appropriate EAL category flowcharts.
- **THIS IS A TIME CRITICAL JPM.**

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Classifies the event as Site Area Emergency (SAE) based on RB2.L and CB8.P.**
2. **Properly completes ICMF for the classified event.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Classify an Event and Complete ICMF IAW EP-SA-111-101

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide the following materials: <ul style="list-style-type: none"> ▪ EP-SA-111-101, ▪ Salem 2 ECG books 			
	CUE:	<p>State to the Operator:</p> <p>THIS IS A TIME CRITICAL JPM.</p> <p>You will be giving time to REVIEW the Initial Conditions. The JPM will START once you have completed your review and acknowledge the Initiating Cue. The time will stop when you have classified the event and submitted the ICMF to the Lead Evaluator.</p> <p>Fill in the JPM Start Time when the student acknowledges the Initiating Cue.</p> <p>START TIME: _____</p>	Operator reviews initial conditions.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Classify an Event and Complete ICMF IAW EP-SA-111-101

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		CLASSIFY the event.	<p>Operator classifies the event as Site Area Emergency (SAE) based on Fission Product Barrier Table:</p> <ul style="list-style-type: none"> ▪ RB2.L (5 pts) – Subcooling ≤ 0 F (as a result of RCS leakage) ▪ CB8.P (2 pts) – Containment pressure > 15 psig AND EITHER of the following: <ul style="list-style-type: none"> ○ One containment spray train in service AND < 3 CFCUs running in low speed. ▪ 7 points total for Site Area Emergency (SAE) 		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: Emergency Plan - Administrative

Task: Classify an Event and Complete ICMF IAW EP-SA-111-101

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		COMPLETES ICMF	<p>Cue: Provide copy of EP-SA-111-F3, Attachment 3 (SAE) when requested.</p> <p><u>Note:</u> Attachments 2 (ALERT) and 4 (GE) ICMFs are available if requested.</p> <p>Operator accurately and completely fills out the ICMF for Site Area Emergency IAW EP-SA-111-F3, Attachment 3.</p> <p>See attached ANSWER KEY for complete and accurate ICMF.</p>		
	CUE:	<p>JPM is Complete.</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate JPM when operator submits the ICMF form.</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JPM #: 16-01 NRC SRO-A5

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.

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

INITIAL CONDITIONS:

- Salem 2 was manually tripped and Safety Injection Auto actuated due to a RCS leak inside containment.
- The crew is implementing **2-EOP-TRIP-1**.
- RCS pressure < 60 psig.
- RCS Subcooling is 0 degrees F.
- All ECCS pumps are running.
- Containment pressure is 35 psi and 21 Containment Spray pump failed to start. Attempts to start 21 CS pump from the control room are unsuccessful.
- 21 CFCU is C/T for cooler leak and 22 and 23 CFCUs failed to start in LOW SPEED. Attempts to start 22 and 23 CFCUs from the control room are unsuccessful.
- Meteorological data is as follows: Wind Direction: 180 degrees, Wind Speed: 5 mph
- 2R41D, Plant Vent Release Rate, radiation monitor is **NOT** indicating elevated readings.

INITIATING CUE:

- You are the Unit 2 Control Room Supervisor (CRS).
- **CLASSIFY** the event AND COMPLETE the ICMF IAW EP-SA-111-101 and appropriate EAL category flowcharts.
- **THIS IS A TIME CRITICAL JPM.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Control Rod Drive System (CRDS)		
TASK:	Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011		
TASK NUMBER:	0220040101		
JPM NUMBER:	16-01 NRC Sim-a		
ALTERNATE PATH:	<input checked="" type="checkbox"/>	K/A NUMBER:	001 A2.01
APPLICABILITY:		IMPORTANCE FACTOR:	<u>3.1</u> <u>3.7</u>
	EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/> SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	S2.OP-AR.ZZ-0011, Rev 60 (checked 9-10-17) S2.OP-SO.CBV-0001, Rev 33		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>5</u> ^{R 9-18-17} / min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan Instructor	<i>Rudolph Chan</i>	Date: 9-15-17
Validated By:	<i>R. Evans</i> SME or Instructor		Date: 9/18/17
Approved By:	Frank Rossetti Training Department	<i>Frank Rossetti</i>	Date: 11/13/17
Approved By:	Operations Department	<i>J. Myers</i>	Date: 11/13/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-a

Rev #	Date	Description	Validation Required
00	9-15-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

TASK NUMBER: 0220040101

SIMULATOR IC: IC-240

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-240
2. Ensure 21 and 22 CRDM vent Fans are running.
3. Verify the following events on the Summary/ET Trigger Lists:
 - **RT-1 MALF: RD0316A CRD Vent Fan damper fails close.**
 - **ET-1 KAB05PBR: Inserts MALF VC0316B: 22 CRD Fan Trip with 01:10 second delay; MALF VC0316C: 23 CRD Fan Trip with 01:00 second delay.**
4. These malfunctions will simulate the running CRDM Vent Fan dampers closing resulting in air flow to console alarm. IAW ARP, the standby fan will be started. Seconds later the standby fan trips followed by the last remaining running fan (no CRDM Fans running). IAW ARP, the operator is required to TRIP the Reactor.
5. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- **None.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011.

TASK NUMBER: 0220040101

INITIAL CONDITIONS:

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

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **STARTS** Standby CRDM Vent Fan IAW ARP based on abnormal console indications.
2. **TRIPs** the Reactor IAW ARP based on NO CRDM Vent Fans running.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	CUE	Simulator Operator: INSERT RT-1 when the operator assumes the watch. MALF: RD0361A 21 CRD Vent Fan Damper Failure			
		The following alarm and indication will come in following RT-1 for <u>21 CRDM Vent Fan</u> : <ul style="list-style-type: none"> ▪ AIR FLOW LO ▪ SEQUENCE COMPLETE bezel extinguished (NOT illuminated) 	Operator reports receipt of unexpected console alarm on 21 CRD Vent Fan for AIR FLOW LO and the SEQUENCE COMPLETE bezel extinguished. Operator refers to 2CC1 ARP. Cue: IF operator reports to you as CRS the following alarms AND is waiting for direction; THEN state: CRS directs you to respond to alarms and indications IAW applicable Alarm Response Procedures.		
	CUE	The following steps are from Alarm Response Procedure (ARP) S2.OP-AR.ZZ-0011, CONTROL CONSOLE 2CC1	Evaluator's Note: The operator may also refer to S2.OP-SO.CBV-0001, Containment Ventilation Operation, section 5.4 for starting/stopping CRDM Vent Fans. <u>However, this procedure provides NO direction for a loss of all CRDM Vent Fans.</u>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	2CC1 ARP pg 13	CONTAINMENT VENTILATION SYSTEM Rod Drive Vent Fans AIR FLOW LO	Operator responds to console alarm for AIR FLOW LO and refers to 2CC1 ARP S2.OP-AR.ZZ-0011 page 13.		
	1.0	CAUSE(S): Fan discharge pressure < 2.0 INWC.	Operator reads the step and continues on.		
	2.0	AUTOMATIC ACTIONS: None	Operator reads the step and continues on.		
	3.0	OPERATOR ACTIONS:			
	NOTE	Low flow alarm may result from erratic flow during fan start. Illumination of control console SEQUENCE COMPLETE light indicates flow through fan outlet damper. Alarm should clear when fan is up to speed.	Operator reads the Note and continues on.		
	CAUTION	Operating with less than two Rod Drive Vent Fans in service could degrade the Rod Drive Coils. An Operability Determination should be performed when operating with one Rod Drive Vent Fan. Operating with more than two Rod Drive Vent Fans in service could damage the fan blades.	Operator reads the Caution and determines this is not applicable at this time, unless the standby fan does not start. Operator continues on. Cue: IF operator informs CRS of Caution, THEN state: the CRS will review this Caution for potential Operability Determination requirements.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.1	<p>IF Rod Drive Vent Fan has just been started, AND SEQUENCE COMPLETE indication is illuminated, THEN MONITOR both running Rod Drive Hdr Outlet temperatures.</p> <p>Fan Comp Pt / Alrm Description 21 T2602A / 160°F 21 Rod Drive Hdr Outlet Temp 22 T2603A / 160°F 22 Rod Drive Hdr Outlet Temp 23 T2604A / 160°F 23 Rod Drive Hdr Outlet Temp</p>	<p>Operator reads the step and determines that a Vent Fan has NOT been started.</p> <p>Marks step N/A and continues on.</p>		
*	3.2	<p>IF SEQUENCE COMPLETE indication for affected fan is extinguished THEN immediately SWAP to the standby Rod Drive Vent Fan,</p> <p>(Evaluator's Note: Steps A-E are below)</p>	<p>Operator determines these steps are applicable based on the SEQUENCE COMPLETE indication bezel is extinguished.</p> <p>Operator continues on and PERFORMs the applicable steps.</p> <p>Evaluator's Note: It is acceptable for the operator to Stop and Start CRD Vent Fans using S2.OP-SO.CBV-0001.</p>		
*	3.2.A	PRESS STOP for affected Rod Drive Vent Fan	Operator depresses STOP PB for 21 Fan and verifies STOP bezel illuminates Green.		
*	3.2.B	PRESS START for standby Rod Drive Vent Fan	Operator depresses START PB for standby vent fan and verifies START bezel illuminates RED. Operator reports SEQUENCE COMPLETE bezel is illuminated and AIR FLOW LO is extinguished as expected.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	Simulator Operator: ENSURE ET-1 is TRUE when the standby fan is started. This will INSERT VC0316C and VC0316B to Trip the two (2) running Vent Fans after a time delay. MALF VC0316C 23 CRD Fan Trip Delay = 01:00 seconds MALF VC0316B 22 CRD Fan Trip Delay = 01:10 seconds.			
	3.2.C	IF the standby fan can NOT be started, AND at least one Rod Drive Vent Fan is in operation, THEN PERFORM an Operability Determination to determine continued plant operation [80083830].	Operator marks step as N/A based on standby fan starting.		
		ALTERNATE PATH STARTS HERE:			
*	3.2.D	IF there are NO Rod Drive Vent Fans in operation, THEN: 1. TRIP the Reactor 2. GO TO 2-EOP-TRIP-1 , Reactor Trip or Safety Injection	Operator initially marks this step as N/A based on standby fan starting. This step will become applicable when the two (2) running vent fans trip shortly after. Operator TRIPs the Reactor when NO Vent Fans are in operation. Terminate the JPM when Rx is Tripped Evaluator's Note: Performing EOP-TRIP-1 immediate actions is not required to complete this JPM.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.2.E	IF at least one Rod Drive Vent Fan is in operation, THEN INITIATE a NOTF to determine and correct the cause of the low flow.	Operator determines this step is N/A and continues on.		
	3.3	SEND an operator to check the main and backup breakers closed for the affected fan.	Cue: CRS will dispatch an operator to check the breaker positions for the main and backup breakers for 21 CRD Vent Fan.		
	NOTE	Main breakers are on 84', 460/230V Switchgear Room	Operator reads the Note and continues on.		
	3.3.A	IF a breaker is found tripped, THEN INFORM the Unit 2 Control Room. 21 Fan Main Bkr 2EX1AX5X Backup Bkr 2EX1AX5X-1	Operator awaits report from field operator and continues on.		
	3.3.B	INITIATE a NOTF to determine and correct cause of the breaker trip.	Operator awaits report from field operator and continues on.		
	3.4	MONITOR running Rod Drive Hdr Outlet temperature(s). Fan Comp Pt / Alarm Description 21 T2602A / 160°F 21 Rod Drive Hdr Outlet Temp 22 T2603A / 160°F 22 Rod Drive Hdr Outlet Temp 23 T2604A / 160°F 23 Rod Drive Hdr Outlet Temp	Operator monitors running Vent Fan Outlet temperatures on the P250 computer.		
	3.5	INITIATE a NOTF to determine and correct cause of the of the low flow alarm	Operator informs CRS to initiate NOTF. Cue: CRS will initiate the notification.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: Control Rod Drive System (CRDS)

TASK: Respond to Loss of All Control Rod Drive Vent Fans IAW S2.OP-AR.ZZ-0011

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	<p>JPM is complete when the task is complete OR at the direction from the Lead Evaluator.</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate the JPM when the operator TRIPs the Reactor.</p> <p>Evaluator's Note: Operator performing immediate actions of EOP-TRIP-1 is not required for this task.</p>		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-a

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.

- X 1. Task description and number, JPM description and number are identified.
- X 2. Knowledge and Abilities (K/A) references are included.
- X 3. Performance location specified. (in-plant, control room, or simulator)
- X 4. Initial setup conditions are identified.
- X 5. Initiating and terminating Cues are properly identified.
- X 6. Task standards identified and verified by SME review.
- X 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- X 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 60A Date 9/18/17
- X 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.

SME/Instructor: Frank Rossetti Date: 9/18/17
SME/Instructor: R. Evans Date: 9/18/17
SME/Instructor: _____ Date: _____

**OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE**

INITIAL CONDITIONS:

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

INITIATING CUE:

- You are the Reactor Operator.
- Respond to all alarms and indications.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Chemical and Volume Control System (CVCS)		
TASK:	Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006		
TASK NUMBER:	0040130101		
JPM NUMBER:	16-01 NRC Sim-b		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	004 A4.04
APPLICABILITY:	IMPORTANCE FACTOR:		
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
			3.2 RO
			3.6 SRO
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	S2.OP-SO.CVC-0006, Rev. 25 (checked 8-24-17) S2.OP-AB.CVC-0001, Rev. 10 S2.RE-RA.ZZ-0012 Rev. 218		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>15 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 12-15-17	
Validated By:	<i>N/A</i> R 12-15-17 SME or Instructor	Date: <i>N/A</i> ^R	
Approved By:	Training Department <i>mchugh</i> <i>[Signature]</i>	Date: 12/15/17	
Approved By:	Operations Department <i>[Signature]</i>	Date: 12/15/17	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-b

Rev #	Date	Description	Validation Required
00	9-8-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-15-17	Added note for evaluator for step 5.2.4 that 2CV179 when placed in manual will initially go open from the closed position as per design.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Chemical and Volume Control System (CVCS)
TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006
TASK NUMBER: 0040130101
SIMULATOR IC: IC-241
MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-241
2. The following malfunctions will be INSERTED when simulator is placed in RUN:
 - RT-1 MALF CV0037 VCT LEVEL XMTR LT112 FAILS H/L, Final Value: 100.
3. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- Drain down the VCT level to about 39%.
- Make sure a marked up (partial procedure usage) of S2.OP-SO.CVC-0006 is available for candidate.
- Setup P250 on 2CC1 to CVCS system so operator can monitor VCT level using 2LT114.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SOCVC-0006.

TASK NUMBER: 0040130101

INITIAL CONDITIONS:

- 100% power, MOL. RCS boron concentration is 900 ppm.
- The crew has entered S2.OP-AB.CVC-0001, Loss of Charging, due to VCT level channel 2LT112 failing high.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a manual makeup of the VCT to **RESTORE** VCT level to 53% IAW **S2.OP.SO.CVC-0006, Boron Concentration Control, Section 5.2, Manual Makeup Mode**.
- All prerequisites are complete with no issues.
- P&Ls have **NOT** been reviewed.
- Boric Acid Storage Tank boron concentration is 6,700 ppm.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. Initiates manual makeup to VCT and stops the makeup when directed.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	Provide the operator the initial conditions, marked up S2.OP-SO.CVC-0006, and initiating cue sheet.			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	Pre-Req 2.0	PREREQUISITES 2.1 THRU 2.3	Cue: All prerequisites are completed SAT with no issues.		
	P&Ls	Precautions and Limitations 3.1 thru 3.22	Operator reviews all P&Ls.		
	5.2	MANUAL MAKEUP MODE	N/A		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.1	<p>DETERMINE Boric Acid Flow Setpoint from S2.RE-RA.ZZ-0012, Figure(s), 100A, 100C, and 105 as applicable, <u>OR</u> as calculated and verified by the CRS/STA, AND RECORD Boric Acid Flow Setpoint.</p>	<p>Cue: If asked about Boric Acid Tank Boron concentration, state all required information given in Initiating Cue.</p> <p>Cue: IF operator uses the current makeup boric acid flow setpoint as displayed on the control console, THEN CUE that the CRS directs you to perform Step 5.2.1 to verify the Boric Acid Flow setpoint is correct.</p> <p>Evaluator's Note; Correct Figure to Use is 100A for 62 gpm Primary Water Flow with BAST concentration at normal ppm. 100C is wrong figure because it is for 9000 ppm boron which is not used during normal ops. Figure 105 is the correction factor for RCS temperatures less than 547, which is N/A at 100% power.</p> <p>If operator uses the graph; then setpoint is about 10 gpm.</p> <p>If operator calculates; then setpoint is 9.6 gpm.</p> <p>Operator determines setpoint between 9-11 gpm.</p> <p>Evaluator's Note: If operator performs calculation using 900 ppm in RCS and 6,700 ppm in BAST, result is 9.62 gpm. Boric Acid flow setter is in 1 gallon increments.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.2	IF required, THEN RESET COUNT A on the Makeup Flow Registers to zero IAW Exhibit 1.	Resets COUNT A for Boric Acid and Primary Water flow IAW Exhibit 1.		
*	5.2.3	PRESS Makeup Control Mode Select STOP pushbutton.	Presses Makeup Control Mode Select STOP pushbutton and verifies bezel illuminates.		
*	5.2.4	PLACE 2CV179, PRIMARY WATER FLOW, in MANUAL, AND CLOSE 2CV179.	Depresses 2CV179 MANUAL PB until bezel illuminates. Note: when selected to manual the 2CV179 will go full open. This is expected. Depresses 2CV179 CLOSE PB until bezel illuminates.		
*	5.2.5	PLACE 2CV172, BORIC ACID FLOW, in MANUAL, AND CLOSE 2CV172.	Depresses 2CV172 MANUAL PB until bezel illuminates. Depresses 2CV172 CLOSE PB until bezel illuminates.		
	NOTE	Makeup from Boric Acid Blender to Charging Pump suction is the preferred alignment.	Operator reads and initials the Note.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.6	ALIGN outlet of Boric Acid Blender to one of the following: A. OPEN 2CV185, MAKEUP FLOWPATH OR B. OPEN 2CV181, MAKEUP FLOWPATH	Operator selects one (1) flowpath alignment by depressing the MANUAL PB until bezel illuminates, THEN the OPEN PB for 2CV185 or 2CV181 until OPEN bezel illuminates. Evaluator's Note: The "NOTE" prior to Step 5.2.6 states that charging pump suction is the preferred path, (but not required) which is accomplished by opening the 2CV185. Opening either 2CV185 or 2CV181 is acceptable.		
	CAUTION	Pump damage may occur while operating in a parallel configuration IF both a Fast and Slow speed Boric Acid pump is aligned to the same header.	Operator reads the Caution Note		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* *	5.2.7	PERFORM the following as required to support current plant conditions: <ul style="list-style-type: none"> • START a Primary Water Pump • PLACE a Boric Acid Pump in MANUAL/FAST START 	Evaluator's Note: Normal configuration is ONE Boric acid pump running in AUTO SLOW, and NO Primary Water pumps running. Operator depresses MANUAL PB for selected PW pump and verifies bezel illuminates. Operator depresses START PB for selected PW Pump and verifies bezel illuminates. Operator depresses MANUAL PB for selected BAT pump and verifies bezel illuminates. Operator depresses FAST START PB for selected BAT Pump and verifies bezel illuminates.		
*	5.2.8	ADJUST 2CV172 flow (FI110A) to the value recorded in step 5.2.1	Adjusts Boric Acid Flow on FI110A to the value recorded in Step 5.2.1 by depressing the 2CV172 OPEN PB to raise setpoint or 2CV172 CLOSE PB to lower setpoint.		
	5.2.9	<u>IF</u> required Boric Acid flow is <u>NOT</u> achieved, <u>THEN:</u> <ul style="list-style-type: none"> • CLOSE 21CV160, RECIRC VALVE • CLOSE 22CV160, RECIRC VALVE • 	Determines closing of the CV160 valves will NOT be required.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.10	Manually ADJUST 2CV179 Setpoint to 62 gpm (or as calculated) to obtain the required flow as indicated on FI111A (Refer to step 3.12)	Adjusts Primary Water flow on FI111A to 62 gpm (acceptable range 60-64 gpm) by depressing the 2CV179 OPEN PB to raise setpoint or 2CV179 CLOSE PB to lower setpoint. Cue: Once makeup is in progress and operator is monitoring VCT level via LT-114 using the Plant Computer, <u>inform operator that VCT level is now at 53%.</u>		
	5.2.11	ENSURE required Boric Acid AND Primary Water Flow are being maintained OR ADJUST 2CV172 and 2CV179 as required to obtain required flows.	Monitors Boric Acid and Primary Water flows being maintained as required and adjusts 2CV172 and 2CV179 as required to obtain required flows.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Chemical and Volume Control System (CVCS)

TASK: Perform Manual Makeup of the VCT IAW S2.OP-SO.CVC-0006

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* * * *	5.2.12	When desired makeup is completed: A. CLOSE the following valves: <ul style="list-style-type: none"> • 2CV179 • 2CV172 • 2CV185 • 2CV181 B. STOP Primary Water Pump C. PLACE Boric Acid Pump selected in SLOW Speed D. PLACE the system in Automatic Makeup Mode IAW Section 5.1	<p>Depresses the CLOSE PBs for 2CV179 and 2CV172, and whichever of the 2CV185 or 2CV181 was opened in Step 5.2.6; verifies that the CLOSE PB bezels are illuminated.</p> <p>Depresses STOP pushbutton for Primary Water Pump which was started.</p> <p>Places the selected Boric Acid Pump in SLOW speed and verifies SLOW speed bezel illuminates.</p> <p>Terminate the JPM once the selected Boric Acid Pump has been placed in SLOW speed.</p>		
	CUE:	<p>JPM is Complete.</p> <p>RECORD STOP TIME</p> <p>STOP TIME: _____</p>	<p>Terminate the JPM when the Boric Acid Pump is in SLOW speed.</p>		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-b

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.

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

**OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE**

INITIAL CONDITIONS:

- 100% power, MOL. RCS boron concentration is 900 ppm.
- The crew has entered S2.OP-AB.CVC-0001, Loss of Charging, due to VCT level channel 2LT112 failing high.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS has directed you to **PERFORM** a manual makeup of the VCT to **RESTORE** VCT level to 53% IAW **S2.OP.SO.CVC-0006, Boron Concentration Control, Section 5.2, Manual Makeup Mode.**
- All prerequisites are complete with no issues.
- P&Ls have **NOT** been reviewed.
- Boric Acid Storage Tank boron concentration is 6,700 ppm.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Emergency Core Cooling System (ECCS)		
TASK:	Isolate the ECCS Accumulators IAW EOP-TRIP-6		
TASK NUMBER:	1150070501		
JPM NUMBER:	16-01 NRC Sim-c		
ALTERNATE PATH:	<input checked="" type="checkbox"/>	K/A NUMBER:	006 A1.13
APPLICABILITY:	IMPORTANCE FACTOR:		<u>3.5</u> <u>3.7</u>
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	2-EOP-TRIP-6 Rev. 30 (checked 12-11-17)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>8 Minutes</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date:	12-11-17
Validated By:	<i>Brenna</i> SME or Instructor	Date:	12-15-17
Approved By:	Training Department <i>[Signature]</i>	Date:	12/15/17
Approved By:	Operations Department <i>[Signature]</i>	Date:	12/15/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-c

Rev #	Date	Description	Validation Required
00	9-29-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated comments from NRC Prep week. Modified malfunction for 24SJ54 to fail at intermediate position.	Yes

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Emergency Core Cooling System (ECCS)

TASK: Isolate the ECCS Accumulators IAW EOP-TRIP-6

TASK NUMBER: 1150070501

SIMULATOR IC: IC-242

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-242 (IC-219 used as baseline)
2. Ensure **ET-1: KA303DCL** 24SJ54 close PB, will trigger malfunction **VL0018** (24SJ54 fail to position) to final value = 50 after 5 seconds (this will simulate the 24SJ54 failing at intermediate position when close PB is depressed)
3. **Note:** The following were used to setup plant conditions: MALFS RC0003A/B/C/D to trip all RCPs. Performed EOP's to TRIP-6, Step 12, SI ACCUM ISOLATION.

OVERRIDES:

None

SPECIAL INSTRUCTIONS:

1. **ENSURE** SPDS on Press/Temp Display
2. **ENSURE** RCS T-colds on trend on P250 on 2CC1.
3. **ENSURE** PZR level > 11% to prevent entry into CAS.
4. Marked up copy of 2-EOP-TRIP-6 on center console.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Core Cooling System (ECCS)

TASK: Isolate the ECCS Accumulators IAW EOP-TRIP-6

TASK NUMBER: 1150070501

INITIAL CONDITIONS:

- A reactor trip occurred when a 500 KV grid perturbation occurred, which also caused all RCPs to trip.
- The operating crew has progressed through the EOP's and is now in 2-EOP-TRIP-6, NATURAL CIRCULATION RAPID COOLDOWN WITH RVLIS.
- The RCPs will NOT be restarted.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to isolate the SI Accumulators IAW Step 12 of 2-EOP-TRIP-6, NATURAL CIRCULATION RAPID COOLDOWN WITH RVLIS.
- Notify the CRS when Step 12 is completed.
- Your evaluator will take care of all alarms not related to your task.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Closes 21, 22, and 23 SJ54's.
2. Vents 24 SI Accumulator to atmospheric pressure.
3. Closes vent valves to 24 SI Accumulator when venting is complete.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Emergency Core Cooling System (ECCS)
TASK: Isolate the ECCS Accumulators IAW EOP-TRIP-6

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		2-EOP-TRIP-6 is open and marked up on console.	Reviews conditions and the marked up EOP-TRIP-6 Natural Circ Cooldown With RVLIS		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	12	IS RCS PRESSURE <1000 PSIG	YES. Operator verifies RCS pressure is <1000 psig.		
*	12.1	REMOVE LOCKOUT FROM 21-24SJ54 ACCUMULATOR OUTLET VALVES	At 2RP4 Panel, operator selects VALVE OPERABLE on 21-24 SJ54 ACCUMULATOR OUTLET VALVES LOCKOUT Switch		
*	12.1 Contd	CLOSE 21 Thru 24 SJ54	Operator depresses CLOSE pushbuttons for 21 thru 24 SJ54s, ACCUMULATOR OUTLET VALVES and verifies each CLOSE bezel illuminates.		
		ALTERNATE PATH STARTS HERE:			
	12.1 Contd	ARE 21 Thru 24 SJ54 CLOSED	NO. Operator determines 24SJ54, ACCUMULATOR OUTLET VALVE, is OPEN Note: Operator observes valve stroking then stops (intermediate position). May re-check LOCKOUT Switch position or attempt to depress the Close PB again.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: **Emergency Core Cooling System (ECCS)**
 TASK: **Isolate the ECCS Accumulators IAW EOP-TRIP-6**

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	12.2	IF an accumulator cannot be isolated or vented, then consult the TSC to determine contingency actions	Cue: CRS will consult with TSC if needed.		
* *	12.2 Contd	VENT ANY AFFECTED ACCUMULATORS: <ul style="list-style-type: none"> • MAINTAIN RCS PRESSURE GREATER THAN ACCUMULATOR NITROGEN PRESSURE • *OPEN 2NT35 (N2 HDR VALVE) • *OPEN AFFECTED SJ93 (N2 SUPPLY VALVE) 	Operator verifies RCS Pressure is > Accumulator pressure. Operator depresses OPEN PB for 2NT35 (N2 HDR VALVE) until OPEN bezel illuminates. <u>Note:</u> If 2NT35 is throttled opened, this may be acceptable so long as Accumulator pressure is sufficiently lowering in next step. Operator depresses OPEN PB for 24SJ93 N2 SUPPLY VALVE until OPEN bezel illuminates and observes 24 Accumulator pressure lowering.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Emergency Core Cooling System (ECCS)
 TASK: Isolate the ECCS Accumulators IAW EOP-TRIP-6

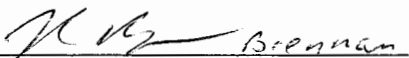
* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
* *	12.3	WHEN ACCUMULATOR VENTING COMPLETE, THEN CLOSE: <ul style="list-style-type: none"> • *2NT35 • *21-24SJ93 	When the operator checks that Accumulator pressure is <u>lowering</u> , THEN , provide the following cue: Cue: 24 Accumulator pressure is now reading ZERO. <u>Note:</u> These valves can be closed in any order. Operator depresses CLOSE PB for 2NT35 N2 HDR VALVE until bezel illuminates. Operator depresses CLOSE PB for 24SJ93 N2 SUPPLY VALVE until bezel illuminates. Terminate JPM.		
	CUE:	JPM is Complete RECORD the STOP TIME. STOP TIME: _____	Terminate the JPM when the step 12.3 is complete.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC Sim-c

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

- YB 1. Task description and number, JPM description and number are identified.
- YB 2. Knowledge and Abilities (K/A) references are included.
- YB 3. Performance location specified. (in-plant, control room, or simulator)
- YB 4. Initial setup conditions are identified.
- YB 5. Initiating and terminating cues are properly identified.
- YB 6. Task standards identified and verified by SME review.
- YB 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- YB 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. _____ Date _____
- YB 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.
- YB 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor:  Brennan Date: 12/15/17

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- A reactor trip occurred when a 500 KV grid perturbation occurred, which also caused all RCPs to trip.
- The operating crew has progressed through the EOP's and is now in 2-EOP-TRIP-6, NATURAL CIRCULATION RAPID COOLDOWN WITH RVLIS.
- The RCPs will NOT be restarted.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to isolate the SI Accumulators IAW Step 12 of 2-EOP-TRIP-6, NATURAL CIRCULATION RAPID COOLDOWN WITH RVLIS.
- Notify the CRS when Step 12 is completed.
- Your evaluator will take care of all alarms not related to your task.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Reactor Coolant System		
TASK:	Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1		
TASK NUMBER:	N1150290501		
JPM NUMBER:	16-01 NRC Sim-d		
ALTERNATE PATH:	<input checked="" type="checkbox"/>	K/A NUMBER:	002 A2.04
APPLICABILITY:		IMPORTANCE FACTOR:	
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	2-EOP-FRHS-1, Rev 30 (checked 11-8-17) <i>34 11-13-17 R</i>		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>8 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 11-8-17	
Validated By:	<i>G. Chan</i> 11-8-17 SME or Instructor	Date:	
Approved By:	Training Department <i>[Signature]</i>	Date: 11/13/17	
Approved By:	Operations Department <i>[Signature]</i>	Date: 11/13/17	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION: SALEM

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

TASK NUMBER: N1150290501

JPM NUMBER: 16-01 NRC Sim-d

ALTERNATE PATH: K/A NUMBER: 002 A2.04

APPLICABILITY: IMPORTANCE FACTOR: 4.3 4.6
 EO RO STA SRO
 RO SRO

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: 2-EOP-FRHS-1, Rev 33 (checked 11-8-17)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 8 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan *Rudohal Chan* Date: 11-8-17
 Instructor

Validated By: SME or Instructor Date:

Approved By: Training Department Date:

Approved By: Operations Department Date:

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:
 GRADE: SAT UNSAT

REASON, IF UNSATISFACTORY: *Ben Brand*

EVALUATOR'S SIGNATURE: *[Signature]* DATE: 11/8-2017

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-d

Rev #	Date	Description	Validation Required
00	9-29-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	11-13-17	Deleted malfunction for 2PR1 not opening in manual and changed initial conditions that three (3) SG WR levels are less than 32% for Bleed and Feed criteria IAW new revision to 2-EOP-FRHS-1 (Rev. 34).	Yes

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

TASK NUMBER: N1150290501

SIMULATOR IC: IC-243

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-243
2. Verify the following events on the Summary/ET Trigger Lists:
 - **MALF: AF0181B 22 AFW pump trip**
 - **MALF: AF0183 23 AFW pump trip**
 - **MALF: RP0247 False FW Isolation**
 - **21 AFW pump C/T.**
3. Ensure three (3) SG WR levels are less than 32% to meet Bleed and Feed criteria.
4. This completes the setup for this JPM.

OVERRIDES:

- B202 E DI 2PR2 Open PB Override OFF

SPECIAL INSTRUCTIONS:

- **ENSURE** four (4) Reactor Head Vent keys are available for the evaluator.
- Extra Instructor to respond to the alarms.
- Consider leaving the Rx Head Vent Keys in the key switch to prevent damage.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

TASK NUMBER: N1150290501

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 32%.
- 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 21** IAW 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.
- Your evaluator will respond to all alarms not related to your task.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. OPENS 2RC40 thru 2RC43 Reactor Head Vents IAW 2-EOP-FRHS-1.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	CUE	The following are Steps from 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.			
	Step 21	CAUTION To establish RCS Heat Sink Removal by RCS Bleed and Feed , Steps 24 thru 29 Must Be Performed Quickly and Without Interruption.	Operator reads the Caution and continues on.		
	Step 21 Contd.	STOP ALL RCPs	Operator verifies that all RCPs are already Stopped. (Step 7 of FRHS-1 stopped RCPs)		
*	Step 22	Initiate 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. Note: Operator only needs to initiate SI on one Train.		
	Step 23	Are SI Valves in Safeguards Position	YES. Operator checks that all SI valve bezels on 2RP4 are illuminated.		
	Step 23.1	Is 21 or 22 Charging Pump Running	YES. Operator reports that both Charging pumps are running as indicated by START bezels illuminated Red.		
	Step 23.1 Contd.	Is BIT Flow Established	YES. Operator reports BIT flow is established by indication of flow on Charging flowmeter. (During validations flow was about 150-160 gpm)		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	Step 23.2	Is any SI Running	YES. Operator reports that both SI pumps are running by START PBs illuminated Red.		
	Step 23.2 Contd.	Are Valves in Table C Open for At Least One Running SI Pump	YES. Operator verifies that all valves are OPEN in Table C for both running SI pumps as indicated by valve OPEN bezels illuminated.		
	Step 23.2 Contd.	Are All Charging and SI Pumps Running And Aligned to Deliver Flow	YES. Operator identifies that all Charging and SI Pumps are running and the valves are in the safeguards positions.		
	Step 24	Open Both PZR PORV Stop Valves	Operator reports that both PZR PORV Stop Valves are OPEN as indicated by 2PR6 and 2PR7 OPEN bezels illuminated.		
		[ALTERNATE PATH STARTS HERE:]			
	Step 24 Contd.	Open Both PZR PORVs	Operator places both PZR PORVs in Manual and depresses OPEN PBs for 2PR1 and 2PR2. Operator reports that 2PR2 will NOT OPEN. <u>Note:</u> 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 not credit auto operation.		
	Step 24.1	Are Both PZR PORV Stop Valves Open	YES. Operator reports both 2PR6 and 2PR7 are open as indicated by OPEN bezels illuminated.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Reactor Coolant System

TASK: Initiate Feed and Bleed using Reactor Head Vents IAW EOP-FRHS-1

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	Step 24.1 Contd.	Are Both PZR PORVs Open	NO. Operator reports that 2PR2 will NOT OPEN.		
*	Step 24.1 Contd.	Open 2RC40 Thru 2RC43 (Reactor Head Vents)	<p>Cue: Lead Evaluator needs to provide the four (4) keys to the Operator.</p> <p>At the 2RP2 backpanel, Operator obtains keys and inserts key into each keyswitch one at a time and turns clockwise until the OPEN bezel illuminates.</p> <p>Terminate JPM when 2RC40 Thru 2RC43 are open.</p>		
	CUE:	<p>JPM is Complete</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate the JPM when the operator OPENS 2RC40 Thru 2RC43.</p>		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-d

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.

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

SME/Instructor: Ben Bond Date: 11/8/2017
SME/Instructor: GUSTAVO OLIVIA Date: 11-3-2017
SME/Instructor: _____ Date: _____

**OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE**

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 32%.
- 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 21** IAW 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.
- Your evaluator will respond to all alarms not related to your task.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Main Turbine Generator System		
TASK:	Synchronize the Main Generator IAW S2.OP-SO.TRB-0001.		
TASK NUMBER:	N0450040101		
JPM NUMBER:	16-01 NRC Sim-e		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	045 A4.02
APPLICABILITY:	IMPORTANCE FACTOR:		
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
			2.7 RO
			2.6 SRO
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	S2.OP-SO.TRB-0001, Rev 47 (checked 12-15-17)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>18 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 12-15-17	
Validated By:	<i>N/A R 12-15-17</i> SME or Instructor	Date: <i>N/A</i>	
Approved By:	Training Department <i>[Signature]</i>	Date: <i>12/15/17</i>	
Approved By:	Operations Department <i>[Signature]</i>	Date: <i>12/15/17</i>	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-e

Rev #	Date	Description	Validation Required
00	9-29-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-15-17	Updated to reflect procedure change to S2.OP-SO.TRB-0001, Rev 47 that removed Note on step 4.5.4 that was not applicable following AVR DCP.	No

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Main Turbine Generator System
TASK: Synchronize the Main Generator IAW S2.OP-SO.TRB-0001
TASK NUMBER: N0450040101
SIMULATOR IC: IC-244
MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-244
2. No malfunctions inserted for this JPM.
3. Plant setup:
 - a. Turbine at 1800 rpm, Setter at 1801
 - b. Rx power at 16%
 - c. Steam dumps in MS set about 960 psi
 - d. Generator excitation completed IAW S2.OP-SO.TRB-0001, 4.4. VR set at 2092 amps
4. This setup will ensure that the turbine is rotating too slowly and INCOMING voltage is < 3 KV required to enable Synch Check relay.
5. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- **ENSURE** sufficient copies of marked up procedure S2.OP-SO.TRB-0001, **Rev. 47. DO NOT USE** the copy in the simulator. The Note at step 4.5.4 in Rev. 46 will confuse the operator during the task.
- At the Lead Evaluator's discretion; providing a marked up copy to the operator next in line could save time by allowing time to read all the Precautions and Limitations and Section 4.5.
- **ENSURE** Main Turbine and Generator parameter screens are open on P250 on 2CC2 console.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Main Generator IAW S2.OP-SO.TRB-0001.

TASK NUMBER: N0450040101

INITIAL CONDITIONS:

- Unit 2 is at 16% power starting up from a maintenance outage.
- The crew is performing power ascension activities IAW S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.
- The main turbine is at 1800 rpm with generator excitation applied.

INITIATING CUE:

- You are the Plant Operator.
- The CRS has directed you to **synchronize** the Generator IAW S2.OP-SO.TRB-0001, Turbine-Generator Startup Operations, Section 4.5, Synchronizing the Generator.
 - All Prerequisites are completed SAT.
 - Step 4.5.1 IVs are completed SAT.
 - Synchronize the Generator starting at Step 4.5.2. The 500 KV 1-9 breaker will be closed first followed by the 500 KV 9-10 breaker.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. Synchronizes the Generator to the electrical grid IAW S2.OP-SO.TRB-0001.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<p>PROVIDE the operator a copy of S2.OP-SO.TRB-0001, Rev. 47.</p> <p>Evaluator's Note: DO NOT USE the copy in the simulator (Rev. 46). This revision contains a Note at step 4.5.4 that is not applicable and could confuse the operator performing the task.</p>			
	CUE	<p>Fill in the JPM Start Time when the student acknowledges the Initiating Cue.</p> <p>START TIME: _____</p>			
		The following steps are from S2.OP-SO.TRB-0001, Turbine-Generator Startup Operations			
	4.5.2	ENSURE 500 KV BUS SECT 9-10 (30X) Breaker SELECTED to 9-10 LOCAL.	Operator verifies 9-10 Breaker is Selected to 9-10 LOCAL.		
	4.5.3	At 2RP6, SELECT NO. 2 UNIT SCOPE TRANSFER Switch to either REGULAR SCOPE or SPARE SCOPE position.	Operator verifies that REGULAR SCOPE is illuminated on 2PR6.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.5.4	MONITOR selected synchroscope while performing the following: 1. PRESS SCOPE TEST pushbutton on 500KV BREAKER SECTIONS 1-9 (32X) Bezel. 2. ENSURE synchroscope hand indicates 12 o'clock. 3. ENSURE INCOM KV and RUN KV Voltmeters both respond by moving upscale. 4. RELEASE SCOPE TEST pushbutton.	Operator depresses SCOPE TEST. Operator verifies synchroscope hand indicates 12 o'clock. Operator verifies that the INCOM KV and RUN KV voltmeters move upscale. Operator releases SCOPE TEST PB.		
	4.5.5	ENSURE that MAIN GEN SYNC PERM BYPASS keylock switch is in the NORMAL position.	Operator verifies MAIN GEN SYNCH PERM BYPASS keylock switch is in the NORMAL position.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.5.6	<p>IF 500KV BUS SECT. 1-9 (32X) Breaker is available, THEN:</p> <p>1. SELECT Mimic Bus 500KV BUS SECT. 1-9 BREAKER 32X.</p> <p>a. ENSURE Mimic Bus pushbutton back light is yellow.</p> <p>b. ENSURE 1-9 MIMIC BUS INTERLOCK CLOSE SELECTION bezel back light is lit.</p> <p>2. SELECT 1-9 SYNCH POT ON.</p>	<p>Operator determines that the 500 KV 1-9 breaker will be closed first from the Initiating Cue sheet.</p> <p>Operator depresses 1-9 Mimic Bus PB and verifies the Mimic Bus PB illuminates yellow AND the console bezel for the MIMIC BUS 1-9 INTERLOCK CLOSE SELECTION is illuminated.</p> <p>Operator depresses the 1-9 SYNCH POT ON and verifies bezel illuminates.</p>		
	4.5.7	<p>IF 500KV BUS SECT. 1-9 (32X) Breaker is NOT available, THEN:</p> <p>1. SELECT Mimic Bus 500KV BUS SECT. 9-10 BREAKER 30X.</p> <p>a. ENSURE Mimic Bus pushbutton back light is yellow.</p> <p>b. ENSURE 9-10 (30X) bezel MIMIC BUS INTLK CLS SEL is lit.</p> <p>2. SELECT 9-10 SYNCH POT ON.</p>	<p>Operator determines Step is N/A since both 1-9 and 9-10 breakers are available and continues on.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.5.8	ADJUST INCOM KV (Generator Output Voltage) to 3 - 5KV greater than RUN KV (Line Voltage).	Operator determines that INCOM KV is NOT 3-5 KV greater than RUN KV. (As Found; INCOM KV = 499, RUN KV = 498) Operator adjust the Voltage Regulator to raise INCOM KV by: At the EXCITATION, VOLTAGE REGULATOR, VREG CNTRL SETPT ADJ bezel; operator depresses the RAISE SETPT bezel until INCOM KV is 3-5 KV greater than RUN KV (at least 501 KV to meet Synch Permissive)		
	NOTE	NOTE 1. The following parameters should be closely monitored when closing the generator output breaker: <input type="checkbox"/> Steam Dump Valve Demand <input type="checkbox"/> Reactor Power <input type="checkbox"/> RCS Pressure <input type="checkbox"/> S/G Steam Flow	Operator reads the Note and continues on.		
	CAUTION	CAUTION The T-Error recorder on 2RP3 will be inaccurate during initial loading of the Turbine-Generator. Raising Turbine Inlet Pressure will cause Tref to rise from the No-Load value of 547°F to the corresponding value for 40 – 60 MW, resulting in faster response of the T-Error pen. Only narrow range Tave should be monitored until a stable load is applied.	Operator reads the Caution and continues on.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.5.9	REQUEST Electric System Operator permission to load Main Generator.	Cue: The Electric System Operator grants permission to load main generator.		
	4.5.10	NOTIFY the Hope Creek CRS/SM that Unit 2 Generator is to be synchronized to the grid. 1. RECORD contact in Control Room Narrative Log.	Cue: Hope Creek CRS/SM is notified that Unit 2 will be synchronized to the grid. Cue: The extra NCO will record contact info in Narrative Log.		
	4.5.11	ADJUST RAMP RATES for the following to 10%/MIN: <input type="checkbox"/> VLV POS CNTRL <input type="checkbox"/> VLV POS LIM <input type="checkbox"/> TURB INLET PRESS CNTRL	Operator adjusts the RAMP RATES using the DEHC HMI panel and verifies that 10%/min is indicated on the HMI panel screen.		
	4.5.12	IF in OPERATOR MODE - AUTO, THEN:	At the DEHC HMI panel, the operator determines that OPERATOR MODE is in AUTO. Operator performs steps in section 4.5.12 as applicable.		
	NOTE	NOTE 1. MAIN GEN SYNC PERMISSIVE green indicating light will NOT light with any of the following: <input type="checkbox"/> MAIN GEN SYNC PERM BYPASS key lock switch in BYPASS position. <input type="checkbox"/> SYNCH POT OFF pushbutton selected. <input type="checkbox"/> INCOMING VOLTAGE less than RUNNING VOLTAGE <input type="checkbox"/> SYNCH SCOPE ROTATION is NOT every 25 - 30 seconds in the fast direction.	Operator reads Note and continues on.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.5.12.1	<p>ADJUST turbine speed as follows until the synchroscope is rotating SLOWLY in the FAST direction at a rate of approximately 1 revolution in every 25 to 30 seconds:</p> <p>a. ADJUST the SETTER - SETTER slightly above the REFERENCE AND ACTUAL SPEED displays.</p> <p>b. SELECT SETTER - GO.</p>	<p>Operator determines that adjustment to turbine speed is required.</p> <p>Operator adjusts turbine speed using the DEHC HMI panel until synchroscope is rotating SLOWLY in the FAST direction. Note: the operator may use a stop watch or watch the clock.</p> <p>Operator adjusts SETTER above REFERENCE AND ACTUAL SPEED displays. (As found SETTER = 1801) Operator should select 1-2 rpm increments when adjusting turbine speed.</p> <p>Operator selects SETTER GO (illuminates Green) and verifies ACTUAL AND REFERENCE turbine speed adjusts to SETTER SPEED.</p> <p>SETTER speed of 1802-1803 is acceptable to meet the Synch Permissive.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.5.12.2	<p>IF MAIN GEN SYNC PERMISSIVE green indicating light is NOT lit each time the synchroscope indicator is near the 12 o'clock position, OR is lit at any other synchroscope position, THEN:</p> <p>a. REQUEST permission from the CRS/SM to bypass the synchroscope interlock.</p> <p>b. PLACE MAIN GEN SYNC PERM BYPASS key lock switch in BYPASS.</p> <p>c. INITIATE a Notification to repair the circuit.</p>	<p>Operator determines that the SYCNH PERMISSIVE is operating properly and marks step N/A and continues on.</p> <p><u>IF</u> the MAIN GEN SYNC PERMISSIVE is NOT lit as expected, THEN provide the following cue:</p> <p>Cue: CRS directs you to re-perform Section 4.5.</p> <p><u>Note:</u> Not satisfying the Voltage and turbine speed requirements in Steps 4.5.8 and 4.5.12.1 would be the most likely cause for response not obtained.</p>		
		<p style="text-align: center;">CAUTION</p> <p>Operator action is required upon Generator Output Breaker closure, if load is NOT automatically picked up within 15 seconds. [1% REFERENCE change approximately 10 MW (NOT to exceed 4%)]</p>	Operator reads Caution and continues on.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	4.5.12.3	WHEN synchroscope is 1 to 2 minutes before 12 o'clock, THEN CLOSE the selected 500KV GROUP BUS - BREAKER SECTION: <input type="checkbox"/> 1-9 (32X) OR <input type="checkbox"/> 9-10 (30X)	<p>Operator depresses the CLOSE PB for 500 KV GROUP BUS – BREAKER Section 1-9 (32X) when the synchroscope is 1 to 2 minutes before 12 o'clock and verifies 1-9 CLOSE PB is illuminated.</p> <p>Operator verifies load is rising on generator by monitoring <u>either</u> the MW indicator on 2RP3, MW Recorder on 2RP5, OR using the HMI panel GENERATOR LOAD lower left hand corner of screen. <u>Note:</u> the MW indicator on 2RP3 reads about 10 MW lower, so the operator may choose to raise load based on this indicator which is acceptable.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Main Turbine Generator System

TASK: Synchronize the Generator IAW S2.OP-SO.TRB-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4.5.12.4	<p>IF GENERATOR LOAD - MW does NOT raise to approximately 40 MW - 60 MW within 15 seconds, THEN: [C0431]</p> <p>a. RAISE SETTER - SETTER display less than or equal to 4% above the REFERENCE display (approximately 1% for each 10 MW) AND SELECT SETTER - GO.</p> <p>OR</p> <p>b. SELECT OPERATOR MODE - MANUAL</p> <p>(1) SELECT RAISE until GENERATOR LOAD - MW are approximately 40 MW to 60 MW.</p> <p>(2) SELECT OPERATOR MODE - AUTO.</p>	<p>Operator verifies that generator load rises to 40 MW – 60 MW within 15 seconds and marks this step as N/A and continues on.</p> <p><u>Note:</u> the MW indicator on 2RP3 reads about 10 MW lower, so the operator may choose to raise load based on this indicator which is acceptable.</p> <p>If raising load, THEN the Operator adjusts the SETTER to 1-3% above the reference THEN selects GO. (Note: during validations the SETTER is about 12%)</p>		
	4.5.12.5	<p>SELECT SYNCH POT OFF for the selected 500KV GROUP BUS -BREAKER SECTION:</p> <p><input type="checkbox"/> 1-9 (32X)</p> <p>OR</p> <p><input type="checkbox"/> 9-10 (30X)</p>	<p>Operator depresses the SYNCH POT OFF PB and verifies bezel illuminates.</p>		
	CUE:	<p>JPM is Complete</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate the JPM when the operator completes Step 4.5.12.5 or at Lead Evaluators direction.</p>		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-e

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.

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

**OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE**

INITIAL CONDITIONS:

- Unit 2 is at 18% power starting up from a refueling outage.
- The crew is performing power ascension activities IAW S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.
- The main turbine is at 1800 rpm with generator excitation applied.

INITIATING CUE:

- You are the Plant Operator.
- The CRS has directed you to **synchronize** the Generator IAW S2.OP-SO.TRB-0001, Turbine-Generator Startup Operations, section 4.5, Synchronizing the Generator.
 - All Prerequisites are completed SAT.
 - Step 4.5.1 IVs are completed SAT.
 - Synchronize the Generator starting at Step 4.5.2. The 500 KV 1-9 breaker will be closed first followed by the 500 KV 9-10 breaker.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Containment Cooling System		
TASK:	Perform 22 CFCU Surveillance Test IAW S2.OP-ST.CBV-0003		
TASK NUMBER:	N0220130201		
JPM NUMBER:	16-01 NRC Sim-f		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	022 A1.04
APPLICABILITY:	IMPORTANCE FACTOR:		
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
			3.2 3.3
			RO SRO
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	S2.OP-ST.CBV-0003, Rev 19 (checked 9-10-17)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>6</u> ^{R 9-18-17} min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan Instructor	<i>Rudolph Chan</i>	Date: 9-18-17
Validated By:	<i>Duffy Raymond</i> SME or Instructor		Date: 9/18/17
Approved By:	<i>Frank Rossetti</i> Training Department	<i>Rick White</i>	Date: 10/4/17
Approved By:	<i>Don McHugh</i> Operations Department	<i>Don McHugh</i>	Date: 10/4/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-f

Rev #	Date	Description	Validation Required
00	9-18-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Containment Cooling System

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

TASK NUMBER: N0220130201

SIMULATOR IC: IC-245

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-245
2. Verify the following events on the Summary/ET Trigger Lists:
 - **ET-1: KAD06PBR, 22 CFCU LOW SPEED Start PB. INSERTS MALF: VL0570**
 - **MALF: VL0570, 22 SW223, RAMP = 15 seconds, FINAL = 89 (SW flow 1786 +/- 5 gpm)**
3. This malfunction will simulate an issue with the 22SW223 valve to properly obtain the required SW flow rate when in LOW SPEED. The malfunction attempts to have SW flow approx. 1786 gpm. This was chosen in case the operator chooses the incorrect Min Flow Rate of 1769 gpm for a SW DP at 105 psi.
4. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- Provide operator marked up copy of S2.OP-ST.CBV-0003.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Containment Cooling System

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

TASK NUMBER: N0220130201

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.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **PERFORMS** surveillance test IAW S2.OP-ST.CBV-0003 and determines 22 CFCU Test Results is **UNSAT**.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Containment Cooling System

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

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	3.0	PRECAUTIONS AND LIMITATIONS 3.4 After recording Differential Pressure (DP) reading, select corresponding minimum flow value specified in Exhibit 1. <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). 	Operator reads and initials all P&Ls. Evaluator's Note: Understanding P&L 3.4 is important to properly determining which DP value to choose from Exhibit 1.		
	4.0	EQUIPMENT/MATERIAL REQUIRED	Cue: Completed SAT by I&C Technicians.		
	5.1	CFCU Operability and Service Water Flow Verification			
	5.1.1	PERFORM test on each Containment Fan Coil Unit required to be tested IAW the following instructions:			
*	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		
		These next steps are from S2.OP-SO.CBV-0001, Containment Ventilation Operation.			

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Containment Cooling System

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

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.2	IF shifting CFCU(s) from High Speed to Low Speed, THEN for each CFCU to be shifted:			
*	5.1.2.A	PRESS FAN HIGH SPEED STOP bezel.	Operator depresses HIGH SPEED STOP bezel for 22 CFCU and verifies STOP bezel illuminates.		
	NOTE	Steps 5.1.2B and 5.1.2C should be coordinated for 25 second delay prior to energizing slow speed windings.	Operator reads the Note and continues on.		
	5.1.2.B	ENSURE FAN STOP bezel is illuminated.	Operator verifies HIGH SPEED STOP bezel is illuminated.		
*	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.		
	5.1.2.D	ENSURE following dampers are in indicated positions: <ul style="list-style-type: none"> ▪ ROUGH FLTR DAMPER CLOSED ▪ HEPA INLET DAMPER OPEN ▪ HEPA OUTLET DAMPER OPEN 	Operator verifies the following for 22 CFCU: <ul style="list-style-type: none"> ▪ ROUGH FLT DAMPER CLOSED bezel extinguished. ▪ HEPA INLET DAMPER OPEN bezel illuminated. ▪ HEPA OUTLET DAMPER OPEN bezel illuminated. 		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Containment Cooling System

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

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	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.		
	5.1.2.F	ENSURE Service Water flow greater than or equal to 1465 gpm.	Operator verifies that SW flow is > 1465 gpm.		
		Operator returns to S2.OP-ST.CBV-0003:	Operator GOES TO S2.OP-ST.CBV-0003		
	5.1.1.B	RECORD Start Time in applicable Attachment(s), Section 3.0, for CFCU being tested.	Operator records START time.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SYSTEM: Containment Cooling System

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

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.1.C	<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. • RECORD Test Results by initialing the SAT OR UNSAT column IAW Acceptance Criteria stated in the attachment. 	<p>Cue: Inform operator that 15 minutes have elapsed.</p> <p>Operator records STOP time.</p> <p>Operator records SW flow on 22 CFCU (1786 +/- 5 gpm)</p> <p>Cue: When field operator is contacted; report 21 SW Header DP is reading 106 psi.</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 UNSAT. 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 ≥ 1465 gpm AND ≥ Min Flow Rate specified in Exhibit 1 to be Operable.</p> <p>See Answer Key for completed Attachment 2, Section 3.0</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SYSTEM: Containment Cooling System

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

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	JPM is Complete. RECORD the STOP TIME. STOP TIME: _____	Terminate the JPM when the operator Records Test Results as SAT or UNSAT.		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 16-01 NRC Sim-f

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.

- DL 1. Task description and number, JPM description and number are identified.
- DL 2. Knowledge and Abilities (K/A) references are included.
- DL 3. Performance location specified. (in-plant, control room, or simulator)
- DL 4. Initial setup conditions are identified.
- DL 5. Initiating and terminating Cues are properly identified.
- DL 6. Task standards identified and verified by SME review.
- DL 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- DL 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 19 Date 9/18/17
- DL 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.

SME/Instructor: [Signature]

Date: 9/18/17

SME/Instructor: [Signature]

Date: 9/18/17

SME/Instructor: _____

Date: _____

**OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE**

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.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM
SYSTEM: A.C. Electrical Distribution
TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)
TASK NUMBER: N0620110101
JPM NUMBER: 16-01 NRC Sim-g

ALTERNATE PATH: K/A NUMBER: 062 A2.04
IMPORTANCE FACTOR: 3.1 3.4
RO RO SRO SRO
APPLICABILITY: EO RO STA SRO

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-SO.4KV-0008, Rev. 13 (checked 12-15-17)
S2.OP-AR.ZZ-0009, Rev 27

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R Chan *Rudolph Che* Date: 12-15-17
Instructor

Validated By: *N/A* ^R 12-15-17 Date: *N/A*^R
SME or Instructor

Approved By: Training Department *McHugh* Date: 12/15/17
Don McHugh

Approved By: Operations Department *Myers* Date: 12/15/17
Myers

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:
GRADE: SAT UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-g

Rev #	Date	Description	Validation Required
00	9-29-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-15-17	Updated to reflect procedure change to S2.OP-SO.4KV-0008, Rev. 13 that corrected a typographical error on P&L 3.3 that could confuse the operator in response to the malfunction.	No

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

TASK NUMBER: N0620110101

SIMULATOR IC: IC-246

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-246 (IC-258 used as baseline)
2. Verify the following actions in the Summary/ET Trigger Lists:
 - a. **ET-1: KC509PC0 - 2BGD 2G Group Bus Feeder Close, INSERT MALF: EL0142 - Loss of 2G 4160 V Group Bus.**
3. This malfunction will simulate a loss of the 2G Group Bus only and result in the loss of one (1) RCP (24 RCP). Based on S2.OP-SO.4KV-0008, Precautions and Limitations 3.3, the crew should respond to OHA J-39 when it does NOT clear following bus transfer. The OHA ARP will direct you to J-38 to TRIP the Reactor and GO TO EOP-TRIP-1.
4. Check APT voltage the same as the Group bus voltage pre-req 2.3.3
5. This completes the setup for this JPM.

OVERRIDES: None

SPECIAL INSTRUCTIONS:

- **Provide** marked up hard copy of S2.OP-SO.4KV-0008, **Rev. 13** to candidate. **DO NOT USE** the copy in the simulator.
- Setup to only deenergize one (1) Group Bus, THEN the operator will receive OHA J-39, 4KV GRP BUS XFER FAIL.
- The ARP for J-39 will direct operator J-38 for response.
- OHA J-38 states: IF ANY RCP Trips THEN:
 - TRIP Reactor
 - GO TO EOP-TRIP-1

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

TASK NUMBER: N0620110101

INITIAL CONDITIONS:

- 18% power, 160 MWe, BOL.
- The Main Generator was synchronized 10 minutes ago.
- Steam Dumps are in MS Pressure Mode-Auto set at 970 psig.
- Rod Control is in Manual (D-147) until Group Buses are transferred.
- Group Buses are currently powered from the Station Power Transformers (SPT).

INITIATING CUE:

- You are the Plant Operator.
- The CRS directs you to **TRANSFER** all 4KV Group Buses from their respective Station Power Transformers (SPT) to the Aux Power Transformers (APT) IAW S2.OP-SO.4KV-0008, 4KV Group Buses Power Supply Transfer in the following order:
 1. 2F IAW section 5.2
 2. 2G IAW section 5.3
 3. 2H IAW section 5.4
 4. 2E IAW section 5.1
- All pre-requisites are completed SAT.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Transfers 2F 4KV Group bus from SPT to APT.
2. Trips Reactor IAW ARP following de-energizing of 2G 4KV Group Bus

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<p>PROVIDE a copy of S2.OP-SO.4KV-0008, Rev. 13 to the operator.</p> <p>Evaluator's Note: DO NOT USE the copy in the simulator due to a typographical error on P&L 3.3 that may confuse the operator in response to the malfunction.</p>			
	CUE:	<p>Fill in the JPM Start Time when the student acknowledges the Initiating Cue.</p> <p>START TIME: _____</p>			
	P&L	<p>Note: The operator may also review the OHA ARPs prior to starting the JPM.</p>	<p>Operator reviews Precautions and Limitations.</p> <p>Evaluator's Note: P&L 3.3 will be applicable when the 2G 4KV Bus deenergizes:</p> <p>When transferring a group Bus from SPT to APT, OHA J-39, GROUP BUS XFER FAIL, will illuminate then clear on bus transfer (expected response). OHA J-39 annunciator response is applicable when the alarm does NOT clear following bus transfer.</p>		
	5.2	<p>Transferring 2F 4KV Group Bus from 22 SPT to 2 APT</p>			

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.1	ENSURE all Overhead Annunciators for 2 APT are clear.	Checks OHA Windows and determines all Overhead Annunciators for 2 APT are clear.		
	5.2.2	ENSURE 2A APT voltage is 4.22 - 4.36KV.	Checks 2A APT reading on 2CC3 and ensures 2A APT voltage is 4.22 - 4.36KV.		
	5.2.3	<u>IF</u> Auxiliary Power Unit Isolation Transfer is tripped, <u>THEN RESET</u> Auxiliary Power Unit Isolation Transfer (UIT).	Determines Auxiliary Power Unit Isolation Transfer is not tripped from control console indication.		
*	5.2.4	PRESS the Mimic Bus 2F GROUP BUS INFEED 2BFGD BREAKER pushbutton, AND ENSURE console bezel 2BFGD MIMIC BUS INTLK CLOSE SELECTION illuminates.	Depresses Mimic Bus 2F GROUP BUS INFEED 2BFGD BREAKER pushbutton and verifies console bezel 2BFGD MIMIC BUS INTLK CLOSE SELECTION is illuminated.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.5	* PRESS control console 2BFGD CLOSE pushbutton, AND ENSURE the following: A. *22FSD is OPEN. B. *2BFGD is CLOSED. C. *2F 4KV Group Bus voltage is 4.22 - 4.36KV. D. Console bezel 2BFGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.	Depresses control console 2BFGD CLOSE pushbutton and verifies the following: A. 22FSD OPEN bezel is illuminated. B. 2BFGD CLOSED bezel is illuminated. C. 2F 4KV Group Bus voltage is 4.22 - 4.36KV. D. Console bezel 2BFGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.		
	5.3	Transferring 2G 4KV Group Bus from 22 SPT to 2 APT			
	5.3.1	ENSURE all Overhead Annunciators for 2 APT are clear.	Checks OHA Windows and determines all Overhead Annunciators for 2 APT are clear.		
	5.3.2	ENSURE 2A APT voltage is 4.22 - 4.36KV.	Checks 2A APT reading on 2CC3 and ensures 2A APT voltage is 4.22 - 4.36KV.		
	5.3.3	<u>IF</u> Auxiliary Power Unit Isolation Transfer is tripped, <u>THEN</u> RESET Auxiliary Power Unit Isolation Transfer (UIT).	Determines Auxiliary Power Unit Isolation Transfer is not tripped from control console indication.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.4	PRESS Mimic Bus 2G GROUP BUS INFEED 2BGGD BREAKER pushbutton, <u>AND ENSURE</u> console bezel 2BGGD MIMIC BUS INTLK CLOSE SELECTION illuminates.	Depresses Mimic Bus 2G GROUP BUS INFEED 2BGGD BREAKER pushbutton, <u>AND</u> verifies console bezel 2BGGD MIMIC BUS INTLK CLOSE SELECTION is illuminated.		
		ALTERNATE PATH STARTS HERE:			

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.5	<p>*PRESS control console 2BGGD CLOSE pushbutton, AND ENSURE the following:</p> <p>A. *22GSD is OPEN. B. *2BGGD is CLOSED. C. *2G 4KV Group Bus voltage is 4.22 - 4.36KV. D. Console bezel 2BGGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.</p>	<p>Operator determines 2G 4KV Group bus did not transfer and announces several unexpected OHA alarms.</p> <p>The following OHA alarms are applicable to the loss of 2G 4KV bus and will provide the operator with the required actions:</p> <p>J-8 (2G 4KV GRP BUS DIFF/OVRLD), J-38 (4KV GRP BUS UNDRVOLT), J-39 (4KV GRP BUS XFER FAIL), and D-31 (24 RCP BKR OPEN/FLO LO).</p> <p>Cue: If requested to dispatch an operator to inspect the 4KV group Bus, state; the CRS will send an operator to investigate.</p> <p>Operator identifies that OHA ARPs for J-38 or D-31 requires tripping the Reactor and going to EOP-TRIP-1 (OHA response are provided in next steps).</p> <p>Cue: If operator informs CRS of action to trip the reactor, state; take actions per the alarm response procedure.</p> <p>Operator TRIPs the Reactor .</p>		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	OHA ARP J-39	4KV GRP BUS XFER FAIL 3.0 <u>OPERATOR ACTIONS</u> GO TO OHA J-38 response	<u>IF</u> the operator refers to this ARP, <u>THEN</u> GOES TP ARP for J-38 for response.		
*	OHA ARP J-38	4KV GRP BUS UNDRVOLT 3.0 <u>OPERATOR ACTIONS:</u> 3.5 <u>IF ANY RCP trips,</u> <u>THEN:</u> A. TRIP Reactor B. GO TO 2-EOP-TRIP-1	<u>IF</u> the operator refers to this ARP, <u>THEN</u> the operator determines that Step 3.5 is applicable and performs the following: Operator TRIPs the Reactor.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	OHA ARP D-31	<p>24 RCP BKR OPEN/FLO LO</p> <p>3.0 OPERATOR ACTIONS:</p> <p>3.5 <u>IF</u> Reactor Coolant System flow degradation exists, <u>THEN:</u></p> <p>A. TRIP the Reactor</p> <p>B. STOP 24 RCP</p> <p>C. <u>IF</u> RCP shutdown was due to RCP Seal Leakoff \geq 6 gpm, <u>THEN</u> simultaneously PERFORM the following:</p> <ul style="list-style-type: none"> ▪ Between 3-5 minutes after stopping 24 RCP, CLOSE 24CV104, SEAL LEAKOFF. ▪ GO TO 2-EOP-TRIP-1 <p>D. GO TO 2-EOP-TRIP-1</p>	<p><u>IF</u> the operator refers to this ARP, <u>THEN</u> the operator determines that Step 3.5 is applicable and performs the following:</p> <p>Operator TRIPs the Reactor.</p> <p><u>Note:</u> Stopping 24 RCP is not required due to the bus de-energizing.</p>		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: A.C. Electrical Distribution

TASK: Transfer 4KV Group Buses To The Alternate Power Supply (SPT to APT)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE:	JPM is Complete RECORD the STOP TIME. STOP TIME: _____	Terminate the JPM when the Rx trip has been initiated.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM #: 16-01 NRC Sim-g

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

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

INITIAL CONDITIONS:

- 18% power, 160 MWe, BOL.
- The Main Generator was synchronized 10 minutes ago.
- Steam Dumps are in MS Pressure Mode-Auto set at 970 psig.
- Rod Control is in Manual (D-147) until Group Buses are transferred.
- Group Buses are currently powered from the Station Power Transformers (SPT).

INITIATING CUE:

- You are the Plant Operator.
- The CRS directs you to **TRANSFER** all 4KV Group Buses from their respective Station Power Transformers (SPT) to the Aux Power Transformers (APT) IAW S2.OP-SO.4KV-0008, 4KV Group Buses Power Supply Transfer in the following order:
 1. 2F IAW section 5.2
 2. 2G IAW section 5.3
 3. 2H IAW section 5.4
 4. 2E IAW section 5.1
- All pre-requisites are completed SAT.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Component Cooling Water System		
TASK:	Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)		
TASK NUMBER:	N1150420501		
JPM NUMBER:	16-01 NRC JPM Sim-h		
ALTERNATE PATH:	<input checked="" type="checkbox"/>	K/A NUMBER:	008 A2.01
APPLICABILITY:		IMPORTANCE FACTOR:	3.3 3.6
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	2-EOP-APPX-1 Rev. 25 (checked 9-29-17)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	<u>10 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i>	Date:	9-29-17
Validated By:	<i>B. J. ...</i> D. Maxey <i>Dan Maxey</i> PAT BRESLIN <i>Pat Breslin</i> SME or Instructor	Date:	9-29-17
Approved By:	Training Department <i>[Signature]</i>	Date:	11/13/17
Approved By:	Operations Department <i>[Signature]</i>	Date:	11/13/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC Sim-h

Rev #	Date	Description	Validation Required
00	9-29-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA. Incorporated changes to 2-EOP-APPX-1 Rev. 25.	Yes

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Component Cooling Water System

TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

TASK NUMBER: N1150420501

SIMULATOR IC: IC-247

MALFUNCTIONS / REMOTES:

1. Reset the simulator to IC-247 (IC-239 used as baseline)
2. Ensure the following malfunction on the event summary:
 - a. **RC0001B:** RCS rupture of RC loop 22 set to TRUE
 - b. **EL0134:** Loss of 500 KV off-site power
 - c. **EL0145:** Loss of 2B Vital Bus

OVERRIDES:

- **A601 E DI:** KA601PBM 21 CC PUMP-START. Final = Override OFF.

SPECIAL INSTRUCTIONS:

- **ENSURE** sufficient copies of 2-EOP-APPX-1.
- Extra Instructor on the floor is recommended to respond to the numerous post-trip alarms that may unnecessarily distract the candidate.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Component Cooling Water System

TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

TASK NUMBER: N1150420501

INITIAL CONDITIONS:

- The Unit 2 reactor was manually tripped and a SI initiated based on indications of a large break LOCA.
- A loss of off-site power occurred when the Main Generator breakers opened.
- 2B 4KV Vital Bus is de-energized due to Bus Differential with its Diesel running.
- 2-EOP-TRIP-1 is in progress.
- NO CCW pumps are running (SEC Mode 3).
- 21 and 22 CCW pumps were in service prior to the trip and 23 CCW pump was in Auto.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to **START ONE** CCW pump IAW 2-EOP-APPX-1.
- Notify the CRS when one CCW pump is running.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **STARTS 23 CCW pump IAW EOP-APPX-1.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: **Component Cooling Water System**

TASK: **Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)**

* #	STEP No.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Operator obtains 2-EOP-APPX-1			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	1	CHECK 4 KV vital bus status: a. CHECK AT LEAST ONE vital bus ENERGIZED by station power transformers.	Determines that NONE of the 4 KV vital buses are energized from the station power transformers. (2A and 2C are energized from EDGs, and 2B is de-energized). RNO: GOES TO Step 2.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Component Cooling Water System

TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

* #	STEP No.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	2	<p>CHECK ECCS pump (CVC,SI, or RHR) and AFW pump status:</p> <p>a. CHECK all ECCS pumps AND motor-driven AFW pumps running on energized vital buses.</p> <p>b. CHECK one CCW pump running.</p>	<p>Checks running pumps and determines that <u>all</u> ECCS pumps AND motor driven AFW pumps <u>running on energized vital buses (A and C).</u></p> <p>Checks CCW pump status and determines <u>NO</u> CCW Pumps are running.</p> <p>RNO: GOES TO Step 3.</p>		
	3	<p>SELECT CCW pump start strategy (choose one (a, b, c, d)):</p>	<p>Selects 'C' CCW Pump Start strategy based on:</p> <p>-De-energized 4KV Vital Bus = B. -CCW Pumps Available = 21 or 23 -GO TO Step No. 6.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Component Cooling Water System
TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

* #	STEP No.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
* #	6	<p>[4KV Vital Bus "B" De-energized]:</p> <p>a. CHECK 21 CCW Pump AVAILABLE.</p> <p>b. *BLOCK 2A SECs</p> <p>c. *RESET 2A SECs</p> <p>d. *STOP 21 CS Pump:</p> <p>e. *START 21 CCW Pump:</p> <p>[ALTERNATE PATH STARTS HERE:]</p>	<p>Determines 21 CCW Pump is available (in service prior to Rx Trip).</p> <p>Rotates 2A SEC Block Switch to BLOCK and releases.</p> <p>Depresses Emergency Loading Reset for 2A SEC on 2CC3 and verifies bezel illuminates.</p> <p>Depresses the 21 CS STOP PB and verifies STOP bezel illuminates on 2CC1.</p> <p>Depresses the 21 CCW START PB and reports that 21 CCW Pump did <u>NOT</u> start.</p> <p>RNO [step e]:</p> <ol style="list-style-type: none"> 1. RESET Containment Spray 2. START 21 CS Pump, as necessary. 3. GO TO Step 6(h) <p><u>Note:</u> Re-starting 21 CS pump is necessary when 22 CS is stopped later.</p> <p>Cue: <u>IF</u> the operator does not re-start 21 CS pump, THEN state: CRS directs re-starting 21 CS pump.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Component Cooling Water System

TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

* #	STEP No.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
* #	6 Contd.	h. CHECK 23 CCW Pump AVAILABLE i. *BLOCK 2A AND 2C SECs j. *RESET 2A AND 2C SECs k. *STOP 22 CS Pump l. *START 23 CCW Pump m. *RESET Containment Spray *CLOSE Valve 22CS2 n. GO TO Step 8	Determines 23 CCW Pump is available. Rotates 2C SEC Block Switch to BLOCK and releases (2A selected to Block previously). Depresses Emergency Loading Reset PBs for 2A and 2C SEC on 2CC3 and verifies bezel illuminates. Depresses 22 CS STOP PB and verifies STOP bezel illuminates on 2CC1. Depresses 23 CCW START PB and verifies START bezel illuminates Depresses Train A and B RESET SPRAY ACTUATION PBs and verifies RESET SPRAY ACTUATION bezel illuminates Green (Note: previously reset from Step 6.e). Depresses 22CS2 CLOSE PB and verifies CLOSE bezel illuminates. GOES TO Step 8		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Component Cooling Water System

TASK: Start A CCW Pump IAW 2-EOP-APPX-1 (23 CCW Pump)

* #	STEP No.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	CUE:	JPM is Complete. RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator completes GOES TO Step 8.		

JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC Sim-h

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

- PB 1. Task description and number, JPM description and number are identified.
- PB 2. Knowledge and Abilities (K/A) references are included.
- PB 3. Performance location specified. (in-plant, control room, or simulator)
- PB 4. Initial setup conditions are identified.
- PB 5. Initiating and terminating Cues are properly identified.
- PB 6. Task standards identified and verified by SME review.
- PB 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- PB 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 25 Date 9-28-17
- PB 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.

SME/Instructor: AT BRESNA AT Date: 9-29-17
SME/Instructor: D. Maxey Date: 9/29/17
SME/Instructor: BR Sharov Date: 9/29/17

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- The Unit 2 reactor was manually tripped and a SI initiated based on indications of a large break LOCA.
- A loss of off-site power occurred when the Main Generator breakers opened.
- 2B 4KV Vital Bus is de-energized due to Bus Differential with its Diesel running.
- 2-EOP-TRIP-1 is in progress.
- NO CCW pumps are running (SEC Mode 3).
- 21 and 22 CCW pumps were in service prior to the trip and 23 CCW pump was in Auto.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to **START ONE** CCW pump IAW 2-EOP-APPX-1.
- Notify the CRS when one CCW pump is running.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: Salem Generating Station
SYSTEM: D.C. Electrical Distribution [063] & EOP Station Blackout [055]
TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)
TASK NUMBER: N1150140501
JPM NUMBER: 16-01 NRC IP-i

ALTERNATE PATH: **K/A NUMBER:** EPE 055 EA1.04
IMPORTANCE FACTOR:

3.5	3.9
RO	SRO

APPLICABILITY:
 EO RO STA SRO

EVALUATION SETTING/METHOD: In Plant- Simulate
REFERENCES: 2-EOP-LOPA-1 Loss of All AC Power, Rev. 31 (checked 12-11-17)
TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 minutes
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan *Rudolph Chan* **Date:** 12-13-17
 Instructor
Validated By: *Wiedman* **Date:** 12/13/17
Bresna
 SME or Instructor
Approved By: Training Department *McHugh* **Date:** 12/15/17
Approved By: Operations Representative *[Signature]* **Date:** 12/15/17
 MYERS

ACTUAL JPM COMPLETION TIME:
ACTUAL TIME CRITICAL COMPLETION TIME:
PERFORMED BY:
GRADE: SAT UNSAT
REASON, IF UNSATISFACTORY:
EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC IP-i

Rev #	Date	Description	Validation Required
00	5-31-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	No
01	12-13-17	Used on 16-01 NRC ILOT exam. (2017 Annual IP-9). Incorporated comments from NRC Prep week. Used this JPM in place of "Unloading and Stopping EDG" JPM based on NRC not satisfied that the previous JPM provided meaningful tasks for the operator to observe.	Yes

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Emergency Operating Procedures
TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)
TASK NUMBER: N1150140501
SIMULATOR IC: N/A
MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

1. This JPM is **NOT** located inside the RCA.
2. **ENSURE** two (2) copies of the procedure is available; 1-candidate and 1-evaluator

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Operating Procedures

TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)

TASK NUMBER: N1150140501

INITIAL CONDITIONS:

Salem Unit 2 has experienced a total Loss of All AC Power.
The control room is performing actions in 2-EOP-LOPA-1, Loss of All AC Power.

INITIATING CUE:

You are directed to shed non-essential DC loads using 2-EOP-LOPA-1, Checkoff Sheet 3, 125VDC LOAD SHED LIST pages 1-3 (COS 3-1 thru 3-3).

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

Locate DC panels and simulate opening only associated DC breakers listed on Checkoff Sheet 3.

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Emergency Operating Procedures

TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide operator <u>and</u> evaluator with 2- EOP-LOPA-1, Checkoff Sheet 3, 125VDC LOAD SHED LIST pages 1-3.	Note: Checkoff Sheet 3 sections may be performed in any order.		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Emergency Operating Procedures

TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	1	Open breakers in 84 Ft Elev Switchgear Room IAW 2-EOP-LOPA-1 COS Sheet 3.	<p>Locates distribution panels in 84' elevation switchgear room, 2A 125VDC bus, 2ADC 125V DC Distribution Panel, 2B 125VDC Bus, 2DDC 125VDC Distribution panel, 2CDC 125 VDC Distribution panel, and simulates opening breakers contained in Check off Sheet 3.</p> <p>Note 1: 2ADC 125 V DC Breaker 2ADC3AX29 is labeled in field as "Source #1 125 VDC to AVR Excitation Cab" following DCP. Procedure has them labeled as "2 Generator Exciter Voltage Regulator". CUE: Provide this clarification to operator if questions on labeling. This is the "2 Generator Exciter Voltage Regulator" breaker.</p> <p>Note 2: 2DDC 125V DC Breaker 2DDC2AX28 "Safety Injection Test Line Valves" is labeled in field as "21SJ162, 2SJ166, 22SJ162, 22SJ166, 2SJ158". Procedure has them labeled as "SAFETY INJECTION TEST VALVES". CUE: Provide this clarification to operator if questions on labeling. These valves are the Safety injection test valves.</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Emergency Operating Procedures

TASK: Perform actions for a Loss of All AC Power (Shed non-essential DC loads)

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Note: Only selected breakers are designated to be opened. Operator should NOT just simulate opening ALL breakers in panel.		
*	1 (cont)	Open breakers in 100 Ft Elev Switchgear Room IAW 2-EOP-LOPA-1 COS Sheet 3.	Locates distribution panels in 100' elevation switchgear room, 2AADC 125 VDC Distribution panel, 2BBDC 125VDC Distribution panel, and 2CCDC 125 VDC Distribution panel, and simulates opening breakers contained in Check off Sheet 3.		
	CUE:	<p><u>WHEN</u> operator informs you the task is complete, OR the JPM has been terminated for other reasons, <u>THEN</u> RECORD the STOP TIME.</p> <p>REPEAT BACK any message from the operator on the status of the JPM, and then state "This JPM is complete".</p> <p>STOP TIME: _____</p>	Terminate JPM when all panels have been located and appropriate breakers simulated opened.		

INITIAL CONDITIONS:

Salem Unit 2 has experienced a total Loss of All AC Power.
The control room is performing actions in 2-EOP-LOPA-1, Loss of All AC Power.

INITIATING CUE:

You are directed to Shed Non-Essential DC loads using 2-EOP-LOPA-1, Checkoff Sheet 3, 125VDC LOAD SHED LIST pages 1-3 (COS 3-1 thru 3-3).

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM		
SYSTEM:	Reactor Protection System (RPS)		
TASK:	Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.		
TASK NUMBER:	1130070501		
JPM NUMBER:	16-01 NRC IP-j		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	012 A4.06
APPLICABILITY:		IMPORTANCE FACTOR:	
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
		RO	SRO
EVALUATION SETTING/METHOD:	In Plant / Simulate		
REFERENCES:	S1.OP-AB.CR-0001, Rev. 18 (checked 12-14-17)		
TOOLS AND EQUIPMENT:	JAM Key		
VALIDATED JPM COMPLETION TIME:	<u>25 min</u>		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	<u>N/A</u>		
Developed By:	R. Chan <i>Rudolph Chan</i>	Date:	12-14-17
	Instructor		
Validated By:	N/A <i>R 12-14-17</i>	Date:	N/A
	SME or Instructor		
Approved By:	Training Department <i>M. Hill</i>	Date:	12/15/17
Approved By:	Operations Department <i>J. MERS</i>	Date:	12/15/17
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			
	DATE:		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

REVISION HISTORY

JPM NUMBER: 16-01 NRC IP-j

Rev #	Date	Description	Validation Required
00	9-20-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA. Incorporated comments from validation.	No
01	12-14-17	Incorporated NRC Prep week comments to perform the task on Unit 1. Revalidation not required based on location of components in the same area on Unit 1. Added cue to address potential arch flash PPE requirements.	No

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Reactor Protection System (RPS)

TASK: Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

TASK NUMBER: 1130070501

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

- This JPM is located inside the RCA.
- Evaluator must have a JAM key to give to operator at start of JPM. Operators do not have individual JAM keys! Check out key #8 at Work Control Center.
- Notification to control room will be required when opening panel door in the charging valve alley.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Reactor Protection System (RPS)

TASK: Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

TASK NUMBER: 1130070501

INITIAL CONDITIONS:

- The **Unit 1** Control Room has been evacuated in accordance with S1.OP-AB.CR-0001, Control Room Evacuation.
- A reactor trip from 100% was initiated prior to evacuating the Control Room, but the reactor failed to trip from the control room.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to locally trip open the Reactor Trip Breakers and take local control of charging flow by **PERFORMING** Steps 1 thru 9 IAW Attachment 5 of S1.OP-AB.CR-0001, Control Room Evacuation.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. Locally OPEN Reactor Trip and Bypass Breakers
2. Locally controls 1CV55 to maintain charging flow.

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

TASK: 0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Lead Evaluator provides blank copy of S1.OP-AB.CR-0001, Control Room Evacuation, Attachment 5, pages 1 & 2 only, a JAM Key , and state: "You have a radio and all other required keys."			
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
		Operator reviews a copy of S1.OP-AB.CR-0001, Att. 5, and proceeds to El. 84 switchgear room (outside RCA).			
	1.0	OBTAIN the following: <ul style="list-style-type: none"> • One copy of this procedure. • One radio (located in Appendix "R" Cabinet) • Key ring set and tools (JA Master, Breaker Keyswitch, screwdriver and adjustable wrench). • A Security Master Key from the Unit 1 CRS (located on the Unit 1 Security Key Ring) 	Cue: Operator has been provided all the required items.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-

TASK: 0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	2.0	PROCEED to Rod Drive MG Set Control Panel (460V Vital Bus Room-EI 84'), AND OPEN the following breakers: 2.1 Reactor Trip Breaker A 2.2 Reactor Trip Breaker B 2.3 Reactor Trip Bypass Breaker A 2.4 Reactor Trip Bypass Breaker B.	Operator <u>simulates</u> opening each breaker by removing cover and depressing the TRIP pushbutton until the breaker flag indicates OPEN. Cue: For each breaker that is simulated open, state: the breaker indicates OPEN. Note: Operator only opens Reactor Trip Breakers that are currently racked in and closed. Typically the Reactor Bypass Trip Breakers are Open and racked out. So these breakers would be N/A.		
	3.0	CONFIRM with the Hot Shutdown Panel Operator (PO) that 11 or 12 Charging Pump is operating.	Cue: 11 charging pump is operating.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-

TASK: 0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	CUE		<p>Evaluators Note: The breakers that will be operated have labels that state “Do Not Operate Controls or Open Covers Without Appropriate PPE. NFPA 78E”. IF the operator STOPS and questions whether the breaker can be operated with existing PPE, THEN use the following cue:</p> <p>Cue: Your supervisor states that the breakers your will be operating poses NO arc flash hazard and your current PPE is adequate to operate these breakers. (Reference SA-AA-129, page 32, section 4.5.5 step 25 and Table 4 provides basis for this direction)</p>		
	4.0	PROCEED to 1AX1AX7X, #13 Charging Pump breaker AND OPEN the breaker.	<p>Locates 1AX1AX7X, #13 Charging Pump breaker AND depresses the trip PB to open the breaker. [location: 84' EL. SGWR Room, 1A 460 V MCC]</p> <p>Cue: The breaker indicates OPEN.</p>		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-

TASK: 0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.0	PROCEED to 1C West Valve & Misc 230V Control Center-EI 84', AND OPEN Breaker 1CY2AX4I, 1CV175-Rapid Borate Stop Valve.	Locates 1C West Valve & Misc 230V Control Center-EI 84', and opens Breaker 1CY2AX4I, 1CV175-Rapid Borate Stop Valve, by rotating switch to OFF position. [location: Inside RCA, 84' EL. Aux Bldg., across from AFW pumps] Cue: The breaker is in OFF position.		
	6.0	NOTIFY the CRS of the following: 6.1 The Reactor Trip and Bypass breakers are OPEN 6.2 #13 Charging Pump Breaker is OPEN.	Cue: CRS understands the Reactor Trip and Bypass breakers are open and #13 Charging Pump Breaker is open.		
	7.0	CONFIRM with NEO #1 that 1CV71, Chr Hdr PCV, is isolated (1CV70) and bypassed (1CV73) and that flow is being maintained to RCP seals at flowrate of 6 to 10 gpm to each seal.	Contacts NEO #1 and confirms that 1CV71, Chr Hdr PCV, is isolated (1CV70) and bypassed (1CV73) and that flow is being maintained to RCP seals at flowrate of 6 to 10 gpm to each seal. Cue: NEO #1 reports 1CV71, Chr Hdr PCV, is isolated (1CV70) and bypassed (1CV73), and that flow is being maintained to RCP seals at flowrate of 6 to 10 gpm to each seal, currently 8 gpm each.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-

TASK: 0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Proceeds to Unit 1 Panel 216-1, Chg Pmps FL & PR Inst Pnl. (84' EL. Aux Bldg, Charging valve Alley) Note: Panel 216-1 will alarm in the Control Room. The Control Room must be notified prior to opening this panel, and when it is secured.		
	NOTE	The following indications and controls are available for local operation at Unit 1 CVC Chg Pmps FL & PR Inst Pnl, Panel 216-1: <ul style="list-style-type: none"> ▪ 1CV55 AUTO/MANUAL Selector Switch (1HC-128G No. 11 & 12 Charging Pumps Flow to Regen HX) ▪ 1CV55 Manual HAND/AIR Regulator Control ▪ Charging Pump Flow Indication, 1FI-128A ▪ 11 and 12 Charging Pump Pressure Indication, 1PI-142B ▪ VCT Level Indication 1LT-114. 	Operator reads the Note and continues on. Operator proceeds into the Aux Bldg 84' EL., Charging Pump Alley (RCA entry) Note: Use caution (situational awareness) when entering the Charging Valve Alley for hazards such as low hanging pipes and bump hazards near valve operators.		
	8.0	TAKE control of 1CV55, Cent Chg Pmp Flow Cont Valve, by performing the following:			

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	8.1	RECORD the charging flow as indicated on 1FI-128A. _____ gpm indicated on 1FI-128A	Records charging flow from 1FI-128A, Charging Pump Flow Indication. Note: Typical charging flow is about 87-89 gpm. However, this could be different based on plant evolutions in progress during the time this JPM is being performed.		
*	8.2	PLACE local E/P Bypass Line Selector Valve in Manual.	Locates local E/P Bypass Line Selector Valve and simulates rotating valve clockwise to Manual position. Cue: E/P Bypass Line Selector Valve is in the Manual position.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Reactor Protection System (RPS)

TASK: Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	8.3	Using the MANUAL hand air operator, ENSURE that the flow rate as noted in Step 8.1 is being maintained with 1CV55.	<p>Reads flowrate from 1FI-128A, Charging Pump Flow Indication to ensure the flow rate is maintained with 1CV55.</p> <p>Cue: Flow rate has LOWERED 10 gpm from flow rate recorded in Step 8.1.</p> <p>Operator adjusts the Manual Hand Operator in the counter clockwise direction to LOWER air pressure to OPEN 1CV55 and RAISE charging flow.</p> <p>Cue: Flow on 1FI-128A reads the value recorded in Step 8.1. IF operator rotates the hand sender in the clockwise direction, THEN report flow reads 15 gpm LOWER than the flow rate noted in Step 8.1</p> <p>Note: 1CV55, Cent Chg Pmp Flow Cont Valve is fail open valve; air to close.</p> <p><u>Raises</u> air pressure to lower flow or <u>Lowers</u> air pressure to raise flow.</p>		
	8.4	OBSERVE local air pressure indicator to verify local control.	<p>Points out local air pressure indicator.</p> <p>Cue: Air pressure on local air pressure indicator is 8 psig.</p>		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____
 DATE: _____

SYSTEM: Reactor Protection System (RPS)

TASK: Locally Open Reactor Trip Breakers and Control Charging Flow Following Control Room Evacuation IAW S1.OP-AB.CR-0001.

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	9.0	NOTIFY the CRS and STA that Steps 1 through 8 of Attachment 5 are completed.	Cue: CRS and STA understand that steps 1 thru 8 of Attachment 5 are complete.		
	CUE:	JPM is Complete RECORD the STOP TIME. STOP TIME: _____	Terminate JPM when operator completes Step 9.0.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 16-01 NRC IP-j

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

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

INITIAL CONDITIONS:

- The **Unit 1** Control Room has been evacuated in accordance with S1.OP-AB.CR-0001, Control Room Evacuation.
- A reactor trip from 100% was initiated prior to evacuating the Control Room, but the reactor failed to trip from the control room.

INITIATING CUE:

- You are the Reactor Operator.
- The CRS directs you to locally trip open the Reactor Trip Breakers and take local control of charging flow by **PERFORMING Steps 1 thru 9** IAW Attachment 5 of S1.OP-AB.CR-0001, Control Room Evacuation.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION: SALEM
 SYSTEM: Liquid Radwaste System
 TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001
 TASK NUMBER: N0685140104
 JPM NUMBER: 16-01 NRC IP-k

ALTERNATE PATH: K/A NUMBER: 068 A2.04
 IMPORTANCE FACTOR: 3.3 3.3
 APPLICABILITY: RO SRO
 EO RO STA SRO

EVALUATION SETTING/METHOD: In Plant / Simulate

REFERENCES: S2.OP-SO.WL-0001, Rev. 28 (checked 10-2-17)
 S2.OP-TM.ZZ-0002, Rev. 8

TOOLS AND EQUIPMENT: S2.OP-TM.ZZ-0002 Tank Capacity Data

VALIDATED JPM COMPLETION TIME: 20 mins

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan *Rudolph Chan* Date: 12-14-17
 Instructor

Validated By: *N/A R 12-14-17* Date: *N/A R*
 SME or Instructor

Approved By: *40 H-256* Date: 12/15/17
 Training Department *[Signature]*

Approved By: *[Signature]* Date: 12/15/17
 Operations Department *[Signature]*

ACTUAL JPM COMPLETION TIME:
 ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:
 GRADE: SAT UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ DATE: _____

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

REVISION HISTORY

JPM NUMBER: 16-01 NRC IP-k

Rev #	Date	Description	Validation Required
00	10-2-17	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-14-07	Incorporated NRC Prep week comments. Changed validation time to 20 minutes. Added cue to provide SAP screenshots if requested for location of 2WR59 valve. Step 5.5.9 cannot be credited towards critical step and alternate path since no action is performed by operator in the field. Also revised outline (ES-301-2) to change this JPM as not an alternate path JPM.	No

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

TASK NUMBER: N0685140104

SIMULATOR IC: N/A

MALFUNCTIONS / REMOTES:
N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS:

- **This JPM is located inside the RCA.**
- **ENSURE** Lead Evaluator has a copy of S2.OP-TM.ZZ-0002, Tank Capacity Data, to provide to Operator when requested. Note: Field Copy does exist at the Radwaste Operator desk by the 104 Panel.
- **ENSURE** Evaluator has the two (2) SAP screenshots for 2WR59 location information.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

TASK NUMBER: N0685140104

INITIAL CONDITIONS:

- Preparations for a release of 21 CVCS Monitor Tank via Unit 2 SW system to Unit 1 CW system is in progress IAW S2.OP-SO.WL-0001, RELEASE OF RADIOACTIVE LIQUID WASTE FROM 21 CVCS MONITOR TANK.
- Chemistry has granted permission to release 21 CVCS MT at a Maximum Release Rate of 45 gpm due to the high curie content of the tank.
- 2R18 and 2FR1064 Flow Recorder are both OPERABLE.
- All Unit 1 CW pumps are in service.

INITIATING CUE:

- You are the extra NCO.
- The CRS directs you to release 21 CVCS MT IAW Section 5.5 of S2.OP-SO.WL-0001.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **Controls the discharge of 21 CVCS MT to less than the Maximum Release rate.**

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with marked up procedure (partial procedure) S2.OP-SO.WL-0001, RELEASE OF RADIOACTIVE LIQUID WASTE FROM 21 CVCS MONITOR TANK.	Give operator marked up copy of S2.OP-SO.WL-0001.		
	CUE:	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
	5.5	Release of 21 CVCS MT via SW System to CW System			
	5.5.1	IF 2FR1064, RADWASTE OVERBOARD DISCH FLOW RECORDER is INOPERABLE, THEN INITIATE Attachment 4, Section 4.0.	Marks step N/A; 2FR1064 is OPERABLE.		
*	5.5.2	DIRECT Unit 2 NCO to OPEN 2WL51, LIQUID RELEASE STOP VALVE	Operator simulates using the plant page or phone to call control room. Operator DIRECTS Unit 2 NCO to OPEN 2WL51. Cue: Unit 2 NCO reports 2WL51 is OPEN.		
	5.5.3	DIRECT second Operator to PERFORM Independent Verification of 2WL51, LIQUID RELEASE STOP VALVE, position in Attachment 2, Step 4.1.2 OR 4.2.2, as applicable (ODCM).	Cue: IV has been performed.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.5.4	THROTTLE OPEN 2WR59, MT PMPS OB STOP VALVE, to obtain less than or equal to Maximum Release Rate recorded in Attachment 2, Step 2.2.2.	<p>Operator locates 2WR59 and simulates opening valve by turning valve hand wheel in the counterclockwise direction. [location: Gas Stripper Feed Pump Room, 64' El. Aux Bldg.]</p> <p><u>Cue:</u> The 2WR59 is full open.</p> <p><u>Cue:</u> IF the operator has problems locating this valve and requests to access SAP to obtain location information on this valve, THEN provide the SAP screenshots for location info on 2WR59.</p> <p><u>Cue:</u> When operator checks the 2FR1064 flow recorder on the 104 panel, THEN report; <u>flow is reading 5 gpm.</u></p>		
	5.5.5	DIRECT second Operator to PERFORM Independent Verification of 2WR59, MT PMPS OB STOP VALVE, position in Attachment 2, Step 4.1.3 OR 4.2.3, as applicable (ODCM).	<u>Cue:</u> IV has been performed.		
	Caution	Completely closing 21WR53 will NOT provide sufficient recirculation to protect the pump should 2WL51 isolate due to high radiation alarm.	Operator reads Caution and continues on.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.5.6	IF Maximum Release Rate recorded in Attachment 2, Step 2.2.2, NOT obtained with 2WR59. MT PMPS OB STOP VALVE, fully open, THEN THROTTLE 21WR53, MT RECIRC V, to obtain less than or equal to Maximum Release Rate recorded in Attachment 2, Step 2.2.2.	<p>Operator locates 21WR53 and simulates throttling valve CLOSED by turning the hand wheel in the clockwise direction to raise flow. [location: CVCS MT Room, 64' EL. Aux Bldg. 21WR53 is about 7 feet above the floor]</p> <p>Cue: When operator checks the 2FR1064 flow recorder on the 104 panel after going in the CLOSED direction, THEN report; <u>flow is 50 gpm.</u></p> <p>When flow is > 45 gpm, the operator lowers flow by OPENING 21WR53 in the counterclockwise direction until flow is less than 45 gpm.</p> <p>Cue: When the operator adjusts the 21WR53 in the OPEN direction, THEN report that <u>flow is reading 40 gpm.</u></p> <p>Note: During actual releases, the best flow achieved during this evolution is about 50 gpm.</p>		
	5.5.7	IF 2FR1064 flow monitor is OPERABLE, THEN RECORD time, date, and tank identification on recorder.	Operator simulates annotating recorder with time, date and tank.		
	5.5.8	COMPLETE Attachment 2, Section 5.1 21 CVCS MT Release Initial Data:	Operator Records data IAW with the provide information below.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<ul style="list-style-type: none"> ▪ 21 CVCS MT Level (2LIS180) 	<p>Cue: When operator reads 21 CVCS Monitor Tank Level on the 104 panel, state; 2LIS-180 indicates 90%.</p>		
		<ul style="list-style-type: none"> ▪ 21 CVCS MT Volume (1) <p>(1) Obtain tank volume from S2.OP-TM.ZZ-0002(Q), Tank Capacity Data.</p>	<p>Cue: When operator reports the need to obtain S2.OP-TM.ZZ-0002, Tank Capacity Data (Note 1), THEN provide the data sheet for CVCS Monitor Tank.</p> <p>Operator uses provided data sheet and determines a tank volume of 19,500 gallons (acceptable range between 19,200 to 19,800 gallons).</p>		
		<ul style="list-style-type: none"> ▪ Dilution Flow Rate 	<p>Cue: Chemistry paperwork indicates dilution water flowrate is 200,000 gpm.</p> <p>Records Dilution Water Flowrate of 200,000 gpm. Initial conditions stated all circulators were in service. 2 Circulators used x 100,000 = 200,000.</p>		
		<ul style="list-style-type: none"> ▪ Discharge Flow Rate (3) (2FR1064) 	<p>Records 40 gpm for Discharge Flow Rate.</p> <p>Cue: 2FR1064 reads 40 gpm.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Liquid Radwaste System

TASK: Perform a Radioactive Liquid Release and TCAF High Radiation Monitor Alarm during release IAW S2.OP-SO.WL-0001

* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		<ul style="list-style-type: none"> ▪ 2R18 Monitor Reading (5) 	<p><u>Cue:</u> When operator reads the 2R18 on the 104 panel state; 2R18 reads 10⁵ counts per minute <u>and</u> the 2R18 High Radiation light is illuminated.</p>		
	5.5.9	<p>IF any of the following occur during release, THEN DIRECT NCO to CLOSE 2WL51, LIQUID RELEASE STOP VALVE:</p> <ul style="list-style-type: none"> ❖ LOSS of dilution water flow ❖ 2FR1064 becomes inoperable ❖ 2R18 Monitor ALARMS ❖ MT Pump pressure falls below MDP allowed IAW Attachment 4 	<p>Operator simulates calling the main control room to report that the 2R18 is in ALARM and DIRECTS the NCO to CLOSE 2WL51.</p> <p><u>Cue:</u> Unit 2 NCO reports that the 2WL51 is CLOSED.</p>		
	CUE:	<p>JPM is complete when the task is complete OR at the direction from the Lead Evaluator.</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	<p>Terminate the JPM when the Control Room reports that 2WL51 is CLOSED.</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

JPM #: 16-01 NRC IP-k

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.

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

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

OPERATOR TRAINING PROGRAM JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Preparations for a release of 21 CVCS Monitor Tank via Unit 2 SW system to Unit 1 CW system is in progress IAW S2.OP-SO.WL-0001, RELEASE OF RADIOACTIVE LIQUID WASTE FROM 21 CVCS MONITOR TANK.
- Chemistry has granted permission to release 21 CVCS MT at a Maximum Release Rate of 45 gpm due to the high curie content of the tank.
- 2R18 and 2FR1064 Flow Recorder are both OPERABLE.
- All Unit 1 CW pumps are in service.

INITIATING CUE:

- You are the extra NCO.
- The CRS directs you to release 21 CVCS MT IAW Section 5.5 of S2.OP-SO.WL-0001.


SIMULATOR EXAMINATION SCENARIO GUIDE

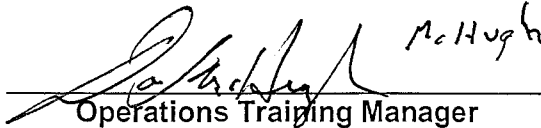
SCENARIO TITLE: 16-01 ESG-1 [AB.PZR-1, AB.SW-3, AB.RCP-1,
TRIP-1, TRIP-2, SGTR-1]
SCENARIO NUMBER: 16-01 ESG-1
EFFECTIVE DATE: See Approval Dates
EXPECTED DURATION: 90 minutes
REVISION NUMBER: 01
PROGRAM: L.O. REQUAL
 INITIAL LICENSE
 STA
 OTHER _____

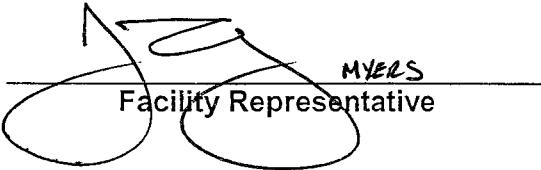
Revision Summary:

New issue for 16-01 ILOT NRC exam.

Rev. 01: Incorporated NRC comments from Prep week. Added Tech Spec LCO times.
Added clarification that CT#2 is broken down into two parts.

PREPARED BY: 
R. Chan
Lead Regulatory Exam Author
12-14-17
Date

APPROVED BY: 
Operations Training Manager
12/15/17
Date

APPROVED BY: 
Facility Representative
12/17/17
Date

SCAN OF SIGNED SCENARIO COVER SHEET

I. OBJECTIVES

- A. Given the order or indications of a pressurizer control system malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with S1/S2.OP-S2.OP-AB.PZR-0001.
- B. Given indication of a pressurizer control system malfunction, DIRECT the response to the malfunction in accordance with S2.OP-AB.PZR-0001.
- C. 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.
- D. Given the order or indications of a SW Bay leak, DIRECT the response to the malfunction IAW approved station procedures.
- E. Given the failure of affecting a Reactor Coolant Pump, perform actions as the nuclear control operator to RESPOND to the failure IAW S1/S2.OP-AB.RCP-0001.
- F. Given the failure of affecting a Reactor Coolant Pump, DIRECT the response to the failure IAW S1/S2.OP-AB.RCP-0001.
- 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 2-EOP-TRIP-1.
- H. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with 2-EOP-TRIP-1.
- 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 steam generator tube rupture, perform actions as the nuclear control operator to RESPOND to the tube rupture in accordance with the approved station procedures.
- L. Given the order or indications of a steam generator tube rupture, DIRECT the response to the tube rupture in accordance with the approved station procedures.

II. MAJOR EVENTS

- A. Power Ascension
- B. Controlling PZR Pressure Channel fails high
- C. #2 SW bay leak
- D. 22 RCP #1 seal degradation and seal failure
- E. 24 SG Tube Rupture

III. SCENARIO SUMMARY

- A. 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 standby. Steam dumps are in Main Steam Pressure Control, Automatic, set at 1000 psig. 23 Charging pump is C/T to troubleshoot flow oscillations with the fluid drive. The crew will be instructed to raise power to 10% and enter Mode 1.
- B. 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.
- C. After the crew enters Mode 1 (about 6% Rx power), the controlling PZR Pressure channel will fail high, deenergizing PZR heaters and causing both PZR Spray valves to fully open. The crew will respond IAW **S2.OP-AB.PZR-0001**, Pressurizer Pressure Malfunction, to establish manual control of PZR pressure control and restore pressure to normal, transfer to an operable channel, and remove the failed channel from service. The CRS will evaluate Tech Specs. **[Tech Specs exercised]**
- D. After the Pressurizer Pressure channel failure has been addressed, a service water (SW) leak in #2 SW bay will occur. The crew will respond IAW **S2.OP-AB.SW-0003**, Service Water Bay Leak. The crew will split the SW headers, stop all SW pumps in #2 Bay and isolate the leak. The CRS will evaluate Tech Specs. **[Tech Specs exercised]**
- E. After the SW Bay leak is addressed, 22 RCP #1 seal will degrade indicated by an increase seal leak-off flow. The crew will respond IAW **S2.OP-AB.RCP-0001**, Reactor Coolant Pump Abnormality. The crew will evaluate the seal degradation and determine a course of action which will include an orderly unit shutdown.
- F. After the crew determines a course of action to address the seal degradation, the #1 seal will fail resulting in the crew initiating the CAS of S2.OP-AB.RCP-0001 and Attachment 2 for stopping RCPs. The crew will trip the Rx, confirm the trip, stop 22 RCP, and then within 3-5 minutes close 22CV104 **[CT#1]**.
- G. The crew will perform immediate actions in **EOP-TRIP-1**, Reactor Trip or Safety Injection, and then transition to **EOP-TRIP-2**, Reactor Trip Response, based on no SI required.
- H. Shortly after transition to EOP-TRIP-2, 24 SG will rupture (650 gpm) and the crew will manually initiate SI and **return to EOP-TRIP-1**. While in EOP-TRIP-1, the crew will identify that a FW isolation valve (**24BF13**), **did not close on SI / Phase A signal** and will take manual actions to close 24BF13 from the control room.

- I. The crew will identify that 24 SG has a tube rupture based on SG narrow range levels rising, and several radiation monitors in alarm, and transition to **EOP-SGTR-1**, Steam Generator Tube Rupture.
- J. While in EOP-SGTR-1, the crew will isolate feed and steam flow to the ruptured 24 SG and initiate a RCS cooldown using steam dumps to the target temperature IAW Table B, Required RCS Cooldown Temperature. The crew will stop the cooldown when the hottest CETs are less than the required RCS cooldown temperature [CT#2]. Note: the crew may have initiated MSLI while in EOP-TRIP-2 based on RCS temperatures not being controlled. If so, the crew will cooldown the RCS using intact MS10's.
- K. The scenario will be terminated after the hottest CETs are less than the RCS cooldown temperature and the cooldown is stopped.

IV. INITIAL CONDITIONS

___ IC-233

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	23 Charging pump is C/T
___ 10	IOP-3 open and complete up to step 4.3.18, Power Operation. Attachment 4 is marked up.
___ 11	Steam Dumps are in MS Pressure Mode and Auto, and S2.OP-SO.MS-0002 is open and marked up to step 5.4.1
___ 12	Rod control in manual.
___ 13	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: KBN12TCY //24BF13 FW INLET STOP VALVE CLOSE COMMAND: DMF VL0026 PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	PR0016A PZR PRESS CH I (PT455) FAILS H/L	N/A	N/A	N/A	RT-1	2500
02	SW0216A 21 SW HDR LEAK IN SW STRUCTURE	N/A	0	00:03:00	RT-2	8000
03	RC007B 22 RC PUMP - #1 SEAL FAILS - w/ DEGRADATION	N/A	0	00:01:00	RT-3	0.75
04	SG0078D 24 STEAM GENERATOR TUBE RUPTURE	N/A	N/A	N/A	RT-4	650
05	VL0026 24BF13 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
01	RC05A RCS SYSTEM , BORON CONC RESET	N/A	N/A	N/A	N/A	1827
02	AF01D 23 AUX FP TRIP RESET	N/A	N/A	N/A	N/A	RESET
03	CV52D 23 CHG PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
04	CV53D 23 CHG PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED
05	PR34D PORV STOP VALVE 2PR6 TAGGED	N/A	N/A	N/A	RT-10	TAGGED
06	SW23D 21 SW PUMP BKR CONTROL POWER	N/A	N/A	N/A	RT-11	OFF
07	SW27D 22 SW PUMP BKR CONTROL POWER	00:00:10	N/A	N/A	RT-11	OFF
08	SW32D 23 SW PUMP BKR CONTROL POWER	00:00:20	N/A	N/A	RT-11	OFF
09	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

____ 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. CRS please inform me when your crew is ready to assume the shift".
- D. 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
<p>1. Power Ascension</p>			
<p>Evaluator'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>Evaluator's Note: Console alarm RC LOOPS Tavg – Tref DEVIATION will be 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>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS directs power ascension using Main Steam Dumps in MS Pressure Control and control rods.		
Evaluator'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.			
	PO raises steam dump demand IAW S2.OP-SO.MS-0002, section 5.4 using Attachments 3 or 4.		
	RO withdraws control rods at the specified increments to maintain Tave on program.		
Evaluator's Note: Program Tavg at 10% Rx power is about 549 F. During simulator runs, Steam Dump pressure setting was about 982 psig for a Rx Power of 5.4%.			
	RO announces when NIS indicates 5% Reactor Power and RECORDs time of Mode 1 entry in Control Room Narrative Log.		
Simulator Operator: When Rx Power is about 6%, <u>THEN</u> continue to next event by direction from Lead evaluator.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
2. Controlling PZR pressure channel fails HIGH			
Simulator Operator: Insert <u>RT-1</u> on direction from Lead Evaluator. MALF: MALF: PR0016A PZR Press CH I (PT-455) fails H/L Final Value: 2500			
	RO announces 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 recommends placing Master Pressure Controller in manual.		
	CRS directs RO to place Master Pressure Controller in manual.		
	RO takes manual control of Master Pressure Controller and lowers demand (increase pressure) to close spray valves.		
	CRS enters S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.		
	At anytime the CRS may direct the power ascension to be placed on hold.		
	CRS directs initiation of AB.PZR-0001 CAS.		
	CRS gives band for control of PZR pressure.		
	RO identifies PZR Pressure Channel I failed high.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS verifies that Master Pressure Controller (MPC) is in Manual.		
	RO adjusts MPC demand signal to be consistent with Attachment 2 to restore pressure to program.		
	RO selects Channel III for control.		
	RO matches MPC demand to current pressure and returns MPC to AUTO.		
Evaluator's Note: The requirement to close PZR PORV Block Valve (2PR6) and remove control power is required to be performed within one hour to comply with TS 3.4.5 action b.			
	RO closes 2PR6 and places 2PR1 in Manual.		
	CRS directs WCC to remove control power from 2PR6.		
Simulator Operator: Insert RT-10 2 minutes after being directed to remove power from 2PR6. REMOTE: PR34D PORV Stop Valve 2PR6 tagged			
	CRS directs PO to initiate removing failed channel from service and contact I&C for support IAW S2.OP-SO.RPS-0003.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Evaluator's Note: Crew may wait for I&C support before performing any actions in S2.OP-SO.RPS-0003. The steps provided below are a few steps that could be performed by the crew in the control room as directed by the CRS; the rest needs I&C support.</p>			
<p>Steps from S2.OP-SO.RPS-0003, Placing PZR Pressure Channel in Tripped Condition:</p>			
	<p>PO checks that tripping associated bistables will NOT result in an ESF or RPS actuation.</p>		
	<p>PO verifies that Channel III is selected for Master Pressure Control.</p>		
	<p>PO selects PZR Pressure recorder to channel II (III) (IV).</p>		
	<p>PO selects Reactor Coolant Temperature, Differential Temperature Recorder to Loop 22 (23) (24).</p>		
	<p>CRS enters TSAS; 3.3.1.1 action 6 (6 hour LCO), 3.3.2.1.b action 19 (6 hour LCO), 3.4.5 action b (1 hour LCO), and 3.2.5 (DNB - 2 hour LCO).</p>		
	<p>Proceed to next event after CRS evaluates Tech Specs or by direction from Lead Evaluator.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
3. #2 SW Bay Leak			
Simulator Operator: Insert <u>RT-2</u> on direction from Lead Evaluator. MALF: SW0216A, 21 SW LEAK IN SW STRUCTURE Ramp 3 min Final Value = 8,000			
Evaluator's Note: The first OHA will annunciate ~1 minute after the leak is inserted.			
	RO announces unexpected OHA alarm B-29, followed shortly by OHA B-13 and B-14.		
	OHA B-29, 22-23 SW PMP SUMP AREA LVL HI, directs entry into S2.OP-AB.SW-0003, IF OHA B-13, 21 SW HDR PRESS LO, is alarming.		
	Crew dispatches NEO to investigate leak in SW bay.		
	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/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Evaluator's Note: OHA B-29 ARP also directs initiation of S2.OP-AB.ZZ-0002, Flooding. The CRS can initiate this procedure after the SW Bay leak is addressed in AB.SW-0003.</p>			
	<p>CRS enters S2.OP-AB.SW-0003, SW Bay Leak, per ARP direction <u>or</u> enters S2.OP-AB.SW-001, Loss of SW Header Pressure, which directs transition to S2.OP-AB.SW-003.</p>		
	<p>PO initiates the CAS of AB.SW-0003.</p>		
	<p>RO reports both SW Bays are in service and dispatches NEO to investigate #2 SW Bay alarms.</p>		
	<p>PO monitors Main Turbine and SGFP temps on SPDS and Plant Computer per CAS.</p>		
<p>Role Play: Report the following after steps to open the Tie Valves (SW23's) are complete; report as NEO that there is a large leak in #2 SW bay, you can't identify where it is coming from due to the spray. The water level in the bay is approx. 2.5 ft. and rising slowly. (SW pumps are considered disabled at 2 ft. in the Bay per AB.ZZ-0002 Attach 7)</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	Crew splits SW Bays by opening nuclear header cross over MOVs 21SW23 and 22SW23, and closing SW bay cross connect valves 21SW17 and 22SW17.		
	Crew determines the SW leak is in #2 Bay.		
	RO/PO starts all available Bay 4 pumps (24, 25, 26).		
	RO/PO stops all Bay 2 pumps (21, 22, 23)		
	CRS sends NEO to open control power bkrs for 21-23 SW pumps.		
<p>Simulator Operator: 2 minutes after being directed to de-energize control power to 21-23 SW pumps, call for a First Check, then insert RT-11. REMOTES: SW23D, SW27D, SW32D for 21, 22, and 23 SW Pump BKR Control Power with delays of 0, 10, and 20 seconds.</p> <p>Call control room after last remote is active and report control power breakers have been opened for 21, 22 and 23 SW pumps.</p>			
	Crew isolates 2 SW Bay by closing 21SW22 and 21SW20.		
	PO reports that SW is available to the Diesel Generators through 22SW21, DG COOLERS.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports that SW is being supplied through 23SW20, TURB AREA.		
<p>Role Play: Once 2 SW Bay is isolated, NEO (if contacted) reports that the leak appears to have stopped, and level is slowly lowering in bay. IF asked about water level, THEN, report that the water level is > 2 Feet and lowering slowly.</p>			
<p>Proceed to next event after Tech Spec has been evaluated or by direction from Lead Evaluator.</p>	PO reports the leak is isolated.		
	CRS evaluates Tech Specs and ECG.		
	CRS enters TS 3.7.4 (72 hour LCO) due to having only one operable SW loop.		
	PO initiates action to remove one CCHX from service IAW CAS item 4.0.		
	CRS enters S2.OP-AB.ZZ-002, Flooding, due to flooding in #2 Bay.		
<p>Evaluator's Note: Flooding procedure may not be entered due to pace of scenario.</p>			
	CRS contacts maintenance to assist in leak		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>4. 22 RCP #1 Seal Degradation and Seal Failure</p>	<p>identification and dewatering.</p>		
<p>Simulator Operator: Insert RT-3 on direction from Lead Evaluator. MALF: RC007B 22 RC Pump #1 Seal Fails – w/degradation.</p> <p>Initial Value: 0.00 Final Value: 0.75 Ramp: 1 minutes</p> <p>The malfunction final value is slightly above the alarm setpoint, so the seal leakoff will stabilize as soon as the alarm is received.</p>			
	<p>RO either identifies rising leakoff flow <u>or</u> announces unexpected console alarm for 22 RCP Seal Leakoff Flow Hi-Lo.</p>		
	<p>RO reports 22 RCP seal leakoff flow and trend, and that it is now stable \approx 5.2 gpm.</p>		
	<p>CRS enters S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality.</p>		
	<p>CRS directs initiation of AB.RCP-0001 CAS.</p>		
	<p>RO uses P-250 computer to check 22 RCP conditions and monitors and compares RCP parameters using Attachment 3 to identify affected RCP.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS determines CCW water supply is not causing RCP abnormal condition.		
	RO reports all RCP winding temperatures are normal and stable.		
	RO reports Seal Injection is not causing RCP abnormal condition based on Seal Injection Flow is > 6 gpm and seal leakoff flow is >5 gpm and stable.		
	CRS evaluates seal leakoff flow status at Step 3.6.		
	CRS determines an orderly unit shutdown is required and the requirement to stop 22 RCP within 8 hours.		
	Crew commences unit shutdown. CRS directs RO to manually inserting control rods (enters Mode 2).		
<p>Evaluator's Note: IF crew does not initiate a unit shutdown based on stable seal leakoff flows, THEN by Lead Evaluators direction; Simulator Operator perform Role Play as Operations Director to direct the CRS to initiate a Reactor Shutdown.</p>			
<p>Proceed to next event after unit shutdown commenced or by direction from Lead Evaluator.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Simulator Operator: When CRS has determined a course of action at Step 3.6, THEN MODIFY MALF RC007B from 0.75 to 1.0 with a 1 minute ramp.</p>			
	RO reports 22 RCP seal leakoff is rising.		
<p>Evaluator's Note: When fully ramped in, the MALF will cause 22 RCP seal leakoff to be >6 gpm. This is indicated by a console reading of "+OVER" on the hi range seal leakoff recorder.</p>			
	CRS determines 22 RCP seal leakoff flow >6 gpm meets the Attachment 1 CAS and initiates Attachment 2, Stopping Reactor Coolant Pumps.		
	CRS briefs Rx trip actions to be performed.		
	CRS identifies the requirement to close 22CV104 within 3-5 minutes after stopping 22 RCP and assigns to RO.		
	RO trips the Rx.		
	RO confirms the Rx Trip.		
	RO stops 22 RCP and starts the timer for closing 22CV104. [Critical Task #1- Part 1]		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO closes 22CV104 within 3-5 minutes [Critical Task #1 – Part 2]		
<p>CT#1 (Site Specific): Stop 22 RCP and close 22CV104 within 3-5 minutes after stopping 22 RCP in EOP-TRIP-1. This CT is broken down into two Parts.</p> <p>SAT _____ UNSAT _____</p> <p>Mark times below:</p> <p>22 RCP Stopped: ____:____:____</p> <p>22CV104 Closed: ____:____:____</p>			
	RO performs immediate actions of EOP-TRIP-1		
	CRS enters EOP-TRIP-1 and directs RO and PO to implement the CAS.		
	CRS and RO perform immediate action steps of EOP-TRIP-1 and then transition to EOP-TRIP-2 based on no SI required.		
	CRS enters EOP-TRIP-2.		
<p>Evaluator's Note: CFSTs are in effect when transition out of EOP-</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
TRIP-1 occurs. STA will report to control room 10 minutes after being summoned via page to monitor CFSTs.			
	CRS directs RO and PO to implement the CAS of EOP-TRIP-2.		
Evaluator's Note: At this point, the SGs are being feed from main feedwater so there will be no AFW pumps in service until directed by CRS or requested by PO to start them.			
	PO reports NO AFW flow.		
	CRS directs starting 21 thru 23 AFW pumps as necessary. Note: It is preferred to start both motor driven AFW pumps first, but the CRS may direct AFW strategy with input from with crew.		
	PO opens 21 thru 24 AF21 (for motor driven pumps) <u>or</u> 21 thru 24 AF11 (for turbine driven) depending on which AFW pumps have been started.		
	PO stops 21 and 22 SGFPs.		
Proceed to next event after CT#1 is ensured and the crew stops both SGFPs or by direction from Lead Evaluator.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO lowers 23 AFW pump to minimum speed.		
	PO maintains AFW flow > 22 E4 lbm/hr until one SG NR level is > 9%, then maintain NR levels between 19-33%.		
<p>Evaluator's Note: Depending on the pace of the crew, the crew may determine that RCS temperature is not being controlled (step 5.2) and initiate Main Steam Line Isolation. The impact on the crew doing this would be the unavailability of steam dumps in SGTR-1 and the use of MS10s to cooldown. During validation, this alternate path did not impact the successful outcome for the crew to perform RCS cooldown in SGTR-1.</p>			
<p>5. 24 SG Tube Rupture</p>			
<p>Simulator Operator: Insert RT-4 for 24 SG Tube Rupture of 650 gpm following stopping both SGFPs.</p> <p>MALF: SG0078D 24 SGTR Final = 650 No ramp</p>			
	RO reports unexpected OHA A-6, RMS TRBL, and reports 2R53D and 2R15 in alarm, followed later by 2R41 and 2R19D in alarm.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports rapidly lowering RCS pressure and/or level.		
	CRS directs RO to initiate SI and return to EOP-TRIP-1.		
	RO initiates SI and performs immediate actions of EOP-TRIP-1		
	CRS re-enters EOP-TRIP-1.		
	CRS performs immediate actions of EOP-TRIP-1.		
	CRS directs RO and PO to implement the CAS.		
	RO reports that SEC loading is NOT complete for energized vital buses.		
	RO reports that NO available equipment failed to start.		
	PO reports that 21 and 22 AFW pumps are running.		
	If the ruptured SG is known at this point, the PO may request to close the 24AF21 and 24AF11 to isolate feed flow to the ruptured SG.		
	RO reports that not all valve groups are in safeguards positions. Reports that 24BF13 failed to close.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Simulator Operator: Ensure ET-1 is TRUE when operator depresses the close PB for 24BF13.			
	PO closes 24BF13 from console.		
	RO reports that containment pressure has remained less than 15 psig.		
	PO reports that 2RP4 does NOT indicate high steam flow coincident with low steam pressure or low-low Tavg.		
	PO reports all 4KV vital buses are energized.		
	RO reports control room ventilation is in Accident Pressurized mode.		
	RO reports 2 switchgear supply and 1 exhaust fan are running.		
	RO reports 2 CCW pumps running.		
	RO reports ECCS flow as expected for current RCS pressure.		
	PO maintains total AFW flow greater than 22E4 lbm/hr until at least one SG NR level is >9%, then maintains SG NR level 19-33%.		
	RO reports 21, 23, 24 RCPs are running.		
	RO reports RCS Tcolds are stable or tending to 547 F.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports both RTBs are open.		
	RO reports both PZR PORVs are closed.		
	RO reports 2PR6 is closed (power removed due to instrument failure) and 2PR7 is open.		
	RO reports 21, 23, 24 RCPs are running (22 RCP stopped previously).		
	RO reports both PZR spray valves are closed.		
	RO reports that RCS pressure is > 1350 psig.		
	RO maintains seal injection flow to all RCPs.		
	PO reports NO SG pressures are dropping in an uncontrolled manner or completely depressurized.		
Evaluator's Note: After stopping 22 RCP, NR levels in 22 SG may be also rising. The crew should recognize that this is due to loss of forced circulation in that RC loop and reduced steaming effect in that SG.			
	RO reports that NR level in 24 SG is rising in an uncontrolled manner.		
	CRS transitions to EOP-SGTR-1, Steam Generator Tube Rupture.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports NR levels rising in 24 SG.		
	PO reports 24MS10 is set to 1045 psig and closed.		
	PO closes 24MS167, 24MS18, 24MS7, and 24GB4.		
	PO reports 24MS167, 24MS18, and 24MS7 are closed.		
	PO reports that 21 or 23 SGs are NOT ruptured.		
	CRS dispatches operator to close 24SG 2SS339.		
	PO closes 24AF21 and 24AF11 valves.		
	CRS dispatches operator to shift gland sealing steam to alternate source IAW S2.OP-SO.GS-0001.		
	CRS determines RCS target temperature using Table B (SG press at >1000 psig = 503 F CETs).		
Evaluator' Note: Depending on the pace of the crew during EOP-TRIP-2, the crew may have determined that RCS temperature was not being controlled and initiated MSLI. <u>IF</u> this was performed, <u>THEN</u> the crew will report that <u>NO</u> steam dumps are			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>available and cooldown with intact MS10s.</p> <p>During validation using MS10's it took about 6 mins to reach CET of 503 F.</p>			
	PO reports steam dumps are available.		
	PO places steam dumps in manual, adjust demand to 0%, and then place in MS Pressure Control.		
	PO initiates RCS cooldown by adjusting MS Pressure Control to 25% to open steam dumps <u>OR</u> dump steam at maximum rate using intact MS10's. [Critical Task #2 – Part 1]		
<p>CT#2 (CT-19): Control initial RCS cooldown so that transition from EOP-SGTR-1 does not occur.</p> <p>This CT is broken down into two (2) Parts; establishing RCS cooldown and then maintaining RCS temperature.</p> <p>SAT _____ UNSAT _____</p>			
	CRS continues on in EOP-SGTR-1.		
	RO reports hottest CETs are not less than RCS cooldown target temp.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO maintains AFW flow > 22E4 lbm/hr until one SG NR level is > 9%, then maintain between 19% and 33%.		
	RO reports power is not available to both PZR PORV stop valves (2PR6 power removed due to instrument failure).		
Simulator Operator: IF requested by crew; DELETE Remote: PR34D to restore power to 2PR6. Notify CRS when completed.			
	CRS may direct WCC to restore power to 2PR6 at this point or wait until directed later in the procedure.		
	RO reports both PZR PORVs are closed.		
	RO opens 2PR6 stop valve, if power restored.		
	RO resets SI, Phase A, and Phase B isolation.		
	RO opens 21 and 22 CA330s.		
	PO resets each SEC and associated control centers.		
	RO reports RHR suction is aligned to the RWST.		
	RO stops both RHR pumps.		
	RO reports hottest CETs are not less than		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RCS target temp.		
	Crew <u>waits</u> until hottest CETs are less than RCS target cooldown temp.		
	RO reports hottest CETs less than RCS target cooldown temp.		
	PO stops the cooldown by closing the steam dumps and then placing MS Pressure Control in Auto <u>OR</u> closing intact MS10's and placing in Auto. [Critical Task #2 - Part 2]		
<p>Terminate the scenario when the RCS cooldown is stopped or by direction from Lead Evaluator.</p>			
<p>Following steps are for the RCS depressurization with normal PZR spray:</p>			
	CRS directs PO to dump steam to maintain CET temp. less than required.		
	PO reports ruptured SG pressure is stable or rising.		
	RO reports RCS subcooling is greater than 20 F.		
	RO reports normal PZR spray is available.		
	CRS reviews depressurization termination criteria IAW Table D.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO fully opens both PZR spray valves.		
	RO reports PZR spray is reducing RCS pressure.		
	RO reports when depressurization termination criteria is met IAW Table D.		
	RO closes both PZR spray valves.		

VI. 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-0003, Hot Standby to Minimum Load ✓
- F. S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction ✓
- G. S2.OP-SO.MS-0002, Steam Dump System Operation
- H. S2.OP-AB.SW-0003, Service bay Leak ✓
- I. S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality ✓
- J. 2-EOP-TRIP-1, Reactor Trip or Safety Injection ✓
- K. 2-EOP-TRIP-2, Reactor Trip Response ✓
- L. 2-EOP-SGTR-1, Steam Generator Tube Rupture ✓

**ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY**

MODE: 2 POWER: 3% RCS BORON: 1648 MWe 0

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

N/A

REACTIVITY PARAMETERS

- Control Bank D at 130 steps.
- Core burnup 500 EFPH.
- 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.
- S2.OP-SO.MS-0002, Steam Dump System Operation (5.4.1)
- Monitoring Tavg > 541 F once per 30 minutes due to RC Loop Tavg – Tref Deviaton console alarm in (extra NCO to log).
- Power ascension to 10% using control rods and steam dumps, and enter Mode 1.
- Reactor Engineering is standing by to support power ascension.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.

PRIMARY:

- 21 Charging pump in service due to 23 Charging pump C/T for troubleshooting of flow oscillations with fluid drive.

SECONDARY:

- On main feedwater using 21 SGFP; 22 SGFP O/S in standby

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 2 POWER: 3% RCS BORON: 1648 MWe 0

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

N/A

REACTIVITY PARAMETERS

- Control Bank D at 130 steps.
- Core burnup 500 EFPD.
- 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.
- S2.OP-SO.MS-0002, Steam Dump System Operation (5.4.1)
- Monitoring Tav_g > 541 F once per 30 minutes due to RC Loop Tav_g – Tref Deviaton console alarm in (extra NCO to log).
- Power ascension to 10% using control rods and steam dumps, and enter Mode 1.
- Reactor Engineering is standing by to support power ascension.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.

PRIMARY:

- 21 Charging pump in service due to 23 Charging pump C/T for troubleshooting of flow oscillations with fluid drive.

SECONDARY:

- On main feedwater using 21 SGFP; 22 SGFP O/S in standby

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 ECG 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: 16-01 ESG-1 REVIEWER: Scott Dimela

Initials Qualitative Attributes

- | | |
|--|--|
| SC
SC
SC
SC

SC
SC
SC
SC
SC
SC
SC | <ol style="list-style-type: none">1. The scenario has clearly stated objectives in the scenario.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.3. The scenario consists mostly of related events.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 point5. 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.6. The events are valid with regard to physics and thermodynamics.7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.8. The simulator modeling is not altered.9. All crew competencies can be evaluated.10. The scenario has been validated.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.12. ESG-PSA Evaluation Form is completed for the scenario at the applicable facility. |
|--|--|

ATTACHMENT 4
SIMULATOR SCENARIO REVIEW CHECKLIST

Minimum Quantitative Attributes (NUREG 1021, R11, Form ES-301-4)

Malfunction ID	Total Malfunctions	Malfunctions After EOP entry	Abnormal Events	Major Transient	EOPs used	Critical Task	Tech Specs exercised	Contingency EOPs
PR0016A	1		1		TRIP-1 TRIP-2 SGTR-1	2	Yes	No
SW0216A	1		1	Yes				
RC007B	1		1	1				
SG0078D	1	1						
VL0026	1	1						
Total Number of Events	5	2	3	1	3	2	2	0
Min Number of Events	5	1-2	2-4	1-2	1-2	≥2	2 per set	1 per set
Verified By								

Comments: See NRC-3 for Contingency EOP used (FRSM-1)

ATTACHMENT 5
ESG CRITICAL TASKS

16-01 ESG-1

CT-1 (Site Specific): Stop 22 RCP and close 22CV104 within 3-5 minutes after stopping 22 RCP in EOP-TRIP-1.

- **Safety Significance:**

Failure to close the seal leakoff flow valve (CV104) when required could result in damage to the backup #2 seal and loss of RCS inventory. When seal leakoff is greater than 6 gpm the operator must close the associated CV104 within 3-5 minutes. The 3 minutes allows for the RCP to coastdown and enable static conditions for the #2 seal to perform its backup function. The 5 minutes minimizes RCS leakage from the damaged seal to maintain RCS inventory.

- **Initiating Cues:**

- Seal leakoff flow indication or console alarm

- **Measurable Performance Standard:**

- Seal leakoff valve (CV104) position indicates closed
- RCP breaker position indicates open

- **Performance Feedback:**

- Report from operator that affected RCP is stopped and seal leakoff is isolated.

CT-2 (CT-19): Control initial RCS cooldown so that transition from EOP-SGTR-1 does not occur.

Note: This CT is broken down into two (2) parts that include establishing RCS cooldown and then maintaining RCS temperature.

Note to Evaluator: CT numbers in parentheses are the corresponding Westinghouse ERG Rev. 2- based Critical Tasks procedure WCAP-17711-NP

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
Y	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
Y	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.

I. OBJECTIVES

- A. Given the indications of a reactor coolant system (RCS) malfunction or leak, perform actions as the nuclear control operator to RESPOND to the malfunctioning accordance with S2.OP-AB.RC-0001.
- B. Given the indications of a reactor coolant system (RCS) malfunction or leak, DIRECT the response to the malfunction in accordance with S2.OP-AB.RC-0001.
- C. 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 2-EOP-TRIP-1.
- D. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with 2-EOP-TRIP-1.
- E. 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.
- F. Given indication of a safety injection, DIRECT the response to the safety injection in accordance with the approved station procedures.
- G. 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
- H. 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.
- I. Given indication of a loss of coolant accident (LOCA), DIRECT the immediate response to the LOCA in accordance with the approved station procedures.
- J. 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.

II. MAJOR EVENTS

1. 21MS167 drifts from full open position
2. 22 RC Loop Tavg Channel Fails High
3. RCS leak inside Containment (35 gpm)
4. Large Break LOCA (LBLOCA)
5. Both trains of SI fail to auto actuate and one keyswitch fails to operate
6. 2B SEC fails to actuate on SI signal

III. SCENARIO SUMMARY

- A. The crew will take the watch with the unit at 40% power, BOL. 23 condensate pump and all heater drain pumps are out of service due to plant power level. 22 SW pump C/T for pump packing replacement; 23B CW pump is C/T for traveling screen repair; 2A EDG is C/T for governor inspection and output breaker swap.
- B. After the crew assumes the watch, 21MS167 will drift from the full open position and respond to **OHA G-34; 21-24 MS167 VALVES NOT FULL OPEN**. The crew will take actions IAW **OHA ARP S2.OP-AR.ZZ-0007**, and re-opens 21MS167.
- C. After the 21MS167 malfunction has been addressed, 22 RC Loop Tavg Channel will fail high. The crew verify no turbine runback in progress and place Rod Control in Manual to stop rod motion. The crew will respond IAW **S2.OP-AB.ROD-0003**, Continuous Rod Motion. The crew will restore Tavg to program, remove the failed channel from service, and then restore Rod Control to Auto. The CRS will evaluate Technical Specifications. **[Tech Spec Exercised]**
- D. After the 22 Tavg failure has been addressed, a 35 gpm RCS leak inside containment will occur. The crew will enter **S2.OP-AB.RC-0001**, Reactor Coolant System Leak, and diagnose the leak. The crew will transfer to a centrifugal charging pump, reduce letdown to a 45 gpm orifice, and estimate the leak rate. The CRS will evaluate Tech Specs. **[Tech Specs exercised]**
- E. The CRS will determine a unit shutdown is required based on the RCS leak exceeding Tech Spec limits. The crew will initiate an orderly unit shutdown.
- F. After the orderly unit shutdown has commenced, the RCS leak will worsen to a **large break LOCA**. The crew will diagnose deteriorating primary conditions. When it is determined that PZR level will be unable to be maintained >17% or leak exceeds makeup capability, the crew will take the CAS action in S2.OP-AB.RC-0001 to trip the reactor, confirm the trip, and initiate Safety Injection.
- G. During performance of initiating Safety Injection (SI); the operator will be unable to manually actuate one train of SI using the keyswitch; the other train keyswitch will function and allow manual actuation of both trains of SI. **[CT#1]**
- H. The crew will perform plant stabilization and diagnostics in **EOP-TRIP-1**, Reactor Trip or Safety Injection. While in EOP-TRIP-1, the 2B SEC will fail to actuate following SI actuation. The crew will manually start safeguards loads for 2B bus using Table A.

- I. The crew will transition to **EOP-LOCA-1**, Loss of Reactor Coolant, when directed in EOP-TRIP-1.
- J. The crew will perform actions in EOP-LOCA-1 until the RWST level low alarm actuates at 15.2 feet; then transition to **EOP-LOCA-3** to transfer to cold leg recirculation. **[CT#2]**
- K. The scenario will be terminated when the transfer to cold leg recirculation is completed in EOP-LOCA-3.

IV. INITIAL CONDITIONS

___ IC-231

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	22 SW Pump C/T
___ 9	23B CW pump C/T
___ 10	2A EDG C/T
___ 11	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: kbd12an1 //21MS167 HYDRAULIC OPEN COMMAND: DMF VL0420 PURPOSE: <update as needed>
	2	EVENT ACTION: HWKA501DOA //W Var bind for ZDIPANEL(1615) COMMAND: DOR ka701doa PURPOSE: <update as needed>
	3	EVENT ACTION: HWKA701DOA //W Var bind for ZDIPANEL(1669) COMMAND: DOR ka501doa PURPOSE: <update as needed>
	4	EVENT ACTION: MONP254 <10. //CONTROL BANK C GROUP POSITION COMMAND: PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	RC0002 RCS LEAK INTO CONTAINMENT (equiv to 0-4 inches)	N/A	0	00:02:00	RT-3	35
02	RC0001D RCS RUPTURE OF RC LOOP 24	N/A	N/A	N/A	RT-4	
03	RP0274A AUTO SI FAILS TO ACT, TRN A	N/A	N/A	N/A	N/A	
04	RP0274B AUTO SI FAILS TO ACT, TRN B	N/A	N/A	N/A	N/A	
05	VL0420 21MS167 Fails to Position (0-100%)	N/A	N/A	N/A	RT-1	95
06	RC0014B 22 HOT LEG RTD AVG SUMMATOR FAILS	N/A	N/A	N/A	RT-2	650

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
01	DG02D DEENERGIZE "B" SEC CABINET	N/A	N/A	N/A	ET-4	YES
02	SW27D 22 SW PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
03	SW28D 22 SW PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED
04	CW03B 23B CIRC WATER PUMP CONTROL PWR BKR 2CW5BD	N/A	N/A	N/A	N/A	OFF
05	DG10D 2A DIESEL GEN LOCKED OUT	N/A	N/A	N/A	N/A	YES
06	DG11D 2A DG BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
07	DG12D 2A DG BKR RACK OUT	N/A	N/A	N/A	N/A	TAGGED

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
___ 01	A701 B DI KA701DOA TRAIN 'B' - SI OPERATE KEYSWITCH	N/A	N/A	N/A	N/A	OFF
___ 02	A501 B DI KA501DOA TRAIN 'A' - SI OPERATE KEYSWITCH	N/A	N/A	N/A	N/A	OFF

OTHER CONDITIONS:

Description

___ 1.

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. CRS please inform me when your crew is ready to assume the shift".
- D. 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
<p>1. 21MS167 drifts from full open position</p>			
<p>Simulator Operator: Insert <u>RT-1</u> on direction from Lead Evaluator. MALF: VL0420 21 MS167 fails to position (0-100%) Final = 95</p>			
<p>Evaluator's Note: As soon as malfunction is entered OHA G-34 overhead alarm will come in.</p>			
	<p>PO announces unexpected OHA G-34, 21-24 MS167 VALVES NOT FULL OPEN, and refers to ARP.</p>		
	<p>PO reports CRT and board indication of 21MS167 not being full open.</p>		
	<p>CRS directs PO to open 21MS167 per OHA ARP.</p>		
<p>Simulator Operator: Ensure <u>ET-1</u> is TRUE when 21MS167 open PB is depressed. This deletes MALF VL0420.</p>			
	<p>PO depresses open PB and reports 21MS167 has fully opened.</p>		
	<p>CRS directs initiation of notification to</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	investigate and correct cause of the alarm.		
Evaluator's Note: Tech Spec 3.7.1.5 for MSIV operability is not applicable. MSIV drift is not uncommon and declaring the MSIV inoperable is not warranted. The operability concern would be related to its not being able to be fast close (steam assist).			
2. 22 RC Loop Tavg Channel Fails High			
Simulator Operator: Insert RT-2 on direction from Lead Evaluator. MALF: RC0014B LOOP 22 HOT LEG RTD AVG SUMMATOR FAILS HI/L Final = 650			
	RO reports Tavg/Tref deviation and rods stepping in as not expected.		
	RO reports no turbine runback in progress and places rod control in manual.		
	RO reports 22 RC Tavg Loop has failed high.		
Evaluator's Note: RO may request to take manual control of Master Flow Controller prior to direction provided in S2.OP-AB.ROD-0003.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS concurs with rod control being placed in manual.		
	RO places rod control in manual and reports rod motion stopped.		
	CRS enters S2.OP-AB.ROD-0003, Continuous Rod Motion.		
	RO reports unexpected OHA alarms for E-8 and E-16 Rod Insertion Lo and Lo-Lo.		
	RO reports various 2CC2 console alarms in for: RC Loop Tavg Deviation, Tavg-Tref Deviation, RC Tavg Hi or Lo-Lo.		
	CRS confirms control rods are in manual and rod motion has stopped.		
	CRS directs RO to adjust rods in manual to maintain Tavg within 1.5 deg of program.		
	RO reports rod motion was in the inward direction and a NIS channel has NOT failed high.		
	CRS directs RO to stop any dilution in progress.		
	RO reports 22 RC Loop Tavg channel has failed High.		
	CRS directs RO to return PZR level to program IAW Attachment 2.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO places Charging System Master Flow Controller in manual if not previously performed.		
	RO adjusts charging flow to restore PZR level to program.		
	RO defeats 22 loop Reactor Coolant Differential Temperature and 22 loop Reactor Coolant Average Temperatures on 2CC2.		
	RO selects channel other than 22 loop for Reactor Coolant Differential Temperature and Reactor Coolant Average Temperature.		
	When PZR level has been restored to program, RO places Charging System Master Flow Controller in Auto.		
	RO reports control rods are above the rod insertion limit.		
	RO restores control rods to ARO position		
	RO places rod control in <u>Auto</u> after ensuring Tav _g is within 1.5 degrees of Tref.		
	CRS enters TSAS(s) 3.3.1.1 Action 6 (6 hour LCO) and 3.3.2.1.b Action 19* (6 hour LCO).		
	CRS initiates S2.OP-SO.RPS-0002 to place 22 RC Loop Tav _g in tripped condition.		

Proceed to next event after the

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Tavg channel has been defeated or at Lead Evaluators direction.			
3. RCS Leak Inside Containment			
Simulator Operator: Insert RT-3 on direction from Lead Evaluator MALF: RC0002 RCS Leak into Containment. Final Value: 35 (30-35 gpm) Ramp = 2 minutes			
	RO reports that charging flow is rising and PZR level is lowering slowly.		
	Crew reports reading on 2R11A containment radiation monitor is rising or in warning/alarm.		
	RO reports unexpected OHA C-2, CNTMT SUMP PMP START, when it occurs.		
	CRS enters S2.OP-AB.RC-0001, Reactor Coolant System Leak.		
	CRS directs initiation of Attachment 1 CAS.		
	RO reports RCS temperature > 350°F and the Unit is in Mode 1.		
	RO reports PZR level is lowering.		
	CRS enters S2.OP-AB.RAD-0001, Abnormal Radiation after OHA A-6 unexpected annunciation.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports that NO centrifugal charging pumps are running.		
	RO transfers to a centrifugal charging pump IAW Step 3.14, and raises charging flow to stabilize PZR level.		
	PO reduces letdown flow to minimum by opening 2CV3, maintaining letdown pressure ~300 psig with 2CV18 in manual, then closing the open 75 gpm orifice and returning 2CV18 to auto.		
	RO stabilizes PZR level and estimates leak rate.		
	CRS initiates S2.OP-ST.RC-0008, Reactor Coolant System Water Inventory Balance.		
	CRS contacts Rad Pro for recommendation on CFCU operation.		
Role Play: If Rad Pro is contacted about CFCUs; state Rad Pro recommends placing 2 CFCU's in Low Speed and 2 CFCU's in High Speed.			
	PO places 2 CFCU's in Low Speed and 2 CFCU's in High Speed.		
	CRS initiates actions to locate and isolate the leak IAW Attachment 2.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>4. Orderly Unit Shutdown due to RCS leak exceeding Tech Spec</p>	<p>CRS enters TSAS 3.4.7.2.b action b for RCS leakage (4 hour LCO) and 3.6.1.4 (1 hour LCO) for containment pressure IF it has reached 0.3 psig.</p>		
<p>Role Play: After RCS leakage Tech Spec has been identified, IF CRS does <u>not</u> initiate a power reduction to bring the unit off-line, call Control Room as Operations Director and instruct the CRS to initiate a 30% per hour load reduction to 20% in preparation for taking Unit 2 offline to investigate and repair the RCS leak.</p>			
<p>Lead Evaluator may proceed to next event (LBLOCA) if observing unit shutdown is not necessary.</p>			
	<p>CRS determines that an orderly unit shutdown is required based on RCS leak exceeding TS limits.</p>		
	<p>CRS enters S2.OP-AB.LOAD-0001 (crew may also use S2.OP-IO.ZZ-0004).</p>		
	<p>RO develops reactivity plan for shutdown and initiates boration.</p>		
	<p>PO initiates turbine load reduction to 20% at specified rate from CRS.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Proceed to next event once the unit shutdown has commenced or at direction from Lead Evaluator.			
5. Large Break LOCA			
Simulator Operator: Insert RT-4 at direction from Lead Evaluator. MALF: RC0001D RCS LOOP RUPTURE OF RC LOOP 24			
	RO reports the Reactor has tripped.		
	RO performs immediate actions for EOP-TRIP-1.		
	RO reports a demand for Safety Injection but SI did NOT Auto actuate.		
Simulator Operator: Ensure ET-3 is TRUE if Train B SI keyswitch is operated OR ET-2 TRUE if Train A keyswitch is operated. This deletes Overrides A501 Train A SI or A701 Train B SI.			
Simulator Operator: Ensure ET-4 is TRUE following Rx Trip. This inserts REMOTE DG02D to deenergize the 2B SEC cabinet.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>6. SI fails to auto actuate and one train keyswitch fails to manually actuate.</p>			
	<p>RO reports that SI failed to Auto actuate and Manually initiates Safety Injection using keyswitch. RO reports that one train of SI failed to manually initiate and goes to other train keyswitch to initiate SI. RO reports SI initiated on both trains. [Critical Task #1]</p>		
<p>CT#1 (CT-2): Manually initiate SI before transition to EOPs; LOCA-1, FRTS-1, or TRIP-2.</p> <p>SAT _____ UNSAT _____</p>			
	<p>RO continues Immediate Actions of EOP-TRIP-1;</p> <ul style="list-style-type: none"> - Trips the Main Turbine - Reports at least one 4KV Vital bus energized. - Reports SI initiated. 		
	<p>CRS enters EOP-TRIP-1.</p>		
	<p>CRS and RO perform immediate actions of EOP-TRIP-1.</p>		
	<p>CRS directs RO and PO to implement the</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment	
<p>7. 2B SEC fails to actuate</p>	CAS.			
	PO requests permission to throttle AFW flow to no less than 22E4 lbm/hr.			
	RO reports that SEC loading is NOT complete for energized vital buses.			
	RO reports that available equipment on 2B bus failed to start.			
	RO blocks 2B SEC.			
	RO resets 2B SEC.			
	<p>Role Play: The CRS may dispatch NEO to locally check the breaker for 2B SEC and then direct the breaker to be opened to ensure the SEC is deenergized. IF contacted, THEN, report back after 1 minute as the NEO that the instrument power breaker for the 2B SEC is in the tripped condition and the SEC looks to be deenergized.</p>			
		<p>CRS directs RO/PO in starting safeguards loads for 2B bus using Table A.</p>		
	PO reports that 21 and 22 AFW pumps are running.			
	RO reports that NOT all valve groups in			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	Table B are in safeguards positions. PO reports that 2SW26 is NOT closed.		
	PO manually closes 2SW26.		
	PO reports that 21 and 22 CA330's are closed.		
	RO reports that containment pressure has NOT remained less than 15 psig.		
	CRS directs initiation of Phase B and Spray actuation, if not already auto initiated.		
	RO reports that both CS pumps started.		
	RO initiates Main Steam Isolation, if not already auto initiated. (Note: During validations MSLI Auto initiated post-trip)		
	RO stops all RCPs.		
	RO reports that all valve groups in Table D are in the safeguards positions.		
	PO reports that 2RP4 does NOT indicate high steam flow coincident with low steam pressure or low-low Tavg. MSLI previously initiated.		
	PO reports all 4KV vital buses are energized.		
	RO reports control room ventilation is in Accident Pressurized mode.		
	RO reports 2 switchgear supply and 1 exhaust fan are running.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 2 CCW pumps running.		
	CRS reads CAS to RO to notify CRS when RWST level lo alarm actuates at 15.2 feet.		
	RO reports RHR is NOT aligned for Cold Leg Recirc		
	RO reports charging flow is > 100 gpm.		
	RO reports that RCS pressure is < 1540 psig (1660 psig adverse)		
	Per the CAS, IF RCS 1500 psig and BIT flow is established at this point, the RO closes the charging pump minflow valves.		
	RO reports that SI flow is > 100 gpm.		
	RO reports RCS pressure is < 300 psig (420 psig adverse).		
	RO reports that RHR flow is at least 300 gpm.		
	PO maintains total AFW flow greater than 22E4 lbm/hr until at least one SG NR level is >9% (15% Adverse), then maintains SG NR level 19-33%.		
	RO reports NO RCPs are running.		
	RO reports RCS Tcolds are NOT stable or tending to 547 F.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports that RCS Temperature is NOT > 547 F.		
	CRS directs PO to stop dumping steam.		
	PO maintains total AFW flow greater than 22E4 lbm/hr until at least one SG NR level is >9% (15% Adverse), then maintains SG NR level 19-33%.		
	RO reports that RCS temperature is NOT being controlled and that MSLI actuation has been previously initiated.		
	RO reports both RTBs are open.		
	RO reports both PZR PORVs are closed.		
	RO reports both PZR PORV stop valves are open.		
	RO reports NO RCPs are running.		
	RO maintains seal injection flow to all RCPs.		
	PO reports NO SG pressures are dropping in an uncontrolled manner or completely depressurized.		
	RO reports that NO SG NR levels are rising in an uncontrolled manner.		
	RO reports that 2R15, 2R19A-D, and 2R46A-D are NOT in warning or alarm.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO/PO reports ALL channels in Table F are in alarm or rising.		
	CRS transitions to EOP-LOCA-1, Loss of Reactor Coolant.		
	STA begins monitoring CFSTs.		
	STA reports RED path for Thermal Shock.		
	CRS transitions to 2-EOP-FRTS-1.		
EOP-FRTS-1 actions start here:			
	RO reports RCS pressure NOT greater than 300 psig (420 psig adverse).		
	RO reports that RHR flow is at least 300 gpm on 21 or 22 SJ49 cold leg injection meters.		
	Crew returns to procedure in effect which was EOP-LOCA-1.		
EOP-LOCA-1 actions start here:			
	CRS directs RO to maintain seal injection flow to all RCPs.		
	PO reports NO SG pressures are dropping in an uncontrolled manner or completely depressurized.		
	CRS directs PO to maintain AFW feed flow >		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	22E4 lbm/hr until one SG NR level is > 9% (15% adverse), then maintain NR levels between 19% and 33%.		
	RO reports that NO SG NR levels are rising in an uncontrolled manner.		
	RO reports that 2R15, 2R19A-D, and 2R46A-D are NOT in warning or alarm.		
	RO resets SI, Phase A and Phase B Isolation.		
	RO opens 21 and 22 CA330s.		
	PO resets each SECs and reports 2A and 2C SECs reset and 2B SEC is deenergized.		
	RO resets SGBD Sample Isolation Bypass and opens 21-24SS94s.		
	CRS directs chemistry to sample 21-24SGs for boron and activity.		
<p>Evaluator's Note: During validations, around this time the crew received the RWST Low Level Alarm and transitioned to EOP-LOCA-3. <u>IF</u> so,</p> <p>Mark time RWST Low Level Alarm actuated for CT#2:</p> <p>Time: _____:_____:_____</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports both PZR PORVs are closed and Block Valves open.		
	RO reports RCS subcooling is NOT > 0°F.		
	RO reports both RHR pumps are NOT aligned to cold leg recirculation..		
	RO reports that RHR flow is > 300 gpm.		
	PO reports that all vital buses are energized from offsite power.		
	PO stops all EDGs one at a time until the DG is verified to be reset prior to stopping the next DG.		
<p>Role Play: At this time only 2C EDG is running. IF contacted by crew to dispatch NEO to EDGs to reset each DG; then call back after 1 minute and report when you're ready to stop the diesel, THEN wait 1 minute and report that the shutdown EDG is reset.</p> <p>Use of S2.OP-SO.DG-0001, 0002, and 0003 section 5.11.1, Diesel Generator Shutdown Checks is used to align for auto start.</p>			
	RO reports both RHR pumps and SJ44s available.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports that there are NO Aux Bldg radiation detectors in Table C in warning or alarm.		
	CRS consults with TSC about obtaining required RCS, SG and Cntmt samples and equipment availability to assist in long term recovery.		
	CRS dispatch operators to close 2CC37 and 2CC48.		
	PO reports 23 AFW pump is NOT needed and trips and stops 23 AFW pump.		
	CRS dispatches NEO to reset the 2MS52 trip valve when the 23 AFW pump auto start signals are cleared.		
	RO reports both RHR pumps are injecting to RCS and RCS pressure < 300 psig (420 psig adverse).		
Evaluator's Note: Depending on the pace of the crew, they may reach step 19 with the RWST low level alarm not actuated and return to step 16.			
	RO reports that RWST level low alarm has actuated		
	CRS transitions to EOP-LOCA-3 to transfer to Cold Leg Recircualtion.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
EOP-LOCA-3 actions start here:			
Evaluator mark time of RWST low level alarm: Time: ____:____:____			
	CRS does not implement any FRPs during LOCA-3 performance until step 16 is reached.		
	RO reports containment sump >62% lights lit and depresses open sump auto arm PBs for 21 and 22 SJ44.		
	PO removes lockouts for 2SJ67, 2SJ68, and 2SJ69.		
CT#2 (CT-36): Transfer to cold leg recirculation before RWST level drops below 1.2 feet.			
Evaluator's Note: This CT is broken down into three (3) parts.			
	RO reports 21 and 22 SJ44s are open.		
	RO reports that both RHR pumps are running.		
	RO closes 2SJ69. [Critical Task #2-Part 1]		
CT#2 (Part 1) – Initiate close on			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>2SJ69 in ≤ 3.7 minutes of RWST low level alarm.</p> <p>Mark time of 2SJ69 closure initiation:</p> <p>Time: ____:____:____</p> <p>SAT ____ UNSAT ____</p>			
	PO reports SI and each SECs are reset.		
	RO reports that both CS pumps are running.		
	RO stops 22 CS pump. [Critical Task #2-Part 2]		
<p>CT#2 (Part 2) – Stop one containment spray pump in ≤ 5.5 minutes from RWST low level alarm.</p> <p>Time: ____:____:____</p> <p>SAT ____ UNSAT ____</p>			
	RO closes 21 and 22RH19s.		
	RO stops 23 Charging pump.		
	Using Table B, Crew selects flowpath for all 4KV vital buses are energized and goes to Step 11 for Recirc Alignment.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports that there are NO vital buses energized by the DGs.		
	RO reports at least 3 SW pumps running, both CCHXs in service, and at least 2 CCW pumps running.		
	RO reports 21 and 22CC16s are open.		
	RO closes 2SJ67 and 2SJ68, <u>and</u> reports 2RH1 and 2RH2 are closed.		
	RO reports that 22 RHR is running.		
	RO opens 22SJ45.		
	RO reports that 21 RHR is running.		
	RO opens 21SJ45.		
	RO reports 21 and 22SJ113s are open.		
	RO reports 21 and 22 charging pumps running, and 21 and 22 SI pumps running.		
	PO removes lockout from 2SJ30.		
	RO closes 2SJ30, 2SJ1, and 2SJ2.		
	RO places 21RH29 and 22RH29 in manual and ensures closed (Step 15). [Critical Task #2-Part 3]		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>CT#2 (Part 3) – Complete transfer to cold leg recirc (LOCA-3 Step 15 is complete) in ≤ 11.2 minutes from RWST low level alarm.</p> <p>Time: ____:____:____</p> <p>SAT ____ UNSAT ____</p>			
<p>Terminate scenario when CT#2 has been evaluated <u>or</u> at Lead Evaluators direction.</p>			

VI. 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.ROD-0003, Continuous Rod Motion
- G. S2.OP-AB.RC-0001, Reactor Coolant System Leak
- H. S2.OP-AB.LOAD-0001, Rapid Load Reduction
- I. S2.OP-IO.ZZ-0004, Power Operation
- J. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
- K. 2-EOP-LOCA-1, Loss of Reactor Coolant
- L. 2-EOP-LOCA-3, Transfer to Cold Leg Recirculation

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 40% RCS BORON: 1348 MWe 410

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

NA

REACTIVITY PARAMETERS

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

- 3.8.1.1.b, action b, for 2A EDG, expires in 60 hours.

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- Power ascension on hold due to Main Turbine Valve Testing issues.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

- Unit 1 and Hope Creek at 100% power.
- No penalty minutes in the last 24 hrs.

PRIMARY:

- 2A EDG C/T for governor inspection and output breaker swap.

SECONDARY:

- Polisher in service
- Blowdown at 35K per loop aligned to flash tank/23 condenser
- 23 CN pump and all Heater Drain pumps out of service.

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

- 22 SW pump C/T for pump packing replacement.
- 23B CW pump C/T for traveling screen repair.

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 ECG 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: 16-01 ESG-2 **REVIEWER:** *Scott Dimele*

Initials	Qualitative Attributes
<i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i>	1. The scenario has clearly stated objectives in the scenario.
	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.
	3. The scenario consists mostly of related events.
	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
<i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i> <i>SD</i>	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.
	6. The events are valid with regard to physics and thermodynamics.
	7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
	8. The simulator modeling is not altered.
	9. All crew competencies can be evaluated.
	10. The scenario has been validated.
	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.
	12. ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4
SIMULATOR SCENARIO REVIEW CHECKLIST

Minimum Quantitative Attributes (NUREG 1021, R11, Form ES-301-4)

Malfunction ID	Total Malfunctions	Malfunctions After EOP entry	Abnormal Events	Major Transient	EOPs used	Critical Task	Tech Specs exercised	Contingency EOPs
VL0420	1		1		TRIP-1 LOCA-1 LOCA-3	2		No
RC0014B	1		1				Yes	
RC0002	1		1				Yes	
RC0001D	1			1				
RP0274A RP0274B A701 A501	1	1						
DG02D	1	1						
Total Number of Events	6	2	3	1	3	2	2	0
Min Number of Events	5	1-2	2-4	1-2	1-2	≥2	2 per set	1 per set
Verified By								

Comments: See NRC-3 for Contingency EOP used (FRSM-1)

ATTACHMENT 5
ESG CRITICAL TASKS

16-01 ESG-2

CT#1 (CT-2): Manually actuate SI before transition to EOPs; LOCA-1, FRTS-1, or TRIP-2

CT#2 (CT-36): Transfer to cold leg recirculation before RWST level drops below 1.2 feet.

Note: This CT is broken down into three (3) parts:

1. Initiate close on 2SJ69 in ≤ 3.7 minutes of RWST low level alarm.
2. Stop one containment spray pump in ≤ 5.5 minutes from RWST low level alarm.
3. Complete transfer to cold leg recirc (LOCA-3 Step 15 is complete) in ≤ 11.2 minutes from RWST low level alarm.

Note to Evaluators: CT numbers in parentheses are the corresponding Westinghouse ERG Rev. 2- based Critical Task procedure WCAP-17711-NP

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	N	Station Black Out
Y	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
Y	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

Complete this evaluation form for each ESG.