OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Reactor Coolant System

TASK: Perform a Manual RCS Leakrate Calculation

TASK NUMBER: N0020200101

JPM NUMBER: 08-01 NRC RO Admin A1-1.

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.18

IMPORTANCE FACTOR: 3.6

APPLICABILITY:	**RO**	**SRO**

EO [ ] **RO** [X] **STA** [ ] **SRO** [ ]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S1.OP-ST.RC-0008, Rev. 23, S1.OP-ST.RC-0004, Rev. 14

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 25 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **G Gauding** **Instructor** **Date:** **03/1610**

Validated By: **S Harris** **SME or Instructor** **Date:** **03/18/10**

Reviewed By: Peter Harris **Training Department** **Date:** 3-26-2010

Approved By: E R **Operations Representative** **Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Reactor Coolant System

TASK: Perform a Manual RCS Leakrate Calculation

TASK NUMBER: **N0020200101**

INITIAL CONDITIONS: Salem Unit 1 is operating at 100 power, steady state. A daily RCS leakrate is in progress IAW S1.OP-ST.RC-0008, Reactor Coolant System Water Inventory Balance. The procedure has been completed through Step 5.1.14. The Initial and Final times for obtaining data are 0800 and 1000 respectively.

- The Total Corrected Volume Leak Rate obtained from the Plant Computer during performance of Step 5.1.14 is 3.0 gpm.
- Final PRT level is 12.5%.
- Final RCDT level is 58%.

There is NO Identified RCS Leakage inside OR outside containment, nor is there any Identified RCS leakage to the ECCS Accumulators.

INITIATING CUE:

Beginning with Step 5.1.15, complete the RCS Leak Rate calculation. Return this JPM and all procedures to the Evaluator when you have completed Step 5.1.21. Any steps in S1.OP-ST.RC-0008 regarding control console operations or contacting chemistry may be initialed as completed when encountered.

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. **Complete steps 5.1.15-5.1.20, with Attachments 1 and 3 filled out IAW key.**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Reactor Coolant System
TASK: Perform a Manual RCS Leakrate Calculation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide Candidate with a marked up copy of S1.OP-ST.RC-0008, Rev. 23, Reactor Coolant System Water Inventory Balance, and a calculator.			
		Perform Steps 5.1.15 through 5.1.21 (initiating cue)			
	5.1.15	**RECORD** Leak Rate results on Attachment 3, Section 1.0	Candidate records **3.0** on Attachment 3, Section 1.0.		
*	5.1.6	IF the PRT AND RCDT are NOT returned to service, THEN **RECORD** Final Data on Attachment 1, Sections 2.0 and 4.0.	Candidate records Final Data on Attachment 1, Sections 2.0 and 4.0. (as per key) Data recorded is: Section 2.0: PRT Leak Rate Final Data (B) PRT Level **12.5** Time **1000**		
*	5.1.6 cont		Section 4.0: RCDT Leak Rate Final Data (B) Level **58** Time **1000**		

OPERATOR TRAINING PROGRAM NAME: _____
JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: Reactor Coolant System
TASK: Perform a Manual RCS Leakrate Calculation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.17	**PLACE** 1CV35, VCT 3 WAY INLET VALVE, in AUTO.	Candidate initials step as directed in Initiating Cue.		
	5.1.18	**OPERATE** the Primary Water Pumps as required to support current plant evolutions.	Candidate initials step as directed in Initiating Cue.		
	5.1.19	**NOTIFY** Chemistry that all sampling may resume.	Candidate initials step as directed in Initiating Cue.		
*	5.1.20	**COMPLETE** Attachment 1, PRT and RCDT Data	Candidate completes Attachment 1 PRT data: Difference (B-A) **267.3 gal** **120 min** Total Volume Change **267.3 / 120= 2.228** On Attachment 1, Section 1.0, there should be a **2%** level change between 10-12% (**211.4** gal) and **0.5%** level change between 12-14% (**55.9 gal),** with a TOTAL of **267.3 gal.**		

OPERATOR TRAINING PROGRAM NAME: _____
JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Reactor Coolant System**
TASK: **Perform a Manual RCS Leakrate Calculation**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.20 cont		Candidate completes Attachment 1 RCDT Data: Difference (B-A) **17.5 gal** **120 min** Total Volume Change **17.5 / 120= 0.15** On Attachment 1, Section 3.0, there should be a **3%** level change between 54-57% (**13.2** gal) and **1.0%** level change between 57-60% (**4.3 gal),** with a TOTAL of **17.5 gal.**		

OPERATOR TRAINING PROGRAM NAME: _____
JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Reactor Coolant System**
TASK: **Perform a Manual RCS Leakrate Calculation**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.21	**COMPLETE** Attachment 3, RCS Water Inventory Balance Calculation Sheet.	Candidate completes Attachment 3, RCS Water Inventory Balance Calculation Sheet: 1.0 TOTAL CORRECTED VOLUME LEAK RATE **3.0** 2.0 A. IDENTIFIED RCS LEAKAGE INSIDE CONTAINMENT **0** B. IDENTIFIED RCS LEAKAGE OUTSIDE CONTAINMENT **0** C. IDENTIFIED RCS LEAKAGE TO ACCUMULATORS **0** D. PRT INLEAKAGE **2.228** E. PRIMARY TO SECONDARY LEAK RATE **0.001** 3.0 TOTAL IDENTIFIED RCS LEAKRATE **2.229** 4.0 UNIDENTIFIED LEAK RATE A. **SUBTRACT** Line 3.0 from Line 1.0 **0.771** B. 1WR80 inleakage(*) 0.001 C. **ADD** 4A and 4B to obtain UNIDENTIFIED LEAK RATE **0.772** 5.0 RCDT INLEAKAGE (from Attachment 1, Section 4.0) **0.15** 6.0 is NA 7.0 Line 3 Leak Rate 2.229 SAT Line 4C Leak Rate 0.772 SAT Line 2E Leak Rate 2.0 (or 0.001) SAT 8.0 is filled out initially, candidate signs and dates bottom of page 3 of Attachment 3.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Reactor Coolant System**
TASK: **Perform a Manual RCS Leakrate Calculation**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			JPM is terminated when candidate returns all JPM paperwork to evaluator.		

INITIAL CONDITIONS:

Salem Unit 1 is operating at 100 power, steady state. A daily RCS leakrate is in progress IAW S1.OP-ST.RC-0008, Reactor Coolant System Water Inventory Balance. The procedure has been completed through Step 5.1.14. The Initial and Final times for obtaining data are 0800 and 1000 respectively.

- The Total Corrected Volume Leak Rate obtained from the Plant Computer during performance of Step 5.1.14 is 3.0 gpm.
- Final PRT level is 12.5%.
- Final RCDT level is 58%.

There is NO Identified RCS Leakage inside OR outside containment, nor is there any Identified RCS leakage to the ECCS Accumulators.

INITIATING CUE:

Beginning with Step 5.1.15, complete the RCS Leak Rate calculation. Return this JPM and all procedures to the Evaluator when you have completed Step 5.1.21. Any steps in S1.OP-ST.RC-0008 regarding control console operations or contacting chemistry may be initialed as completed when encountered.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Excore NIS

TASK: Perform a QPTR

TASK NUMBER: N0150020201

JPM NUMBER: 08-01 NRC RO Admin A1-2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.43

IMPORTANCE FACTOR: 4.1 (RO) ____ (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [ ]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S1.OP-ST.NIS-0002 Rev. 15 — All rev checked 03/03/10
S1.RE-RA.ZZ-0011 Rev. 279
Tech Spec 3.2.4

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 27 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 03/03/10

Validated By: W Wallace, SME or Instructor — **Date:** 03/18/10

Reviewed By: Peter Marsh, Training Department — **Date:** 3-26-2010

Approved By: Operations Representative — **Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Excore NIS

TASK: Perform a QPTR

TASK NUMBER: 1200020301

INITIAL CONDITIONS:

Unit 1 was operating at 100% power when rod 2D4 dropped fully into the core. OHA E-38, UPPER SECT DEV ABV 50% PWR annunciated and remains locked in.
Operators completed reducing power to 74% 10 minutes ago to comply with TSAS 3.1.3.1.c.3.d IAW S1.OP-AB.ROD-002 to restore Tavg to program.

INITIATING CUE:

The CRS has directed you to perform a QPTR using Manual Calculation IAW S1.OP-ST.NIS-0002.
Initial NI currents are:

	Upper Detectors	Lower Detectors
N41	195	200
N42	185	200
N43	175	170
N44	195	205

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 calculate the highest QPTR as UNSAT (N41T) with a value of 1.023.**
2. **Identify TSAS 3.2.4 for QPTR is applicable.**

OPERA', . TRAINING PROGRAM NAME: _____ _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Excore NIS**

TASK: **Perform a QPTR**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide Candidate with a blank copy of S1.OP-ST.NIS-0002, Rev. 15, Power Distribution - Quadrant Power Tilt Ratio, a copy of S1.RE-RA.ZZ-0011, Rev. 279, Tables, and a copy of Tech Spec 3.2.4.			
	2.1	**IDENTIFY** sections of this procedure that are NOT to be performed with "N/A".	Candidate N/A's Section 5.2, Attachment 1 Section 3.0, and Attachment 3.		
	3.0	**PRECAUTIONS AND LIMITATIONS**	Reads and initials PRECAUTION AND LIMITATIONS 3.1-3.5		
	5.1.1	IF one PR channel is inoperable, AND RTP is >75%, THEN...	Determines all PR channel are operable and step is NA.		
	5.1.2	**RECORD** the following data on Attachment 2 • Date • Time • Reactor Power • Reason for performing QPTR Calculation	Records current date, current time, 74% reactor power and checks OHA E-38 as reason for performance in Attachment 2		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Excore NIS**
TASK: **Perform a QPTR**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.3	**RECORD** the following data on Attachment 1: • 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 S1.RE-RA.ZZ-0011, Table 2	Records on Attachment 1: (From initial conditions) • NI channels N41-44 Upper Detector Current Readings • NI channels N41-44 Lower Detector Current Readings • 100% NI Current Values from S1.RE-RA.ZZ-0011, TABLES **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." If asked, **CUE** that all Power Range Detectors are Operable.		
*	5.1.4	**COMPLETE** Attachment 1 calculations.	For Top and Bottom Detectors: (numbers as per key for evaluator) • 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. Cue: **IV is complete** when asked for IV of calculations		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Excore NIS**
TASK: **Perform a QPTR**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	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.	Records information on Attachment 2 (as per key for evaluator) Maximum Power Tilt for N41T will be marked UNSAT at 1.023		
	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.		
*	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.	Candidate refers to provided Tech Spec 3.2.4, and determines: TSAS 3.2.4 Action a is applicable because power is > 50% and QPTR exceeds 1.02.		
	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.	Candidate describes actions required on Attachment 4 to initiate a notification, record the notification # and reason, and notify Rx Engineering.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Excore NIS**

TASK: **Perform a QPTR**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.4.1	**COMPLETE** Attachment 4, Sections 1.0 and 2.0, AND **FORWARD** completed procedure to SM/CRS for review.			
			JPM is terminated when candidate returns all JPM paperwork to evaluator.		

'NITIAL CONDITIONS:

Unit 1 was operating at 100% power when rod 2D4 dropped fully into the core. OHA E-38, UPPER SECT DEV ABV 50% PWR annunciated and remains locked in.
Operators completed reducing power to 74% 10 minutes ago to comply with TSAS 3.1.3.1.c.3.d IAW S1.OP-AB.ROD-002 to restore Tavg to program.

INITIATING CUE:

The CRS has directed you to perform a QPTR using Manual Calculation IAW S1.OP-ST.NIS-0002.
itial NI currents are:

	Upper Detectors	Lower Detectors
N41	195	200
N42	185	200
N43	175	170
N44	195	205

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Perform a peer check on an ECC using Nuclear Design Data

TASK NUMBER: 1200020301

JPM NUMBER: 08-01 ILOT NRC RO Admin 2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.2.1

IMPORTANCE FACTOR: 4.5 (RO) ____ (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [ ]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: SC.RE-RA.ZZ-0001, Rev. 10 — All rev checked 03/01/10
S2.RE-RA.ZZ-0012, Rev. 143
S2.RE-RA.ZZ-0016, Rev. 4

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 45 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 03/01/10

Validated By: S Harris, SME or Instructor — **Date:** 03/18/10

Reviewed By: Peter Harsh, Training Department — **Date:** 3-26-2010

Approved By: Operations Representative — **Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Perform a peer check on an ECC using Nuclear Design Data

TASK NUMBER: 1200020301

INITIAL CONDITIONS:

Unit 2 is in HSB at 547°F/2235 PSIG with a reactor startup planned for this shift.

Previous Critical Conditions:

- Reactor trip on 3/5/10 at 2200 after 55 days at 100% power
- 1150 ppm Boron
- 1828 EFPH
- Bank D 226

Intended Critical Conditions:

- 2200 on 3/8/10
- Bank C @ 189 steps
- Bank D @ 61 steps

Reactor Engineering is currently performing an ECC using BEACON, but the results are not available yet. Rx Engineering has provided a Predicted Critical Boron Concentration of 1275 ppm.

INITIATING CUE:

Perform a peer check on an ECC using Nuclear Design Data. This is **NOT** the required Calculation Verification.

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. Review the completed ECC calculation and identify the following errors:

a) Step 2.7.2.B sign is wrong (should be positive number) because negative value from 2.7.2.A was not used.
b) Step 2.7.3.A is wrong (should be 1397) because it was not divided by 2.
c) Step 2.7.3.B is wrong because 2.7.2.A error used in determining differential boron worth
d) Step 2.7.3.C is wrong because of c above (should be 506)
e) Step 2.7.4 is wrong (should be 1656) because of d and c above.
f) Step 2.8.3 is wrong (should be 1656) because of d and c above.

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide Candidate with a completed SC.RE-RA.ZZ-0001, Estimated Critical Conditions, and clean copy of S2.RE-RA.ZZ-0016, Curves, and S2.RE-RA.ZZ-0012, Figures.			
		Reviews procedure.	Reviews Prerequisites and Precautions and Limitations.		
		Verify proper completion of Attachment 1 ECC Calculation Using Nuclear Design Data as described below:			
	Proc Steps 1.1-1.4 Att. 1	Review Section 2: 2.1 Previous Critical Conditions 2.2 Shutdown Conditions 2.3 Intended Critical Conditions	Operator reviews Section 2.1, 2.2, & 2.3, for completeness. Operator ensures data given in Initial Conditions matches data recorded in Sections 2.1-2.3.		
	Proc Step 1.5 Att. 1	**COMPLETE** Sections 2.4 - 2.8			
		Review Section 2.4 Reactivity Worths at Previous Critical Conditions. (100% power)	Operator reviews Section 2.4 for completeness as below:		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	2.4.1	Integral Rod Worth at position in (2.1.4.)(Figure 2/Table 1-7) (If ARO, use zero)	Operator verifies no reactivity is inserted from rods at ARO. (Table 1-7)		
	2.4.2	Power Defect at power in (2.1.2) and Boron Concentration in (2.1.3)(Figure 17A/Table 2-1)	Operator verifies Power Defect at power in 2.1.2 (100%) and boron concentration at 2.1.3 (1150) is **1635 pcm** from Table 2-1 (page 113).		
	2.4.4	IF using design data, THEN mark step 2.4.3."N/A" and **CALCULATE** Corrected Xenon Reactivity . A. DIFFERENTIAL BORON WORTH AT CONCENTRATION IN ITEM 2.1.3 (Figure 10B/Table 2-4) B. INTEGRAL BORON WORTH _____ x _____ = Item 2.1.3 Item 2.4.4.A	Operator verifies a Differential boron worth from Table 2-4 on page 97 of **-6.130 pcm** by: 1150 ppm at 100% power 900 ppm is -6.253, 1200 ppm is -6.105, difference is 0.148, divide by 300 ppm change to get 0.000493 pcm/ppm, then multiply by 50 to get change of 0.0247 from 1200 so -6.105-0.0247=-**6.130** Operator verifies (1150)(-6.130)=**-7049.5 pcm**		
	2.4.4	C. POISON CORRECTION FACTOR (Figure 8B)	Operator verifies a Poison Correction Factor of **0.906** using calculation at top of Figure 8B on page 62. $1.0 + (0.1327 * 7049.5 * 1E^{-4})$		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	2.4.4	D. XENON REACTIVITY _____x_____ = Fig. 8C/Table 1-2 Item 2.4.4.C (at time zero)	Operator verifies steady state Xenon of **-2923 pcm** (100% power and ZERO time) from Table 1-2 on page 75, and verifies corrected Xenon of **-2648 pcm**.		
	2.4.6	IF using design data, THEN mark step 2.4.5."N/A" and **CALCULATE** Corrected Samarium Reactivity . A. SAMARIUM REACTIVITY _____x_____= Table 1-4 Item 2.4.4.C (at time zero)	Operator verifies steady state Samarium of **943 pcm** (100% power and ZERO time) and verifies corrected Samarium of **854 pcm using** Table 1-4 on page 7		
	2.5	REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS	Operator reviews Section 2.5		
	2.5.1	Integral Rod Worth at Position in (2.3.2) (Figure 2A/Table 1-8).	Operator verifies Rod Worth of **747.7 pcm** Table 1-8 page 46		
	2.5.3	IF using design data, THEN mark step 2.5.2 "N/A" and **CALCULATE** Corrected Xenon Reactivity at power in ITEM 2.2.2. A. Predicted Critical Boron Concentration supplied by Reactor Engineering	Value is 1275 ppm.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		B. ARI Integral Rod Worth (Table 1-5 using ITEM 2.5.3.A)	Operator verifies **8763 pcm** from table using 1275 ppm and 547 deg. Table 1-5 page 13		
		C. POISON CORRECTION FACTOR (Figure 8B)	Operator verifies a Poison Correction Factor of **0.884** from Figure 8B (page 62) $1.0+(0.1327*-8763*1E^{-4})$ **Note:** This is NOT the same value as correction factor used in step 2.4.4.C, since the boron worth is different.		
		D. XENON REACTIVITY _____x_____ Fig. 8C/Table 1-2 Item 2.5.3.C (at time in 2.3.4)	Operator verifies the change in Xenon Reactivity to be **(100) (0.884) = 88.4 pcm** Table 1-2 page 75		
	2.5.5	A SAMARIUM REACTIVITY _____x_____ Table 1-4 Item 2.5.3.C (at time in 2.3.4)	Operator verifies Samarium Reactivity is **945.9 pcm (1070)(0.884)** Table 1-4 on page 7		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	2.6	REACTIVITY CHANGES AND SUM	Operator reviews Section 2.6		
	2.6.1	Integral Rod Worth _____-_____ Item (2.4.1) Item (2.5.1)	Operator verifies 0-747.7= **-747.7 pcm**		
	2.6.2	Power Defect Item (2.4.2)	Operator verifies **1635 pcm**		
	2.6.3	Xenon Reactivity _____x_____ Item (2.5.2)or(2.5.3D) Item (2.4.3or(2.4.4D)	Operator verifies 2559.6 from (-88.4)-(-2648)= **2559.6 pcm**		
	2.6.4	Samarium Reactivity	Operator verifies -91.9 from (-945.9)-(-854)= **-91.9 pcm**		
	2.6.5	SUM Item (2.6.1)+Item (2.6.2)+Item (2.6.3)+Item (2.6.4)	Operator verifies Integral Rod Worth of **-747.7** pcm. Operator verifies Power Defect of **1635 pcm.** Operator verifies Xenon Reactivity of **2559.6 pcm** Operator verifies Samarium Reactivity of **-91.9 pcm** Operator verifies Sum of **3355 pcm.**		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	2.7	INTENDED CRITICAL BORON CONCENTRATION DETERMINATION	Operator reviews Section 2.7		
	2.7.1	Correction TO Previous Boron due to Burnup Differences between Previous and Intended Critical Conditions A. HFP ARO Equilibrium Poison Concentration at Burnup in (2.1.5) (Figure 30 of S1(2).RE-RA.ZZ-0012(Q)) B. HFP ARO Equilibrium Poison Concentration at Burnup in (2.3.3) (Figure 30 of S1(2).RE-RA.ZZ-0012(Q)) C. Boron Concentration Difference (2.7.1.A)-(2.7.1.B) D. Corrected Previous Boron Concentration	 Operator verifies **1235 ppm** Operator verifies **1235 ppm** Operator verifies **0 ppm** Operator verifies **1150 ppm** Note: If operator determines a different ppm for A and B values (from graph interpolation), it is unimportant as long as there is no difference between the 2 values.		
	2.7.2	First Estimate of Boron Concentration Change A. Differential Boron Worth at Concentration in (2.7.1D) and Burnup in (2.3.3) for Tavg=547°F, No Xe (Figure 10A/Table 2-4)	 Operator Verifies differential boron worth at 547 for 1150 ppm and 1828 EFPH is **–6.785 pcm/ppm** Table 2-4 page 98		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		B. Boron Concentration Change to compensate for reactivity change _____ / _____ (-) 2.6.5 (2.7.2A)	Operator identifies that the Differential Boron Worth negative sign was not used, and the -494 ppm value should be +494 ppm.		
	2.7.3	Second Estimate of Boron Concentration Change			
*		A. $\frac{[2x(2.7.1D) + (2.7.2.B)]}{2}$	Operator identifies that 2.7.3.A is incorrect because of 2.7.2.B being incorrect, and identifies correct value of **1397 ppm**		
*		B. Differential Boron Worth at Concentration in (2.7.3A) and Burnup in (2.3.3) for Tavg=547°F, No Xe (Figure 10A/Table 2-4)	Operator identifies incorrect Differential Boron Worth based on incorrect value carried forward, should be **-6.636 pcm/ppm**		
*		C. Boron Concentration Change to compensate for reactivity change _____ / _____ (-) 2.6.5 (2.7.3.B)	Operator identifies error carried forward, and identifies correct should be **506 ppm.**		
*	2.7.4	Intended Critical Boron Concentration _____ + _____ (2.7.1D) (2.7.3.C)	Operator identifies error carried forward and correct intended Critical Boron concentration should be **1656 ppm**		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on an ECC using Nuclear Design Data**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	2.8	ESTIMATED CRITICAL CONDITION	Operator identifies error carried forward and 2.8.3 Critical Boron Concentration should be 1656 ppm per above step.		
		State JPM is complete			

Terminating Cue: Candidate states the ECC is correct, or states it is incorrect with justification, then state "This JPM is complete".

INITIAL CONDITIONS:

Unit 2 is in HSB at 547°F/2235 PSIG with a reactor startup planned for this shift.

Previous Critical Conditions:

- Reactor trip on 3/5/10 at 2200 after 55 days at 100% power
- 1150 ppm Boron
- 1828 EFPH
- Bank D 226

Intended Critical Conditions:

- 2200 on 3/8/10
- Bank C @ 189 steps
- Bank D @ 61 steps

Reactor Engineering is currently performing an ECC using BEACON, but the results are not available yet. Rx Engineering has provided a Predicted Critical Boron Concentration of 1275 ppm.

INITIATING CUE:

Perform a peer check on an ECC using Nuclear Design Data. This is NOT the required Calculation Verification.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ADMINISTRATIVE (ALARA)

TASK: Perform Stay Time Calculation for Emergency Condition.

TASK NUMBER: N1200100104

JPM NUMBER: 08-01 NRC RO ADMIN A3

ALTERNATE PATH: [ ]

K/A NUMBER: 2.3.4

IMPORTANCE FACTOR: 3.2 (RO) ____ (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [ ]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: Radiological Survey Map 11045Z1, RP-AA-203

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 15 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 03-04-10**
Validated:	**W Wallace** **SME or Instructor**	**Date: 03-19/10**
Reviewed By:	Peter Gould **Training Department**	**Date:** 3-26-2010
Approved By:	E Pan **Operations Representative**	**Date:** 3/25/10

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (ALARA)

TASK: Perform Stay Time Calculation for Emergency Condition.

TASK NUMBER: N1200100104

INITIAL CONDITIONS:

1. Unit 1 experienced Rx trip with a small RCS leak from 100% power.
2. Salem is currently in an Unusual Event.
3. Your TEDE dose for the year is 1925 mrem.

INITIATING CUE:

You have been directed to perform a detailed inspection of 11 RHR pump room prior to starting the pump.

Using the provided survey map, and conservatively using the HIGHEST dose rate in the room for your entire exposure, calculate the number of HOURS you could theoretically remain in the area without exceeding any dose limit.

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:

Candidate calculates maximum stay time of 4.17 hours, which can be rounded DOWN, but not UP.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: ADMINISTRATIVE (ALARA)
TASK: Determine Radiological Conditions For Personnel Exposure

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	1	Provide the attached survey maps, RP-AA-203, and NC.EP-EP.ZZ-0304.	Candidate selects the Survey Map "S1 AUX 045' 11 RHR ROOMS"		
		START TIME: _____			
*	2	Determine highest dose rate in room.	Per the survey map, squares are dose rates in mrem/hr, and circles are smear locations. The highest square is located next to smear location "11" or "12" and indicates 18 mrem/hr. Note: The numbered circles reach 21.		
*	3	Calculate Maximum Stay Time	Candidate subtracts year to date TEDE dose from Admin Dose limit of 2,000 mrem, and gets 75 mrem. Candidate divides 75 mrem by 18 mrem/hr, and gets 4.17 hours. Candidate may round down to be conservative, but if candidate rounds UP it will result in exceeding the Dose Limit.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ADMINISTRATIVE (ALARA)

TASK: Determine Radiological Conditions For Personnel Exposure

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Notes: The PSEG Admin Limit is 2,000 mrem/year TEDE. Upon the declaration of an ALERT or higher, a persons annual limit is automatically raised to 4500. This declaration is only a UE, so no dose escalation is provided.		
			Terminate JPM when candidate has returned paperwork.		
	5	STOP TIME: _____			

INITIAL CONDITIONS:

1. Unit 1 experienced Rx trip with a small RCS leak from 100% power.
2. Salem is currently in an Unusual Event.
3. Your TEDE dose for the year is 1925 mrem.

INITIATING CUE:

You have been directed to perform a detailed inspection of 11 RHR pump room prior to starting the pump.

Using the provided survey map, and conservatively using the HIGHEST dose rate in the room for your entire exposure, calculate the number of HOURS you could theoretically remain in the area without exceeding any dose limit.

ORIGINAL

Salem

Radiological Survey

MAP # 11045Z1

Location: S1 AUX 045' 11 RHR ROOMS | Date: 11/9/09 | Time: 0930 | RWP: 1

Radiation Survey		
γ	Instrument: RO2	Serial#: 4814
γ	Instrument: N/A	Serial#: N/A

Contamination Survey		
β,γ	Instrument: EM14	Serial#: 2371
α	Instrument: N/A	Serial#: N/A

Contamination β,γ

LOC	dpm/100cm2	LOC	dpm/100cm2
1	<1000	11	8000
2	<1000	12	4000
3	2000	13	<1000
4	8000	14	4000
5	3000	15	4000
6	<1000	16	<1000
7	10000	17	2000
8	30000	18	<1000
9	<1000	↓	↓
10	<1000	21	↓

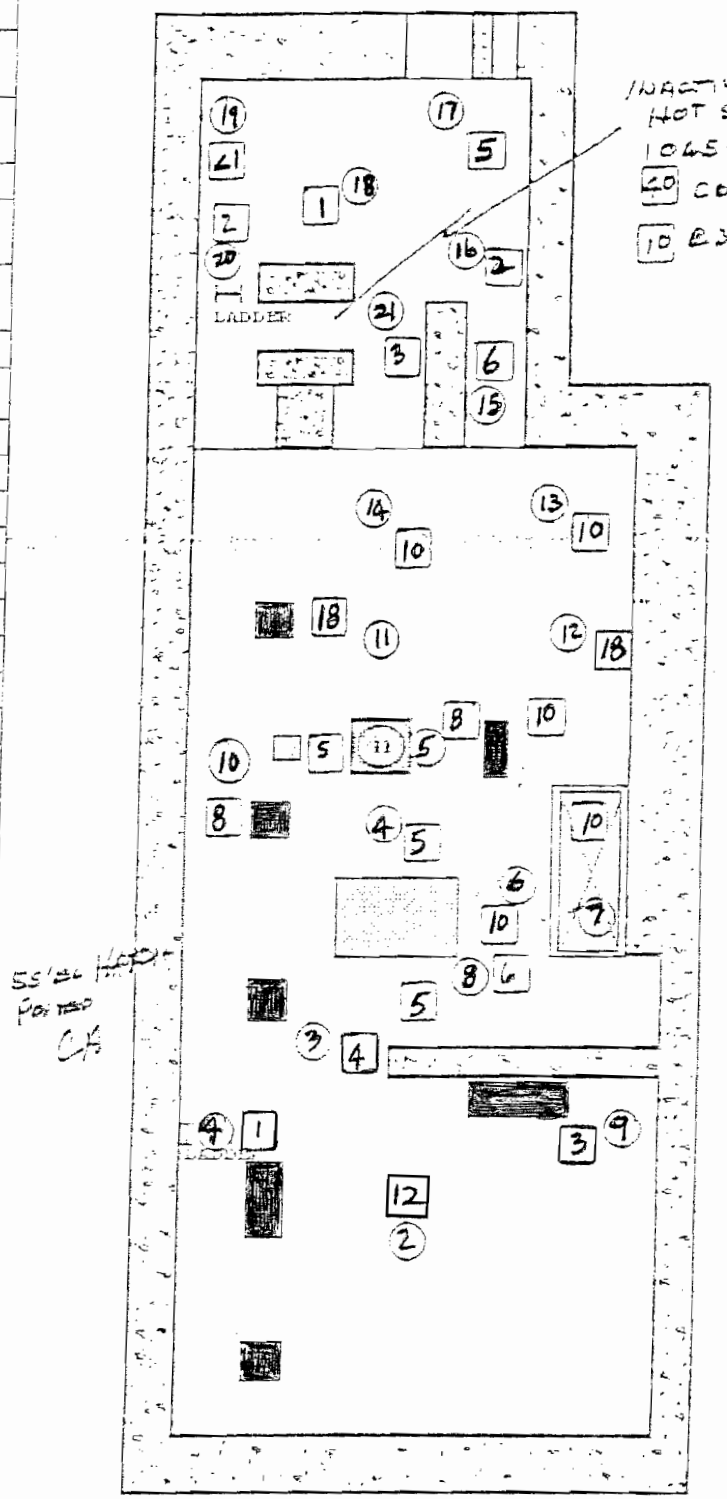
Survey Type	Contamination α: LO dpm/100cm2	dpm/100cm2
N/A	Clean Area	
	Routine	N
X	Monthly	A
N/A	S.O.J.	
N/A	Other	

Surveyed By:

Print: COSTELLO

Sign: Costello

COMMENTS:



☐ Dose Rate, mRem/hr ○, Smear Location

W/A Dose Rates along massline path <1 mRem/hr unless otherwise noted

W/A Massline results <1000 dpm/100cm2 on floors, walls & equipment

X Verified Radiological postings, labels, marking, and barriers

Technician Review		Supervisor Review		
NAME: Clawson	BADGE #: 01519	NAME: Teresa Fritz	BADGE #: 07-344	DATE: 11/9/09

Salem GENERATING STATION

Radiological Survey

MAP # 1108410

Location: S1 AUX 084' PIPE TUNNEL | Date: 4-6-10 | Time: 1030 | RWP: 1

Radiation Survey		
γ	Instrument: TELETECTOR	Serial#: OBKd
γ	Instrument: N/A	Serial#: N/A

Contamination Survey		
β,γ	Instrument: RM-14	Serial#: 7145
α	Instrument: N/A	Serial#: N/A

Contamination β,γ

LOC	dpm/100cm2	LOC	dpm/100cm2
1	2K		
2	<1K		
3			
4			
5			
6			
7			
8			
9			
10	<1K		

Survey Type		Contamination α		
		LOC	ccpm	dpm/100cm2
	Clean Area	N/A		
	Routine			
	Monthly			
	S.O.J.			
	Other			

Surveyed By:

Print: BRUCE LAWSON

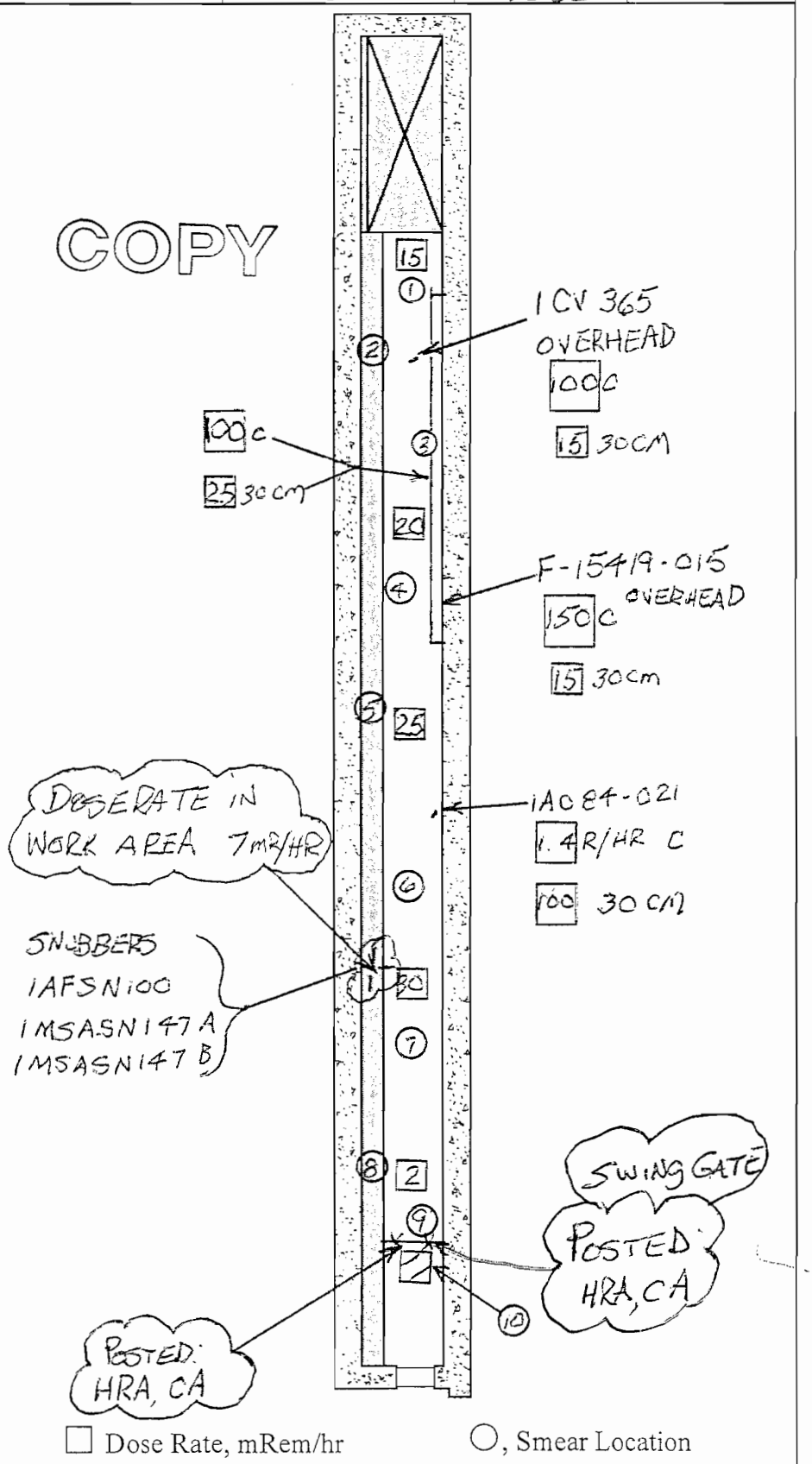
Sign: Bruce Lawson

COMMENTS: SNUBBERS WERE SURVEYED OUT OF THE CA.

N/A Dose Rates along masslinn path <1 mRem/hr unless otherwise noted

N/A Masslinn results <1000 dpm/16cm2 on floors, walls & equipment

N/A Verified Radiological postings, labels, marking, and barriers



Technician Review		Supervisor Review		
NAME: Robert W. Day	BADGE #: 12-944	NAME:	BADGE #:	DATE:

Salem GENERATING STATION

Radiological Survey

MAP # 11045Z2

Location: S1 AUX 045' 12 RHR ROOMS | Date: 4-5-10 | Time: ~~NO~~ 4-5-10 ~~HC~~ 2300 | RWP: 1

Radiation Survey

	Instrument	Serial#
γ	~~RM~~ RO2A	3793
γ		

Contamination Survey

	Instrument	Serial#
β,γ	RM14	2385
α		

Contamination β,γ

LOC	dpm/100cm2	LOC	dpm/100cm2
1	Floor	<1K	
2	1	<1K	
3	1	2K	
4	1	<1K	
5	1/8 Hatch	<1K	

Survey Type		Contamination α		
		LOC	ccpm	dpm/100cm2
N/A	Clean Area			
N/A	Routine			
N/A	Monthly			
✓	S.O.J.			
N/A	Other			

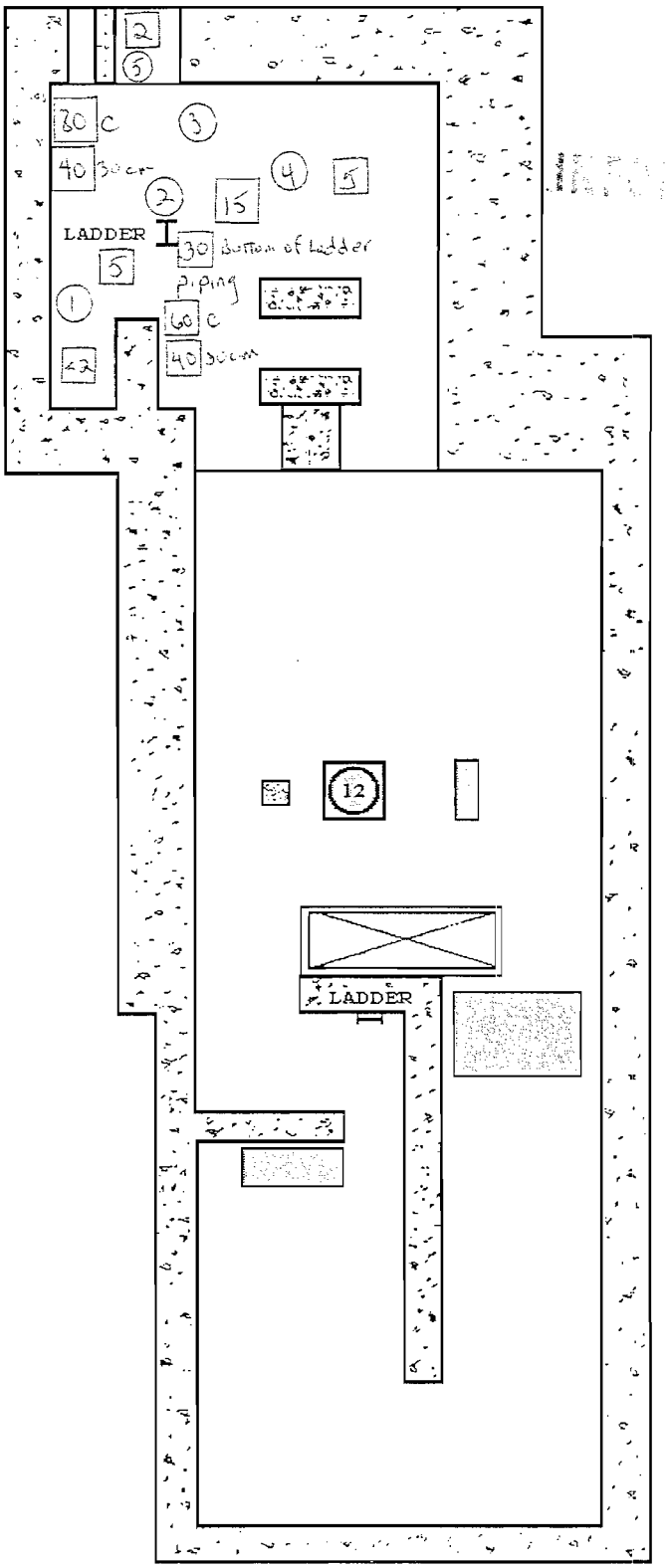
Surveyed By:

Print: A Donovan

Sign: A Donovan

COMMENTS:
Area Posted: HRA > 1000 mr/hr
CA
Hatch Posted Confined Space

[ ] Dose Rates along masslinn path <1 mRem/hr unless otherwise noted
[ ] Masslinn results <1000 dpm/16cm2 on floors, walls & equipment
[ ] Verified Radiological postings, labels, marking, and barriers



☐ Dose Rate, mRem/hr ○, Smear Location

Technician Review		Supervisor Review		
NAME	BADGE #	NAME	BADGE #	DATE:
	03-899			

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Chilled Water

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

TASK NUMBER: 0980020101

JPM NUMBER: 08-01 NRC SRO Admin A1-1

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.25

IMPORTANCE FACTOR: RO ____ SRO 4.2

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD:

REFERENCES: S2.OP-SO.CH-0001, Rev. 28, TECH Spec 3.7.10

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 10 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: _____

Developed By:	**G Gauding** **Instructor**	**Date: 03/04/10**
Validated By:	**J Franklin** **SME or Instructor**	**Date: 03/19/10**
Reviewed By:	**Training Department**	**Date:** 3-26-2010
Approved By:	**Operations Representative**	**Date:** 3/25/10

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

SYSTEM: Chilled Water

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads

TASK NUMBER: 980020101

INITIAL CONDITIONS:

- Salem Unit 2 is at 100% power.
- 23 Chiller has been removed from service and C/T due to an electrical control problem.
- 22 Chiller has tripped on freeze protection and cannot be reset.
- Technical Specification LCO 3.7.10 Action b.1. is in effect and non-essential heat loads need to
- be removed from the chilled water system.
- Inlet Water Temperature Readings from SC.OP-DL.ZZ-0008(Q), Circulating / Service Water Log:
  2TL3756 = 70.0°F
  2TL3757 = 68.4°F
- River temperatures are NOT expected to rise any further.

INITIATING CUE:

You are directed to determine which non-essential chilled water supplied components to remove from service in order to meet the requirements of TS 3.7.10 Action b.1. IAW S2.OP-SO.CH-0001, Chilled Water System Operation. Components Off Normal and Off Normal Tagged lists have been reviewed with no components identified that will affect this evolution.

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. **Candidate determines Total Heat Load Isolation required is 1267.2 kBTU/hr.**
2. **Candidate selects Heat Loads for isolation, including CREACS INOP, which are $\geq$ 1267.2 kBTU/hr.**

NAME: _____ _____
DATE: _____

SYSTEM: Chilled Water System

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			Cue: Provide the applicant with copies of: - Tech Spec 3.7.10 - S2.OP-SO.CH-0001(Q) Chilled Water System Operation		
	2.1	**IDENTIFY** Sections of this procedure that are not to be performed with "N/A".	Candidate determines that Section 5.6 is the correct section to be performed, and N/A's all other sections. (The section for restoring these heat loads may also be left blank, as the procedure may be left open if the duration will be short.)		
	2.2	**REVIEW** Components "Off Normal and Off Normal Tagged" List(s) for the system(s) and support system(s) associated with evolution to be performed in this procedure.	From initiating cue, Candidate initials Components Off Normal and Off Normal Tagged lists have been reviewed with no components identified that will affect this evolution.		
	2.3	IF performing a system startup, THEN...	Candidate NA's this step and sub-steps since system startup is not being performed.		

NAME: _____

DATE: _____

SYSTEM: Chilled Water System

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	2.4	IF substitution of Measuring and Test Equipment (M&TE) is required, THEN...	Candidate NA's this step since it does not apply.		
	3.0	**PRECAUTIONS AND LIMITATIONS**	Candidate reviews and initials Precautions and Limitations 3.1 through 3.15		
	5.6	Isolation of Non-Essential Heat loads			
	5.6.1	**REFER** to Technical Specification LCO 3.7.10 for the Action requirements.	Candidate refers to LCO 3.7.10, (provided). (The action requirements have already been delineated to the candidate in the initial conditions; and are spelled out in the CH procedure)		
	5.6.2	IF two Chillers are inoperable, THEN: • **SELECT** components for isolation IAW Attachment 2. • **ALIGN** the Control Area Ventilation system for Operation with Unit 2 EACS Out-of SERVICE (MAINTENANCE Mode) IAW S1.OP-SO.CAV-0001(Q).	Candidate refers to and performs Attachment 2 as identified in the individual attachment as follows.		
	Att. 2 1.0	**RECORD** the following data for use in Table A:			

NAME: _____

DATE: _____

SYSTEM: Chilled Water System

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	Att. 2 1.1	Inlet Water Temperature from SC.OP-DL.ZZ-0008(Q) Circulating / Service Water Log: 2TL3756=___°F 2TL3757___°F From the above indicated 2TL3756/2TL3757 temperatures, **RECORD** the highest temperature AND **ADD** 1.5°F to account for instrument uncertainty. Utilize this temperature when referring to Table A.	Candidate enters **70.0** and **68.4** in the respective 2TL2756 and 2TL3747 spaces.		
*		___°F(highest temp) +1.5°F = ___°	Candidates enters **70.0** as the highest temp, adds 1.5 deg to that and calculates **71.5**		
	Att. 2 1.2	Number of inoperable Chiller Units:___	Candidate enters **2**.		
*	Att. 2 2.0	**RECORD** the TOTAL HEAT LOAD ISOLATION from Table A:_____	Candidate enters **1267.2** from the column with temp>70≤75, and 2 chillers inoperable.		

NAME: _____

DATE: _____

SYSTEM: Chilled Water System

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	Att. 2 3.0	**IDENTIFY** the components to be isolated in Table B as follows:			
*		3.1 **RECORD** the value from the HEAT LOAD column into the ISOLATION column for the components selected for isolation.	Candidate enters **406.5** in the ISOLATION column for CREACS INOP (MAINTENANCE Mode), since step 5.6.2 directed aligning the control area ventilation in Maintenance mode.		
*			Candidate selects additional heat loads, which when combined with the 406.5 noted above, add up to at least **1267.2.**		
			(Note: The largest heat load, Unit 2 ECAC, would take the longest to isolate, so while it appears to be the most logical choice for isolation, it is not incorrect to isolate smaller loads as long as the total is > 1267.2).		
		3.2 **RECORD** "N/A" for the components selected to remain available.	Candidate marks all components selected to remain available as N/A.		

NAME: _____

DATE: _____

SYSTEM: Chilled Water System

TASK: Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	Att. 2 4.0	**ADD** the values recorded in the ISOLATION column AND **RECORD** the TOTAL ISOLATION value in Table B.	Candidate adds all values in the ISOLATION column and records number in TOTAL ISOLATION. Number MUST be **≥ 1267.2.**		
	Att 2 5.0	**VERIFY** that the TOTAL ISOLATION value recorded in Table B is ≥ the TOTAL HEAT LOAD ISOLATION recorded in step 2.0 of this attachment.	Cue: IV completed SAT. JPM is complete		

TERMINATING CUE: None.

INITIAL CONDITIONS:

- Salem Unit 2 is at 100% power.
- 23 Chiller has been removed from service and C/T due to an electrical control problem.
- 22 Chiller has tripped on freeze protection and cannot be reset.
- Technical Specification LCO 3.7.10 Action b.1. is in effect and non-essential heat loads need to
- be removed from the chilled water system.
- Inlet Water Temperature Readings from SC.OP-DL.ZZ-0008(Q), Circulating / Service Water Log:
  2TL3756 = 70.0°F
  2TL3757 = 68.4°F
- River temperatures are NOT expected to rise any further.

INITIATING CUE:

You are directed to determine which non-essential chilled water supplied components to remove from service in order to meet the requirements of TS 3.7.10 Action b.1. IAW S2.OP-SO.CH-0001, Chilled Water System Operation. Components Off Normal and Off Normal Tagged lists have been reviewed with no components identified that will affect this evolution.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Evaluate a shift staffing situation and take corrective action IAW administrative procedures

TASK NUMBER: 1210020302

JPM NUMBER: 08-01 NRC SRO Admin A.1-2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.5

IMPORTANCE FACTOR: RO ____ SRO 3.9

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: Salem Tech Specs Section 6.0 (Both Units)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 9 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 3/15/10

Validated By: J Franklin, SME or Instructor — **Date:** 3/19/10

Reviewed By: Operations Representative — **Date:** 3-26-2010

Approved By: Training Department — **Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Evaluate a shift staffing situation and take corrective action IAW administrative procedures

TASK NUMBER: 1210020302

INITIAL CONDITIONS:

Salem Unit 1 is in Mode 5.

Salem Unit 2 is in Mode 1.

A number of on shift Operators and Technicians have fallen ill after eating lunch, to the point where some are becoming incapacitated and unable to remain at their duty stations. ONE unaffected SRO is also qualified as STA.

INITIATING CUE:

1. IAW Salem Technical Specifications, determine the **absolute minimum** number (as a **TOTAL** number of each type) of individuals by position required to fill **ALL** required Shift positions on BOTH units.

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:

Identify minimum shift manning of 1 Shift Manager,1 STA Qualified SRO, 3 NCO's, 4 NEO's,

1 Maintenance Electrician, and 1 Radiation Protection Technician.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Evaluate a shift staffing situation and take corrective action IAW administrative procedures**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Section 6.0 of Salem Technical Specifications contains Administrative Controls. Provide candidates with pages 6-1 through 6-6 of Unit 1 Tech Specs, and pages 6-1 through 6-7 of Unit 2 Tech Specs.			
			Candidate refers to Unit 2 Tech Specs, page 6-5 for Minimum Shift Crew Composition. Determines **1 SM** is required (can be the same for Unit 1 position. Determines **1 SRO** is required. Stem states the healthy SRO is STA qualified, so they fill both slots. Determines **2 NCO's** are required. Determines **3 NEO's** are required. Determines **1 Maintenance Electrician** is required. Determines **1 Rad Pro Tech** is required, who can fill the same position on Unit 1.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Evaluate a shift staffing situation and take corrective action IAW administrative procedures**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Candidate refers to Unit 1 Tech Specs, page 6-5 for Minimum Shift Crew Composition. Determines **1 SM** is required (can be the same for Unit 1 position. Determines **NO SRO** is required. Determines no additional STA is required. Determines **1 NCO's** are required. Determines **1** NEO is required. Determines **NO** Maintenance Electrician is required. Determines **1** Rad Pro Tech is required, who can fill the same position on Unit 1.		
* * * * * *			Adds required operators together and gets total number of positions required: **1 Shift Manager** **1 STA Qualified SRO** **3 NCO's** **4 NEO's** **1 Maintenance Electrician** **1 Radiation Protection Technician.**		
			Terminate JPM when candidate returns cue sheet.		

INITIAL CONDITIONS:

Salem Unit 1 is in Mode 5.

Salem Unit 2 is in Mode 1.

A number of on shift Operators and Technicians have fallen ill after eating lunch, to the point where some are becoming incapacitated and unable to remain at their duty stations. ONE unaffected SRO is also qualified as STA.

INITIATING CUE:

IAW Salem Technical Specifications, determine the **absolute minimum** number (as a **TOTAL** number of each type) of individuals by position required to fill **ALL** required Shift positions on BOTH units.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Administrative- Technical Specifications
TASK:	Identify the most restrictive Tech Spec Action Statement
TASK NUMBER:	N1200010301
JPM NUMBER:	08-01 NRC SRO Admin A2
ALTERNATE PATH:	[ ]
K/A NUMBER:	2.2.42
IMPORTANCE FACTOR:	RO: ____ SRO: 4.6
APPLICABILITY:	EO [ ] RO [ ] STA [ ] SRO [X]
EVALUATION SETTING/METHOD:	Simulator in Freeze
REFERENCES:	Salem Tech Specs
TOOLS AND EQUIPMENT:	None
VALIDATED JPM COMPLETION TIME:	12 minutes
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	____

Developed By:	**G Gauding** **Instructor**	**Date: 03/17/10**
validated By:	**B Boos** **SME or Instructor**	**Date: 03/19/10**
Reviewed By:	**Training Department**	**Date:** 3-26-10
Approved By:	**Operations Representative**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

TASK NUMBER:

SIMULATOR SETUP: Initialize Simulator to **IC-258**, Rx power 55%, Cb 42 ppm.
22,24 SW pumps control power off, 21 charging pump control power off, 24,25 CFCU control power off, PZR level channel III high level bistable energized.
Take the simulator out of freeze and quickly print Alarm Summary for Aux Alarm Typrewriter, then return Simulator to freeze.

See next page for Bezel Covers Required

INITIAL CONDITIONS: Salem Unit 2 was operating at 100% power when 22 SGFP tripped 5 minutes ago. The unit automatically ran back as expected. Prior to the runback, Salem was experiencing heavy grassing in the Delaware River. 23A and 23B circulators were Emergency Tripped just prior to the 22 SGFP trip. During the runback, 26 SW pump tripped.

'st prior to the 22 SGFP trip, the following conditions were present:

- 22 & 24 SW pps were C/T at 0800 today for strainer cleaning.
- 24 and 25 CFCUs were C/T at 1900 yesterday for investigation of out of spec low SW flow.
- 21 charging pump was declared inoperable at 0800 two days ago due to cooler biofouling, and remains C/T due to emergent issue discovered during cooler cleaning.
- 23 AFW pump outboard pump bearing bubbler was found empty, and the 2MS52 was shut at 0600 today.
- 15 AFD penalty minutes had been accumulated in the last 24 hours.
- I&C is performing a Channel Calibration of PZR Level Channel III, and are midway through the calibration. (~~NOTE TO NOTE THAT THEY PLACED THE CHANNEL IN TRIP~~ SET
- 2PR2 was declared inoperable at 0930 today due to excessive seat leakage.

The Current Time is 1000.

INITIATING CUE: You are the Unit 2 CRS. Walkdown the control console and determine **AT THIS TIME** the most limiting **Tech Spec Action Time**.

Turn in Cue Sheet to the Evaluator with the Tech Spec **AND** Action Time identified when complete.

SIMULATOR OPERATOR - Bezel Covers Required.
Initial

_____ 21 CVCS C/T
_____ PZR level Channel III – Clear Bezel Cover
_____ 24 and 25 CFCUs C/T – Bezel Covers on Hi and Lo Speed Breakers.
_____ 23 AFW pump- Clear Bezel Cover.
_____ 22 and 24 SW pumps C/T.
_____ 2PR2 – Clear Bezel Cover

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. **Determine the most limiting Tech Spec is 3.1.1.1 for Shutdown Margin, since Control Rods are below the Rod Insertion Limit AND Emergency Boration has not been started.**
2. **Identify the action time is Immediately.**

INITIAL CONDITIONS:

Salem Unit 2 was operating at 100% power when 22 SGFP tripped 5 minutes ago. The unit automatically ran back as expected. Prior to the runback, Salem was experiencing heavy grassing in the Delaware River.
- 23A and 23B circulators were Emergency Tripped just prior to the 22 SGFP trip.
- During the runback, 26 SW pump tripped.

Just prior to the 22 SGFP trip, the following conditions were present:

- 22 & 24 SW pps were C/T at 0800 today for strainer cleaning.
- 24 and 25 CFCUs were C/T at 1900 yesterday for investigation of out of spec low SW flow.
- 21 charging pump was declared inoperable at 0800 two days ago due to cooler biofouling, and remains C/T due to emergent issue discovered during cooler cleaning.
- 23 AFW pump outboard pump bearing bubbler was found empty, and the 2MS52 was shut at 0600 today.
- I&C is performing a Channel Calibration of PZR Level Channel III, and are midway through the calibration.
- 2PR2 was declared inoperable at 0930 today due to excessive seat leakage.

The Current Time is 1000.

INITIATING CUE:

You are the Unit 2 CRS. Walkdown the control console and determine **AT THIS TIME** the most limiting **Tech Spec Action Time**.

Turn in Cue Sheet to the Evaluator with the Tech Spec **AND** Action Time identified when complete.

OPERATOR TR .NG PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Allow candidate sufficient time to walkdown control consoles and refer to Tech Specs. Tech Specs and Action Times are listed to the right.	**Note:** There are no "hidden" components that are O/S that the candidates are expected to find. **Cue** candidates if asked about "other" conditions that only the conditions stated in the stem are present, i.e., actual plant status, alarms that indicate plant status in response to the SGFP runback, and components that have been identified as being removed from service.		
			PZR level Channel III -3.3.1.1 Action 6 actions are already taken since first part of procedure has bistables tripped, which puts plant in compliance to trip bistables within **6 hours**. Stem states procedure is ½ done.		

OPERATOR TR. .NG PROGRAM

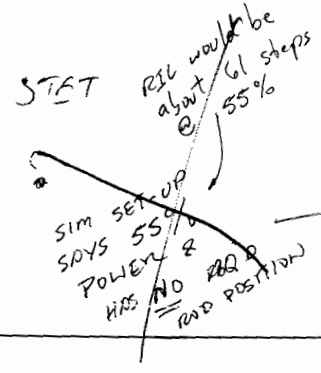
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			SW pumps- 3.7.4. Using S2.OP-SO.SW-0005, Attachment 2 SW Operability Guidelines, page 1 of 35, the minimum pump requirements are not met to have 2 operable SW loops, since there are not 2 operable pumps per bay (24 & 26 inoperable). This will result in a **72 hour** action time, and the clock started when 26 SW pump tripped during downpower. (Is ***NOT*** 3.0.3)		
* *			**Shutdown Margin 3.1.1.1 - this is the most limiting Tech Spec Action Time since it requires immediate initiation of Emergency Boration, and it has not been initiated.** The surveillance requirement for 4.1.1.1.1.b states that the rods are within the limits of the COLR, which IAW Figure 1, with auct hi D/T power of 69%, shows 98 steps on Control Bank D. Actual rod position is 78 steps.		

OPERATOR TR. .ING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			Rod Insertion Limit Lo-Lo OHA E-16 in alarm. RIL is exceeded, and 3.1.3.5 has a **2 hour** action time. Alarm has been in for a maximum of 5 minutes since that it when the SGFP tripped. **Note:** The Alarm Response for OHA E-16 directs operators to commence an Emergency Boration, but Tech Specs has the 2 hour Action Time.		
			21 charging pump C/T- 3.5.2 ECCS subsystems, 72 hour action time if only one train operable. **22 hours remain.**		
			DNB 3.2.5.b(RCS pressure <2200 psi**A**) is N/A since RCS pressure is 2202 psi**G**.	~~why is this N/A~~	STET

OPERATOR TR .ING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			23 AFW pump 2MS52 shut- 3.7.1.2. With one AFW pump inoperable, 72 hour action time. **68 hours remain**.		
			Axial Flux Differential 3.2.1 - The 15 minute action time of Action a.1 applies only >90% power. The 30 minute action time of Action 2.a could only be applicable after the accumulation of 45 more penalty minutes or outside the COLR, which is -28 at 55% power, and actual AFD is -20.	3.2.1 NOT PROVIDED	

OPERATOR TR. .NG PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative- Technical Specifications

TASK: Identify the most restrictive TSAS Action Time

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			2PR2 being inoperable due to seat leakage-3.4.5 Action a, requires the PORV Block Valve to be shut within **one hour.** Block valve is NOT shut. This leaves **30 minutes** to close the 2PR6.	~~U~~ NOT PROVIDED	
			JPM is terminated when candidate has turned in Cue sheet with Tech Spec identified.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Waste Gas

TASK: Authorize a Radioactive Gas Release Form

TASK NUMBER: N1120650302

JPM NUMBER: 2009 SRO Admin A2

ALTERNATE PATH: [X]

K/A NUMBER: 2.3.6

IMPORTANCE FACTOR: RO ____ SRO 3.8

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S1.OP-SO.WG-0010 Rev. 31

TOOLS AND EQUIPMENT:

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 02/06/09

Validated By: Wygant, SME or Instructor — **Date:** 02/12/09

Reviewed By: Operations Representative — **Date:** 6/30/09

Approved By: Training Department — **Date:** 6/24/09

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

NAME: _____

DATE: _____

SYSTEM: Waste Gas

TASK: Authorize a Radioactive Gas Release Form

TASK NUMBER: N1120650302

INITIAL CONDITIONS: 13 GDT is in holdup in preparation for performing a gas release. 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 PO, who informs you the release is ready for CRS approval.

INITIATING CUE:

Review S1.OP-SO.WG-0010, for completeness, accuracy, and release approval. Approve the release or provide justification for NOT approving the release, and also note any discrepancies found in the procedure, in the comments section of the procedure.

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 at step 5.2.8**
b. **Attachment 2, Step 4.1, second bullet, calculated Maximum Allowable Release rate from Section 3.4 has been entered as 32 SCFM instead of the correct value of 100 scfm.**

OPERATOR TRAINING PROGRAM NAME:_____
JOB PERFORMANCE MEASURE DATE:_____

System: ADMINISTRATIVE

Task: Authorize a Radioactive Gas Release Form

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide marked up S1.OP-SO.WG-0010 to operator.			
			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** a candidate 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 can be assumed to be correct.		

OPERATOR TRAINING PROGRAM NAME:_____
JOB PERFORMANCE MEASURE DATE:_____

System: ADMINISTRATIVE

Task: Authorize a Radioactive Gas Release Form

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*			The first error in the procedure is that the performance of the pre-release valve position verification in Attachment 1, has not been performed at step 5.2.8., prior to the procedure being given to the CRS for release approval. **Possible Cue Required:** If candidate identifies that Step 5.2.8 has not been performed and does not go any further to see if the rest of the procedure is correct, then a cue stating that the candidate needs to review the entire procedure will need to be given.		
*			The second error is that the release rate which was calculated as 100 scfm and entered on Att. 2 page 2 of 6, Step 3.4 second bullet, has been incorrectly entered as 32 scfm on Att. 2, page 4 of 6, step 4.1 1st bullet. (The release rate entered here must be >32 scfm in order to sign off the next bullet).		

OPERATOR TRAINING PROGRAM NAME:_____

JOB PERFORMANCE MEASURE DATE:_____

System: ADMINISTRATIVE

Task: Authorize a Radioactive Gas Release Form

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Operator identifies and records discrepancies.	When operator records discrepancies and has reviewed the entire procedure, then terminate JPM.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

13 GDT is in holdup in preparation for performing a gas release. 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 PO, who informs you the release is ready for CRS approval.

INITIATING CUE:

Review S1.OP-SO.WG-0010, for completeness, accuracy, and release approval. Approve the release or provide justification for NOT approving the release, and also note any discrepancies found in the procedure, in the comments section of the procedure.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-1)

TASK NUMBER: 1240020502

JPM NUMBER: 08-01 NRC SRO Admin A4-1 (ESG-1)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.29

IMPORTANCE FACTOR: RO ____ SRO 4.4

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

TOOLS AND EQUIPMENT: Inform Simulator Operators – DO NOT ERASE ANY PROCEDURES UNTIL THE SRO EVALUATOR APPROVES

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

Developed By:	**G Gauding** **Instructor**	**Date: 03/15/10**
Validated By:	**B Boos** **SME or Instructor**	**Date: 03/18/10**
Reviewed By:	Peter Boos **Operations Representative**	**Date:** 3-26-2010
Approved By:	E A **Training Department**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-1)

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running." If there are multiple ECG calls, classify the most severe.

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator.

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. **Complete the ICMF with the classification of ALERT under EAL 3.2.2.b, and provide it to the Primary Communicator within 15 minutes of Start Time.**

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Emergency Plan**
TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-1)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume SM duties	**Cue:** The regulatory commitment time clock has started.		
	1	Reviews ECG to classify event	**Note:** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event and refers to ECG Attachment 2 (ALERT)		
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 2	• Unit: 2 • EAL#(s): 3.2.2.b • Declared at: Current Time and Date • Initials as EC		
	4	CALL communicators to the Control Room	Pages communicators and initials as SM **Cue:** I am the Primary Communicator		

OPERATC .'RAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____ _____
DATE: _____

SYSTEM: **Emergency Plan**
TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-1)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5	ACTIVATE "ERO Emergency Callout" per posted instructions titled: "Emergency Callout Activation (**EP96-003)**	**Cue**: Activation of ERO Emergency Callout is not required for this JPM.		
*	6	COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).	Fills out Section II of ICMF: • Time/Date: Time/date filled in on Attachment 2 • EAL#(s): 3.2.2.b • Description of Event: Loss of the Reactor Coolant System Barrier Note: Description of Event is found in Section IV of the ECG. Fills out Section III: • Checks No Radiological Release is in progress Fills out Section IV: Retrieves wind speed and direction data from SPDS Initials for approval to transmit		
*	7	PROVIDE the ICMF to the Primary Communicator and DIRECT the Communicator to implement ECG Attachment 6.	Provides ICMF to Primary Communicator within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on direction to the Primary Communicator, and then state "This JPM is complete"

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running."

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-2)

TASK NUMBER: 1240020502

JPM NUMBER: 08-01 NRC SRO Admin A4-2 (ESG-2)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.29

IMPORTANCE FACTOR: RO ____ SRO 4.4

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

TOOLS AND EQUIPMENT: Inform Simulator Operators – DO NOT ERASE ANY PROCEDURES UNTIL THE SRO EVALUATOR APPROVES

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

Developed By:	**G Gauding** **Instructor**	**Date: 03/15/10**
Validated By:	**B Boos** **SME or Instructor**	**Date: 03/18/10**
Reviewed By:	Peter Dorsh **Operations Representative**	**Date:** 3-26-2010
Approved By:	E R **Training Department**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-2)

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running." If there are multiple ECG calls, classify the most severe.

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator.

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. Complete the ICMF with the classification of SAE under EAL 8.1.3.c, OR 3.1.1.b AND 3.2.1.b and provide it to the Primary Communicator within 15 minutes of Start Time.

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-2)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume SM duties	**Cue:** The regulatory commitment time clock has started.		
	1	Reviews ECG to classify event	**Note:** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event and refers to ECG Attachment 3 (SAE)		
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 2	• Unit: 2 • EAL#(s): 8.1.3.c **OR** 3.1.1.b **AND** 3.2.1.b • Declared at: Current Time and Date • Initials as EC		
	4	CALL communicators to the Control Room	Pages communicators and initials as SM **Cue:** I am the Primary Communicator		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Emergency Plan**
TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-2)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5	ACTIVATE "ERO Emergency Callout" per posted instructions titled: "Emergency Callout Activation (**EP96-003**)	**Cue**: Activation of ERO Emergency Callout is not required for this JPM.		
*	6	COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).	Fills out Section II of ICMF: • Time/Date: Time/date filled in on Attachment 3 • EAL#(s): 8.1.3.c OR 3.1.1.b AND 3.2.1.b • Description of Event: Complete Loss of Functions Needed to Achieve or Maintain Hot Shutdown **OR** Potential Loss of the Fuel Clad Barrier **AND** Potential Loss of the Reactor Coolant system Barrier Note: Description of Event is found in Section IV of the ECG. Fills out Section III: • Checks No Radiological Release is in progress Fills out Section IV: Retrieves wind speed and direction data from SPDS Initials for approval to transmit		

OPERATO[illegible] RAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-2)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	7	PROVIDE the ICMF to the Primary Communicator and DIRECT the Communicator to implement ECG Attachment 6.	Provides ICMF to Primary Communicator within 15 minutes of START TIME COMPLETION TIME: _____		

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running."

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-3)

TASK NUMBER: 1240020502

JPM NUMBER: 08-01 NRC SRO Admin A4-3 (ESG-3)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.29

IMPORTANCE FACTOR: RO ____ SRO 4.4

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

TOOLS AND EQUIPMENT: Inform Simulator Operators – DO NOT ERASE ANY PROCEDURES UNTIL THE SRO EVALUATOR APPROVES

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

Developed By:	**G Gauding** **Instructor**	**Date: 03/15/10**
Validated By:	**B Boos** **SME or Instructor**	**Date: 03/18/10**
Reviewed By:	**Operations Representative**	**Date:** 3-26-2010
Approved By:	**Training Department**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-3)

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running." If there are multiple ECG calls, classify the most severe.

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator.

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. **Complete the ICMF with the classification of SAE under EAL 5.1.3, and provide it to the Primary Communicator within 15 minutes of Start Time.**

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-3)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume SM duties	**Cue:** The regulatory commitment time clock has started.		
	1	Reviews ECG to classify event	**Note:** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event and refers to ECG Attachment 3 (SAE)		
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 3	• Unit: 2 • EAL#(s): 5.1.3 • Declared at: Current Time and Date • Initials as EC		
	4	CALL communicators to the Control Room	Pages communicators and initials as SM **Cue:** I am the Primary Communicator		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-3)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5	ACTIVATE "ERO Emergency Callout" per posted instructions titled: "Emergency Callout Activation (**EP96-003)**	**Cue**: Activation of ERO Emergency Callout is not required for this JPM.		
*	6	COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).	Fills out Section II of ICMF: • Time/Date: Time/date filled in on Attachment 3 • EAL#(s): 5.1.3 • Description of Event: Reactor Trip Failure with power above 5%. Note: Description of Event is found in Section IV of the ECG. Fills out Section III: • Checks No Radiological Release is in progress Fills out Section IV: Retrieves wind speed and direction data from SPDS Initials for approval to transmit		
*	7	PROVIDE the ICMF to the Primary Communicator and DIRECT the Communicator to implement ECG Attachment 6.	Provides ICMF to Primary Communicator within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on direction to the Primary Communicator, and then state "This JPM is complete"

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running."

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-4)

TASK NUMBER: 1240020502

JPM NUMBER: 08-01 NRC SRO Admin A4-4 (ESG-4)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.29

IMPORTANCE FACTOR: RO ____ SRO 4.4

APPLICABILITY:
EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

TOOLS AND EQUIPMENT: Inform Simulator Operators – DO NOT ERASE ANY PROCEDURES UNTIL THE SRO EVALUATOR APPROVES

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

Developed By:	**G Gauding** **Instructor**	**Date: 03/15/10**
Validated By:	**B Boos** **SME or Instructor**	**Date: 03/18/10**
Reviewed By:	Peter Hash **Operations Representative**	**Date:** 3-26-2010
Approved By:	E R C **Training Department**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

TASK: Classify an event and complete an ICMF within the regulatory committed time limit (ESG-4)

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running." If there are multiple ECG calls, classify the most severe.

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator.

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. Complete the ICMF with the classification of SAE under EALs 3.2.3.b AND 3.3.4.b and provide it to the Primary Communicator within 15 minutes of Start Time.

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-4)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume SM duties	**Cue:** The regulatory commitment time clock has started.		
	1	Reviews ECG to classify event	**Note:** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event and refers to ECG Attachment 3 (SAE)		
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 3	• Unit: 2 • EAL#(s): 3.2.3.b AND 3.3.4.b • Declared at: Current Time and Date • Initials as EC		
	4	CALL communicators to the Control Room	Pages communicators and initials as SM **Cue:** I am the Primary Communicator		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

TASK: **Classify an event and complete an ICMF within the regulatory committed time limit (ESG-4)**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5	ACTIVATE "ERO Emergency Callout" per posted instructions titled: "Emergency Callout Activation (**EP96-003)**	**Cue**: Activation of ERO Emergency Callout is not required for this JPM.		
*	6	COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).	Fills out Section II of ICMF: • Time/Date: Time/date filled in on Attachment 3 • EAL#(s): 3.2.3.b AND 3.3.4.b • Description of Event: Loss of the Reactor Coolant System Barrier AND Loss of the Containment Barrier. Note: Description of Event is found in Section IV of the ECG. Fills out Section III: • There IS a Radiological Release is in progress Fills out Section IV: Retrieves wind speed and direction data from SPDS Initials for approval to transmit		
*	7	PROVIDE the ICMF to the Primary Communicator and DIRECT the Communicator to implement ECG Attachment 6.	Provides ICMF to Primary Communicator within 15 minutes of START TIME COMPLETION TIME: _____		

INITIAL CONDITIONS:

1. You have a maximum of 5 minutes to review the Emergency Operating Procedures used during this scenario to refresh your memory of all events/paths. At the end of your review you will become the Shift Manager (SM). Inform the Evaluator when you are ready to assume SM duties. You may continue to reference the procedures or to look at the control board but "the clock will be running."

INITIATING CUE:

You are the Duty SM. Classify the event, complete the correct ECG Attachment and provide an ICMF to the Primary Communicator

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Rod Control

TASK: Take corrective actions for a dropped control rod(s)

TASK NUMBER: 1140330401

JPM NUMBER: 08-01 NRC Sim a

ALTERNATE PATH: [X]

K/A NUMBER: 003 AA2.03

IMPORTANCE FACTOR: 3.6 (RO) 3.8 (SRO)

APPLICABILITY:
EO [ ] **RO** [X] **STA** [ ] **SRO** [X]

EVALUATION SETTING/METHOD: Simulator

REFERENCES: S2.OP-AB.ROD-0002 Rev. 10 (checked 3/9/10)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 4 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 03/01/10

Validated By: B Shavor, SME or Instructor **Date:** 03/19/10

Approved By: Training Department **Date:** 3-26-2010

Approved By: Operations Department **Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Rod Control

TASK: Take corrective actions for 2 dropped control rods

TASK NUMBER: 1140330401

SIMULATOR SETUP IC-251
Insert RT-1, **RD0267**, ANY ROD DROPS INTO RX, Final Severity 5 after candidate has assumed the watch.

Modify **RD0267** ANY ROD DROPS INTO RX, to Final Severity 53 when candidate has completed step 3.10 of S2.OP-AB.ROD-0002 **OR** if candidate attempts to change Main Turbine load due to Tavg being >1.5 degrees lower than Tref.

INITIAL CONDITIONS:

40% power, BOL. A power reduction to bring the Main Turbine off-line is on hold.

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.

Task Standard for Successful Completion:
1. Candidate places Rod Control in Manual following 1st dropped rod.
2. Candidate trips the reactor upon discovery of 2nd dropped rod.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: ROD CONTROL
TASK: Take corrective actions for a dropped control rod

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		SIMULATOR OPERATOR: Insert **RT-1 RD0267,** ANY ROD DROPS INTO RX, Final Severity 5, when candidate assumes the watch.	Candidate announces cluster of rod related "E" Window OHAs as unexpected alarms. Announces indications of rod 2SA1 dropped into the core. Enters S2.OP-AB.ROD-0002, Dropped Rod.		
	2.1	IF more than one rod is verified to be tripped, THEN Manually **TRIP** Reactor AND **GO TO** 2-EOP-TRIP-1, Reactor Trip OR Safety Injection.	Verifies only 1 rod has dropped into core.		
*	3.1	**PLACE** Rod Bank Selector Switch in MAN.	Places Rod Bank Selector Switch in MAN.		
	3.2	**IF** a Turbine load change is in progress…	Verifies no turbine load change in progress.		
	3.3	**ADJUST** T_{ave} to within 1.5^0 of program as follows: • **IF** Main Turbine is operating, THEN adjust Turbine load. • **IF** Main Turbine is NOT operating, THEN **ADJUST** Steam Dumps OR 21-24MS10 valves.	Verifies T_{ave} is within 1.5^0 of program. **Simulator Operator: IF operator attempts to lower turbine load, then change RT-1 as described on next page now.**		Note: It will take ~ 2 minutes 15 seconds for Terr to reach –1.5 degrees.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: ROD CONTROL
TASK: Take corrective actions for a dropped control rod

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.4	Is Reactor subcritical as a result of the dropped rod?	Answers NO, GOES TO step 3.9		
	3.9	IF AT ANY TIME a power reduction becomes necessary, THEN **BORATE** AND **ADJUST** Turbine load or Steam Dump System flowrate to maintain T_{ave} within 1.5^0 F of program.	Determines no power reduction is necessary.		
	3.10	Is power above 50% of RATED THERMAL POWER?	Answers NO, and GOES TO Step 3.12		
			SIMULATOR OPERATOR: Modify malfunction **RD0267,** ANY ROD DROPS INTO RX, to Final Severity 53, when candidate has completed step 3.10 of S2.OP-AB.ROD-0002.		
*	2.1	IF more than one rod is verified to be tripped, THEN Manually **TRIP** Reactor AND **GO TO** 2-EOP-TRIP-1, Reactor Trip OR Safety Injection.	Candidate should observe a second rod bottom light by direct observation, or by depressed power in the region of the 2 dropped rods, Terr or Tavg lowering , or OHA D-32 TAVE LO, and MANUALLY **TRIP** the Reactor IAW Step 2.1. **Evaluator:** See next step if candidate does not recognize the second dropped rod and continues in the procedure. (This will allow the candidate to continue in the JPM until the 2 times validation time has been reached and the JPM is terminated.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: ROD CONTROL
TASK: Take corrective actions for a dropped control rod

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.12	**REQUEST** Maintenance to determine if an Individual Rod Position Indicator (IRPI) malfunction has occurred.	Candidate contacts Maintenance or requests CRS to contact Maintenance to determine if an IRPI malfunction has occurred. **Cue:** Maintenance has been contacted.		
	3.13	Has an IRPI malfunction occurred?	Candidate answers NO based on rod bottom, OHAs, and primary plant parameter changes, and GOES TO Step 3.15.		
	3.15	**INITIATE** a power reduction to <75% Rated Thermal Power…	Candidate recognizes power is 40%.		
	3.16	**REQUEST** Reactor Engineering assistance to recover rod.	Candidate contacts Reactor Engineering or requests CRS to contact Reactor Engineering for assistance in recovering dropped rod. **Cue:** Reactor Engineering has been contacted.		
	3.17	Is dropped rod to be recovered, per Reactor Engineering?	**Cue:** Reactor Engineering will be performing a flux map to aid in determination of whether a recovery will be made of the dropped rod.		
			Terminate the JPM once the candidate has inserted a manual Reactor Trip or reaches two times the validation time.		

INITIAL CONDITIONS:

40% power, BOL. A power reduction to bring the Main Turbine off-line is on hold.

INITIATING CUE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION: SALEM

SYSTEM: Emergency Operating Procedures

TASK: Perform The Actions For Reactor Trip or Safety Injection (Manually initiate SI based on demand with no auto SI)

TASK NUMBER: N1150020501

JPM NUMBER: 08-01 NRC Sim b

ALTERNATE PATH: [X]

K/A NUMBER: 013 A4.03

IMPORTANCE FACTOR: 4.5 (RO) 4.7 (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: 2-EOP-TRIP-1 Rev. 27 S2.OP-IO.ZZ-0005, Rev. 20
OP-AA-101-111-1003, Rev. 1

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 2 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 03/08/10

Validated By: S Harris, SME or Instructor **Date:** 03/19/10

Reviewed By: Peter Hosek, Training Department **Date:** 3-26-2010

Approved By: Operations Department **Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM: Emergency Operating Procedures

TASK: Perform The Actions For Reactor Trip or Safety Injection

TASK NUMBER: N1150020501

SIMULATOR SETUP
Reset Simulator to **IC-252**

MALFS:
1. **VL0460 through VL0465, 21-23TB10 and 21-23TB20 fail 100% open**
2. **VL0454 through VL0459 21-23TB30 and 21-23 TB40 fail 100% open (all TB valve failures tied to ET-1 MONP0254<20 (Control Bank C Control Rods <20 steps) with 5 second time delay.**
3. **AN0588 SER 588 FAILS -:F21 STEAM FLOW HIGH (Final Value 1)**
4. **RP0108 FAILURE OF AUTOMATIC SI (Final Value TRUE)**
5. **MS0092E,F,G,H 21-24MS167 FAILS OPEN.**
6. **CF06, CF07, CF08, and CF10 all overridden OFF to prevent turning steam dumps off.**

IOP-5 out and marked up to Rx trip step. (5.1.7.B)

INITIAL CONDITIONS:

- Salem Unit 2 is performing a plant shutdown to enter a refueling outage. Rx power has been reduced to 19% in preparation for tripping the Rx. S2.OP-IO.ZZ-0005, Minimum Load to Hot Standby has been performed up to Step 5.1.7.B
- Group busses have been transferred to their Station Power Transformers.
- 21 and 22 AFW pumps are in service supplying 10E4 lbm/hr to each SG.
- 22 SGFP is at idle speed.
- Rod Control is in Manual.

INITIATING CUE:
You are the Reactor Operator. Initiate a Rx trip IAW Step 5.1.7.B of S2.OP-IO.ZZ-0005, and enter EOP-TRIP-1, Reactor Trip or Safety Injection.

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. **Candidate initiates a Manual Safety Injection based on board indication of excessive steam flow OR PZR pressure dropping following Rx trip prior to an automatic Safety Injection.**

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Emergency Operating Procedures

TASK: Perform the Actions for a Reactor Trip or Safety Injection

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Candidate reviews S2.OP-IO.ZZ-0005, Minimum Load to Hot Standby.		
*	IOP-5 5.1.7.B	**TRIP** the Reactor using either Reactor Trip Switches on 2CC2 AND **GO TO** 2-EOP-TRIP-1 Reactor Trip or Safety Injection.	Candidate announces tripping the reactor and trips the reactor with either of the Reactor Trip Switches on 2CC2. **Simulator Operator:** Ensure **ET-1** is **TRUE** upon the Rx trip.		
	EOP-TRIP-1	TRIP REACTOR	Candidate performs Immediate Actions of TRIP-1 from memory: Candidate verifies reactor is tripped from operation of Reactor Trip Switch and indication of Reactor Trip Breakers open.		
	EOP-TRIP-1	IS REACTOR TRIP CONFIRMED	Candidate confirms the reactor trip by: 1. Power range NI indication less than 5% **AND** 2. Intermediate range NI indication dropping **AND** 3. Intermediate range NI SUR negative.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Emergency Operating Procedures

TASK: Perform the Actions for a Reactor Trip or Safety Injection

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	EOP-TRIP-1	TRIP TURBINE	Candidate checks all 4 Turbine Stop Valves indicate shut on 2RP4.		
	EOP-TRIP-1	IS ANY 4KV VITAL BUS ENERGIZED	Candidate checks 4KV vital bus voltage indication on 2CC3 and responds YES.		
	EOP-TRIP-1	IS SI ACTUATED	Candidate checks SI has NOT initiated.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Emergency Operating Procedures

TASK: Perform the Actions for a Reactor Trip or Safety Injection

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	EOP-TRIP-1	IS SI REQUIRED BY 2RP4 OR FIRST OUT OHA	Candidate identifies that there is no demand for a Safety Injection by First Out Overhead Alarm. Candidate identifies that bistable coincidence on 2RP4 for Lo Lo Tavg is present, and then Low Steam Pressure, and additionally notes that steam flow is > expected for a Rx trip. Candidate may also identify rapidly lowering PZR pressure.		
*			Candidate manually initiates Safety Injection from either Safeguards Train A or Train B Keyswitch. **Note**: There is no requirement to identify specific condition which is causing the excessive steam flow. However, candidate MAY identify Main Steam Dump valves all 100% open and attempt to shut them by turning steam dumps off or initiating a MSLI to close the MSIVs. (Will not work).		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Emergency Operating Procedures

TASK: Perform the Actions for a Reactor Trip or Safety Injection

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Terminate JPM when candidate states: "Ready for you to read", which indicates their performance of the first pass through Immediate Actions is complete, or when they announce "Immediate actions are complete", or after an automatic Safety Injection has occurred.		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Salem Unit 2 is performing a plant shutdown to enter a refueling outage. Rx power has been reduced to 19% in preparation for tripping the Rx. S2.OP-IO.ZZ-0005, Minimum Load to Hot Standby has been performed up to Step 5.1.7.B
- Group busses have been transferred to their Station Power Transformers.
- 21 and 22 AFW pumps are in service supplying 10E4 lbm/hr to each SG.
- 22 SGFP is at idle speed.
- Rod Control is in Manual.

INITIATING CUE:

You are the Reactor Operator. Initiate a Rx trip IAW Step 5.1.7.B of S2.OP-IO.ZZ-0005, and enter EOP-TRIP-1, Reactor Trip or Safety Injection.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION:	SALEM
SYSTEM:	Pressurizer Pressure Control
TASK:	TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation
TASK NUMBER:	N1140240401
JPM NUMBER:	08-01 NRC Sim c
ALTERNATE PATH:	[X]
K/A NUMBER:	010 A4.03
IMPORTANCE FACTOR:	RO: 4.0 / SRO: 3.8

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-SO.RC-0002, Rev. 29, S2.OP-AB.PZR-0001, Rev. 18, S2.OP-AR.ZZ-0011, Rev. 56, S2.OP-AR.ZZ-0005, Rev. 18

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 13 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 03/09/10**
Validated By:	**B Boos** **SME or Instructor**	**Date: 03/19/10**
Reviewed By:	Peter Walsh **Training Department**	**Date:** 3-26-2010
Approved By:	**Operations Representative**	**Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

TASK NUMBER: N1150020501

SIMULATOR SETUP

IC-253 **Open RCP screen on P-250 computer**

Mark up S2.OP-SO.RC-0001, to show 23 RCP has been started. (marked up through 5.3.6, with step completed for 23 RCP.

MALF: 1. VL0297 2PR1 FAILS TO POSITION (0-100%) Final Value 100 Delay 10 seconds tied to ET-1.
2. RC0022A RCS PRESS (PT405) FAILS HI/LO Final Value 390 Delay 9 seconds tied to ET-1.
ET-1 KAK06PBH 22 RCP Start pushbutton
ET-3 QB201PRI 2PR1 open indication on 2CC2 Command DMF RC0022A (deletes the high pressure on PC405 that caused POPS Channel 1 initiation.

INITIAL CONDITIONS:

Salem Unit 2 is in MODE 5. RHR HX inlet temperature is 180 degrees. RCS pressure is 290 psig.

21 RHR loop is supplying shutdown cooling. 22 RHR loop is being aligned for ECCS.

23 RCP is in service.

INITIATING CUE: You are directed to start 22 RCP IAW S2.OP-SO.RC-0001, Reactor Coolant Pump Operation, beginning at step 5.3.2. All pre-requisites have been performed SAT. Current open copy of procedure was used to start 23 RCP. Required RCP trends are displayed on P-250 computer, 2RP3, and 2RP4.

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. **Candidate starts 22 RCP.**
2. **Candidate shuts 2PR6.**

OPERATC.. TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with marked up copy of S2.OP-SO.RC-0001, Reactor Coolant Pump Operation, marked up through Step 5.3.6, and with step 5.3.6 completed for 23 RCP.	Candidate reviews procedure, including Precautions and Limitations.		
	5.3.2	**ENSURE** RCP Standpipe is filled AND STANDPIPE LEVEL LO alarm is clear for each RCP to be started.	Candidate checks 22 RCP standpipe level low alarm on RCP bezel is clear.		
	5.3.3	**NOTIFY** the following of the impending RCP start(s): • Electric System Operator • Unit 1 SM/CRS • Hope Creek SM/CRS	Candidate uses correct phones to notify the ESO, Unit 1 CRS, and the Hope Creek SM/CRS that 22 RCP is about to be started.		
	5.3.4	IF 21 RCP is to be started, THEN...	Candidate identifies that 21 RCP is not going to be started. Note: Since this procedure can be used to start all RCPs, this step is not required to be N/A's prior to proceeding to the next step.		
	5.3.5	IF 23 RCP is to be started, THEN...	Candidate notes step has already been performed when placing 23 RCP in service.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control
TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.6	**PERFORM** following for the selected RCP: A. **TREND** parameters for selected RCP (listed in Attachment 5, RCP Parameters)	Candidate notes that trends are established per initial conditions.		
*		B. **START** RCP Oil Lift Pump on selected pump, AND **OPERATE** for a minimum of two minutes.	Candidate depresses start push button for 22 RCP Oil Lift Pump, and verifies red light illuminates and green light extinguishes. Candidate notes time of start for two minute time requirement.		
		C. IF steam generator temperature is lower than RCS temperature, THEN **ENERGIZE** Pressurizer Heaters as required to maintain pressure at 325 psig.	Candidate determines that 22 SG temperature is equal to RCS temperature by checking P-250 computer for SG temperature or SG metal temps on 2RP5.		
		D. **ANNOUNCE** start of selected RCP on Plant Page.	Candidate announces starting 22 RCP on plant page.		
*		E. **START** selected RCP.	Candidate depresses 22 RCP start push button, and verifies red light illuminates and green light extinguishes. **SIMULATOR OPERATOR: Verify ET-1 is TRUE when 22 RCP start PB is depressed.**		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.6 Con't	F. **MONITOR** following parameters until stabilized: • Seal Water differential pressure • Amps • Loop flow • Plant Computer trends • Seal Leakoff flow • Vibration Monitors	Candidate announces unexpected alarms: • Console alarms **POPS INITIATED PRESSURE HI** on channel I, and **CHANNEL 1 PRESSURE HIGH.** • OHA **E-26 2PR1 NOT FULL CLSD.** **Note:** The 2 console alarms will clear after 2PR1 is fully open, when the MALF RC0022A which caused the POPS initiation is automatically deleted. **Note:** The 2PR6 is not able to be closed as long as POPS Channel 1 is ARMED. With the 2PR1 failed open, the only way to isolate the loss of RCS inventory is to disarm POPS Channel 1 and shut the 2PR6. Candidate may refer to any of the following response procedures. **Note:** If candidate's first action is to disarm POPS Channel 1 and attempt to shut 2PR1 and shut 2PR6 without referring to any procedure, then allow the candidate to continue to ensure that they check their actions are backed up by the proper procedure.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP E-26 3.1	IF a Reactor Coolant System high pressure condition exists...	Candidate refers to ARP for E-26 **2PR1 NOT FULL CLSD** and:		
	3.2	IF the reactor Coolant System pressure is normal and 2PR1 is leaking, THEN: A. **CLOSE** 2PR6, PZR PWR OP RELIEF STOP V. B. **REFER** to Technical Specifications.	a. Determines that RCS pressure indicated on 2PC-405 is less than 375 psig and lowering b. May attempt to shut 2PR6 PZR PWR OP RELIEF STOP V, but it will not shut.		

OPERATC.. TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP Console 3.1	**MONITOR** actual RCS pressure on the following indicators: - 2PA-9858 on POPS bezel (2CC1) - 2PI-403 and 2PI-405 on RC Pressure Bezel (2CC2)	Candidate refers to Console Alarm Response for POPS INITIATED PRESSURE HIGH and: a. Determines that RCS pressure is less than 375 psig and lowering.		
	3.2	**NOTIFY** SM/CRS to refer to Technical Specifications and the ECG.	b. Notifies SM/CRS to refer to Technical Specifications and the ECG .		
	3.3	IF the actual pressure is high, THEN:... IF actual RCS pressure is <375 psig and 2PR1 is failed open, THEN:	c. Candidates determines pressure is NOT high.		
*	3.4	A. **PLACE** POPS Ch I on OFF.	1. **PLACES** POPS Ch 1 on OFF.		
*		B. **CLOSE** 2PR6 PZR PWR OP RELIEF STOP V.	2. **CLOSES** 2PR6 PZR PWR OP RELIEF STOP V.		
		C. **GO TO** S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.	3. **GOES TO** S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.		

OPERATC.. TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.PZR		Enters S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction directly based on entry conditions, and performs the following:		
	3.1	**INITIATE** Attachment 1 Continuous Action Summary.	Initiates Attachment 1 Continuous Action Summary. **Cue:** I will monitor the CAS.		
	3.2	Is POPS in service?	Candidate answers YES, and **GOES TO** Attachment 3.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Pressurizer Pressure Control

TASK: TCAF for Pressurizer Pressure Malfunction - Respond to Unwarranted PZR Pressure Overprotection System (POPS) actuation

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.PZR Att. 3 1.0	Is a PORV open?	Candidate answers YES		
	2.0	Is RCS pressure greater than 375 psig?	Candidate answers NO based on console indication, and GOES TO Step 5.0		
*	5.0	**PLACE** the affected channel in OFF AND **CLOSE** the PORV.	Candidate depresses OFF pushbutton for POPS Ch. I, then attempts to shut 2PR1 by depressing 2PR1 MANUAL and SHUT pushbuttons, and recognizes 2PR1 does not shut.		
*	6.0	**CLOSE** the affected PORV Stop Valve.	Candidate closes 2PR6 PZR PWR OP RELIEF STOP V by depressing shut pushbutton, and verifying it shuts.		
			Terminate JPM after candidate has shut 2PR6.		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Salem Unit 2 is in MODE 5.

RHR HX inlet temperature is 180 degrees.

RCS pressure is 290 psig.

21 RHR loop is supplying shutdown cooling.

22 RHR loop is being aligned for ECCS.

23 RCP is in service.

INITIATING CUE:

You are directed to start 22 RCP IAW S2.OP-SO.RC-0001, Reactor Coolant Pump Operation, beginning at step 5.3.2. All pre-requisites have been performed SAT. Current open copy of procedure was used to start 23 RCP. Required RCP trends are displayed on P-250 computer, 2RP3, and 2RP4.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

TASK NUMBER: 1140260401

JPM NUMBER: 08-01 NRC Sim d

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.9

IMPORTANCE FACTOR: 3.8 (RO) 4.2 (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-AB.LOCA Rev. 8 (checked 03/09/10)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 13 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 03-12-10

Validated By: S Harris, SME or Instructor **Date:** 03-19-10

Reviewed By: Peter Hardt, Training Department **Date:** 3-26-2010

Approved By: Operations Department **Date:** 3/25/10

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
JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: ECCS

TASK: Shutdown LOCA

TASK NUMBER: 1140260401

SIMULATOR IC: IC- 257 on Blue Flash Drive (Shutdown IC with SI pumps, Accumulators, and one centrifugal charging pump removed from service)

MALFUNCTIONS REQUIRED:

RT-1 RC0002 RCS Leak Final Value 300
This equals ~ 138 gpm leak at this RCS pressure.

MALF VL0083 2SJ1 fails to 0% (will be automatically deleted when the 2SJ1 MANUAL PB is depressed)
MALF VL0084 2SJ2 fails to 0% (will be automatically deleted when the 2SJ2 MANUAL PB is depressed)
These 2 malfunctions defeat the auto swap of charging pump suction on lo-lo VCT level, but are removed when the associated SJ1 or SJ2 MANUAL PB is depressed. This ensures operator action is required to shift charging pump suction from VCT to RWST.

Events: ET-1 KB116DMK Command DMF VL0083
ET-3 KB117DMK Command DMF VL0084

OVERRIDES REQUIRED: None

SPECIAL INSTRUCTIONS: None

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

TASK NUMBER: 1140260401

INITIAL CONDITIONS:

Reactor is shutdown in MODE 4

21 RHR loop is operating in Shutdown Cooling Mode

RHR HX inlet temp at 277°F, RCS pressure is 325 psig.

22 and 23 Charging pumps and both SI pumps are C/T.

The accumulators have been isolated.

There are no personnel in containment.

INITIATING CUE:

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

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. Raise charging flow to maintain PZR level stable
2. Transfer charging pump suction from VCT to RWST.

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		INSERT RT-1 after operator assumes the watch.	Operator responds to OHA C-2, CNTMT SUMP PMP START, and identifies RCS leakrate is > 1 gpm. Operator uses diverse indications (PZR level lowering, rising charging flow, lowering PZR pressure) to determine there is an RCS leak. Note: Candidate may enter AB.LOCA directly based on meeting entry criteria. **Evaluator Note**: If any AFW alarms occur during JPM, state that another operator will acknowledge alarms.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			Operator determines entry conditions are met for S2.OP-AB.LOCA-0001, SHUTDOWN LOCA. **Note:** Operator may enter S2.OP-AB.RC-0001, REACTOR COOLANT SYSTEM LEAK, which will direct entry into AB.LOCA. **IF** operator enters AB.RC-0001, **THEN** CUE that the CRS will monitor CAS of AB.RC-0001.		
	3.1	**INITIATE** Attachment 1, Continuous Action Summary.	Indicates that Attachment 1 is to be monitored. **Cue:** The CRS will monitor Attachment 1, Continuous Action Summary.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	3.2	**CLOSE** the following valves to isolate letdown: • 2CV2 (LETDOWN CONTROL) • 2CV7 (LETDOWN CONTROL) • 2CV277 (LETDOWN CONTROL) • 2CV8 (LETDOWN ISO FOR RHR) • 2CV278 (EXCESS LETDOWN) • 2CV131 (EXCESS LETDOWN)	Operator closes 2CV2, 2CV277, 2CV7, and 2CV8, and verifies shut 2CV278 and 2CV131 Note: Depending on the amount of time from leak initiation to entry into AB.LOCA-1, an automatic letdown isolation may have occurred from PZR hot calibrated level channel low at 17%. If so, then operator should verify correct letdown isolation at this step.		
	3.3	Can Pressurizer Level be maintained stable or rising?	Determines that pressurizer level is lowering. Operator may raise charging flow here to attempt to stabilize PZR level, and respond YES to stable PZR level. If so, go to Step 3.12. If they do **not** adjust charging flow here, continue to step 3.4. They will be directed to adjust CV55 at step 3.9		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*			**Note:** If the VCT lo-lo level alarm is received at any time during the JPM, the operator will recognize that the automatic actions to swap charging pump suction from the VCT to the RWST has NOT occurred, and manually swap from VCT to RWST. This is a critical step if required to be performed.		
	3.4	Is a Centrifugal Charging Pump in service?	Determines a Centrifugal Charging Pump is in service and goes to Step 3.9		
*	3.9	**ADJUST** 2CV55 until Pressurizer level can be maintained stable or rising.	Depresses the 2CV55 OPEN (INCR FLOW) PB until Pressurizer level is stable or rising.		
	3.10	**MAINTAIN** seal injection flow 6-12 gpm per pump not to exceed 40 gpm total using 2CV71 (CHG HDR PCV)	Monitors seal injection flow and adjusts 2CV71 if required.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3.11	Is Pressurizer Level >11% (>19% for adverse containment) AND stable or rising?	Determines PZR level is >11% and stable or rising, and goes to Step 3.12 below, OR Depending on the amount of time from leak initiation to this point, PZR level MAY be <11%. If so, then operator will perform step 3.15 by: A. Opens 2SJ1 OR 2SJ2. B. Closes 2CV40 OR 2CV41 C. Verifies only one centrifugal charging pump running. D. Opens 2SJ4, 5, 12, and 13. E. Closes 2CV68 and 69. F. Fully opens 2CV55. G. Closes Charging mini flow valves 2CV139 and 140, and goes to step 3.18		
	3.12	Is RCS Subcooling >0^0 F?	Determines subcooling is 0^0 F.		
	3.13	Is Charging Flow < 100 gpm?	Determines charging flow is > 100 gpm, and goes to step 3.17		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ECCS

TASK: Respond to a Shutdown LOCA

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3.17	**ALIGN** Charging Pump suction to the RWST:			
*		A. **OPEN** 2SJ1 OR 2SJ2, (RWST TO CHG PUMP). B. **CLOSE** 2CV40 OR 2CV41, (VCT DISCH STOP VALVE).	Opens 2SJ1 OR 2SJ2, (RWST TO CHG PUMP), and shuts 2CV40 OR 2CV41, (VCT DISCH STOP VALVE).		
	3.18	IF leak is in containment THEN **EVACUATE** all non-essential personnel from Containment: A. **SOUND** Containment Evacuation Alarm. B. **ANNOUNCE** on the Plant PA: There is a Reactor Coolant Leak in Containment, ALL non-essential plant personnel evacuate Containment.	Determines leak is in containment from console indications and alarms, and identifies from initial conditions that no one is in containment. Operator may still sound the containment evacuation horn and make page announcement.		

TERMINATING CUE: After determining no one is in containment OR after performing containment evacuation step, state JPM is complete.

INITIAL CONDITIONS:

Reactor is shutdown in MODE 4.

21 RHR loop is operating in Shutdown Cooling Mode

RHR HX inlet temp at 277°F, RCS pressure is 325 psig.

22 and 23 Charging pumps and both SI pumps are C/T.

The accumulators have been isolated.

There are no personnel in containment.

INITIATING CUE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION: SALEM

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

TASK NUMBER: N0390140201

JPM NUMBER: 08-01 NRC Sim e

ALTERNATE PATH: [X]

K/A NUMBER: 039 A4.01

IMPORTANCE FACTOR: 2.9 (RO) ____ (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [ ]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-ST.MS-0003, Rev. 16 Steam Line Isolation and Response Time Testing

TOOLS AND EQUIPMENT: Stopwatch/Timer

VALIDATED JPM COMPLETION TIME: 17 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **G Gauding** **Instructor** **Date: 03/09/10**

Validated By: **W Wallace** **SME or Instructor** **Date: 03/19/10**

Reviewed By: **Training Department** **Date:** 3-26-2010

Approved By: **Operations Department** **Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM:

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

TASK NUMBER: N0390140201

SIMULATOR SETUP

IC-255
OVERRIDE 4803 OVLO STM LINE ISOL – 21MS167 Final Value OFF
RT-1 MALF VL0420 21MS167 FAILS TO POSITION (0-100%) Final Value 100%

INITIAL CONDITIONS:
Salem Unit 2 is in Mode 3, NOP, NOT.
Main steam Dumps are in MS PRESSURE CONTROL – AUTO @ 970 psig.
21 and 22 AFW pumps are in service.
All Main Steam line Isolation Valves (21-24MS167) are shut, with their respective bypass valves (21-24MS18) open.
All MSIV locking rings are removed.
No other testing is being performed in the inner penetration area.

INITIATING CUE:
You are directed to perform the Stroke Time Testing of **21MS167** IAW S2.OP-ST.MS-0003, Steamline Isolation and Response Time Testing, Section 5.2., starting at step 5.2.2 A second control room operator will be performing the Remote Position Indication (RPI) of Step 5.2.1 using Attachment 6.

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. **Candidate opens 21MS167 and calculates 90% opening time.**
2. **Candidate shuts 21MS167 from 2CC1.**
3. **Candidate terminates surveillance after determining 2RP4 status light for 21MS167 is NOT illuminated.**

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with a marked up partial copy of S2.OP-ST.MS-0003, Rev. 16, with the Pre-requisites and Precautions and Limitations signed off, non applicable portions of procedure removed, and copy of S2.RA.ST.MS-0003, Steam Line Isolation and Response Time Testing Modes 2-3 Acceptance Criteria.	Candidate reviews Pre-requisites and Precautions and Limitations.		
	5.2.2	**RECORD** Pretest Position of the components specified in Attachment 5, Section 1.0	Candidate records: 21MS7 - O 21MS18 - O 21MS167 - X 21MS168 - 169&171 VLVS SELECTED Candidate contacts Field operator and requests position of 21MS169 and 21MS171. **Cue:** 21MS169 and 21MS171 are shut. Candidate records 21MS169 - X 21MS171 - X		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.3	**ENSURE** 21 Steam Generator pressure is 900 (800-1000) psig.	Candidate observes 21 steam generator pressure on 2CC2 and identifies it is ~970 psig. **IF** candidate attempts or signals that they want to adjust steam pressure, **THEN Cue:** The CRS directs you to perform the test with steam pressure at its current value.		
	5.2.4	IF the 21MS167 Mechanical Shaft Locking Device is installed, THEN...	Candidate determines shaft locking device is not installed per initial conditions.		
	5.2.5	IF 21MS18 is NOT OPEN, THEN...	Candidate determines 21MS18 is open from initial conditions or position indication on control console.		
	5.2.6	**ENSURE** 21MS7 is OPEN.	Candidate determines 21MS7 is open from control console indication.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.7	Simultaneously **PERFORM** the following: • **START** the stopwatch. • **OPEN** 21MS167	Candidate depresses the 21MS167 open push button on the control console while starting the stopwatch. **Note**: MS167's can only be opened hydraulically from the Steam Generator section of the control console, the open button on the MSIV portion of CC3 is indication only. **Cue: Time compression will be used to open the 21MS167, and the 21MS167 stroked open in 3 minutes and 50 seconds.**		
			Simulator Operator: After time compression cue has been repeated back by candidate, **INSERT RT-1, MALF VL0420 21MS167 FAILS TO POSITION (0-100%)** Final Value 100%, to open 21MS167, then **DELETE MALF VL0420**.		
	5.2.8	When 21MS167 indicates fully OPEN, **STOP** the stopwatch.	Candidate identifies 21MS167 is open following time compression.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.9	**PERFORM** the following for 21MS167 on Attachment 4: A. **RECORD** the "MSIV Opening Time".	Candidate transfers opening time from stopwatch to the 21MS167 MSIV Opening Time (A) on Attachment 4.		
*		B. **CALCULATE** the "MSIV 90% Opening Time".	Candidate multiplies that time by 0.9 and records that time in MSIV 90% Opening Time on Attachment 4.		
	5.2.10	**VERIFY** OHA G2, 21 SG STM LN ISOL is clear.	Candidate determines OHA G2, 21 SG STM LN ISOL is clear by looking up at alarm.		
	5.2.11	**PERFORM** the following: A. **PLACE** 21MS168 selector switch to 171 VLV SELECTED.	Candidate rotates 21MS168 selector switch to the 171 VLV SELECTED position and verifies indicating light illuminated		
		B. **VERIFY** 171 VLV SELECTED indicating light illuminated.			
	5.2.12	**RECORD** 21 Steam Generator pressure during performance of 21MS167 stroke time testing. ___ psig as indicated on PI514A /PI515A / PI516A (circle one)	Candidate records 21 Steam Generator pressure and circles the selected pressure indicator.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.13	Simultaneously perform the following: • **PRESS** the TRAIN A - LOOP 21 Main Steam Isolation pushbutton at 2CC1. • **START** the stopwatch.	Candidate depresses the TRAIN A - LOOP 21 Main Steam Isolation pushbutton at 2CC1 while simultaneously starting the stopwatch.		
	5.2.14	When 21MS167 indicates full closed on 2CC2 position indicator lights, **STOP** the stopwatch	Candidate stops stopwatch when 21MS167 indicates full closed on 2CC2 position indicator lights. **Note:** Fast close time is ~5-6 seconds.		
	5.2.15	**RECORD** the actual Stroke Time, Stopwatch Number, Date & Time, and Initials on Attachment 3, Section 1.0	Candidate records the actual Stroke Time, Stopwatch Number, Date & Time, and Initials on Attachment 3, Section 1.0.		
	5.2.16	**VERIFY** the TRAIN A-LOOP 21 MAIN STEAM ISOLATION actuated the following valves to the closed position: • 21MS7-CLOSED • 21MS18-CLOSED • 21MS167-CLOSED			

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Main Steam

TASK: Demonstrate Operability of Main Steam Line Isolation Valves (Perform Stroke Time Testing of 21MS167 (Main Steamline Isolation Valve)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.17	**VERIFY** the RP4 CLOSED Status Light for 21MS167 illuminated.	Candidate determines the RP4 CLOSED Status Light for 21MS167 is **NOT** illuminated. Note: Candidate may perform a lamp check on 2RP4 to determine it does not have a burnt out light bulb, but it is not required per procedure.		
*	5.2.18	IF the RP4 CLOSED Status Light for 21MS167 is extinguished, THEN: A. **TERMINATE** performance of this surveillance. B. **INITIATE** NOTF(s) to correct the unsatisfactory conditions(s). C. **RECORD** NOTF number(s) on Attachment 7 in the Comments Section.	Candidate terminates performance of procedure. **Cue:** Once candidate announces procedure termination, state: "JPM is complete".		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Salem Unit 2 is in Mode 3, NOP, NOT.
Main steam Dumps are in MS PRESSURE CONTROL – AUTO @ 970 psig.
21 and 22 AFW pumps are in service.
All Main Steam line Isolation Valves (21-24MS167) are shut, with their respective bypass valves (21-24MS18) open.
All MSIV locking rings are removed.
No other testing is being performed in the inner penetration area.

INITIATING CUE
You are directed to perform the Stroke Time Testing of **21MS167** IAW S2.OP-ST.MS-0003, Steamline Isolation and Response Time Testing, Section 5.2., starting at step 5.2.2 A second control room operator will be performing the Remote Position Indication (RPI) of Step 5.2.1 using Attachment 6.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION:	SALEM
SYSTEM:	Containment Cooling
TASK:	Perform a CFCU Operability and Service Water Flow Verification
TASK NUMBER:	220130201
JPM NUMBER:	08-01 NRC Sim f
ALTERNATE PATH:	[ ]
K/A NUMBER:	022 A4.01
IMPORTANCE FACTOR:	RO: 3.6 SRO: 3.6
APPLICABILITY:	EO [ ] RO [X] STA [ ] SRO [X]
EVALUATION SETTING/METHOD:	Simulator
REFERENCES:	S2.OP-ST.CBV-0003 Rev. 17 (Rev checked 3/21/10) S2.OP-SO.CBV-0001 Rev. 32 (Rev checked 3/21/10)
TOOLS AND EQUIPMENT:	None
VALIDATED JPM COMPLETION TIME:	12 min
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A

Developed By:	**G Gauding** **Instructor**	**Date: 3/8/10**
Validated By:	**S Harris** **SME or Instructor**	**Date: 3/19/10**
Reviewed By:	**Training Department**	**Date:** 3-26-2010
Approved By:	**Operations Department**	**Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM: Containment Cooling

TASK: Perform a CFCU Operability and Service Water Flow Verification

TASK NUMBER: **220130201**

SIMULATOR SETUP: Reset Simulator to IC-1, 100% power, BOL.

INITIAL CONDITIONS:

Rx power is 100% steady state, BOL.

INITIATING CUE:

You have been directed to perform S2.OP-ST.CBV-0003, Containment Systems-Cooling Systems surveillance for **25** CFCU for monthly run.

25 CFCU is filled and vented.

Component Off Normal Report has been reviewed with no abnormalities noted.

Calibration data for required instruments has been obtained and recorded in appropriate Attachments.

The differential pressure gauge for 22 SW header has been installed.

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 S2.OP-ST.CBV-0003 for 25 CFCU and evaluate data as SAT.**

OPERATOR TRAINING PROGRAM **NAME:** _____
JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Containment Cooling

TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME: _____			
		Provide candidate with marked up copy of S2.OP-ST.CBV-0003, Containment Systems-Cooling Systems.	Prerequisites have been completed, but candidate should review them before proceeding.		
			Candidate reviews and initials Precautions and Limitations.		
			NOTE: There is no requirement to either start additional SW pumps OR stop any running CFCUs. There is a system requirement NOT to run 5 CFCUs in HIGH speed, but that is N/A here. However, candidate MAY start another SW pump OR stop a CFCU, which is acceptable.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Containment Cooling
TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.1	**PERFORM** test on each CFCU required to be tested IAW the following instruction: A. **ENSURE** the CFCU to be tested is in LOW SPEED IAW S2.OP-SO.CBV-0001, Containment Ventilation Operation.	Candidate retrieves S2.OP-SO.CBV-0001, Containment Ventilation Operation, and reviews P&Ls, and Prerequisites. Candidate identifies the sections of the procedure NOT to be performed (Sections 5.2-5.6) with N/A. If needed, tell candidate Components Off Normal review is complete and SAT. Candidate starts 25 CFCU in LOW speed IAW Step 5.1.3 by:		
	SO.CBV -1 5.1.3	A. **ENSURE** CFCU is filled and vented IAW S2.OP-SO.CBV-0003(Q), Filling and Venting Containment Fan Coil Units.	A. Ensuring 25 CFCU is filled and vented (Initiating Cue)		
		B. **ENSURE** Service Water is available.	B. Ensuring SW is available by checking SW pumps in service and adequate SW header pressure.		
*		C. **PRESS** FAN LOW SPEED START bezel.	C. PRESS FAN LOW SPEED START bezel for 25 CFCU.		
		D. **ENSURE** following dampers are in indicated positions: • ROUGH FLTR DAMPER CLOSED • HEPA INLET DAMPER OPEN • HEPA OUTLET DAMPER OPEN	D. ENSURES damper alignment is correct for 25 CFCU: ROUGH FLTR DAMPER CLOSED HEPA INLET DAMPER OPEN HEPA OUTLET DAMPER OPEN		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Containment Cooling

TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	SO.CBV -1 5.1.3 (cont)	E. IF Service Water flow is <1465 gpm, THEN: 1. **STOP** the CFCU. 2. **REFER** to S2.OP-SO.SW-0005, Service Water System Operation, Service Water System Operability Guidelines. F. **ENSURE** Service Water flow ≥ 1465 gpm.	Verifies SW flow >1465 gpm to 25 CFCU.		
	ST.CBV-3 5.1.1	B. **RECORD** Start Time in the applicable Attachments(s), Section 3.0, for the CFCU being tested.	Candidate records start time of 25 CFCU in Attachment 5.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Containment Cooling
TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.1 (cont)	C. When at least 15 minutes have elapsed, **RECORD** the following in the applicable Attachment(s), Section 3.0, for the CFCU being tested:	**Cue**: 25 CFCU has been operating for 15 minutes.		
		1. Stop Time	Candidate records 25 CFCU stop time, SW flow rate, and 22 SW header ΔP.		
*		2. Cooling Water Flow Rate (gpm)			
		3. IF testing 21 OR 22 CFCU, THEN 21 SW HDR ΔP is to be recorded.			
		4. IF testing 23 CFCU, THEN both 21 SW HDR ΔP AND 22 SW HDR ΔP are to be recorded (Refer to Step 3.5)	Candidate marks steps for 21-23 CFCU N/A.		
*		5. IF testing 24 OR 25 CFCU, THEN 22 SW HDR ΔP is to be recorded.	**Cue:** WHEN asked, report 22 SW header ΔP is 68 psid.		
*		6. Test results by initialing the SAT or UNSAT column IAW the Acceptance Criteria stated in the Attachment	**See next page for discussion of Acceptance Criteria for ST.CBV-0003**		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Containment Cooling

TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.1 (cont)		Exhibit 1 identifies the minimum flow rate associated with different SW header ΔP. P&L 3.4 states that when ΔP falls between two points on Att., the value shall be rounded up. The 68 psid reported by the field operator shall be rounded up to 70 psid, which yields a required minimum flow of 1447 gpm for 25 CFCU. The recorded flow for 25 CFCU recorded was ~1950 (depending on other CFCU status and number of SW pumps operating) gpm, so the minimum TS flow of 1465 is SAT, and the minimum flow for the ΔP is also SAT.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Containment Cooling
TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.1 (cont)	D. **ALIGN** the CFCUs as required to support current plant conditions IAW S2.OP-SO.CBV-0001, Containment Ventilation Operation.	Candidate stops 25 CFCU IAW Step 5.1.4 of S2.OP-SO.CBV-0001 by:		
*		A. IF CFCU is running in High Speed... B. IF CFCU is running in Low Speed, THEN **PRESS** FAN LOW SPEED STOP bezel. C. **ENSURE** bezels illuminated: 1. FAN STOP 2. ROUGH FLTR DAMPER OPEN 3. HEPA INLET DAMPER CLOSED 4. HEPA OUTLET DAMPER CLOSED	N/A since fan is not in high speed. Presses FAN LOW SPEED STOP bezel for 25 CFCU. Checks proper bezels illuminated 1. FAN STOP. 2. ROUGH FLTR DAMPER OPEN. 3. HEPA INLET DAMPER CLOSED. 4. HEPA OUTLET DAMPER CLOSED.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Containment Cooling

TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	SO.CBV -1 Step 5.1.1	A. **ENSURE** CFCU is filled and vented IAW S2.OP-SO.CBV-0003(Q), Filling and Venting Containment Fan Coil Units. B. **ENSURE** Service Water is available. C. **PRESS** FAN HIGH SPEED START bezel. D. **ENSURE** bezels illuminate: • ROUGH FLTR DAMPER OPEN • HEPA INLET DAMPER CLOSED • HEPA OUTLET DAMPER CLOSED	**IF** candidate determines that current plant conditions require operation of 4 CFCU's in High Speed (original configuration) **AND** less than 4 CFCU's are running in High Speed, **THEN** candidate starts available CFCU IAW S2.OP-SO.CBV-0001, Step 5.1.1 by: Ensures CFCU is filled and vented by noting it was previously in service. Ensuring SW is available by checking SW pumps in service and adequate SW header pressure. Presses FAN HIGH SPEED START bezel. ENSURES bezels illuminate: Roughing Filter damper OPEN HEPA inlet damper CLOSED HEPA outlet damper CLOSED		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Containment Cooling
TASK: Perform a CFCU Operability and Service Water Flow Verification

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		E. IF Service Water flow is <1465 gpm, THEN: 1. **STOP** the CFCU. 2. **REFER** to S2.OP-SO.SW-0005, Service Water System Operation, Service Water System Operability Guidelines. F. **ENSURE** Service Water flow ≥ 1465 gpm.	Verifies SW flow >1465 gpm for CFCU started . Terminate JPM when candidate has performed Step 5.1.1.D regarding alignment of CFCU's to support current plant status.		

INITIAL CONDITIONS:

Rx power is 100% steady state, BOL.

INITIATING CUE:

You have been directed to perform S2.OP-ST.CBV-0003, Containment Systems-Cooling Systems surveillance for **25** CFCU for monthly run.

25 CFCU is filled and vented.

Component Off Normal Report has been reviewed with no abnormalities noted.

Calibration data for required instruments has been obtained and recorded in appropriate Attachments.

The differential pressure gauge for 22 SW header has been installed.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION: SALEM

SYSTEM: 4KV Vital Bus Electrical Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

TASK NUMBER: N0620060101

JPM NUMBER: 08-01 NRC Sim g

ALTERNATE PATH: [ ]

K/A NUMBER: 064 A4.01

IMPORTANCE FACTOR: 4.0 (RO) 4.3 (SRO)

APPLICABILITY:

EO [ ] **RO** [X] **STA** [ ] **SRO** [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-SO.DG-0002, Rev. 34 (Checked 3/10/10)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 25 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding Instructor**	**Date: 03/10/10**
Validated By:	**W. Wallace SME or Instructor**	**Date: 03/19/10**
Reviewed By:	**Training Department**	**Date:** 3-26-2010
Approved By:	**Operations Representative**	**Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM: 4KV Vital Bus Electrical Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

TASK NUMBER:

SIMULATOR SETUP

IC-256

Note: To simulate a defueled condition for realism, most components are O/S and numerous alarms are present. It is not intended that the candidate be required to respond to conditions outside of the system they are operating, and any associated alarms caused by operation of that system.

INITIAL CONDITIONS:

Salem Unit 2 is defueled during an extended shutdown.

2B 4KV Vital bus is being restored from a deenergized inspection due to multiple breaker failures over the last year. All 2B 4KV Vital bus breakers are open.

Part of the vendor supplied, approved re-test is to energize 2B vital bus remotely from the Control Room with 2B EDG.

Local alarms associated with the J-12 2B EDG URGENT TRBL are expected for the current conditions, and do not affect the 2B EDGs ability to be started.

INITIATING CUE:
Using S2.OP-SO.DG-0002, 2B Diesel Generator Operation, start 2B EDG from the control room IAW Section 5.3, and energize 2B 4KV Vital Bus IAW, Section 5.6. DG Startup checks have been completed IAW Section 5.1.
A Field Operator is standing by at 2B EDG, and has a Field Copy of procedure.

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. **Start 2B EDG.**
2. **Adjust 2B EDG voltage to 4.023-4.306.**
3. **Energize 2B 4KV Vital bus with 2B EDG.**

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate a marked up copy of S2.OP-SO.DG-0002, with Prerequisites and Section 5.1 completed.	Candidate reviews and initial Precautions and Limitations.		
*	5.3.1	**PRESS** 2B DIESEL GEN START pushbutton on Control console 2CC3.	Candidate depresses START pushbutton on Control console 2CC3 for 2B DG.		
*	5.3.2	**RECORD** the following: - Generator Voltage on 2VA5843 - Generator Frequency on 2QA5844	Candidate identifies 2VA5843 and 2QA5844 on 2CC3 and records readings in procedure step. **Note:** 2VA5843 will read >4.306 which is the maximum allowed per procedure for the EDG. Candidate may have NEO adjust voltage to correct it here, or procedure will ENSURE voltage is 4.023-4.306 at steps 5.3.4, and 5.6.1 **Simulator Operator:** **IF** directed by candidate to lower EDG voltage locally at the EDG, **THEN** modify REMOTE: **CD03 OVDI** to 4.28 then report that you have lowered voltage to 4260 volts.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Direct NEO to **PERFORM** the following:			
	5.3.3.A	A. **RECORD** the following Diesel Generator Start readings: - 2PL7272 Lube Oil Header Pressure - 2PL7232 Jacket Water Header Pressure - 2PL7330 Air Manifold Pressure - 2TA16525 Highest Gen Stator Temp	Candidate contacts Field Operator and directs them to record: - 2PL7272 Lube Oil Header Pressure - 2PL7232 Jacket Water Header Pressure - 2PL7330 Air Manifold Pressure - 2TA16525 Highest Gen Stator Temp **Note**: It is permissible for the candidate to instruct the Field Operator to: "Perform Step 5.3.3". **Simulator Operator: If** directed to perform step 5.3.3, **then** report that 5.3.3.A is complete, 5.3.3.B is complete SAT, 5.3.3.C is NA, and 5.3.3.D is complete SAT. Otherwise, report back as directed in following steps.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.3.B	B. IF 2BD1AX6D*, 2B Diesel Generator 125VDC breaker is closed, THEN: **CHECK** voltage permissive indicator light 2DAE23-LT2, EDG VOLTAGE, on Generator Control Panel is ON. **CHECK** speed permissive indicator light, 2DAE23-LT-3, EDG SPEED, on Generator Control Panel is ON.	Candidate directs Field Operator to check voltage permissive indicator light 2DAE23-LT2, EDG VOLTAGE, on Generator Control Panel is ON. **Simulator Operator**: Voltage permissive indicator light 2DAE23-LT2, EDG VOLTAGE, on Generator Control Panel is on. Cue: Speed permissive indicator light 2DAE23-LT2, EDG SPEED is ON.		
	5.3.3.C	C. IF Field Ground Relay 64/G white indicating light is OFF AND GENERATOR FIELD GROUND alarm is CLEAR, THEN: 1. **RESET** 64/G relay. 2. **ENSURE** 64/G white indicating light is ON.	Candidate directs Field Operator to check Field Ground Relay 64/G white indicating light status. **Simulator Operator:** Report that Field Ground Relay 64/G white indicating light is ON.		
	5.3.3.D	**ENSURE** K1C Field Flashing Relay Supervisory Light is OFF.	**Simulator Operator:** Report that K1C Field Flashing Relay Supervisory Light is OFF.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.4	**ENSURE** the following control console indication: • READY TO LOAD lamp is ON. • Diesel Generator output voltage is 4.023-4.306 KV. • Diesel Generator frequency is 58.94-60.36 Hz.	Candidate verifies READY TO LOAD lamp on control console is ON. Candidate checks Generator Voltage on 2VA5843 is between 4.023-4.306 KV. If not corrected previously, voltage will be reading >4.306. **Simulator Operator:** IF directed by candidate to lower EDG voltage locally at the EDG, **THEN** modify REMOTE: **CD03 OVDI** to 4.28 then report that you have lowered voltage to 4260 volts. Candidate checks Generator Frequency on 2QA5844 is 58.94-60.36 Hz.		
	5.3.5	IF 2B Diesel Generator is to operated unloaded for an extended period of time(>30 minutes), THEN **INITIATE** Section 5.7, Diesel Generator Running Checks.	**Cue**: 2B Diesel Generator will be loaded in 15 minutes. Candidate NA's step based on cue.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.6.1	**ENSURE** Diesel Generator voltage is within 4.023-4.306 KV range AND frequency is within 58.94-60.36 Hz as indicated on 2CC3 bezels.	Candidate checks Generator Voltage on 2VA5843 is between 4.023-4.306 KV. Candidate checks Generator Frequency on 2QA5844 is 58.94-60.36 Hz.		
	5.6.2	**ENSURE** the following breaker indication on 2CC3 bezels: • 23BSD OPEN • 24BSD OPEN	Candidate checks 23BSD and 24BSD breakers open on 2CC3 by verifying green OPEN light is illuminated for each breaker.		
*	5.6.3	**PRESS** Mimic Bus 2BDD pushbutton.	Candidate depresses mimic bus 2BDD pushbutton on 2CC3 electrical distribution mimic.		
	5.6.4	**ENSURE** 2B MIMIC BUSINTLK CLOSE SELECTION bezel is ON.	Candidate verifies 2B MIMIC BUS INTLK CLOSE SELECTION bezel is ON at 2B EDG bezel.		
*	5.6.5	**PRESS** 2B BREAKER CLOSE pushbutton.	Candidate depresses 2B BREAKER CLOSE pushbutton.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: 4KV Vital Bus Distribution

TASK: Place a 4KV Vital Bus in Service (Start an EDG from the Control Room and energize an isolated vital bus).

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.6.6	**ENSURE** the following: • 2B BREAKER CLOSE pushbutton ON • 2B 4KV Vital Bus voltage is 4.023-4.306 KV. • OHA J-18, 2B 4KV VTL BUS UNDERVOLT, is CLEAR.	Candidate checks 2B BREAKER CLOSE pushbutton ON is illuminated. Candidate checks 2B 4KV Vital Bus Voltage on is between 4.023-4.306 KV. Candidate acknowledges OHA J-18, 2B 4KV VTL BUS UNDERVOLT clearing.		
			Cue: Once candidate has ensured Step 5.6.6 is complete, state "JPM is complete.		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Salem Unit 2 is defueled during an extended shutdown.

2B 4KV Vital bus is being restored from a deenergized inspection due to multiple breaker failures over the last year. All 2B 4KV Vital bus breakers are open.

Part of the vendor supplied, approved re-test is to energize 2B vital bus remotely from the Control Room with 2B EDG.

Local alarms associated with the J-12 2B EDG URGENT TRBL are expected for the current conditions, and do not affect the 2B EDGs ability to be started.

INITIATING CUE

Using S2.OP-SO.DG-0002, 2B Diesel Generator Operation, start 2B EDG from the control room IAW Section 5.3, and energize 2B 4KV Vital Bus IAW, Section 5.6. DG Startup checks have been completed IAW Section 5.1.
A Field Operator is standing by at 2B EDG, and has a Field Copy of procedure.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE:

STATION:	SALEM
SYSTEM:	Reactor Protection System
TASK:	Withdraw control rods to criticality, and TCAF Failure of Source Range Hi Flux Trip to BLOCK .
TASK NUMBER:	N1120170101
JPM NUMBER:	08-01 NRC Sim h
ALTERNATE PATH:	[X]
K/A NUMBER:	012 A4.03
IMPORTANCE FACTOR:	3.6 RO / 3.6 SRO

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-IO.ZZ-0003, Rev. 31 (Checked 3/10/10)

TOOLS AND EQUIPMENT:

VALIDATED JPM COMPLETION TIME: 20 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 03/10/10**
Validated By:	**S Harris** **SME or Instructor**	**Date: 03/19/10**
Reviewed By:	Peter Board **Training Department**	**Date:** 3-26-2010
Approved By:	E **Operations Department**	**Date:** 3/25/10

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:

NAME: _____

DATE: _____

SYSTEM: Reactor Protection System

TASK: Withdraw control rods to criticality, and TCAF Failure of Source Range Hi Flux Trip to BLOCK .

SIMULATOR SETUP

IC-254 **Override B410 OVDI** (Block Source Range B PB will not block)

Ensure AUDIO MULTIPLIER at NI racks is set at 1k

Ensure both SR channels are displayed on NR-45 and NR-45 alarms cleared.

INITIAL CONDITIONS: Salem Unit 2 is in Mode 2 performing a Rx startup by control rods IAW S2.OP-IO.ZZ-0003. The ICRR plot at the eight-fold position predicted criticality at 115 steps, which is the same as the Estimated Critical Rod Height. Rx Engineering predicts the Rx will go critical during the next rod pull of 25 steps.

Control Bank D is at 100 steps.

INITIATING CUE: You are the Reactor Operator. Continue the startup at Step 5.3.16.F. by withdrawing Control Bank D 25 steps or until the Rx is critical, then continue with procedure to raise power and stabilize the Rx at $1x10^{-8}$A in the Intermediate Range.

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. **Candidate identifies criticality during rod pull prior to withdrawing control bank D 25 additional steps.**
2. **Candidate establishes an approximately 0.25 dpm SUR.**
3. **Candidate inserts control rods to establish zero or negative SUR after determination that Source Range Channel B does not Block PRIOR to the Rx automatically tripping on High SR Flux.**

OPERATO.. TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Reactor Protection System
TASK: Withdraw control rods to criticality, and TCAF Failure of Source Range Hi Flux Trip to BLOCK .

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with marked up copy of S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.	When candidate states they are ready to accept the watch, take the Simulator from FREEZE to RUN. Candidate reviews procedure.		
*	5.3.16.F	**WITHDRAW** Control Bank D STOPPING at the following hold points to obtain ICRR data: • ≤ 50 step increments • 8-Fold Rod Position	Candidate announces withdrawing Control Bank D 25 steps or until criticality is achieved. Candidate withdraws control rods while closely monitoring nuclear instrumentation, and stops withdrawing Control Bank D when identification of Rx criticality is observed. The Rx will be critical before Control Bank D have been withdrawn 25 steps.		
	5.3.16.G	IF P-6 (Source range Permissive) green light energizes....	**Note:** P-6 will not energize at this point.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Reactor Protection System
TASK: Withdraw control rods to criticality, and TCAF Failure of Source Range Hi Flux Trip to BLOCK .

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.3.17	When criticality is achieved: **A. MAKE** the following announcement twice on the plant PA System: "Attention all plant personnel, Unit 2 Reactor is critical." **B. RECORD** Criticality Date/Time data in Attachment 2, Section 3.0, and in the Control Room Narrative Log. **C. RECORD** Attachment 2, Section 3.0, Surveillance Results IAW the stated Acceptance Criteria.	Candidate announces the Rx is critical. Candidate makes "Attention all plant personnel, Unit 2 Reactor is critical." announcement two times on the Plant PA system. **Cue**: The Plant operator will annotate the Control Room Log. Candidate records date/time of criticality in Attachment 2, Section 3.0 at bottom of page. Candidate initials SAT column of section 3.0 in Attachment 2.		
			Cue: "The CRS directs you to continue the power ascension at Step 5.3.18 by withdrawing Control Bank D to establish and maintain a 0.25 decade per minute start up rate."		
*	5.3.18	**CONTINUE** with Reactor Power ascension, with positive stable SUR NOT to exceed 1.0 dpm, by adjusting Control Bank "D" as needed.	Candidate withdraws Control Bank D to establish and maintain a positive startup rate of approximately 0.25 dpm SUR.		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Reactor Protection System

TASK: Withdraw control rods to criticality, and TCAF Failure of Source Range Hi Flux Trip to BLOCK .

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.19	**OBSERVE** source range and intermediate range levels on NIS for ≥ one decade overlap during performance of next step.	Candidate observes source range and intermediate range and identifies when at least 1 decade of overlap between them has occurred.		
	5.3.20	When P-6 (Source Range Permissive) green light is energized, as indicated on 2RP4 ½ IR channels at 10^{-10} amps:			
		A. **SELECT** one pen of NR-45 to an Intermediate Range channel and the other pen to a Power Range channel.	Candidate selects one Intermediate Range channel and one Power Range channel on recorder NR-45.		
*		B. **BLOCK** Source Range High Flux Trip by depressing both "BLOCK SOURCE RANGE **A"** AND "BLOCK SOURCE RANGE **B**" pushbuttons on console.	Candidate depresses BLOCK SOURCE RANGE **A"** AND "BLOCK SOURCE RANGE **B**" pushbuttons on console, and observes BLOCK SOURCE RANGE **B** light does NOT illuminate.		
*		C. **ENSURE** Source Range Trains A&B TRIP BLOCKED blue light is illuminated on 2RP4 AND OHA E-5 SR DET VOLT TRBL alarms.	Candidate inserts control bank D to stop the power ascension and establishes a zero or negative SUR.		
			Terminate the JPM when the candidate establishes a zero or negative SUR, or after the Rx trips on High Source Range Flux at $1E^5$ cpm in the Source Range.		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Salem Unit 2 is in Mode 2 performing a Rx startup by control rods IAW S2.OP-IO.ZZ-0003. The ICRR plot at the eight-fold position predicted criticality at 115 steps, which is the same as the Estimated Critical Rod Height. Rx Engineering predicts the Rx will go critical during the next rod pull of 25 steps.

Control Bank D is at 100 steps.

INITIATING CUE

You are the Reactor Operator. Continue the startup at Step 5.3.16.F. by withdrawing Control Bank D 25 steps or until the Rx is critical, then continue with procedure to raise power and stabilize the Rx at $1x10^{-8}$A in the Intermediate Range.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Control Room Evacuation

TASK: Reset Auxiliary Feedwater Pump Turbine Trip Valve MS52

TASK NUMBER: 113 004 05 01

JPM NUMBER: 08-01 NRC IP-i

ALTERNATE PATH: [ ]

K/A NUMBER: APE 068 AA1.02

IMPORTANCE FACTOR:	4.3	4.5
	RO	**SRO**

APPLICABILITY:
EO [ ] **RO** [X] **STA** [ ] **SRO** [X]

EVALUATION SETTING/METHOD: In Plant

REFERENCES: S2.OP-AB.CR-0001, Control Room Evacuation, Rev. 22 Att. 13

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 03/01/10**
Validated By:	**W Wallace** **SME or Instructor**	**Date: 03/18/10**
Approved By:	**Operations Representative**	**Date:** 3/25/10
Approved By:	**Training Department**	**Date:** 3-26-2010

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

NAME_____
DATE_____

SYSTEM: AUXILIARY FEEDWATER SYSTEM

TASK: Reset an Auxiliary Feedwater Turbine Trip Valve (MS52)

TASK NUMBER: 113 004 05 01

INITIAL CONDITIONS: The reactor has been tripped and the control room has been evacuated due to a bomb threat. 23 AFW Pump has tripped on over speed.

INITIATING CUE: You have been directed to reset 23 AFW Pump Turbine Trip Valve (2MS52) IAW S2.OP-AB.CR-0001, Control Room Evacuation, Attachment 13, Turbine - Driven AFW Pump Restoration. Maintenance has corrected the cause of the overspeed trip, and there are no AUTO start signals present for 23 AFW pump.

SUCCESSFUL COMPLETION CRITERIA:

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

Task Standard for Successful Completion:
1. Perform Attachment 13 in correct sequence.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
		Operator obtains procedure.	Provide operator with the correct procedure, S2.OP-AB.CR-0001, Rev. 22, Att.13.		
*	1.0 1.1	RESETTING 2MS52 **SEAT** tappet nut by slightly pulling Head Lever away from trip linkage AND **CHECK** that the Emergency Trip Lever is in its RESET position (horizontal).	Verifies tappet nut seated and EMERGENCY TRIP LEVER in reset position. **Cue:** Tappet nut seated and EMERGENCY TRIP LEVER is reset.		
*	1.2	**ROTATE** 2MS52 handwheel in the closed direction (clockwise). This will cause the Latch-Up Lever to move up toward the Trip Hook.	Simulates rotating 2MS52 23 AFW Pp Turbine Trip Valve handwheel clockwise and verifies Latch-Up Lever moving toward Trip Hook. **Cue**: Lever is moving towards trip hook.		
*	1.3	**CHECK** that the Latch-Up Lever moves up into position, that it moves to and engages the Trip Hook.	Verifies Trip Hook engages. **Cue**: Trip Hook is engaged.		
	1.4	**PULL UP** on the Hand Trip Lever to ensure full engagement of the Trip Hook and Latch-up Lever.	Trip Hook engaged in previous step. **Cue**: Trip Hook is fully engaged.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
		CAUTION: Leaving 2MS52 backseated may impose more reaction loading on the Trip hook than the Trip Linkage can overcome, thus rendering the 2MS52 trip function **INOPERABLE.** When resetting 2MS52, trapped steam pressure could spin turbine for short period of time (~2 seconds).			
*	1.5	Slowly **ROTATE** 2MS52 handwheel in the OPEN direction (counter-clockwise) until the Split Coupling raises and makes contact with the bottom of the Sliding Nut OR the valve comes to rest on the backseat.	Simulates rotating Handwheel counter-clockwise and verifies Split Coupling makes contact with Sliding Nut OR the valve comes to rest on the backseat. **Cue**: Split Coupling contacting Sliding Nut.		
*	1.6	**ROTATE** 2MS52 handwheel clockwise approximately one turn until handwheel moves freely AND Latch-up lever is in full contact with Trip Hook.	Simulates rotating Handwheel clockwise one turn and verifies Handwheel moves freely. **Cue**: Handwheel moves freely and Latch-up lever is in full contact with Trip Hook.		
	1.7	**ENSURE** turbine stops spinning (indicates 2MS132 is seated)	**Cue**: Turbine is not spinning.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
	1.8	**ENSURE** proper engagement of tappet nut and head lever IAW Att. 13, page 2, 23 AF Pump Trip/Throttle Valve & Overspeed Trip Mechanism, Overspeed Trip Mechanism Reset.	Ensures proper engagement IAW Att. 13, page 2.		

TERMINATING CUE: Operator reports 2MS52 is reset.

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

The reactor has been tripped and the control room has been evacuated due to a bomb threat. 23 AFW Pump has tripped on over speed.

INITIATING CUE:

You have been directed to reset 23 AFW Pump Turbine Trip Valve (2MS52) IAW S2.OP-AB.CR-0001, Control Room Evacuation, Attachment 13, Turbine - Driven AFW Pump Restoration. Maintenance has corrected the cause of the overspeed trip, and there are no AUTO start signals present for 23 AFW pump.

ATTACHMENT 13
(Page 1 of 3)

TURBINE-DRIVEN AFW PUMP RESTORATION

1.0 **RESETTING 2MS52** **[C0356]**

___ 1.1 **SEAT** tappet nut by slightly pulling Head Lever away from trip linkage AND **CHECK** that the Emergency Trip Lever is in its RESET position (horizontal).

NOTE

The next three steps are interrelated and should occur at about the same time.

___ 1.2 **ROTATE** 2MS52 handwheel in the closed direction (clockwise). This will cause the Latch-Up Lever to move up toward the Trip Hook.

___ 1.3 **CHECK** that as the Latch-Up Lever moves up into position, that it moves to and engages the Trip Hook.

___ 1.4 **PULL UP** on the Hand Trip Lever to ensure full engagement of the Trip Hook and Latch-up Lever.

CAUTION

Extra caution is advised while in the Turbine Driven AFW Pump Room when resetting the AFW Pump with AUTO Start signals locked in. In this condition, the pump will start.

Leaving 2MS52 backseated may impose more reaction loading on the Trip Hook than the Trip Linkage can overcome, thus rendering the 2MS52 trip function INOPERABLE.

___ 1.5 Slowly **ROTATE** 2MS52 handwheel in the open direction (counter-clockwise) until the Split Coupling raises and makes contact with the bottom of the Sliding Nut OR the valve comes to rest on the backseat.

___ 1.6 **ROTATE** 2MS52 handwheel clockwise approximately one turn until handwheel moves freely AND Latch-up lever is in full contact with Trip Hook. **[C0315]**

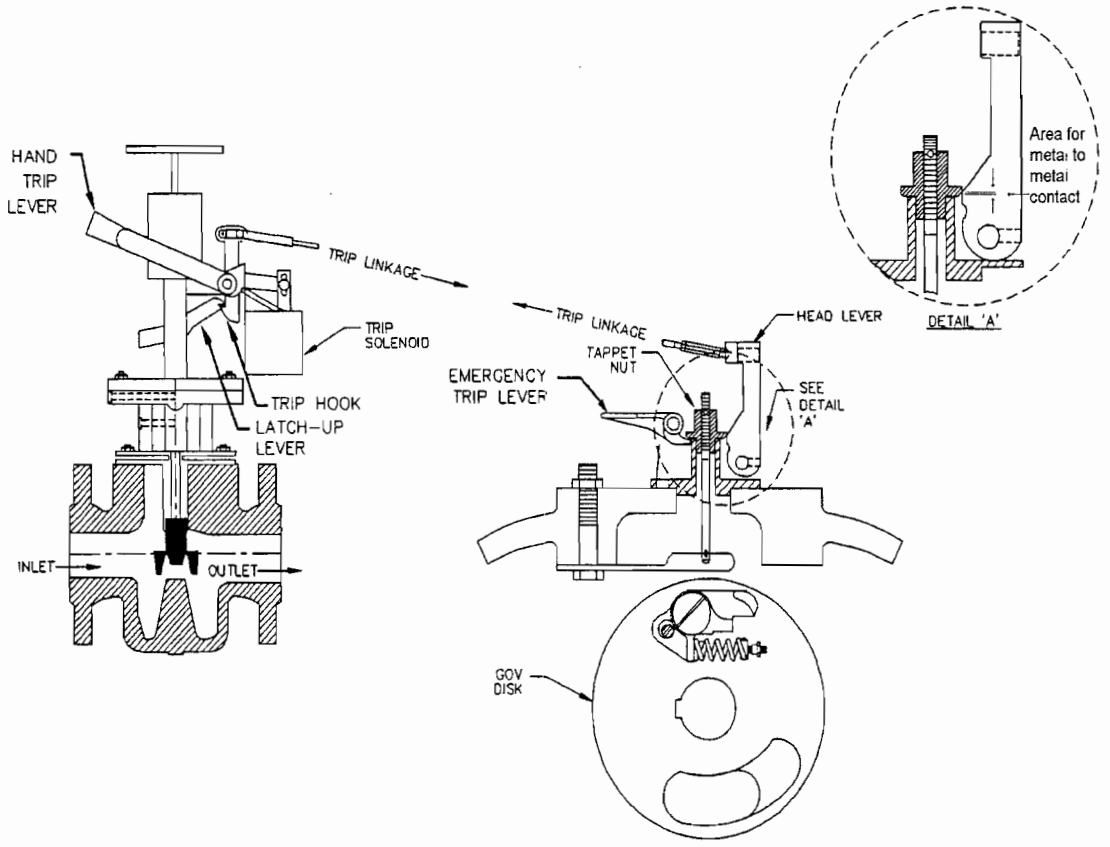
___ 1.7 **ENSURE** turbine stops spinning (indicates 2MS132 is seated).

___ 1.8 **ENSURE** proper engagement of tappet nut and head lever IAW Attachment 13 Page 2, 23 AF Pump Trip/Throttle Valve & Overspeed Trip Mechanism, Overspeed Trip Mechanism/Valve Reset.

ATTACHMENT 13
(Page 2 of 3)

TURBINE-DRIVEN AFW PUMP RESTORATION

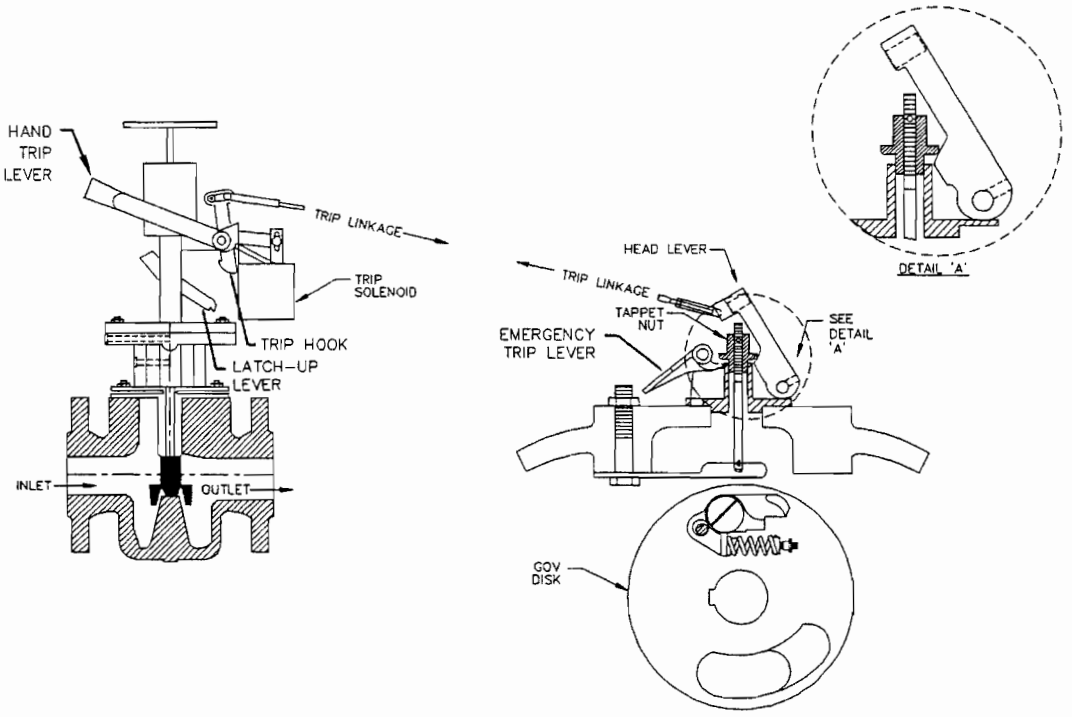
23 AF PUMP TRIP/THROTTLE VALVE & OVERSPEED TRIP MECHANISM
OVERSPEED TRIP MECHANISM/VALVE RESET



ATTACHMENT 13
(Page 3 of 3)

TURBINE-DRIVEN AFW PUMP RESTORATION

23 AF PUMP TRIP/THROTTLE VALVE & OVERSPEED TRIP MECHANISM
OVERSPEED TRIP MECHANISM/VALVE TRIPPED



Operations Training Program
Job Performance Measure

STATION: SALEM

SYSTEM: Control Air

TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor)

TASK NUMBER: N1150140501

JPM NUMBER: 08-01 NRC IP-j

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.23

IMPORTANCE FACTOR: 4.3 (RO) 4.4 (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: In Plant

REFERENCES:
SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor, Rev. 13
2-EOP-LOPA-1, Loss of All AC Power, Rev. 26
S2.OP-AB.LOOP-1, Loss of Off-Site Power, Rev. 22
S2.OP-AB.CA-0001, Loss of Control Air, Rev. 15
DWG 604495 (Rev. 2) and 205347-2 Rev. 40 (H-6)

TOOLS AND EQUIPMENT: SBO Compressor Building is normally unlocked (L-3 key if locked)

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date:** 03/01/10
Validated By:	**W Wallace** **SME or Instructor**	**Date:** 03/18/10
Reviewed By:	Peter Marsh **Training Department**	**Date:** 3-26-2010
Approved By:	E **Operations Department**	**Date:** 3/25/10

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

Operations Training Program
Job Performance Measure

SYSTEM: Control Air

TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor)

TASK NUMBER: N1150140501

INITIAL CONDITIONS:

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

INITIATING CUE:

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

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. Operator performs SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor, SECTION 5.1 in the correct sequence which would result in SBO Compressor running supplying air through 1CA1913 SBO COMPRESSOR DISCHARGE VALVE, and 1CA1886 BLACKOUT AIR COMPRESSOR ISOLATION, and 2CA584 YARD CONTROL AIR SUPPLY VALVE to Aux Building headers 1A and 2A.

Operations Training Program
Job Performance Measure

SYSTEM: Control Air **NAME:** _____
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Provide marked up copy of the SC.OP-SO.CA-0001, SBO Diesel Control Air Compressor with Prerequisites signed off. Additionally, Step 5.1.1 for removing Inspection Covers will be previously completed, as will Step 5.1.2 to re-install inspection covers.	Operator has and uses standard personnel safety equipment. Dons hardhat, safety glasses. Uses hearing protection when entering high noise areas that are posted as hearing protection required. Uses gloves when operating equipment or climbing.		
			Operator reviews and signs Precautions and Limitations, and performs P&L 3.10 as described in next step. Operator must obtain hearing protection per P&L 3.1 All other P&Ls require no action other than reading and initialing with the exception of P&L 3.10 which will be performed at the SBO as identified below.		
			Operator proceeds to SBO Compressor Building.		

Operations Training Program
Job Performance Measure

SYSTEM: Control Air **NAME:** _____

TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	P&L 3.10	Ensure the Battery Tender has power by observing the Red and Green lamps on the front. The placard next to the Battery Tender explains the Red and Green lamps and their significance.	Operator observes the battery Tender GREEN light is illuminated, and the RED light is not illuminated in the SBO building. (Green is a float charge on the battery, Red (full charging current) would only be present after a discharge)		
	5.1.3	**OPEN** both Engine intake louvers (located outside building on west wall.)	**Cue:** After operator **locates** and describes how to open Engine intake louvers, state that the Engine intake louvers are open.		
	5.1.4	**OPEN** 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, to drain any water accumulation, then CLOSE 1CA1920.	**Cue:** After operator locates 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, and describes how to open, including that the drain cap must be removed, state 1CA1920, BLACKOUT AIR COMPRESSOR DRAIN VALVE, has been cycled and no water came out of pipe. **Since the cue would be the same whether or not the drain cap was removed (nothing came out the end of pipe) only comment here for review if pipe cap was not removed.**		

SYSTEM: Control Air **NAME:** _____
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	5.1.5	**OPEN** 2FZSBO10, BATTERY CHARGER, breaker	Operator locates 2FZSBO10, BATTERY CHARGER, breaker in Panel 2FZSBO, SBO Compressor Bldg Distribution Panel, and simulates opening. **Cue:** 2FZSBO10, BATTERY CHARGER, breaker, is open.		
	5.1.6	**PLACE** SBO Control Air Dryer switch in ON position.	Operator locates SBO Control Air Dryer switch and simulates turning switch to ON position. **Cue:** SBO Control Air Dryer switch is ON, and Control Air On light is illuminated.		
	5.1.7	**RECORD** Engine Hourmeter reading on Attachment 1, Section 1.0, and in log book at SBO compressor.	Operator locates Engine Hourmeter, 1XA16993, Tachometer/Hourmeter, inside engine control panel labeled Compressor Noise Emission Control Information, and records current reading in Section 1.0 of Att. 1. Operator locates logbook hanging from side of panel 2FZSBO, SBO Compressor Bldg Distribution Panel, and identifies where Engine Hourmeter should be logged.		

Operations Training Program
Job Performance Measure

SYSTEM: Control Air **NAME:** _____
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	5.1.8	**PLACE** UNLOADER VALVE selector switch in START position.	Operator locates UNLOADER VALVE selector switch, and ensures switch in START position. **Note:** UNLOADER VALVE selector switch is normally in Start when engine is shutdown.		
*	5.1.9	**PRESS** AND **HOLD** BY-PASS VALVE pushbutton.	Operators locates BY-PASS VALVE pushbutton in control panel, and simulates depressing AND holding depressed.		

Operations Training Program
Job Performance Measure

SYSTEM: Control Air **NAME:** _____
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	5.1.10	**PLACE** SBO-IGN-SWT, ENGINE IGNITION SWITCH in START position until engine starts, then RELEASE to RUN position.	While keeping the Bypass Valve pushbutton depressed, operator simulates placing the SBO-IGN-SWT SBO Air Comp Inst Pnl Engine Ignition Switch in START. **Cue:** Engine has started. After cue is given, operator releases SBO-IGN-SWT *SBO* Air Comp Inst Pnl Engine Ignition Switch to RUN. **Note*: If operator also releases the BYPASS VALVE pushbutton at this point, without checking oil pressure >15 psig, then CUE that the engine has stopped.***		
*	5.1.11	When engine oil pressure is >15 psig, RELEASE BY-PASS VALVE pushbutton.	Operator identifies oil pressure reading on gauge labeled oil pressure gauge inside control panel. **Cue:** Oil pressure is 40 psig. Operator releases BY-PASS VALVE pushbutton.		

Operations Training Program
Job Performance Measure

SYSTEM: Control Air **NAME:** _____
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor) **DATE:** _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	5.1.12	**ALLOW** engine to run for 5 minutes to warm up.	**Cue:** 5 minutes has elapsed.		
*	5.1.13	**OPEN** 1CA1913 SBO COMPRESSOR DISCHARGE VALVE, to pressurize Control Air header.	Operator locates and describes opening 1CA1913 SBO COMPRESSOR DISCHARGE VALVE **Cue:** 1CA1913 SBO COMPRESSOR DISCHARGE VALVE, is open.		
*	5.1.14	**OPEN** 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION.	Operator locates and describes opening 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION. Note: 1CA1886 is located near the entrance to Service Building on right side past the U2 mixing bottle **Cue:** 1CA1886, BLACKOUT AIR COMPRESSOR ISOLATION is open.		

Operations Training Program
Job Performance Measure

SYSTEM: Control Air
TASK: Perform Actions for a Loss of All AC Power (Start the SBO Compressor)

NAME: _____
DATE: _____

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	5.1.15	**OPEN** 2CA584, YARD CONTROL AIR SUPPLY VALVE, to pressurize Aux. Building 1A and 2A Control Air headers.	Operator locates and describes opening 2CA584, YARD CONTROL AIR SUPPLY VALVE. Note: 2CA584 is located near the entrance to Service Building on right side past the U2 mixing bottle. **Cue:** 2CA584, YARD CONTROL AIR SUPPLY VALVE is open.		
*	5.1.16	**PLACE** UNLOADER VALVE selector switch in RUN position.	Operator returns to SBO Compressor Building and points out UNLOADER VALVE selector switch describes placing it in RUN position. **Cue:** JPM is complete.		

INITIAL CONDITIONS:

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

INITIATING CUE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Radioactive Liquid Waste
TASK:	Respond to High Radiation Alarm during an Authorized Release of Rad. Liquid Waste to the CIRC Water System From 21 CVCS Monitor Tank
TASK NUMBER:	N0685140104
JPM NUMBER:	08-01 NRC IP-k
ALTERNATE PATH:	[X]
K/A NUMBER:	2.3.11
IMPORTANCE FACTOR:	3.8 (RO) / 4.3 (SRO)

APPLICABILITY:
EO [ ] RO [X] STA [ ] SRO [X]

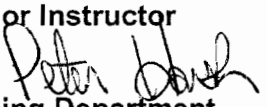
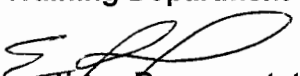
EVALUATION SETTING/METHOD: In Plant/SIMULATE

REFERENCES: S2.OP-SO.WL-0001, Rev. 23, Release of Radioactive Liquid Waste from 21 CVCS Monitor Tank

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 min.

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 03/03/10**
Validated By:	**W Wallace** **SME or Instructor**	**Date: 03/18/10**
Reviewed By:	 **Training Department**	**Date:** 3-26-2010
Approved By:	 **Operations Representative**	**Date:** 3/25/10

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

NAME: _____

DATE: _____

SYSTEM: Radioactive Liquid Waste

TASK: Respond to High Radiation Alarm during an Authorized Release of Rad. Liquid Waste to the CIRC Water System From 21 CVCS Monitor Tank

TASK NUMBER: N0685140104

INITIAL CONDITIONS:

Both Units are at 100% power.
A discharge of 21 CVCS Monitor Tank to Unit 1 Circ Water via Unit 2 SW has been directed IAW S2.OP SO.WL-0001, Release of Radioactive Liquid Waste from 21 CVCS Monitor Tank.
Recirculation and preparation for release of the Monitoring Tank have been completed.
Chemistry has authorized a maximum allowable release rate of 150 gpm.
ALL Circulators are in service.
2R18 and the Overboard Flow monitor are OPERABLE.
SW Room Cooler Headers are NOT cross-tied.
S2.OP-SO.WL-0001, Sections 5.1, 5.2, and 5.3 are complete.
21 CVCS tank initial level is 19,600 gallons.

INITIATING CUE:

Perform Section 5.5, Release of 21 CVCS Monitor Tank via SW system to CW system, 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. **Perform normal Liquid Radwaste Release.**
2. **Terminate release upon receipt of high radiation alarm on release.**

*	STEP No.	STEP	STANDARD	EVAL S/U	COMMENTS
		Provide candidate with marked up copy of release procedure.	Reviews marked up procedure		
	5.5.1	IF 2FR1064 is INOPERABLE....	NA's step since 2FR1064 is OPERABLE.		
*	5.5.2	Direct unit 2 NCO to **OPEN** 2WL51, LIQUID RELEASE STOP VALVE.	Locates plant page or phone to call control room. Cue: Unit 2 NCO reports 2WL51 has been opened.		
	5.5.3	Direct a second operator to **PERFORM** an Independent Verification for 2WL51 position IAW Attachment 2, Step 4.1.2 OR 4.2.2 as applicable (ODCM)	Cue: IV has been performed.		
*	5.5.4	**THROTTLE** OPEN 2WR59, MT PMPS OB STOP VALVE, NOT to exceed the Maximum Release Rate recorded in Attachment 2, Step 2.2.2	Candidate locates 2WR59 and simulates opening valve. When candidate checks flow indication on 104 panel, Cue: With the valve fully open, flow is 10 gpm. Note: Max Release Rate from Att. 2, Step 2.2.2 is 150 gpm.		
	5.5.5	Direct a second operator to **PERFORM** an Independent Verification for 2WR59 position IAW Attachment 2, Step 4.1.3 OR 4.2.3 as applicable (ODCM)	Cue: IV has been performed.		
*	5.5.6	IF the Maximum Release Rate recorded in Attachment 2, Step 2.2.2 can NOT be obtained, THEN **THROTTLE** CLOSED 21WR53 MT RECIRC V, NOT to exceed the Maximum Release Rate.	Candidate locates 21WR53 and simulates throttling valve closed. When candidate checks flow on 104 panel, CUE: Flow is 55 gpm.		

*	STEP No.	STEP	STANDARD	EVAL S/U	COMMENTS
	5.5.7	IF 2FR1064 flow monitor is OPERABLE, THEN **RECORD** time, date, and tank identification on recorder.	Candidate simulates annotating recorder with time, date and tank.		
	5.5.8	**COMPLETE** Attachment 2, Section 5.1	Candidate records data. Cue: Chemistry paperwork indicates dilution water flowrate is 200,000 gpm. Cue: When candidate reads 21 CVCS Monitor Tank Level, state, "2-LIS-180 indicates 90%". Operator records 19,600 from either Att. 1 Section 2.0 or Att. 2 Section 1.0. If operator requests S2.OP-TM.ZZ-0002, Tank Capacity Data, tell them the procedure is not needed to determine the tank volume. Operator records Dilution Water Flowrate of 200,000 gpm.) Initial conditions stated all circulators were in service. Operator records 55 gpm for Discharge Flow Rate. (Previous cue from Step 5.5.6 can be re-stated here if asked.) Cue: When candidate reads 2R18 indication on 104 panel, state, "2R18 reads 10^5 counts, the RED HI RAD light is lit." Candidate calls control room to inform them of HI RADIATION condition and directs NCO to shut 2WL51.		
*	5.5.9	IF any of the following occur during the release THEN direct the NCO to **CLOSE** 2WL51, LIQUID RELEASE STOP VALVE. Loss of dilution water flow 2FR1064 becomes inoperable 2R18 Monitor ALARMS MT pump pressure falls below the MDP allowed IAW Attachment 4, as applicable			
			Cue: Once operator has called control room to have the 2WL51 shut, state: "JPM is complete."		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Both Units are at 100% power.
A discharge of 21 CVCS Monitor Tank to Unit 1 Circ Water via Unit 2 SW has been directed IAW S2.OP SO.WL-0001, Release of Radioactive Liquid Waste from 21 CVCS Monitor Tank.
Recirculation and preparation for release of the Monitoring Tank have been completed.
Chemistry has authorized a maximum allowable release rate of 150 gpm.
ALL Circulators are in service.
2R18 and the Overboard Flow monitor are OPERABLE.
SW Room Cooler Headers are NOT cross-tied.
S2.OP-SO.WL-0001, Sections 5.1, 5.2, and 5.3 are complete.
21 CVCS tank initial level is 19,600 gallons.

INITIATING CUE:

Perform Section 5.5, Release of 21 CVCS Monitor Tank via SW system to CW system, of S2.OP-SO.WL-0001.

Facility: SALEM 1 & 2 Scenario No.: ESG-1 Op-Test No.: 08-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 90% power, MOL. 23 SW pp C/T for strainer repair.

Turnover: Raise Rx power to 100%

Event No.	Malf. No.	Event Type*	Event Description
1		N CRS/PO R RO	Raise power
2		I CRS/RO	Tavg channel fails high (Tech Specs)
3		C CRS/PO	#4 SW Bay leak, leak isolation requires isolating all #4 Bay SW pps, with 23SW pp C/T (TS 3.0.3 entry)
4		C CRS/RO	RCP #1 seal degradation leading to failure
5		C CRS/PO	2A 4KV vital bus de-energizes on Rx trip, EDG output bkr does not shut, no SW pumps are running
6		M ALL	SBLOCA
7		C ALL	SEC controlled equipment fails to start (22 SI pp)
8		C ALL	Loss of Off-Site power after SI reset

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

SIMULATOR

EXAMINATION SCENARIO GUIDE

SCENARIO TITLE:	RCP #1 seal failure, SBLOCA
SCENARIO NUMBER:	08-01 NRC ESG-1
EFFECTIVE DATE:	See Approval Dates
EXPECTED DURATION:	90 min
REVISION NUMBER:	0
PROGRAM:	☐ **L.O. REQUAL**
	☒ **INITIAL LICENSE**
	☐ **OTHER** ☐ **STA**

REVISION SUMMARY:
New Issue for NRC Exam

PREPARED BY:	G Gauding	03-06-10
	Lead Regulatory Exam Author	**Date**
APPROVED BY:	Peter Hash	3-26-2010
	Salem Operations Training	**Date**
APPROVED BY:		3/25/10
	Facility Representative	**Date**

I. OBJECTIVE(S):

Enabling Objectives:

A. Given the unit at 90% reactor power with the generator synchronized to the grid, the crew will perform a power increase at 2%/hr, IAW S2.OP-IO.ZZ-0004(Q).

B. Given the unit at power with a failure of a Tavg channel which causes continuous rod motion, take corrective action IAW AB.ROD-0003.

C. Given the order or indications of a loss or malfunction of a safety related plant cooling water system, perform actions as the nuclear control operator to RESPOND to the loss or malfunction of the safety related plant cooling water system in accordance with the approved station procedures.

D. Given the order or indications of a loss or malfunction of a safety related plant cooling water system, DIRECT the response to the loss or malfunction in accordance with the approved station procedures.

E. Given the unit at power with a SW Bay Leak, take actions needed to isolate the bay, IAW approved station procedures.

F. Given a RCP with various seal failures, take corrective action for RCP seal failures IAW AB.RCP-0001 and the appropriate alarm response procedures

G. Given a failure of an RCP, perform actions as the nuclear control operator to RESPOND to the malfunction IAW approved station procedures.

H. Given the failure of a RCP, DIRECT the response to the malfunction IAW approved station procedures.

I. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.

J. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.

K. Given the order or indications of a safety injection perform actions as the nuclear control operator to RESPOND to the safety injection in accordance with the approved station procedures.

L. Given indication of a safety injection DIRECT the response to the safety injection in accordance with the approved station procedures.

II. MAJOR EVENTS:

A. Raise Rx power.

B. Tavg Channel fails high.

C. 4 SW bay leak.

D. 24 RCP #1 seal failure

E. SBLOCA

F. Loss of Off Site power

III. SCENARIO SUMMARY:

A. The crew will take the watch at ~90% power with all systems in automatic at MOL, with directions to raise power to 100% @ 2% per hour. 23 SW pump is C/T for strainer repair.

B. After the power ascension is underway, Tavg channel 22 will fail high. The crew will respond to place the control rods in manual after verifying no load rejection, and respond to the malfunction IAW S2.OP-AB.ROD-0003, Continuous Rod Motion.

C. After the CRS has evaluated Tech Specs, #4 Service Water Bay will develop a SW leak. The crew will respond to perform leak identification and isolation actions in S2.OP-AB.SW-0001, Loss of Service Water Header Pressure and S2.OP-AB.SW-0003, Service Water Bay Leak. The CRS will identify a Tech Spec 3.0.3 entry due to SW pump operability.

D. After the SW leak is isolated and TS 3.0.3 is identified, 24 RCP #1 seal will experience degradation, and ultimately fail completely. The crew will respond IAW S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality, and determine an orderly unit shutdown is required.

E. Once the determination of the required shutdown is made, the 24 RCP #1 seal will completely fail. The crew will take the action required in the AB and trip the Rx.

F. When the Rx trips, a SBLOCA will occur. The crew will initiate a Safety Injection based on deteriorating primary conditions. 2A 4KV Vital Bus will de-energize upon the Rx trip, and the 2A EDG output breaker will not shut, resulting in no SW pumps running. Additionally, 21 SI pump will not be running from "A" bus, and 22 SI pump fails to start. The crew will perform actions to establish the minimum required SW pump and SI pump operation.

G. After performing SI reset action in LOCA-1, Loss of Reactor Coolant, a loss of Off-Site power will occur. The Safeguards Equipment Controllers will load in MODE II (Blackout) The crew will take actions to re-start the required ECCS components, and the scenario will be terminated.

IV. INITIAL CONDITIONS:

_____ Initialize the simulator to IC-241, Blue Exam drive, 90% Power, MOL, Xe burning out at 3 pcm per hour, RCS Boron 916 ppm.

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers)

Initial	Description
____ 1	RH1 and RH2 C/T
____ 2	RH18s C/T
____ 3	VC1and VC4 C/T
____ 4	RCPs (SELF CHECK)
____ 5	RTBs (SELF CHECK)
____ 6	MS167s (SELF CHECK)
____ 7	500 KV SWYD (SELF CHECK)
____ 8	SGFP Trip (SELF CHECK)
____ 9	23 CV PP (SELF CHECK)
___ 10	**23 Service Water Pump C/T**
___ 11	**Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."**

EVENT TRIGGERS:

Initial	ET #	Description
	ET-1	MONP0254<10, Control Bank C < 10 steps

MALFUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	RC0015B, LOOP 22 COLD LEG RTD FAILS H/L	NA	NA	RT-1	NA	630
2.___	SW0216B, 22 SW HDR LEAK IN SW STRUCTURE	NA	3 MIN	RT-3	0	10,000
3.___	RC007D, 24 RC PUMP-#1 SEAL FAILS-W/DEGRADATION	NA	120 MIN	RT-5	0.72	0.95
4.___	RC0002, RCS LEAK INTO CONTAINMENT	3 MIN	5 MIN	ET-1	0	2000
5.___	EL0273A, 2A DG BKR FAILS TO AUTO-CLOSE	NA	NA	NA	TRUE	TRUE
6.___	SJ0184B, 22 SI PMP FAILS TO START ON SEC	NA	NA	NA	TRUE	TRUE
7.___	EL0134, LOSS OF ALL 500KV OFF-SITE POWER	NA	NA	RT-7	FALSE	TRUE
8.___	RP318A2, 22 RHR PUMP FAILS TO START ON SEC	NA	NA	NA	TRUE	TRUE

REMOTE/FIELD FUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	SW32D, 23 SW PUMP BKR CONTROL POWER	NA	NA	NA	OFF	OFF
2.___	SW35D, 24 SW PUMP BKR Control Power	NA	NA	RT-10	ON	OFF
3.___	SW39D, 25 SW PUMP BKR CONTROL POWER	10 SEC	NA	RT-10	ON	OFF
4.___	SW43D, 26 SW PUMP BKR CONTROL POWER	20 SEC	NA	RT-10	ON	OFF
5.___	DG01D, DEENERGIZE "A" SEC CABINET	NA	NA	RT-9	NO	YES

I/O OVERRIDE SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	C804 F OVDI, 24ASD 2A VITAL BUS FEEDER-OPEN	NA	NA	ET-1	OFF	ON
2.___	C804 E OVDI, 24ASD 2A VITAL BUS FEEDER-CLOSE	NA	NA	ET-1	OFF	OFF
3.___	C801 F OVDI, 23ASD 2A VITAL BUS FEEDER-OPEN	NA	NA	ET-1	OFF	ON
4.___	C801 E OVDI, 23ASD 2A VITAL BUS FEEDER-CLOSE	NA	NA	ET-1	OFF	OFF

OTHER CONDITIONS:

Initial	Description
	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 SM that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

E. Do not review objectives with crew.

F. If required to terminate the scenario early, the instructor should evaluate if sufficient information has been gathered to evaluate the crew's performance. Typically this would be accomplished by completion of the scenario through the third event, however, this is not a requirement. The final decision remains with the instructor and evaluators.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

1. Power Increase to 100%

Reactivity plan per the turnover sheet

- CRS briefs crew on evolution

Note: Rod Control may remain in Auto or placed in manual with CRS approval IAW IOP-4, P&L 3.6

- CRS implements S2.OP-IO.ZZ-0004.
- CRS directs PO to commence Turbine load increase at 2%/hour.

Note: The Main Turbine is initially set up for 15 % per ***minute***, the PO must change the ramp rate to 2% per ***hour.***

- PO sets up Digital EHC (DEHC) console for 2%/hr load increase, and initiates load increase.

Note: The RO should maintain a log of dilutions to ensure reactivity additions are tracked.

- RO initiates a dilution per the reactivity plan provided.
- PO monitors DEHC for proper response of load increase.
- RO monitors Tavg and Delta T and MWe for expected indications of load increase.

Proceed to next event at direction of lead evaluator.

2. RCS loop 22 Tc RTD fails high

Simulator Operator: Enter **RT-1** on direction from Lead Evaluator.

MALF: RC0015B, LOOP 22 COLD LEG RTD FAILS H/L
Final Value: 630

Note: If rod control was placed in manual for power increase, the steps for auto rod insertion and placing rods in manual will be NA.

- RO reports Tavg/Tref deviation and Rods stepping in as NOT expected

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO reports no turbine runback in progress, and placing rod control in manual. • 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. • CRS directs PO to place turbine load increase on hold. • RO reports PZR level lo console alarm due to auct hi Tave raising prog lvl.	
Note: 90% Rx power ~ 573 degrees program Tavg.	• CRS directs RO to adjust rods in manual to maintain Tavg within 1.5 deg of T program. Any rod manipulation is pre-announced, and the RO monitors control board indications for plant response to rod motion. • RO reports rod motion was in the inward direction and a NIS channel has NOT failed. • CRS directs RO to stop any dilution in progress, and RO secures dilution if in progress. • RO reports 22 loop Tavg channel has failed Hi. • CRS directs RO to return PZR level to program. • RO places Charging System Master Flow controller in manual.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Note: Tavg on program at 573 degrees ~55% programmed PZR level.	• RO adjusts charging flow to restore PZR level to program. • RO adjusts 2CV71, CHG HDR PCV as required to maintain RCP seal injection flow between 6-12 gpm per pump, not to exceed 40 gpm total. • 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.	
Note: The Terr recorder on 2RP4 has 22 loop Tave connected to it. This means that the Terr will indicate off-scale high. The crew should understand that the Deviation Defeat of loop 22 removes its input to the rod control system. Proceed to next event after CRS has determined Tech Specs at Lead Evaluators direction.	• RO places rod control in auto after ensuring Tavg is within 1.5 degrees of Tref. • CRS directs PO to initiate S2.OP-SO.RPS-0002 for removing a RCS Temperature channel from service. • CRS enters **TSAS(s) 3.3.1.1 Action 6 and 3.3.2.1 Action 19*.**	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

3. #4 SW Bay Flooding

Simulator Operator: Insert **RT-3** on direction from Lead Evaluator.

MALF: SW0216B, SW LEAK IN SW STRUCTURE
Ramp 00:03:00
Final Value = 10,000

Note: The first OHA's will annunciate ~45 seconds after the leak is inserted.

- CREW announces unexpected OHA alarms B-13 and B-14, followed shortly by B-30.
- OHA B-30, 24-26 SW PMP SUMP AREA LVL HI, directs entry into AB.SW-0003 if alarm is concurrent with OHA B-14, 22 SW HDR PRESS LO.
- RO announces the auto start of the standby SW pump when it occurs, and the clearing of the low SW header pressures alarms.
- CRS enters AB.SW-0003 SW Bay Leak per ARP direction or enters AB.SW-0001, Loss of SW Header Pressure then transitions to AB.SW-0003, and initiates CAS.
- RO/PO pages NEO and directs investigation of 4 Bay problems.
- PO monitors Main Turbine temps on SPDS and Plant Computer

Role Play: 3 minutes after being contacted, report as NEO that there is a large leak in 4 bay, you can't identify where it is coming from due to the spray, and approx. 4 ft of water is in the bay now, and rising slowly.

- CREW splits SW Bays by opening nuclear header cross over MOVs 21 and 22SW23, and shutting SW bay cross connect valves 21 and 22SW17, and identifies the leak is in 4 Bay.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Simulator Operator: 2 minutes after being directed to de-energize control power to 24-26 SW pumps, call as NEO and state: "This is (NEOs name) calling for a First Check. I am in Unit 2 64' switchgear room, and the walls are yellow." After acknowledgment from control room, then INSERT **RT-10** **REMOTE: SW35D, 24 SW Pump BKR Control Power** Delay: None **REMOTE: SW39D, 25 SW Pump BKR Control Power** Delay= 00:00:10 **REMOTE: SW43D, 26 SW Pump BKR Control Power** Delay= 00:00:20 Call control room after last remote is active and report control power breakers have been opened for 24, 25 and 26 SW pumps.	• RO/PO ensures 22 SW pump is running, and stops 24 and 26 SW pumps. • CREW sends NEO to open control power bkrs for 24-26 SW pumps.	
	• CREW isolates 4 SW Bay by closing 22SW22 and 23SW20.	
Role Play: Once 4 bay is isolated, NEO (if contacted) will report that the leak appears to have stopped.	• PO reports the leak is isolated.	
	• PO reports SW remains available to the EDGs.	
	• PO reports SW is being supplied to the Turbine Building through 21SW20.	
	• PO monitors Main turbine parameters on SPDS and the Plant Computer.	
	• PO initiates action to remove one CCHX from service IAW CAS.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Note: CRS should contact work control to find status 23 SW pump, and when pump could be restored to service to avoid a unit shutdown due to Tech Spec 3.0.3. If asked, respond that the release for 23 SW pump is in the field.	• CRS enters TSAS **3.0.3** due to having **NO** operable SW loops.	
Note: ECG classification at this point would be UE IAW ECG section 9.7.1.	• CRS directs SM to refer to the ECG.	
Proceed to next event after CRS has determined Tech Specs at Lead Evaluators direction.	• CRS contacts maintenance to investigate.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

4. 24 RCP #1 Seal Degradation and subsequent failure

Simulator Operator: Insert **RT-5** at Lead Evaluator direction

MALF: RC007D 24 RC Pump #1 Seal Fails – w/degradation

Initial Value 0.72
Final Value 0.95
Ramp 120 minutes

The initial value equates to 5 gpm seal leakoff flow, and leakoff flow will continue to rise very slowly.

- RO announces as unexpected 24 RCP Seal Leakoff Flow Hi-Lo.
- RO reports 24 RCP seal leakoff 5 gpm and stable or rising very slowly.
- CRS enters S2.OP-AB.RCP-001, Reactor Coolant Pump Abnormality.
- CRS verifies entry condition of seal leakoff flow >5 gpm is met.
- CRS directs PO to initiate CAS.
- RO uses P-250 computer to check 24 RCP conditions.
- CRS determines CCW water supply is not causing abnormal condition.
- RO reports all RCP temperatures are normal and stable.
- RO reports Seal Injection Flow is > 6 gpm and seal leakoff flow is 5 gpm and stable or rising very slowly.
- CRS determines seal leakoff flow is slowly approaching 6 gpm, and pump bearing / seal inlet temperatures are stable or lowering.
- RO ensures Seal injection flow is >9 gpm, not to exceed 40 gpm total.
- CRS determines an orderly unit shutdown is and stop of 24 RCP must is required within 8 hours.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Simulator Operator: When directed by Lead Evaluator, **MODIFY MALF RC007D to 100% with no ramp or delay.** This raises seal leakoff flow on 24 RCP to > 6 gpm, which meets the Attachment 2 criteria for stopping RCP's.	• RO announces 24 RCP #1 seal D/P low alarm, 24 RCP #1 seal D/P lowering towards zero, and 24 RCP seal leakoff flow is off scale high reading 6.0 gpm. • Crew identifies that the CAS condition for seal leakoff flow $\geq$ 6 gpm is met, and goes to Att. 2 Stopping RCPs • CRS briefs Rx trip actions to be performed. • CRS identifies the requirement to shut 24CV104 3-5 minutes after pump shutdown.	

5. Rx Trip, Loss of 2A Vital Bus

Simulator Operator: Ensure **ET-1** is TRUE after the Rx trip. This deenergizes 2A 4KV vital bus. It will also insert the SBLOCA after a 3 minute time delay. **MALF: RC0002, RCS LEAK INTO CONTAINMENT** Initial Value: 500 Final Value: 2,000 Delay: 3 minutes Ramp 5 minutes **OVDI 801** and **804** opens both infeed breakers to 2A 4KV vital bus	• RO trips the Rx and stops 24 RCP. TIME RX TRIPPED: _____ TIME RCP STOPPED: _____	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
6. SBLOCA	• RO performs immediate actions of TRIP-1 -Confirms the Rx trip -Trips the Main Turbine - Determines SI is not actuated or required - Reports 2A 4kv vital bus is deenergized, 2B and 2C 4KV vital busses are powered from off-site power.	
	• CRS reads immediate action steps to RO and verifies performance.	
Note: If RCS leak inserts prior to transition step, crew may SI and remain in TRIP-1.	• CRS transitions to TRIP-2	
CT#1 **Close 24CV104 3-5 minutes after tripping the RCP due to Seal Leakoff > 6 gpm.** **Time 24CV104 Shut: _____** **SAT____ UNSAT____**	• 3-5 minutes after the 24 RCP was stopped, PO shuts 24CV104.	
	• RO makes page announcement.	
	• CREW monitors TRIP-2 CAS.	
	• CRS directs SM to implement the ECG.	
Note: The entry condition is met for S2.OP-AB.SW-005, Loss of All Service Water. If entered, the crew will stop all RCPs. This will prevent the RCS Thermal Shock condition from developing, and FRTS-1 will not be entered later in scenario after transition out of LOCA-1 on page 21.	• PO reports 21 AFW pump is not in service, reports 22 and 23 AFW pumps are running and AFW flow >22E4 lbm/hr, and stops 21 and 22 SGFPs.	
	• RO announces lowering PZR pressure, initiates SI and crew re-enters TRIP-1.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• CRS concurs with PO lowering AFW flow to no less than 22E4 lbm/hr when asked.	
7. SEC controlled equipment fails to start. Crew should recognize that EDGs are running with NO SW cooling flow, and action is required to either restore SW flow or stop the EDGs.	• RO reports SEC loading is NOT complete for vital busses, and also identifies that 2A 4KV vital bus is deenergized and 2A EDG output breaker remains open, as well as 22 SI pump and 22 RHR pump have not started.	
CT#2 (E-0--J) Establish flow from at least one intermediate head ECCS pump prior to transition out of EOP-TRIP-1. **SAT_____ UNSAT_____**	• RO blocks and resets 2B and 2C SECs. • RO starts 22 Safety Injection pump and 22 RHR pump.	
Note: 2A SEC cannot be reset due to the standing UV signal on its bus. With the SEC unable to be reset, the EDG output breaker cannot be shut.		
Note: The CRS may attempt to restore 2A 4KV vital bus with the following steps. However, the presence of OHA J-9, 2A DG Urgent Trouble, may lead the crew to believe there is a problem with 2A EDG, and not attempt to place it in service on the bus. If no attempt is made to restore 2A bus, then these next steps will not be performed, and no loads will be restored from A bus. **CT#3** will be evaluated after 23 SW pump is restored after 2B SEC is reset.	• CRS sends an operator to deenergize 2A SEC.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Role Play: If dispatched to investigate 2A EDG, report after 3 minutes that there are 6 alarms up at the local panel, and all indicate that there is no electrical power to the 2A local MCC. There are no generator alarms present.		
Simulator Operator: If directed, 2 minutes after being dispatched, enter **RT-9** to deenergize 2A SEC, and report back to Control Room. **REMOTE: DG01D, DEENERGIZE "A" SEC CABINET** Final Value: OFF		
	• PO depresses mimic bus interlock then shuts 2A EDG output breaker.	
CT #3 (E-0--L) Manually start at least the minimum required number of SW pumps (one) in an operating safeguards train to restore minimum FSAR analyses conditions prior to the end of the scenario. **SAT____ UNSAT____**	• RO starts 21 SI pump, 21 RHR pump, 21 and 22 SW pumps, 21 CFCU in low speed, 21 AFW pump, 21 Aux Bldg exh fan, and 21 chiller powered from 2A bus **(if power restored)**, (21 AFW pp will start when the bus is re-energized if standing lo-lo SG NR lvl signal is present)	
Role Play: After 2B SEC has been reset, call the control room as Hank Kawecki, and report that you have racked up 23 SW pump breaker, you are going to energize the control power breaker, and the only remaining item on the Untagging list is the bezel cover. Then modify REMOTE SW32D from OFF to ON, and report to control room that 23 SW pump control power is on.	• CRS directs the PO to start 23 SW pump when control power has been restored.	
	• PO reports all Safeguards Valves except 21SW20 are in their correct positions, and CRS dispatches operator to locally close 21SW20.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO reports 21 and 22 CA 330's are shut.	
	• RO shuts charging pump mini flow valves 2CV139 and 2CV140 when RCS pressure lowers <1500 psig IAW CAS.	
CT #4 (E-1-C) Trip all RCPs so that CET temperatures do not become superheated when forced circulation in the RCS stops. (RCS pressure < 1350 with ECCS flow) **SAT_____ UNSAT_____**	• RO stops all RCPs when RCS pressure is <1350 psig and ECCS flow is established.	
	• RO reports containment pressure, and that it is currently <15 psig.	
	• RO reports no MSLI is required.	
	• CRS direct SM to implement ECG.	
	• PO reports 4KV vital bus status.	
Note: If operators did NOT energize 2A 4KV vital bus previously, then they should initiate actions IAW S2.OP-AB.4KV-0001, Loss of 2A 4KV Vital Bus.		
	• RO reports control room ventilation is in Accident Pressurized Mode, and runs the proper complement of switchgear ventilation.	
	• RO reports 2 CCW pumps are running.	
	• RO reports ECCS is not aligned for cold leg recirc, reports charging SI flow>100 gpm, and SI flow > 100 gpm.	
	• RO reports RCS pressure is > 300 psig.	
	• RO shuts charging pump mini flow valves 2CV139 and 2CV140 when RCS pressure is < 1500 psig IAW TRIP-1 CAS.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO/PO verifies AFW flow >22E04 lb/hr or SG level > 9%, and NR levels will be maintained 9(or 15% adverse)-33%	
	• RO reports Tavg lowering due to ECCS injection.	
	• RO reports Tavg <547, and not dumping steam.	
	• RO initiates MSLI.	
	• RO/PO verifies RTBs open.	
	• RO/PO verifies PZR PORVs closed and Stop Valves open, and PZR Spray status based on RCP operation.	
Note: If "A" bus was restored using the EDG, then the transition to LOCA-1 will be based on 2 or more rad monitors in Table "F" in warning or alarm.	• PO verifies no faulted SGs.	
	• PO reports no indications of a SGTR.	
	• RO reports only 1 rad monitor in Table F is in warning or alarm due to loss of A bus.	
	• RO reports containment pressure is > 4 psig.	
	• CRS transitions to EOP-LOCA-1.	
	• STA reports a RED path exists for Thermal Shock.	
	• CRS enters FRTS-1.	
	• RO reports RCS pressure is > 300 psig. (420 adverse)	
	• RO reports T-colds dropping.	
	• PO ensures MS10s and steam dumps are shut.	
	• RO reports RHR not in service in shutdown cooling mode.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

	• RO/PO verifies AFW flow >22E04 lb/hr or SG level > 9%, and NR levels will be maintained 9(or 15% adverse)-33%
	
	• PO reports no uncontrolled depressurization of SGs.
	• RO reports PZR PORVs operating correctly for RCS pressure.
	
	• RO reports SI pumps in operation and RCS subcooling < 50 degrees.
	
	• RO reports all RCPs are stopped, and subcooling < 0 degrees.
	
	• RO reports cooldown has exceeded 100 degrees in one hour.
	
	• CRS identifies one hour soak is required, and returns to LOCA-1.
	
	• CREW identifies containment ADVERSE conditions exist when containment pressure reaches 4 psig.
	
	• PO identifies no faulted SGs.
	
	• PO adjust AFW flow to maintain SG NR levels 9%(15%adverse)-33%.
	
	• PO identifies no ruptured SGs.
	
	• CRS reads CAS for Blackout Loading after SI reset actions.
	
	• CREW resets Safeguards Actuations:
	  • Reset SI.
	  • Reset Phase A Isolation.
	  • Reset Phase B Isolation.
	  • Open 21 & 22 CA330.
	  • Resets any SECs if not previously reset.
	  • Reset 230V Control Centers.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

8. Loss of Off-Site Power

Simulator Operator: Insert **RT-7** after 230V Control Centers are reset, or at Lead Evaluator's discretion.

MALF: EL0134 Loss of All 500Kv Offsite Power

Final Value: True

- Crew recognizes the loss of off-site power.
- CRS refers to Step 5 Continuous Action "IF Blackout occurs..."
- CREW performs actions of Table B of LOCA-1.

Note: IF 2A SEC was previously deenergized, 2A EDG will continue supplying power to 2A vital bus uninterrupted.

Note: Loads should be started sequentially and EDG loading checked. CRS may choose to not restart the RHR Pumps.

- RO verifies loading complete for B and C SECs and resets B and C SECs.
- CRS directs restart of available Safeguards loads:
  - 22 SI Pump;
  - 21/22 RHR Pump (if required)
  - 21/22 CS Pump (if required)
  - 22-25 CFCU slow speed
  - ECAC
  - Swgr room supply and exhaust fans.

Lead Evaluator terminate scenario when ECCS loads have been restarted.

VI. SCENARIO REFERENCES

A. NUREG 1021, Examiner Standards
B. NUREG-1122, K/A Catalog for NPP Operators: PWR
C. TQ-AA-104-3001, NRC ILT Examination Development and Administration
D. Alarm Response Procedures (various)
E. Technical Specifications
F. Emergency Plan (ECG)
G. JTA Listing
H. S2.OP-IO.ZZ-0004, Power Operation
I. S2.OP-AB.ROD-0003, Continuous Rod Motion
J. S2.OP-AB.SW-0001, Loss of Service Water Header Pressure
K. S2.OP-AB.SW-0003, Service Water Bay Leak
L. S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality
M. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
N. 2-EOP-LOCA-1, Loss of Reactor Coolant
O. 2-FRTS-1, Response to Imminent Pressurized Thermal Shock Conditions

ATTACHMENT 1
PLANT STATUS
UNIT TWO
TODAY

MODE 1 **POWER** 90% **RCS BORON** 916 ppm **MWE** 1110

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

N/A

REACTIVITY PARAMETERS:

Core Burnup is 6500 EFPH
Control Bank D @199 steps
Xenon burning out at 3 pcm/hr.
The Reactor fuel is conditioned to 100%.
Reactivity plan for power increase at 2% / hr is to dilute 40 gal every 15 minutes for a total of 800 gal over 5 hours, while withdrawing rods as needed to maintain Tave on program.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

Raise power to 100% IAW S2.OP-IO.ZZ-0004, Power Operation.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Power reduced to 90% as a conservative action due to previous 21 SGFP speed control oscillation. Troubleshooting complete.
Hope Creek and Salem 1 are at 100% power.

PRIMARY:

SECONDARY:

Heating Steam is aligned to Unit 1.

RADWASTE:

No discharges in progress.

CIRCULATING WATER/SERVICE WATER:

23 SW pump is C/T for strainer work. All work on the strainer is complete, and the Maintenance Supervisor has just signed off the Tagging Request.

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.

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

Note: Attach a separate copy of this form to each scenario reviewed. This form is used as guidance for the examination team as they conduct their review for the proposed scenarios.

SCENARIO IDENTIFIER: 08-01 NRC ESG-1 Rev. 0 REVIEWER: P Harsh

Initials		Qualitative Attributes
PH	1.	The scenario has clearly stated objectives in the scenario.
PH	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.
PH	3.	The scenario consists mostly of related events.
PH	4.	Each event description consists of: • 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
PH	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.
PH	6.	The events are valid with regard to physics and thermodynamics.
PH	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
PH	8.	The simulator modeling is not altered.
PH	9.	All crew competencies can be evaluated.
PH	10.	The scenario has been validated.
PH	11.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4 (Cont)
SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The following criteria list scenario traits that are numerical in nature. A second set of numbers indicates a range to be met for a set of two scenarios. Therefore, to complete this part of the review, the set of scenarios must be available. This page should be completed once per scenario set. The ranges listed for each scenario set represents a target and are not absolute limitations. Scenario sets that do not fit into the ranges listed should be further evaluated to ensure they are appropriate.

Initial		Qualitative Attributes
GSG	7	Total malfunctions inserted: 5-8
GSG	2	Malfunctions that occur after EOP entry: 1-2
GSG	3	Abnormal Events: 2-4
GSG	1	Major Transients: 1-2
GSG	2	EOPs entered/requiring substantive actions: 1-2
GSG	0	EOP Contingency Procedures requiring substantive actions: 0-2
GSG	4	Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5
ESG CRITICAL TASKS
08-01 NRC ESG-1 Rev. 0

CT #1: (AB.RCP) Close 24CV104 3-5 minutes after tripping the RCP due to Seal Leakoff > 6 gpm.

BASIS: Closing the Seal Leakoff Isolation Valve 24CV104 prevents unfiltered, high temperature RCS into the #2 RCP seal, which raises the probability of #2 seal failure. The 3 minute time frame is based on expected coastdown time of the RCP since a static condition is more favorable for the #2 seal to perform its backup function to the #1 seal. The 5 minute limitation minimizes RCS leakage from the damaged seal to maintain RCS inventory. Failure to isolate within 5 minutes raises the possibility of a #2 seal failure and subsequent LOCA.

CT #2: (E-0--J) Establish flow from at least one intermediate head ECCS pump prior to transition out of EOP-TRIP-1.

BASIS: Failure to manually start at least one intermediate head ECCS pump under the postulated conditions constitutes "mis-operation or incorrect crew performance which leads to degraded ECCS capacity."

CT #3: (E-0--L) Manually start at least the minimum required number of SW pumps (one) in an operating safeguards train to restore minimum FSAR analyses conditions prior to end of scenario.

BASIS: Failure to manually start at least the minimum required of ESW pumps in an operating safeguards train represents a "demonstrated inability by the crew to:

- Recognize a failure/incorrect auto actuation of an ESF system or component
- Effectively direct/manipulate ESF controls.

Additionally, under the postulated plant conditions, failure to manually start at least the minimum required ESW pumps (when it is possible to do so) is a "violation of the facility license condition".

CT#4 (E-1--C) Trip all RCPs so that CET temperatures do not become superheated when forced circulation in the RCS stops. (RCS pressure < 1350 with ECCS flow)

BASIS: Failure to trip the RCPs under the postulated plant conditions leads to core uncovery and to fuel cladding temperatures in excess of 2200°. Thus, failure to perform the task represents "mis-operation or incorrect crew performance which leads to the degradation of a barrier to fission product release.

ATTACHMENT 6

ESG – PSA RELATIONSHIP EVALUATION

08-01 NRC ESG-1 Rev. 0

SALEM ESG - PRA RELATIONSHIPS EVALUATION FORM

EVENTS LEADING TO CORE DAMAGE

Y/N	EVENT	Y/N	EVENT
N	TRANSIENTS with PCS Unavailable	Y	Loss of Service Water
N	Steam Generator Tube Rupture	N	Loss of CCW
Y	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

Y/N	COMPONENT, SYSTEM, OR TRAIN	Y/N	COMPONENT, SYSTEM, OR TRAIN
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

Y/N	OPERATOR ACTION
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

Complete this evaluation form for each ESG.

Facility: SALEM 1 & 2 Scenario No.: ESG-2 Op-Test No: 08-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100% power, BOL, PZR level CH III selected for control due to CH I indication problem. Rod Control in manual due to PT-505 channel calibration in progress. 21 Heater Drain Tank pump O/S due to oil leak. 22 Condensate pump has elevated vibration.

Turnover: Reduce power at 30% per hour to 79% in preparation for removing 22 Condensate Pump from service.

Event No.	Malf. No.	Event Type*	Event Description
1		N SRO/PO R RO	Perform power reduction
2		N/A CRS	CFCU trip (Tech Specs)
3a		I CRS / RO	VCT level ch fails high
3b		N PO	Re-establish RCS Letdown
4		C CRS/RO	Operating charging pump cavitation (Tech Specs)
5a		C CRS/PO	22 Cond pump trip, degraded SGFP suction pressure
5b		M ALL	23 Cond pump, loss of both SGFPs
6		C RO	MainTurbine fails to trip initially, MSLI successful
7		C CRS/PO	21 AFW pump will not start, 22 AFW pp pressure override defeat failure, 23 AFW pp trips. FRHS with condensate pump recovery.

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

SIMULATOR

EXAMINATION SCENARIO GUIDE

SCENARIO TITLE:	Charging Pump Cavitation, FRHS
SCENARIO NUMBER:	08-01 NRC ESG-2
EFFECTIVE DATE:	See Approval Dates
EXPECTED DURATION:	75 min
REVISION NUMBER:	0
PROGRAM:	☐ **L.O. REQUAL**
	☒ **INITIAL LICENSE**
	☐ **OTHER** ☐ **STA**

REVISION SUMMARY:
New Issue for NRC Exam

PREPARED BY:	G Gauding	03-08-10
	Lead Regulatory Exam Author	**Date**
APPROVED BY:	Peter Booth	3-26-2010
	Salem Operations Training	**Date**
APPROVED BY:		3/25/10
	Facility Representative	**Date**

I. OBJECTIVE(S):

Enabling Objectives:

A. Given the reactor operating at 100%, DIRECT actions to conduct a reactor shutdown to minimum load, in accordance with the approved station procedures.

B. Given the unit in mode 1, the crew will perform a reactor shutdown from 100% power to 79% power IAW S2.OP-IO.ZZ-0004(q)

C. Given a condition causing a console alarm, investigate the cause and take corrective action(s), IAW approved station procedures.

D. Given indication of a loss or malfunction of the Charging system, DIRECT corrective action for a Charging System malfunction in accordance with the approved station procedures.

E. Given the order or indications of a charging system malfunction, perform actions as the nuclear control operator to RESPOND to the loss or malfunction of the charging system in accordance with the approved station procedures.

F. Given indication of a feedwater or condensate system malfunction, DIRECT the response to the malfunction in accordance with the approved station procedures.

G. Given the order or indications of a feedwater or condensate system malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.

H. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.

I. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.

J. Given indication of a loss of secondary heat sink, DIRECT the response to the heat sink loss in accordance with the approved station procedures.

K. Given the order or indications of a loss of secondary heat sink, perform actions as the nuclear control operator to RESPOND to the loss of heat sink in accordance with the approved station procedures.

II. MAJOR EVENTS:

A. Lower Rx power.

B. 21 CFCU Trips

C. VCT Level Channel 2LT112 fails high

D. 22 Charging Pump Cavitation

E. 22 Condensate Pump Trips, Loss of SGFP suction pressure

F. Main Turbine Fails to Trip, MSLI

G. Loss of Heat Sink FRHS

III. SCENARIO SUMMARY:

A. The Crew will receive the watch at 100% power BOL. Pressurizer level Channel III is selected for control due to CH I indication problems. Rod control is in manual due to PT505 channel calibration in progress. 21 heater drain pump is O/S due to an oil leak. 22 CN pump has elevated vibrations.

B. The crew is directed to reduce power at 30% / hour to 79% in preparation for removing 22 CN pump from service. The crew will commence a downpower IAW IOP-4.

C. After the downpower is in progress 21 CFCU will trip. The crew will evaluate Tech Specs and start an additional CFCU.

D. After the Tech Specs are evaluated for the CFCU, 2LT-112 VCT level channel I will fail high causing the 2CV35 to divert to the holdup tank and actual VCT level to lower. The crew will implement S2.OP-AB.CVC-0001 and restore the 2CV35 flow to the VCT.

E. After VCT level is stabilized, 22 Charging pump will begin to cavitate. The crew will re-enter S2.OP-AB.CVC-0001, stop 22 Charging pump, send an NEO to vent 21 Charging pump, and start 21 Charging pump.

F. When 21 Charging pump is in service and PZR level is stabilized, 22 Condensate pump will trip. This will cause a low suction pressure condition on both operating SGFPs. The crew will bypass the polisher, and open 2CN47 to restore SGFP suction pressure. If action is not taken quickly to re-establish adequate suction pressure to the SGFPs, they will trip. If the SGFPs remain in service, 23 Condensate pump will trip ~ 3minutes after 22 CN pump tripped, and the SGFPs will trip on low suction pressure. The CRS will order a manual RX trip IAW the CAS of AB.CN.

G. When the RX trips the main turbine will fail to trip and the RO will initiate a Main Steam Line Isolation (MSLI) IAW the immediate actions of EOP-TRIP-1. An automatic Safety Injection occurs on Hi Steam Flow.

H. During the transient, 21 AFW pump will fail to start, 22 AFW pump discharge valves will fail to open and the 23 AFW pump will trip. The crew will perform the actions of EOP-TRIP-1, and transition to FRHS-1 based on no AFW flow and insufficient SG level.

I. In FRHS the crew will establish Feed and Bleed of the RCS as required and establish a secondary heat sink by depressurizing a steam generator and feeding with a condensate pump.

IV. INITIAL CONDITIONS:

_____ Initialize the simulator to IC-242, Blue Exam drive, 100% Power, BOL, equilibrium Xe, RCS Boron 1046 ppm.

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers)

Initial	Description
____ 1	RH1 and RH2 C/T
____ 2	RH18s C/T
____ 3	VC1and VC4 C/T
____ 4	RCPs (SELF CHECK)
____ 5	RTBs (SELF CHECK)
____ 6	MS167s (SELF CHECK)
____ 7	500 KV SWYD (SELF CHECK)
____ 8	SGFP Trip (SELF CHECK)
____ 9	23 CV PP (SELF CHECK)
___ 10	**23 Charging Pump C/T**
___ 11	**21 Heater Drain Tank Pump O/S (clear bezel cover)**
___ 12	**2PT-505 calibration (clear bezel cover)**
___ 13	**Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."**
___ 14	**Give copy of S2.IC-CC.RCP-0024, Exhibit 1 with turnover sheet (Last 2 pages of this ESG)**

EVENT TRIGGERS:

Initial	ET #	Description
____	ET-5	KB511AZP 22 AFW Pressure Override Defeat PB

MALFUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	PR0017A PZR CHANNEL 1 (LT459) FAILS H/L	NA	NA	NONE	43	43
2.___	AN0304 SER 304 FAILS - :A4 REACTOR PROTECT	NA	NA	NONE	2	2
3.___	AN0027 SER 027 FAILS :A36 AMSAC BYPASSED	NA	NA	NONE	2	2
4.___	AN0035 SER 035 FAILS - :A44 AMSAC TEST OR T	NA	NA	NONE	2	2
5.___	AN0154 SER 154 FAILS -:E5 SOURCE RANGE DE	NA	NA	NONE	2	2
6.___	AN0170 SER 170 FAILS -:E21 SOURCE RANGE HI	NA	NA	NONE	2	2
7.___	RD0061 ROD SPEED PROGRAM FAILS	NA	NA	NONE	8	8
8.___	VC0173A 21 CNTMT FAN COIL UNIT TRIP	NA	NA	RT-1	FALSE	TRUE
9.___	CN0117B 22 CONDENSATE PUMP TRIP	NA	NA	RT-4	FALSE	TRUE
10.___	RP0069 MN TURBINE TRIP (INT VLV) FAIL	NA	NA	NONE	TRUE	TRUE
11.___	RP0073 MN TURB. TRIP FAILURES (VARIOUS)	NA	NA	NONE	4	4
12.___	AF0183 23 AUX FW PUMP OVERSPEED TRIP	NA	NA	NONE	TRUE	TRUE
13.___	AF0182B 22 AFP PRESSOVRD PROT FAILS	NA	NA	NONE	TRUE	TRUE
14.___	AN3520 AAS 520 FAILS-:21 AF PUMP LOSS 125	NA	NA	NONE	1	1
15.___	VL0469, 24BF40 FAILS TO POSITION (0-100%)	NA	12 SEC	RT-10	0	100
16.___	CV0037 VCT LEVEL XMTR LT112 FAILS H/L	NA	NA	RT-2	36.7	100
17.___	AF0181B 22 AUX FEEDWATER PUMP TRIP	28 SEC	NA	ET-5	FALSE	TRUE
18.___	CN0117C 23 CONDENSATE PUMP TRIP	3 MIN 15 SEC	NA	RT-4	FALSE	TRUE
19.___	RP0279A AUTO MSLIS FAILS TO ACT TRAIN A	NA	NA	NONE	TRUE	TRUE
20.___	RP0279B AUTO MSLIS FAILS TO ACT TRAIN B	NA	NA	NONE	TRUE	TRUE

REMOTE/FIELD FUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	TR09A TURBINE INLET PRESSURE CH I TRANS PT-5	NA	NA	NONE	0.81	0.81
2.___	CV62B 22 CHG PUMP SUCTION VALVE 2CV49	NA	NA	RT-3	0	.000045
3.___	AF20D 21 AFW PUMP BKR CONTROL POWER	NA	NA	NONE	OFF	OFF
4.___	CT191-1D 21 CFCU BKR #1 HIGH SPEED 125VDC	NA	NA	RT-9	ON	OFF
5.___	CT191-2D 21 CFCU BKR #2 HIGH SPEED 125VDC	14 SEC	NA	RT-9	ON	OFF
6.___	CT191-3D 21 CFCU BKR #1 LOW SPEED 125VDC	22 SEC	NA	RT-9	ON	OFF
7.___	PR15D PZR HI LVL RX TRIP CH 1 LC459A BS	NA	NA	NONE	TRIP	TRIP

I/O OVERRIDE SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	4244 OVLO TURBINE IMPULSE PRESSURE BELOW P-2I	NA	NA	NONE	OFF	ON

OTHER CONDITIONS:

Initial	Description
	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.

E. Do not review objectives with crew.

F. If required to terminate the scenario early, the instructor should evaluate if sufficient information has been gathered to evaluate the crew's performance. Typically this would be accomplished by completion of the scenario through the third event, however, this is not a requirement. The final decision remains with the instructor and evaluators.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
1. Power Decrease to 79%		
	• CRS briefs crew on downpower to 79% in preparation for stopping 22 CN pump, including reactivity plan, IAW S2.OP-IO.ZZ-0004.	
	• RO commences a boration at rate directed by CRS reflecting reactivity plan.	
	• PO initiates turbine load reduction to 79% at direction of the CRS at 30% per hour at DEHC HMI	
Note: With Steamline Pressure transmitter PT-505 O/S, the Terr recorder on 2RP4 will indicate off-scale high. RO must determine programmed Tavg via other procedures. (AB.CN, AB.ROD-3)	• RO monitors primary plant parameters and adjusts control rods in manual to maintain Tavg on program.	
	• PO monitors Main Turbine and ensures proper response.	
When the load reduction has progressed to the satisfaction of the lead evaluator then proceed to next event.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
2. 21 CFCU Trip		
Simulator Operator: Insert **RT-1** on direction from Lead Evaluator. **MALF: VC0173A 21 CNTMT FAN COIL UNIT TRIP**	• RO reports flashing Stop bezel and trip of 21 CFCU.	
Note: CRS may direct load reduction placed on hold until CFCU issue is complete.	• RO verifies normal containment parameters	
Note: CRS may conservatively enter TSAS 3.6.1.1 until the nature of the failure is known. If entered this TSAS can be exited when the 125VDC Control power is secured for 21 CFCU. **Role Play:** 3 minutes after being contacted, call control room as NEO and report that the overcurrent tab is extended for 21 CFCU high speed breaker #1.	• CRS refers to S2.OP-SO.SW-0005 for operability guidelines.	
Simulator Operator: Insert **RT-9** to sequentially open 21 CFCU 125VDC Control Power breakers if requested.	• CRS dispatches an NEO to de-energize 125V DC control power for all 21 CFCU breakers.	
	• CRS enters TSAS 3.6.2.3 for 21 CFCU.	
Note: CRS may determine that 3 remaining CFCUs are adequate and direct RO to monitor containment parameters.	• CRS directs RO to start an alternate CFCU to maintain containment parameters IAW S2.OP-SO.CBV-0001.	
	• CRS directs load reduction re-commenced (if placed on hold)	
After the CRS has identified the TSAS, at the direction of the Lead evaluator proceed to the next event.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
3. VCT Level Failure **Simulator Operator:** Insert **RT-2** on direction from Lead Evaluator **MALF CV0037 VCT LEVEL XMTR LT112 FAILS H/L** Final Value: 100	• RO announces as unexpected VCT Level Hi-Lo console alarm.	
Note: CRS may direct the load reduction be placed on hold.	• RO reports that LT-112 is failed high and 2CV35 has automatically diverted to HUT. • RO may place 2CV35 in the MAN FLOW TO VCT position with CRS concurrence prior to direction in S2.OP-AB.CVC-001. • PO refers to ARP and recommends entry into S2.OP-AB.CVC-0001, Loss of Charging. • RO monitors LT-114 indication on plant computer. • CRS enters AB.CVC-0001. • CRS directs PO to initiate CAS. • RO verifies a charging pump is in service and not cavitating. • RO reports no PZR level channel has failed. • RO reports 2LT-112 has failed high. • RO places 2CV35 in the MAN FLOW TO VCT position if not previously performed. • RO reports Letdown remains in service. • RO reports VCT level does not indicate a need to makeup, additionally, boron is being added during downpower.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Proceed to next event on direction of Lead Evaluator.	• RO reports charging pump flow is normal.	
4. 22 Charging Pump Cavitation		
Simulator Operator: Insert **RT-3** on direction from Lead Evaluator **REMOTE: CV62B 22 CHG PUMP SUCTION VALVE 2CV49** Final Value 0.000045		
	• RO reports all RCP Seal Injection Lo Flow alarms are in.	
	• RO reports charging flow is at zero, and 22 charging pump amps are oscillating.	
Note: Flashing in the Letdown Line will occur if the charging pump is not stopped promptly. Letdown will automatically isolate when the charging pump is stopped. CRS may direct letdown isolation.	• CRS directs RO to stop 22 charging pump.	
	• RO reports indications of flashing in the letdown line based on intermittent high pressure alarms and varying letdown flow if 22 charging pump is not stopped quickly enough.	
	• CRS re-enters S2.OP-AB.CVC-0001.	
	• CRS either proceeds through the steps to arrive at Step 3.18 or goes directly there based on Continuous Action Summary 2.0, if it is recognized quicker, and stops 22 charging pump.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO reports letdown is isolated. • RO reports VCT level is adequate for charging pump operation. • RO reports 23 charging pump is C/T, and 21 charging pump is available. • CRS may direct the load reduction be placed on hold since no charging pumps are running to add boron to RCS. • CRS enters S2.OP-AB.RCP-0001, based on no seal injection flow.	
Role Play: 3 minutes after being dispatched, call control room as NEO and state: "This is (operator name) I have a venting bottle and HP support, and will be venting 21 charging pump suction via 2CV356. Wait one minute. Call control room as NEO and state: This is (operator name). 21 charging pump venting is complete SAT. **IF** asked, state there was very little air before a solid stream issued from vent valve.	• CRS dispatches an operator to vent 21 charging pump. • RO verifies all RCP seal inlet temperatures <225 degrees on 2CC1 or Plant Computer. • RO shuts 2CV55 • RO starts 21 charging pump, and verifies proper amperage and flow indications. • RO opens 2CV55 to establish sufficient trend of flow to restore PZR level to program.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO adjusts 2CV71 to establish 6-10 gpm seal injection to each RCP not to exceed 40 gpm total.	
Role Play: When contacted as NEO, report that all indications for 21 charging pump are normal.	• RO reports no control room indication of cavitation, and contacts local operator to check for indication of cavitation.	
	• PO restores letdown by: - Verifying 2CV7 is open. - Closing 2CV18 manually - Opening 2CV18 until closed indicating light extinguishes. - Opens 2CV2 and 2CV277. - Ensures charging flow is 85-90 gpm. - Simultaneously opens 75 gpm orifice valve while maintain letdown pressure ~300 psig. - Places 2CV18 in auto.	
	• RO reports PZR level can be maintained stable or rising.	
	• CRS enters TSAS 3.1.2.4 and 3.5.2 for charging pumps and ECCS trains.	
Note: If operators don't open control power to 22 charging pump, it will re-start later in scenario on SEC initiation. Proceed to next event on direction from Lead Evaluator.	• CRS dispatches an operator to open the control power breakers for 22 charging pump 4KV breaker.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
5. 22 and 23 Condensate Pump trips.		
Simulator Operator: Insert **RT-4** on direction from Lead Evaluator. **MALFS: CN0117B 22 CONDENSATE PUMP TRIP** **Final Value: TRUE** **CN0117C 23 CONDENSATE PUMP TRIP** Delay: 3 min 15 seconds Final Value: TRUE	• PO announces 22 condensate pump trip	
Note: SGFP suction pressure may not lower enough for 2CN47 to open, or low suct press alarms to come in, based on how far the load reduction is performed.	• PO reports SGFP suction pressure lowering, and each SGFP Cond Suct Press Lo alarm if they annunciate.	
	• CRS enters S2.OP-AB.CN-0001.	
	• Crew monitors CAS	
	• PO reports 22 condensate pump tripped.	
	• PO opens 21-23CN108s based on SGFP suction pressure remaining <320 psig.	
	• PO opens 2CN47 based on SGFP suction pressure remaining <320 psig.	
	• PO shuts 21-24GB4 and 21-24GB185 based on 2CN47 being open.	
	• CRS identifies maximum power allowed for this pump configuration is 30%.	
Note: 23 condensate pump trips 3 minutes and 15 seconds after 22 condensate pump tripped.	• PO reports 23 condensate pump has tripped, and both SGFPs have tripped on low suction pressure.	
	• RO/PO trips the reactor based on no operating SGFPs >10% power.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

6. Rx Trip, Main Turbine fails to trip

Note: The Main Turbine fails to trip upon the Rx trip, and an automatic Safety Injection will occur ~17 seconds after the Rx trip. An automatic MSLI will be demanded in ~22 seconds following the Rx trip, but no auto MSLI will occur.

CT #1 (E-0-Q)
Manually trip the main turbine before a severe challenge develops to either the subcriticality or the integrity CSF or before transition to LOSC-2, whichever comes first.

SAT_____ UNSAT_____

- RO performs TRIP-1 Immediate actions from memory.
  -Confirms the Rx trip
  -Trips the Main Turbine
  Identifies turbine did not trip from trip switches, and depresses Turbine Trip bezel pushbutton.
  Identifies turbine has not tripped, and initiates MSLI on Safeguards Train A or B.
  - Reports SI has automatically initiated
  - Reports all 4KV vital busses are energized.
- CRS reads immediate action steps to RO and verifies performance.

Note: IF control power was not removed from 22 charging pump, THEN it will auto start on the SEC signal. The 2C SEC will need to be blocked and reset, and 22 charging pump stopped.

- RO makes page announcement.
- CREW monitors TRIP-1 CAS
- PO reports SEC loading is not complete for energized vital busses.
- PO reports 21 AFW pump is not running.
- RO blocks 2A SEC.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• PO resets 2A SEC. • PO depresses start pushbutton for 21 AFW pump and it does not start.	
Simulator Operator: Ensure **ET-5** is TRUE when 22 AFW pump Pressure Override PB is depressed. This will trip 22 AFW pump after a 28 second delay.	• PO reports no AFW flow is indicated, 21 AFW pump is not running, 22 AFW pump is running with no flow, and 23 AFW pump is tripped. • CRS directs PO to defeat Pressure Override protection for 22 AFW pump • PO depresses Pressure Override Defeat, and reports AFW flow is indicated to 21 and 22 SGs. • PO reports 22 AFW pump has tripped.	
Role Play: 3 minutes after being dispatched, report as NEO that the 21 AFW pump 4KV breaker looks cocked in its cubicle.	• CRS dispatches an operator to investigate 21 AFW pump failure to start. • CRS dispatch maintenance to assist in breaker malfunction investigation.	
Simulator Operator: 3 minutes after being requested, insert REMOTE **AF25D** to OFF to remove control power to 22 AFW pump 4KV breaker.	• PO opens Main Generator output breakers.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• PO reports Safeguards Valves are in their correct positions. • RO reports 21 and 22 CA330's are shut. • RO reports containment pressure, and that it is currently <15 psig. • RO reports MSLI has been performed and a High steam Flow SI occurred. • CRS direct SM to implement ECG. • PO reports all 4KV vital busses are energized. • RO reports control room ventilation is in Accident Pressurized Mode, and runs the proper complement of switchgear ventilation. • RO reports 2 CCW pumps are running. • RO reports ECCS is not aligned for cold leg recirc, reports charging SI flow>100 gpm, and RCS pressure > 1540 psig. • PO announces when 21-24MS10 begin opening to maintain SG pressure. • PO reports no AFW is indicated and SG NR levels are all <9%. • CRS transitions to FRHS-1. • PO reports no AFW flow is not due to operator action. • RO reports RCS pressure is > than all SG pressures, and RCS Thots are > 350 deg. F. • RO reports 21 charging pump is available.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Bleed and Feed steps begin on page 21. **Note:** Depending on how quickly a MSLI was performed, the crew may go to Bleed and Feed as soon as they encounter this CAS.	• CRS reads CAS for Bleed and Fed initiation. PO monitors SG WR levels and reports when 3/4 WR levels are <32%. CRS goes to Step 23 when conditions are met.	
	• PO shuts 21-24GB4 and 21-24SS94 valves.	
Role Play: 3 minutes after being contacted as Maintenance, report back to CRS that the 21 AFW pump 4kv breaker was racked in incorrectly, and is jammed in its current position. Additional troubleshooting is continuing. Also report that there is a smell of burnt insulation in the area of 22 AFW pump 4kv breaker.	• PO reports no AFW pumps are running or can be started, and CRS dispatches operators/maintenance to investigate.	
	• RO stops all RCPs.	
Role Play: 3 minutes after being contacted, report that 23 AFW pump trip linkage is bent and it doesn't appear that the trip can be reset.	• PO reports condensate system is in operation.	
	• PO reports no SGFPs are available.	
	• RO reports SI actuated.	
	• PO verifies SI valve alignment IAW APPX-3.	
	• CREW resets Safeguards Actuations: - Reset SI. - Reset Phase A Isolation. - Reset Phase B Isolation. - Open 21 & 22 CA330. - Resets each SEC. - Reset 230V Control Centers.	
	• CRS picks SG with the lowest level for depressurization (24) that is not 21 or 23.	
	• PO reports steam dumps are not available.	
	• PO reports MSLI previously actuated.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• PO fully opens 24MS10.	
Simulator Operator: 3 minutes after being dispatched, insert **RT-10** to open 24BF40, and report its status.	• CRS dispatches an operator to open 24BF40.	
	• PO opens 24BF13	
	• PO reports 24BF22 is released.	
	• PO opens 21 and 22CN48 and shuts 21 and 22CN32.	
	• CRS waits at step 20.5 until condensate flow is established to 24 SG.	
CT#2A: (FR-H.1A) **Establish feedwater flow into at least one SG before RCS bleed and feed is required.** **SAT____ UNSAT____** ***See CT Basis and explanation for when this task is deemed critical	• PO reports indication of feedwater flow to 24 SG.	
	• Once feed flow is established, PO maintains 24 SG pressure <575 psig.	
Terminate the scenario once CRS returns to procedure in effect IF Bleed and Feed has not been initiated **OR** Terminate scenario when crew identifies feed flow to 24 SG has turned 24 SG WR level **IF** Bleed and Feed has already been performed.	• IF Bleed and Feed have NOT been initiated, THEN CRS returns to TRIP-1	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
BLEED AND FEED STEPS	• RO stops or verifies all RCPs are stopped. • RO initiates Safety Injection. • PO reports SI valves in safeguards positions.	
CT#2B (FR-H.1B) **Establish RCS Bleed and Feed before PORVs open automatically due to SG dryout and RCS pressure increase.** **SAT____ UNSAT____**	• RO reports 21 charging pump is running. • RO reports BIT flow is established. • RO reports both PZR PORV stop valves are open. • RO opens both PZR PORVs. • RO reports both PZR PORVs and Block Valves are open. • PO verifies SI valve alignment IAW APPX-3. • RO resets safeguards if required - Reset SI. - Reset Phase A Isolation. - Reset Phase B Isolation. - Open 21 & 22 CA330. - Resets each SEC. - Reset 230V Control Centers. • Crew maintains ECCS flow and PORVs open. • RO reports containment pressure remains <15 psig, and no Containment Spray pumps are running. • Crew returns to or begins performing steps to establish feedwater flow with condensate system at step 20, or step they were performing when Bleed and Feed was established.	
Terminate scenario when condensate flow has been established and WR level is rising in any SG **IF** Bleed and Feed section was performed and then condensate flow established.		

VI. SCENARIO REFERENCES

A. NUREG 1021, Examiner Standards
B. NUREG-1122, K/A Catalog for NPP Operators: PWR
C. TQ-AA-104-3001, NRC ILT Examination Development and Administration
D. Alarm Response Procedures (various)
E. Technical Specifications
F. Emergency Plan (ECG)
G. S2.OP-IO.ZZ-0004, Power Operation
H. S2.OP-AB.CVC-0001, Loss of Charging
I. S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality
J. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
K. 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink

ATTACHMENT 1
PLANT STATUS
UNIT TWO
TODAY

MODE: 1 **POWER:** 100% **RCS BORON** 1045 ppm **MWE** 1190

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

N/A

REACTIVITY PARAMETERS:

Core Burnup is 3200 EFPH
Control Bank D @227steps
Reactivity plan for power decrease to 79% at 30% / hr is to borate at 10 gpm and maintain Tavg on program using manual rod control.
The total amount of boron addition will be 320 gallons.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

3.3.1.1.b Action 6 for PZR Level Channel I

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

Lower power to 79% IAW S2.OP-IO.ZZ-0004, Power Operation.
S2.IC-CC.RCP-0024, 2PT-505 Turbine Steam Line Inlet Pressure Protection Channel 1, is in progress.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Power reduction to 79% is required to remove 22 CN pump from service to investigate high vibrations.
PZR level CH III selected for control due to CH I indication problems. Channel is removed from service.
Rod control in manual due to a channel calibration on 2PT505.
Hope Creek and Salem 1 are at 100% power.

PRIMARY:

23 Charging pump is C/T for packing replacement.

SECONDARY:

Elevated vibrations on 22 CN pump. 12 hr shift tech monitoring 1x/4hrs. Maintenance recommends stopping pump for further investigation.
21 Heater Drain pump is O/S for an oil leak.
Heating Steam is aligned to Unit 1.

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.

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

Note: Attach a separate copy of this form to each scenario reviewed. This form is used as guidance for the examination team as they conduct their review for the proposed scenarios.

SCENARIO IDENTIFIER: 08-01 NRC ESG-2 Rev. 0 REVIEWER: P Harsh

Initials		Qualitative Attributes
PH	1.	The scenario has clearly stated objectives in the scenario.
PH	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.
PH	3.	The scenario consists mostly of related events.
PH	4.	Each event description consists of: • 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
PH	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.
PH	6.	The events are valid with regard to physics and thermodynamics.
PH	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
PH	8.	The simulator modeling is not altered.
PH	9.	All crew competencies can be evaluated.
PH	10.	The scenario has been validated.
PH	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4 (Cont)
SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The following criteria list scenario traits that are numerical in nature. A second set of numbers indicates a range to be met for a set of two scenarios. Therefore, to complete this part of the review, the set of scenarios must be available. This page should be completed once per scenario set. The ranges listed for each scenario set represents a target and are not absolute limitations. Scenario sets that do not fit into the ranges listed should be further evaluated to ensure they are appropriate.

Initial		Qualitative Attributes
GG	7	Total malfunctions inserted: 5-8
GG	2	Malfunctions that occur after EOP entry: 1-2
GG	3	Abnormal Events: 2-4
GG	1	Major Transients: 1-2
GG	1	EOPs entered/requiring substantive actions: 1-2
GG	1	EOP Contingency Procedures requiring substantive actions: 0-2
GG	2	Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5
ESG CRITICAL TASKS
08-01 NRC ESG-2 Rev. 0

CT #1 (E-0-Q) **Manually trip the main turbine before a severe challenge develops to either the subcriticality or the integrity CSF or before transition to LOSC-2, whichever comes first.**

BASIS: Failure to trip the main turbine under the postulated plant conditions challenges to CSFs beyond those irreparably introduced by the postulated conditions. Additionally such an omission constitutes a demonstrated inability by the crew to "take an action ...that would prevent a challenge to plant safety.

CT#2A: (FR-H.1A) Establish feedwater flow into at least one SG before RCS bleed and feed is required.

BASIS: Failure to establish feedwater flow to any SG results in the crew's having to rely upon the lower-priority action of establishing RCS bleed and feed to minimize core uncovery. This leads to degradation of any barrier to fission product release.

(**Note**: This critical task must be evaluated such that if the crew has the ability to establish feed flow to any SG but does not do so it is Unsat. For example, if the crew fails to establish feed flow due to incorrect procedure usage, improper transition, or overly long delay in implementing the correct FRP, this would constitute Unsat performance.)

OR

CT#2B (FR-H.1B) Establish RCS Bleed and Feed before PORVs open automatically due to SG dryout and RCS pressure increase.

BASIS: Failure to establish RCS Bleed and Feed before automatic opening of the PORVs reduces the probability of success to establish a heat sink for the core. This constitutes a significant reduction of safety margin beyond that irreparably introduced by the scenario.

ATTACHMENT 6

ESG – PSA RELATIONSHIP EVALUATION

08-01 NRC ESG-2 Rev. 0

SALEM ESG - PRA RELATIONSHIPS EVALUATION FORM

EVENTS LEADING TO CORE DAMAGE

Y/N	EVENT	Y/N	EVENT
N	TRANSIENTS with PCS Unavailable	N	Loss of Service Water
N	Steam Generator Tube Rupture	N	Loss of CCW
N	Loss of Offsite Power	N	Loss of Control Air
N	Loss of Switchgear and Pen Area Ventilation	N	Station Black Out
N	LOCA		

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

Y/N	COMPONENT, SYSTEM, OR TRAIN	Y/N	COMPONENT, SYSTEM, OR TRAIN
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	Y	Auxiliary Feed Pump
N	CVCS Letdown line Control and Isolation Valves	N	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

Y/N	OPERATOR ACTION
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
Y	Initiate feed and bleed

Complete this evaluation form for each ESG.

EXHIBIT 1

OPERATIONS INFORMATION SHEET

Procedure Title: 2PT-505 Turbine Steam Line Inlet Pressure Protection Channel I

Performer Name: _____ Date: _____

NOTE

A Reactor Trip signal will be initiated when the bistable test switches in Step 5.12 are placed in the test (up) position, if any of the following Status Panel lights are on:

- REACTOR TRIPS, FLOW LOOP, 2/3 in 2/4 loops
- REACTOR TRIPS, UNDER FREQ RCP BUSES, 1/2 taken twice
- REACTOR TRIPS, PZR. HIGH WTR. LEVEL, 2/3
- REACTOR TRIPS, PRESSURIZER LOW PRESSURE, 2/3
- REACTOR TRIPS, UNDERVOLTAGE RCP BUSES, 1/2 taken twice
- REACTOR TRIPS, RCP BREAKER OPEN, 2/4

NOTE

A Main Steam Isolation signal will be initiated when the bistable test switches in Step 5.15 are placed in the test (up) position, if any of the following Status Panel lights are on:

- SAFETY INJECTION, LOW LOW T_{AVG}, 2/4
- SAFETY INJECTION, LOW STEAM LINE PRESSURE, 2/4

Remarks

- The Advanced Digital Feedwater Control System (ADFCS) utilizes median signal select. During performance of this procedure, this channel is left in scan on ADFCS. If deviation in channels of this loop exceed 4%, then actions should be considered to avoid steam generator level perturbations or ADFCS automatic swap to manual.

Required Lineups

- MAIN STEAM SYSTEM, STEAM DUMP CONTROLS, CONTROL MODE, MS PRESS CONTROL selected
- ROD CONTROL SYSTEM, ROD BANK SELECTOR SWITCH, NOT in AUTO

EXHIBIT 1 (Continued)

Procedure Title: 2PT-505 Turbine Steam Line Inlet Pressure Protection Channel I

Annunciators

- RX PROT CH I ON TEST (A-4)
- SR DET VOLT TRBL (E-5)
- SR HI FLUX AT S/D BLOCKED (E-21)
- AMSAC BYPASSED (A-36)
- AMSAC TEST OR TRBL (A-44)
- ADFCS TROUBLE (G-15)

Control Console Alarms

- REACTOR COOLANT TEMPERATURES, AVERAGE TEMPERATURES, ALARMS, RC TAVG-TREF DEVIATION
- 21 STEAM GENERATOR, ALARMS, LEVEL & STEAM, FLOW HI
- 22 STEAM GENERATOR, ALARMS, LEVEL & STEAM, FLOW HI
- 23 STEAM GENERATOR, ALARMS, LEVEL & STEAM, FLOW HI
- 24 STEAM GENERATOR, ALARMS, LEVEL & STEAM, FLOW HI

Status Panel Lights

- REACTOR TRIPS, TURBINE POWER, STEAM LINE INLET Press, ABOVE P-7, CH I
- REACTOR TRIPS, TURBINE POWER, STEAM LINE INLET Press, BELOW P-2
- SAFETY INJECTION, HIGH STEAM LINE FLOW, LOOP 1, CH I
- SAFETY INJECTION, HIGH STEAM LINE FLOW, LOOP 2, CH I
- SAFETY INJECTION, HIGH STEAM LINE FLOW, LOOP 3, CH I
- SAFETY INJECTION, HIGH STEAM LINE FLOW, LOOP 4, CH I

Facility: SALEM 1 & 2 Scenario No.: ESG-3 Op-Test No.: 08-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 4.8% power, MOL, Main Turbine is on the Turning Gear. Rx startup by Control Rods was performed. 2PR1 PZR PORV is leaking, 2PR6 is shut with power applied to comply with Tech Specs.

Turnover: Raise Rx power to 17% over the next 30 minutes in preparation for rolling the Main Turbine. Reactivity plan developed by Rx Engineering directs raising power with control rods only

Event No.	Malf. No.	Event Type*	Event Description
1		N CRS/PO R RO	Raise Rx power
2		I CRS / RO	PZR pressure instrument fails high (Tech Spec)
3		C CRS / PO	ECCS Accumulator low pressure (Tech Specs)
4		M ALL	Rapid degradation of condenser vacuum/loss of steam dumps with power above capacity of SG Atmospheric reliefs.
5		C CRS/RO	Rod Control failure results in no inward rod movement or Rx trip available - ATWT / FRSM
6		C CRS/RO	Rapid Borate Stop valve fails to open
7		C CRS/RO	PZR PORV fails open.

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

SIMULATOR

EXAMINATION SCENARIO GUIDE

SCENARIO TITLE:	Raise Power, AB.PZR-0001 and FRSM-1
SCENARIO NUMBER:	08-01 NRC ESG-3
EFFECTIVE DATE:	See Approval Dates
EXPECTED DURATION:	75 min
REVISION NUMBER:	0
PROGRAM:	☐ **L.O. REQUAL**
	☒ **INITIAL LICENSE**
	☐ **OTHER** ☐ **STA**

REVISION SUMMARY:
New Issue for NRC Exam

PREPARED BY:	G Gauding	3-15-10
	Lead Regulatory Exam Author	**Date**
APPROVED BY:	Peter Hash	3-26-2010
	Salem Operations Training	**Date**
APPROVED BY:		3/25/10
	Facility Representative	**Date**

I. OBJECTIVE(S):

Enabling Objectives:

A. Given the unit at 5% power, raise reactor power, in accordance with the approved station procedures.

B. Given indication of a pressurizer control system malfunction, DIRECT the response to the malfunction, in accordance with the approved station procedures.

C. 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 the approved station procedures.

D. Given a condition causing a console alarm, investigate the cause and take corrective action(s), IAW approved station procedures.

E. Given the order or indications of a loss of vacuum, DIRECT the response to the malfunction, IAW approved station procedures.

F. Given the order or indications of a loss of vacuum, perform actions as the nuclear control operator to RESPOND to the malfunction, IAW approved station procedures.

G. Given indication of an anticipated transient without trip (ATWT), DIRECT the immediate response to the ATWT, in accordance with the approved station procedures.

H. Given the order or indications of an anticipated transient without trip (ATWT), complete actions as the nuclear control operator to PERFORM the immediate response to the ATWT, in accordance with the approved station procedures.

I. Given the order or indications of a reactor trip, perform actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.

J. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.

II. MAJOR EVENTS:

A. Raise Rx power.

B. Pressurizer Pressure Channel I Fails High

C. 23 Accumulator Low Pressure

D. Loss of Condenser Vacuum

E. ATWT / FRSM

F. Reactor Trip Response with a Failed Open PORV

III. SCENARIO SUMMARY:

A. The crew will receive the unit at ~5% power with the direction to raise power to 18% to place the turbine on-line. No major equipment will be C/Ted.

B. Once the crew has taken the watch they will raise power IAW S2.OP-IO.ZZ-0003.

C. During the power ascension, Channel I Pressurizer Pressure will fail high. The crew will enter AB.PZR-0001, swap controlling channels, remove the channel from service, and enter the appropriate Tech Spec.

D. Once the channels are swapped, 23 ECCS Accumulator relief will lift briefly and slightly depressurize the Accumulator. The crew will enter the appropriate Tech Spec. The crew will re-pressurize the Accumulator IAW S2.OP-SO.SJ-0002 to restore it above technical specifications, and exit the Tech Spec.

E. Once the accumulator is re-pressurized, a rapid loss of condenser vacuum will occur, and both SGFPs will trip. The crew will manually initiate a reactor trip.

F. Once the reactor operator initiates the manual reactor trip, they will determine the reactor has failed to trip and initiate actions to trip the reactor with all available methods from the control room. Additionally, all rods will fail to insert, both manually and automatically.

G. The crew will transition to FRSM-1. During the response in FRSM-1, the reactor operator will report that the rapid borate stop valve 2CV175 will not open, the crew will use the alternate flowpath to initiate the rapid boration.

H. Once the crew has completed EOP-FRSM-1, they will transition to EOP-TRIP-1 to validate no need for an SI and then transition to EOP-TRIP-2.

I. During the actions of EOP-TRIP-2, PZR PORV 2PR2 will fail open. The reactor operator will manually close 2PR7 to isolate the failed PORV.

J. The scenario will terminate once EOP-TRIP-2 is complete.

IV. INITIAL CONDITIONS:

_____ Initialize the simulator to IC-243, Blue Exam drive, 4.5% Power, BOL, equilibrium Xe, RCS Boron 1652 ppm.

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers)

Initial	Description
____ 1	RH1 and RH2 C/T
____ 2	RH18s C/T
____ 3	VC1and VC4 C/T
____ 4	RCPs (SELF CHECK)
____ 5	RTBs (SELF CHECK)
____ 6	MS167s (SELF CHECK)
____ 7	500 KV SWYD (SELF CHECK)
____ 8	SGFP Trip (SELF CHECK)
____ 9	23 CV PP (SELF CHECK)
___ 10	**INFO Bezel on 2PR1**
___ 11	**Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."**
___ 12	**IOP-3 out and marked up through 5.4.15.**

EVENT TRIGGERS:

Initial	ET #	Description
	6	GA205BPL<0.848 Command DMF SJ0180C Accumulator Low level Alarm

MALFUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	PR0016A PZR PRESS CH I (PT455) FAILS H/L	NA	NA	RT-1	2235	2500
2.___	SJ0180C 23 SI ACCUMULATOR GAS LEAK	NA	NA	RT-2	0	5
3.___	CN0086 LOSS OF MAIN CONDENSER VACUUM	NA	1:00	RT-3	0	50
4.___	VL0298 2PR2 Fails to Position (0-100%)	NA	:30	RT-4	0	100
5.___	RP0058 FAILURE OF AUTOMATIC RX TRIP	NA	NA	NA	NA	NA
6.___	RP0059A FAILURE OF MANUAL RX TRIP	NA	NA	NA	NA	NA
7.___	RP0059B FAILURE OF MANUAL SI/RX TRIP	NA	NA	NA	NA	NA
8.___	VL0095 2CV175 Fails to Position (0-100%	NA	NA	NA	0	0
9.___	RD0057 ALL RODS FAIL TO MOVE (AUTO/MAN)	NA	NA	RT-1	NA	NA
10___	VL0115 21AR65 FAILS TO POSITION (0-100%)	2:00	2:00	RT-3	0	100
11___	BF0105A 21 STM GEN FEED PUMP TRIP	2:15	NA	RT-3	0	3
12___	BF0105B 22 STM GEN FEED PUMP TRIP	2:18	NA	RT-3	0	3

REMOTE/FIELD FUNCTION SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	MT02D MAIN TURB TURNING GEAR ENGAGE	NA	NA	NA	ENGAGE	ENGAGE

I/O OVERRIDE SUMMARY:

Initial	Description	Delay	Ramp	Remote/Event	Initial Val	Final Val
1.___	B441 OVDI REACTOR TRIP BREAKER 'B'-TRIP	NA	NA	NA	OFF	OFF
2.___	B440 OVDI REACTOR TRIP BREAKER 'A'-TRIP	NA	NA	NA	OFF	OFF
3.___	C510 OVDI 2G6D PRESSURE HEATER BUS 480V-	NA	NA	NA	OFF	OFF
4.___	C310 OVDI 2E6D PRESSURE HEATER BUS 480V-	NA	NA	NA	OFF	OFF

OTHER CONDITIONS:

Initial	Description
	2PR6 shut with power applied

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.

E. Do not review objectives with crew.

F. If required to terminate the scenario early, the instructor should evaluate if sufficient information has been gathered to evaluate the crew's performance. Typically this would be accomplished by completion of the scenario through the third event, however, this is not a requirement. The final decision remains with the instructor and evaluators.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
1. Power Increase to 18%		
	• CRS briefs crew on continuing power ascension IAW S2.OP-IO.ZZ-0003, including expectations for rod withdrawal, and monitoring expected plant response.	
	• CRS directs RO and PO to coordinate power ascension by withdrawing control rods and adjusting Main Steam Dumps to raise power to 18% over 30 minutes.	
	• RO withdrawals rods in a slow deliberate manner, while closely monitoring plant parameters.	
	• RO monitors reactor power, rod position and Tavg.	
	• RO announces when MODE 1 is entered at 5% power.	
Note: PO may place Main steam Dumps in Manual to make setpoint adjustments, then return dumps to auto.	• PO verifies Main Steam Dumps are in MS Pressure Control- Auto.	
	• PO reports all 21-24 MS10s are in auto at 1010-1020 psig.	
	• RO announces Tave-Tref deviation. Crew determines the alarm is valid based on Tref input being Main Steamline Turbine Inlet Pressure PT-505, which is at no load with the Turbine off-line.	
	• PO verifies steam dumps are responding to the increase in Tavg, and adjusts dumps to maintain Tavg on program.	
	• PO verifies MFW is responding to increase in steam flow.	
	• RO/PO continue to slowly raise power to 18%.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO announces when power is above P-10 by 2RP4 indication. • RO blocks low power trips on IR and PR using block pushbuttons on the control console and verifying block indications.	
Proceed to next event after power is above P-10 (10%) at direction of lead evaluator.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
2. Pressurizer Pressure Channel I Controlling Channel Fails High		
Simulator Operator: Insert **RT-1** on direction from Lead Evaluator at 12% power. **MALF: PR0016A PZR PRESS CH I (PT455) FAILS H/L** Final Value: 2500 **MALF: RD0057 ALL RODS FAIL TO MOVE (AUTO/MAN)**	• RO announces OHA E-42 2PR1 1/2 TRIP, and recognizes RCS pressure lowering. • CREW determines that Channel I Pressurizer Pressure is failed high and RO takes manual control of the Master Pressure Controller. • CRS enters S2.OP-AB.PZR-0001. • CRS direct PO to initiate CAS. • RO reports POPS not in service and PZR Pressure Channel I Controlling Channel is failed high. • CRS directs RO to control RCS pressure with manual control of Master Pressure Controller • RO swaps controlling channel to Channel III, and returns Master Pressure Controller to auto. • CRS directs PO to review S2.OP-SO.RPS-0003 to remove failed channel from service. • CREW identifies the following Tech Specs: 3.2.5 (DNB), 3.3.1.1 Action 6, 3.3.2.1 Action b 19, and 3.4.5.b. Power must be removed from 2PR6 within 1 hour.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• CRS holds crew brief to discuss priorities and actions going forward.	
Note: This is a one hour requirement. Do not wait for this action to be performed.	• CRS directs an operator to remove control power from 2PR6.	
Simulator Operator: **IF** requested to remove power from 2PR6, THEN after 3 minutes insert **REMOTE: PR34D** Final Condition TAGGED.		
Note: Control rods will not move in Manual or Auto. Insertion of next event should be timed so that crew does not have time to reinitiate the power ascension. Proceed to next event once crew has determined Technical Specification requirements or at lead evaluators discretion.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
3. 23 ECCS Accumulator Low Pressure		
Simulator Operator: Insert **RT-2** on direction from Lead Evaluator **MALF: SJ0180C 23 SI ACCUMULATOR GAS LEAK** Final Value: 5 Verify **ET-6** is TRUE when Accumulator Low Pressure alarm annunciates, which deletes **SJ0180C.**	• PO reports 23 Accumulator Hi-Lo Pressure Alarm, and identifies pressure is low.	
	• PO refers to Alarm Response Procedure S2.OP-AR.ZZ-0011.	
	• CRS enters TSAS 3.5.1 Action a.	
The crew may discuss why pressure dropped and if re-pressurizing accumulator is the prudent course of action since there is no apparent reason why it lowered so quickly. If crew does not take action to re-pressurize 23 accumulator, proceed to next event once crew has entered the Technical Specification for 23 Accumulator.	• CRS directs PO to re-pressurize 23 Accumulator IAW S2.OP-SO.SJ-0002.	
	• PO re-pressurizes 23 Accumulator as directed by: 1. Opening 2NT32 2. Opening 23SJ93 3. Closing 23SJ93 once pressure rises to desired pressure 4. Closes 2NT32	
	• CRS exits TSAS 3.5.1.d Action a when pressure is restored.	
Proceed to next event once crew has determined a course of action for 23 Accumulator at Lead Evaluators direction.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

4. Rapid Loss of Condenser Vacuum

Simulator Operator: Enter **RT-3** on direction from Lead Evaluator.

MALFS: CN0086 LOSS OF MAIN CONDENSER VACUUM
Final Value : 50
Ramp: 1 minute

VL0115 21AR25 Fails to position (0-100%)
Final Value: 100
2 minute delay
2 minute ramp

BF0105A 21 Stm Gen Feed Pump Trip
Final Value : 3
2 minute 15 second delay
BF0105B 22 Stm Gen Feed Pump Trip
Final Value: 3
2 minute 18 second delay

- RO reports Condensate DO alarm as unexpected.
- PO informs CRS that condenser backpressure is rising.
- CRS enters S2.OP-AB.COND-0001.
- PO initiates CAS of AB.COND-0001
- PO starts all available vacuum pumps.

After the 2 minute delay, the loss of vacuum occurs quickly, and the CRS may not have time to order a power reduction.

- CRS may direct a power reduction to lower steam demand anticipating a loss of the Main Steam Dumps. If RO attempts to insert control rods, a Rod Control urgent failure will annunciate.
- PO reports that both SGFPs have tripped.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
5. ATWT	• CRS directs PO to trip the reactor. • RO attempts to trip the Rx with both Rx Trip Handles and reports that the Rx did not trip, and Crew identifies ATWT. • RO attempts to trip the Rx with the other Rx Trip Handle and reports that the Rx did not trip. • RO attempts to open Rx Trip Breakers and announces they did not open. • RO attempts to open PZR Heater Bus infeed breakers to deenergize RDMG sets, and reports they do not open. • RO reports the turbine is tripped and manually attempts to insert control rods. • RO reports rod control urgent failure with no way to manually or automatically insert rods. • CRS enters EOP-TRIP-1 and transitions to FRSM-1. • CREW dispatches an NEO to locally open RTBs. • PO starts or verifies running 21 and 22 AFW pumps, and reports AFW flow is >44E4 lbm/hr. • RO starts 21 and 22 Charging Pumps, and reports SI is NOT initiated. • PO throttles AFW as needed to maintain SG levels 9-33% while maintaining >44E4 lbm/hr. • RO verifies SI not actuated	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
6. Rapid Borate Stop Valve Fails to Open	• RO starts both BAT pumps in fast speed. • RO attempts to open 2CV175. • RO reports 2CV175 will not open. • CRS directs alignment via alternate path. • RO closed letdown valves2CV2, 2CV277, 2CV3, 2CV4, 2CV5 and 2CV7. • RO opens 2SJ1, 2SJ2, 2SJ4, 2SJ5, 2SJ12, and 2SJ13 to align RWST to charging flowpath. • RO closes 2CV40, 2CV41, 2CV68 and 2CV69. • RO reports rapid boration aligned.	
CT #1 (FR-S.1-C) Insert negative reactivity into to the core using the following method prior to completing step 4 of FRSM-1: • **Initiate Emergency Boration** **SAT____ UNSAT____**	• RO reports that 2PR6 is closed to isolate a leaking 2PR1. • CRS direct valve to remain closed.	
Simulator Operator: Open the reactor trip breakers 3 minutes after the order is given but no sooner than completion of the Rapid Boration initiation in FRSM-1. Delete **MALFs: RP0058, RP0059A, and RP0059B.** Modify **I/O Overrides B440** and **B441 to ON (opens RTBs)**	• RO verifies 2VC5 and 6 are closed	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO verifies Reactor Trip Breakers are open.	
	• PO verifies turbine tripped.	
	• PO reports status of AFW and SG levels.	
	• PO verifies RCS temperature is not lowering in an uncontrolled manner.	
	• PO determines no SG is faulted.	
	• RO verifies no CETs are greater than 1200°F.	
	• RO verifies power range less than 5% and IR SUR is negative.	
	• CRS directs chemistry to perform an RCS boron sample.	
	• CRS returns to EOP-TRIP-1.	
	• CREW re-verifies immediate actions of TRIP-1.	
	• CRS transitions to EOP-TRIP-2.	
7. 2PR2 Fails Open **Simulator Operator:** Shortly after the crew transitions to TRIP-2, insert **RT-4.** **MALF: VL0298 2PR2 FAILS TO POSITION (0-100%)** Final Value: 100 Ramp: 30 seconds	• RO announces reactor trip twice on station PA.	
	• Upon transition to EOP-TRIP-2 CRS reminds crew that CFSTs are in effect and for crew to monitor CASs.	
	• CRS conducts a brief with the crew and discusses plant status.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• RO reports loss of closed limit on 2PR2 and valve is apparently open since RCS pressure is lowering.	
	• RO attempts to shut 2PR2 in Manual, and reports it will not shut.	
	• CRS directs 2PR7 closed to isolate 2PR2.	
CT #2 (E-0-M) Close the block MOV upstream of the stuck-open PZR PORV prior to initiation of automatic Safety Injection. SAT____ UNSAT____	• RO closes 2PR7 and informs CRS that valve is closed and no PORVs are available to control RCS pressure.	
Terminate scenario when 2PR6 is shut.		

VI. SCENARIO REFERENCES

A. NUREG 1021, Examiner Standards
B. NUREG-1122, K/A Catalog for NPP Operators: PWR
C. TQ-AA-104-3001, NRC ILT Examination Development and Administration
D. Alarm Response Procedures (various)
E. Technical Specifications
F. Emergency Plan (ECG)
G. S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load
H. S2.OP-IO.ZZ-0004, Power Operation
I. S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction
J. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
K. 2-EOP-FRSM-1, Response to Nuclear Power Generation
L. 2-EOP-TRIP-2, Reactor Trip Response

ATTACHMENT 1
PLANT STATUS
UNIT TWO
TODAY

MODE: 2 **POWER:** 4.5% **RCS BORON** 1652 **MWE** 0

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

N/A

REACTIVITY PARAMETERS:

Control Bank D is at 153 steps
Reactivity plan for power increase to 18% in 30 minutes using rods only, in conjunction with Main Steam Dumps. Core is Xenon Free.
Rx Engineering provides the following reactivity parameters:
- Power Defect – 18 pcm/ % power
- Differential Rod Worth – 5.3 pcm / step
- Core Burnup – 1,000 EFPH

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

3.4.5.a 2PR1 isolated with 2PR6 shut with power available, 2PR1 leaks by

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

S2.OP-IO.ZZ-0003, HSB to Minimum Load is complete up to Step 5.4.15
Continue Power Ascension by raising power to 18% IAW S2.OP-IO.ZZ-0003.
An extra NCO has been assigned to perform Turbine Startup activities IAW S2.OP-SO.TRB-0001, Turbine Generator Startup Operations.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Main steam Dumps are in MS Pressure Control -Auto
Unit is returning to service after a short outage.
Hope Creek and Salem 1 are at 100% power.

PRIMARY:

SECONDARY:

Heating Steam is aligned to Unit 1.

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.

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

Note: Attach a separate copy of this form to each scenario reviewed. This form is used as guidance for the examination team as they conduct their review for the proposed scenarios.

SCENARIO IDENTIFIER: 08-01 NRC ESG-3 Rev. 0 REVIEWER: P Harsh

Initials		Qualitative Attributes
PH	1.	The scenario has clearly stated objectives in the scenario.
PH	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.
PH	3.	The scenario consists mostly of related events.
PH	4.	Each event description consists of: • 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
PH	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.
PH	6.	The events are valid with regard to physics and thermodynamics.
PH	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
PH	8.	The simulator modeling is not altered.
PH	9.	All crew competencies can be evaluated.
PH	10.	The scenario has been validated.
PH	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4 (Cont)
SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The following criteria list scenario traits that are numerical in nature. A second set of numbers indicates a range to be met for a set of two scenarios. Therefore, to complete this part of the review, the set of scenarios must be available. This page should be completed once per scenario set. The ranges listed for each scenario set represents a target and are not absolute limitations. Scenario sets that do not fit into the ranges listed should be further evaluated to ensure they are appropriate.

Initial		Qualitative Attributes
GSG	6	Total malfunctions inserted: 5-8
GSG	2	Malfunctions that occur after EOP entry: 1-2
GSG	2	Abnormal Events: 2-4
GSG	1	Major Transients: 1-2
GSG	1	EOPs entered/requiring substantive actions: 1-2
GSG	1	EOP Contingency Procedures requiring substantive actions: 0-2
GSG	2	Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5
ESG CRITICAL TASKS
08-01 NRC ESG-1 Rev. 0

CT #1: (FR-S.1-C) Insert negative reactivity into to the core using the following method prior to completing step 4 ofFRSM-1:

- Initiate Emergency Boration

BASIS: Failure to insert negative reactivity under the postulated plant conditions, results in an unnecessary situation in which the reactor remains critical or returns to a critical condition. Performance of this critical task would make the reactor subcritical and provide sufficient shutdown margin to prevent (or at least minimize the power excursion associated with) any subsequent return to criticality. Since Salem employs flow charts vice the standard Westinghouse two-column format, there are no immediate actions associated with FRSM. The immediate actions of FRSM are contained in step 2 of EOP-TRIP-1 and steps 1-4 of FRSM. Thus the time limit of this critical task is extended to step 4 of FRSM to maintain alignment.

CT #2: (E-0--M) Close the block MOV upstream of the stuck-open PZR PORV prior to actuation of automatic Safety injection

BASIS: The RCS fission-product barrier can be restored to full integrity simply by closing the block valve. Therefore, failure to close the MOV represents a "demonstrated inability by the crew to take an action or combination of actions that would prevent a challenge to plant safety."

ATTACHMENT 6

ESG – PSA RELATIONSHIP EVALUATION

08-01 NRC ESG-3 Rev. 0

SALEM ESG - PRA RELATIONSHIPS EVALUATION FORM

EVENTS LEADING TO CORE DAMAGE

Y/N	EVENT	Y/N	EVENT
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

Y/N	COMPONENT, SYSTEM, OR TRAIN	Y/N	COMPONENT, SYSTEM, OR TRAIN
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

Y/N	OPERATOR ACTION
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

Complete this evaluation form for each ESG.

Facility: SALEM 1 & 2 Scenario No.: ESG-4 (Spare) Op-Test No.: 08-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: Rx power is 67%, BOL. Power is reduced due to 21MS29 Main Turbine Governor Valve failed shut 1 hour ago. 2PS1 is leaking and its manual isolation valve is shut. 2PR1 is leaking and its block valve is shut with power applied

Turnover: Maintain current power while 21MS29 failure is investigated.

Event No.	Malf. No.	Event Type*	Event Description
1		I ALL	Controlling PZR level channel fails low (Tech Specs)
2		N ALL	2nd turbine governor valve (23MS29) fails closed Power reduction to <30% power (Tech Spec-AFD)
3		C RO	Steam leak downstream of MSIVs
4		C RO	Rx fails to trip from trip switch, RTB trip successful
5		M ALL	Steam rupture with failed open MSIV
6		C PO	22 AFW pp fails to start
7		C CRS / PO	SGTR following affected SG de-pressurzation

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

SIMULATOR EXAMINATION SCENARIO

SCENARIO TITLE:	Steam Leak, Faulted/Ruptured SG
SCENARIO NUMBER:	08-01 NRC ESG-4 (Spare)
EFFECTIVE DATE:	Effective on final approval date below
EXPECTED DURATION:	60 minutes
REVISION NUMBER:	03

PROGRAM:

[ ] **L.O. REQUAL**

[X] **INITIAL LICENSE**

[ ] **OTHER**

REVISION SUMMARY

Rev. 03- 03/17/10

Updated format and expanded expected actions.(last used 2002)
Modified initial conditions from 100% to 67% with one GV already failed shut because SO.TRB-1 now only requires power reduction to ≤75% for one GV being shut.
Modified initial conditions to include 2PS1 leaking and isolated, and 2PR1 leaking and isolated.
Modified Rx trip failure to include only Automatic Rx trip. This will keep CT#1 valid.
Swapped NI channel failure with PZR level channel failure.

PREPARED BY:	**G Gauding** **Lead Regulatory Exam Author**	**03-17-10** **(DATE)**
APPROVED BY:	Peter Walsh **Salem Operations Training**	**(DATE)** 3-26-2010
APPROVED BY:	**Facility Representative**	**(DATE)** 3/25/10

I. OBJECTIVES

ENABLING OBJECTIVES

A. Given a situation with an OHA alarm, perform action(s) to investigate and correct the cause of the alarm, IAW approved station procedures.
B. Given a failure of a power range detector, take corrective action for a power range instrument failure IAW AB.NIS-0001.
C. Given an NIS malfunction or loss, the crew will remove the failed channel from service IAW approved station procedures.
D. Given the order to rapidly reduce load, perform actions as the nuclear control operator to RESPOND to the malfunction, IAW the approved station procedures.
E. Given indication or order to rapidly reduce load, DIRECT the response to the malfunction, IAW the approved station procedures.
F. Given indications of a main turbine or generator malfunction, DIRECT the response to the malfunction in accordance with the approved station procedures.
G. Given the order or indications of a main turbine or generator malfunction, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.
H. Given the indication of excessive steam flow, DIRECT the response to excessive flow in accordance with the approved station procedures.
I. Given the indication of excessive steam flow, perform actions as the nuclear control operator to RESPOND to excessive flow in accordance with the approved station procedures.
J. Given the order or indications of a loss of secondary coolant, perform actions as the nuclear control operator to RESPOND to the coolant loss, IAW the approved station procedures.
K. Given indication of a loss of secondary coolant, DIRECT the response to the loss of secondary coolant, IAW the approved station procedures.
L. Given the order or indications of a loss of secondary coolant, perform actions as the shift technical advisor to RESPOND to the loss of secondary coolant IAW the approved station procedures.
M. Given indication of a steam generator tube rupture (SGTR), DIRECT the response to the SGTR in accordance with approved station procedures.
N. Given the order or indications of a steam generator tube rupture (SGTR), perform actions as the nuclear control operator to RESPOND to the tube rupture in accordance with approved station procedures.
O. Given the reactor coolant system (RCS) subcooled with the immediate response to a steam generator tube rupture (SGTR) with loss of coolant accident (LOCA) completed, DIRECT a subcooled recovery in accordance with approved station procedures.
P. Given the order with the reactor coolant system (RCS) subcooled and the immediate response to a steam generator tube rupture (SGTR) with loss of coolant accident (LOCA) completed, carry out actions as the nuclear control operator to PERFORM a subcooled recovery in accordance with approved station procedures.

II. MAJOR EVENTS

A. Controlling PZR Level Channel fails high

B. (2^{nd})Turbine Governor Valve Fails Closed

C. Unisolable Main Steam Line Leak Outside Containment

D. Faulted/Ruptured SG

III. SCENARIO SUMMARY

A. The crew will take the turnover at approximately 67% power, BOL. 21MS29 Main Turbine Governor Valve is shut, it failed shut one hour ago. Load was reduced to meet the P&L requirement of SO.TRB-1 which requires power $\leq$ 75%. 2PS1 is leaking and its manual isolation valve is shut. 2PR1 is leaking and its block valve is shut with power applied. The crew will be directed to maintain current unit conditions.

B. Shortly after the crew takes the watch PZR Level Channel I fails high. The crew will place Master Flow Controller in manual, and swap control to Channel III IAW S2.OP-AB.CVC-0001.

C. After the crew completes removing the failed channel from service and the Tech Spec call is made, a (2^{nd}) turbine governor valve (23MS29) fails closed due to workers bumping a panel in the HP turbine housing. The limitations of S2.OP-SO.TRB-0001 will be implemented to reduce load to $\leq$30% at 5%/minute. The crew will reduce load IAW S2.AB.LOAD-0001 at 5% / minute while controlling reactivity and primary plant parameters in an effective manner.

C. A main steam leak downstream of the MSIVs develops while the power reduction is in progress. The crew should enter AB.STM-1. The steam leak progresses, eventually requiring the CRS to order a MANUAL reactor trip and MSLI. 22MS167 will not close and remains open throughout the rest of the scenario. 2H Group Bus de-energizes when the main generator output breakers open.

D. The steam leak continues through 22MS167 resulting in an AUTO SI on steamline delta P. The crew will implement TRIP-1 and transition to LOSC-1. At the completion of LOSC-1 the crew will transition to LOCA-1. When 22SG has depressurized and LOCA-1 is in progress, a SGTR will be introduced. The CRS should transition to SGTR-1 when continuous action step criteria are met. The Lead Evaluator can terminate the scenario after the crew enters SGTR-1. The scenario should not be continued beyond the transition to SGTR-3.

IV. INITIAL CONDITIONS

____ Initialize simulator to IC-244, Blue Exam Drive, 67% Power,
BOL, downpower recently completed, Xe building in at 80 pcm/hr, RCS Boron 1095 ppm.

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers):

Initial	Description
___1.	RH1 and RH2 (C/T)
___2.	RH18s (C/T)
___3.	RCPs (SELF CHECK)
___4.	RTBs (SELF CHECK)
___5.	MS167s (SELF CHECK)
___6.	500 KV SWYD (SELF CHECK)
___7.	SGFP Trip (SELF CHECK)
___8.	23 CV Pump (SELF CHECK)
___9.	**2PR1 in Manual and shut**
___10.	**2PR6 shut with power applied.**
___11.	**2PS1 in Manual and shut.**
___12.	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

****

NOTE TO EVALUATORS: 500 gallon dilution finished ~5 minutes ago. Tave is rising, Tave/Tref deviation will start at ~0.29 degrees high and would peak at ~ 0.9 high after 15 minutes in RUN, so there is ample time for board walk downs without needing reactivity adjustment. **PERFORM SETUP ACTIVITIES QUICKLY AND MINIMIZE TIME SIMULATOR IS IN RUN PRIOR TO CREW COMMENCING BOARD WALKDOWNS.**

****

EVENT TRIGGERS

Initial	ET #	Description
____	1	MON0254<10 C Bank Control rods < 10 steps withdrawn
____	3	GB407BAC<0.4 N42 power as a function of full scale (120%) which is ~ 48% indicated

MALFUNCTION SUMMARY

Initial	Description	Delay	Ramp	Remote / Event	Init Val	Final Val
__ 1.	RP0058 Failure of Automatic Rx trip	NA	NA	NONE	TRUE	TRUE
__ 2.	MS0092F 22MS167 Fails Open	NA	NA	NONE	TRUE	TRUE
__3.	EL0140 Loss of 2H 4160 V Group Bus	30 sec	NA	ET-1	FALSE	TRUE
__ 4.	TU0081E 21MS29 Turb Cntrl Valve Fails Closed	NA	NA	RT-2	TRUE	TRUE
__ 5.	MS0091r Main Steam Header Leak Outside Containment	NA	8 min	ET-3	0	35
__ 6.	AN0242 SER 242 Fails: A22 N.Pen Temp	5 min	NA	ET-3	0	2
__ 7.	SG0078B 22 Steam Generator Tube Rupture	N/A	5 min	RT-7	0	600
__ 8.	TU0081G 23MS29 Turb Cntrl Valve Fails Closed	NA	NA	RT-3	FALSE	TRUE
__ 9.	PR0017A PZR level Channel I (LT-459) Fails H/L	NA	NA	RT-8	NA	100
__10	RP318E 22 Aux Feed Pump Fails to Start on SEC	NA	NA	NONE	TRUE	TRUE
__11	AN3540 AAS 540 FAILS-:22 AF PUMP LOSS OF 125VDC	NA	NA	NONE	1	1
__12	RP0059A FAILURE OF MANUAL RX TRIP	NA	NA	NONE	FALSE	TRUE

REMOTE/FIELD FUNCTION SUMMARY

Initial	Description	Delay	Ramp	Remote / Event	Init Val	Final Val
__1	AF25D 22 AFW PUMP CONTROL POWER	NA	NA	NONE	OFF	OFF

I/O OVERRIDE SUMMARY						
Initial	Description	Delay	Ramp	Remote / Event	Init Val	Final Val
	None					

OTHER CONDITIONS:		
	1.	Remote Triggers 1 and 2 are already RED. Used during scenario construction.

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.

E. Do not review objectives with crew.

F. If required to terminate the scenario early, the instructor should evaluate if sufficient information has been gathered to evaluate the crew's performance. Typically this would be accomplished by completion of the scenario through the third event, however, this is not a requirement. The final decision remains with the instructor and evaluators.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
1. PZR Level CH I Fails High		
Simulator Operator: Insert **RT-8** on direction from Lead Evaluator **MALF: PR0017A** PZR level Channel I (LT-459) Fails H/L Final Value: 100		
	• RO PZR HI LVL alarm and Channel I reading 100%.	
Note: If OHA E-20 ARP is used, it only has RO select an Operable channel and initiate S2.OP-SO.RPS-003 to remove channel from service.	• CRS enters AB.CVC-001 OR uses OHA E-20 ARP.	
	• RO may request permission to place the Master Flow Controller in Manual to establish control over charging flow.	
	• CRS progresses through AB if used until reaching Step 3.54, and the RO reiterates PZR level channel I has failed high.	
	• If not previously performed, RO places Master Flow Controller in Manual and adjusts charging flow to maintain PZR level on program IAW Att. 2.	
	• RO selects Channel III for control, and Channel II or III for the recorder.	
Note: All actions performed in the Control Room have already been performed in the AB.	• CRS directs PO to initiate SO.RPS-003 to remove failed channel from service.	
	• CRS enters TSAS 3.3.1.1 Action 6	
Proceed to next event after Tech Spec call is made at direction of Lead Evaluator.		

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments

2. Failure Closed of 23MS29 Governor Valve

Simulator Operator: Insert **RT-3** on direction from Lead Evaluator.

MALF: TU0081G 23MS29 Turb Ctrl Valve Fails Closed

Final Value: True

Note: The 23MS29 closing will cause Tave to initially rise ~4.5 degrees. The unaffected governor valve opening will lower Tave ~ 2 degrees. The entire transient will take less than 3 minutes, and with no operator action steady state conditions would be established with Tave ~ 3 degrees higher than before the governor valve shut.

- CREW recognizes loss of turbine load by control rods inserting (lower MWe, rising Tave/PZR pressure, Tave-Tref console alarm, OHA's G-15 and G-3.

Note: With rod control in auto, rods will step in ~ 20 steps while the unaffected governor valves open. Rods will then withdraw in auto due to the power mismatch signal with Tave/Tref deviation well above minus1.5 degrees.

Note: With only a Terror signal present, automatic rod control is not expected to withdraw rods until Terror is minus 1.5 degrees.

Note: CRS may direct rod control be placed in manual due to unusual outward rod motion if the cause is not readily identified as the Power Mismatch signal affecting rod control.

- RO monitors RCS temperature and rod control.

Note: Rx trip steps start on page 11.

- RO/PO investigates turbine indications and determines 23MS29 closed. 22 and 24MS29 will open to restore turbine inlet pressure at setpoint.
- CRS reviews SO.TRB-0001 and determines main turbine load limitation of $\leq$ 30% with failed valve.

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Role Play: 5 minutes after being contacted reports as NEO or Maintenance Supervisor that a worker in the HP turbine housing banged into a panel, and the crew heard the 23MS29 go closed. If asked, state the panel has no ID tag on it.	• CREW dispatches NEO to investigate or contacts maintenance crew.	
	• CRS enters AB.LOAD-0001 to initiate load reduction at 5%/minute to ≤ 30% load.	
Simulator Operator: Ensure **ET-3** is TRUE when N42 power lowers to ~47%. **MALF MS0091r Main Steam Hdr Leak outside Containment** Final Value: 35% Ramp: 8 minutes **MALF AN0242, SER 242 fails A22** Final Value: 2 Delay: 5 minutes	• RO/PO coordinate actions to reduce load to ≤30%. • PO initiate a turbine load reduction to ≤ 30% @ 5%/min.	
	• RO calculates boration required and initiates boration.	
	• RO ensures auto rod control is inserting rods at the expected rate or inserts control rods if in manual to maintain Tave on program.	
	• RO energizes PZR heaters if not energized.	
	• RO announces AFD outside target band when it alarms.	
Note: The AFD Tech Spec is not applicable <50% power, but the CRS must realize that the excess penalty minutes will prevent raising power above 50%.	• CRS enters TSAS 3.2.1 for AFD, and recognizes that penalty minutes exceed 60 when it occurs.	
	• RO/PO announces when Below P-9 light illuminates on RP4.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
3. Steam Leak Outside Containment		
Note: Due to the rate of power reduction, the steam leak may not be diagnosed until after the load reduction is complete. The penetration area hi temp alarm OHA A-22 will annunciate ~ 2 minutes after the load reduction is complete.	• CRS directs RO to stop all Heater Drain Pumps at ~ 40% Rx power. • RO stops 21-23 Heater Drain Pumps. • CREW observes the following as steam leak develops: - Rx power/MWe mismatch - PZR pressure dropping - Hotwell levels lowering - Tave lowering faster than expected. • RO/PO announces when Below P-8 light illuminates on RP4.	
Role Play: If the crew dispatches an NEO to investigate, call back after 5 minutes and report steam blowing out of the outer penetration area. The blowout panels may be open.	• RO/PO reports abnormal plant response to CRS. • CRS enters AB.STM-1. • CRS directs NEOs to investigate for signs of steam leakage if not previously dispatched. • CREW determines reactor conditions unstable and personnel safety issues dictate a MANUAL Rx trip and steam line isolation IAW CAS of AB.STM.	
4. Rx fails to trip from Trip Switches, RTB trips the Rx. **CT#1 (E-0-A)** **Manually trip the Rx from the control room prior to transition to FRSM-1. (Auto trip will not occur).** **SAT____ UNSAT____**	RO initiates a MANUAL Rx trip, and announces that neither Rx trip switch tripped the Rx. RO trips the Rx by opening the Reactor Trip Breakers on 2CC2. • RO confirms the Rx trip.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
5. Unisolable Faulted SG **Simulator Operator:** Ensure **ET-1** inserts on Rx Trip **MALF EL0140 Loss of 2H 4160 V Bus** Final Value: True Delay: 30 seconds		
Note: An automatic SI will occur on LOOP 22 STM DP LO (OHA F-22)	• RO initiates MSLI. • RO reports 22MS167 did not shut, and attempts to shut it with redundant controls on other Safeguards bezel and fast close on 2CC3, and reports 22MS167 remains open with steam flow still indicated on 22 SG. • RO reports an automatic SI has occurred. • CREW implements TRIP-1. • RO performs immediate actions. - Verifies the Rx is tripped. - Confirms the Rx trip. - Trips the Main Turbine - Verifies at least one 4KV vital bus energized. - Reports SI is initiated from Steamline D/P on 22 loop. • CRS/RO verify immediate actions of TRIP-1 are complete by performing verification of immediate action steps.	
CT#2 (E-2--A) **Isolate all feedwater to the 22 SG, and isolate 22 SG from the intact SGs before transition out of LOSC-1.** **SAT_____ UNSAT_____**	• PO isolates AFW to 22 SG by closing 22AF11 and 22AF21.	
Simulator Operator: If anyone is dispatched to the outer penetration area, report back after 5 minutes that steam is blowing out of blowout panels and you cannot enter area.	• CRS contacts WCC/Maintenance for assistance closing 22MS167.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
6. 22 AFW pump fails to start		
Simulator Operator: When PO depresses the start pushbutton for 22 AFW pump, **delete** Remote **AF25D** 22 AFW pump control power to allow 22 AFW pump to start.	• RO reports SEC loading is not complete for B vital bus, and 22 AFW pump did not start. • CRS directs 2B SEC blocked and reset. • PO starts 22 AFW pump. • PO reports 21 and 22 AFW pumps are running and reduces AFW flow to no less than 22E4 lb/hr to intact SGs. • RO/PO verifies safeguards valve alignment is correct. • RO reports 21/22CA330s are shut. • RO reports containment pressure is ~0 psig. • RO reports an auto SI occurred on 22 steamline D/P, a MSLI has been performed, and 22MS167 remains open.	
Note: Crew should recognize loss of 2H Group Bus when checking RCPs.	• PO reports all 4KV vital busses are energized. • RO reports control room ventilation is in Accident Pressurized mode. • RO reports switchgear room ventilation status. • RO reports 2 CCW pumps are running. • RO reports RHR is not aligned for cold leg recirc. • RO reports charging flow is >100 gpm on SI systems charging flow meter. • RO reports RCS pressure and SI pump flow status.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Note: RCS pressure may not lower to <1500 psig depending on how quickly feed flow is isolated to 22 SG.	• RO shuts charging pump miniflow valves CV139 and CV140 IAW TRIP-1 CAS if RCS pressure is <1,500 psig and BIT flow established. • RO reports RCS pressure is >300 psig. • PO reports AFW flow and SG NR level status, and maintains >22E4 lbm/hr until at least 1 SG NR level is > 9%. • RO reports a MSLI has already been performed and no operator controlled cooldown is in progress. • RO reports Rx trip breakers are open. • RO reports both PZR PORVs are closed, and CRS directs RO to maintain 2PR6 shut to isolate leaking 2PR1. • RO reports spray valves are closed as expected for current conditions. • RO reports RCS pressure is >1350 psig. • PO reports 22 SG is faulted. • CRS transitions to LOSC-1.	
Simulator Operator: If called by CRS to check on status of 22MS167, reply that the Maint crew is still being assembled and briefed.	• PO reports all valves in Table A are shut EXCEPT 22MS167 which remains open. • CRS verifies only a single SG is affected. • PO verifies faulted SG is isolated except for the 22MS167 which will not shut. • PO reports faulted SG is NOT 21 or 23 SG.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
	• PO lowers 23 AFW pump speed to minimum, trips, then stops 23 AFW pump.	
	• CRS determines no MS45 is affected.	
	• RO resets Phase A isolation, resets SGBD Sample Isolation Bypass, and opens 21-24SS94's.	
	• CRS directs chemistry to sample 21-24 SGs for boron and activity.	
	• PO stabilizes RCS temperature by adjusting intact SG MS10's.	
	• CREW determines no SGTR is present.	
	• CRS transitions to LOCA-1.	
7. SGTR		
Simulator Operator: Insert **RT-7** when 22 SG has blown down and LOCA-1 Step 4 (SGTR evaluation)has been **completed.** **MALF: SG0078B 22 SG Tube Rupture** Final Value: 600 Ramp: 5 min	• RO/PO resets SI, Phase A, Phase B, opens 21 and 22CA330, resets each SEC and 230V Control Center.	
	• RO/PO stops EDGs	
Note: The R15 reading will be unaffected due to the contaminated steam from 22 SG going out the break in the pipe, and no TB10s open.	• RO/PO notes abnormal faulted SG response on 22SG: - steam flow is present on the SG after it has completely blown down - SG pressure fluctuations - lowering RCS pressure - R19 readings rising	
	• CREW diagnoses SGTR	
	• CRS refers to CAS and transitions to SGTR-1.	

Evaluator/Instructor Activity	Expected Plant/Student Response	Comments
Lead Evaluator can terminate the scenario anytime after the transition to SGTR-1 but should not continue beyond the transition to SGTR-3. **IF** an additional Critical Task is required, **THEN** continue scenario until the crew has performed the cooldown to Table D target temperature and demonstrates the ability to maintain temp below the target temperature and take credit for: **CT # 3 (E-3-B) Establish/Maintain RCS temperature so a transition from SGTR-1 does not occur because Tave is too high to maintain minimum subcooling, OR below the RCS temperature that causes an extreme challenge (Red) or severe (Purple) challenge to the sub-criticality and/or the integrity CSF.** **SAT_____ UNSAT_____**		

VI. SCENARIO REFERENCES:

A. NUREG-1021, Examiner Standards
B. NUREG-1122, K/A Catalog for NPP Operators: PWR
C. TQ-AA-104-3001, NRC ILT Examination Development and Administration
D. Alarm Response Procedures (Various)
E. Technical Specifications
F. S2.OP-S0.TRB-0001, Turbine Generator Startup Operations
G. S2.OP-SO.RPS-0001, Nuclear Instrumentation Channel Trip/Restoration
H. S2.OP-AB.NIS-0001, Nuclear Instrumentation System Malfunction
I. S2.OP-AB-LOAD-0001, Rapid Load Reduction
J. S2.OP-AB.STM, Excessive Steam Flow
K. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
L. 2-EOP-LOSC-1, Loss of Secondary Coolant
M. 2-EOP-LOCA-1, Loss of Coolant Accident
N. 2-EOP-SGTR-1, Steam Generator Tube Rupture

ATTACHMENT 1
PLANT STATUS
UNIT TWO
TODAY

MODE: **1** POWER: **67** RCS BORON: **1095** MWe: **790**

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

N/A

REACTIVITY PARAMETERS
Core Burnup: 1100 MWD/MTU.
Xe building in at 80 pcm/hr.
Control Bank D is at 172 steps.
The off going shift completed a 500 gallon dilution 5 minutes ago.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

3.4.5.a None

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

ABNORMAL PLANT CONFIGURATIONS:
21MS29 Main Turbine Governor valve failed close ~1 hour ago due to a hydraulic fluid leak which has been isolated. Power was reduced to ≤75 (currently 67%) IAW SO.TRB-1 and AB.LOAD-1. A Maintenance crew is in the HP turbine housing working on the 21MS29.
AB.LOAD is complete and exited.
Maintain current power level while troubleshooting is in progress.

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.
58 AFD penalty minutes in the last 24 hrs, all accumulated in the last hour.

PRIMARY:
2PR1 is in Manual and shut due to leakage past seat. 2PR6 is shut with power applied IAW TSAS 3.4.5. 2PS1 is leaking, it is in manual and shut. 2PS24 manual isolation valve is shut.
Primary to Secondary leakage is zero.

SECONDARY:

23 Condensate Pump was secured during performance of AB.LOAD and remains O/S.

Heating steam is aligned to Unit 1.

RADWASTE:

None

CIRCULATING WATER/SERVICE WATER:

None

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.

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

Note: Attach a separate copy of this form to each scenario reviewed. This form is used as guidance for the examination team as they conduct their review for the proposed scenarios.

SCENARIO IDENTIFIER: 08-01 NRC ESG-4 (Spare) **REVIEWER:P Harsh**

Initials		Qualitative Attributes
PH	1.	The scenario has clearly stated objectives in the scenario.
PH	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.
PH	3.	The scenario consists mostly of related events.
PH	4.	Each event description consists of: • 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
PH	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.
PH	6.	The events are valid with regard to physics and thermodynamics.
PH	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
PH	8.	The simulator modeling is not altered.
PH	9.	All crew competencies can be evaluated.
PH	10.	The scenario has been validated.
PH	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.

ATTACHMENT 4 (Cont)
SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The following criteria list scenario traits that are numerical in nature. A second set of numbers indicates a range to be met for a set of two scenarios. Therefore, to complete this part of the review, the set of scenarios must be available. This page should be completed once per scenario set. The ranges listed for each scenario set represents a target and are not absolute limitations. Scenario sets that do not fit into the ranges listed should be further evaluated to ensure they are appropriate.

Initial		Qualitative Attributes
GSG	7	Total malfunctions inserted: 5-8
GSG	2	Malfunctions that occur after EOP entry: 1-2
GSG	3	Abnormal Events: 2-4
GSG	2	Major Transients: 1-2
GSG	2	EOPs entered/requiring substantive actions: 1-2
GSG	1	EOP Contingency Procedures requiring substantive actions: 0-2
GSG	3	Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5
ESG CRITICAL TASKS
ESG-08-01 NRC ESG-4 (Spare)

CT#1 (E-0--A) Initiate manual Reactor Trip from the control room prior to a transition to FRSM-1 being required.

BASIS: FSAR Section 15.4 Accident Analyses, Limiting Faults, section 15.4.2 Major Secondary System Pipe Rupture assumes the Rx is tripped (page 15.4-32).

Failure to manually trip the reactor causes a challenge to the sub criticality CSF beyond that irreparably introduced by the postulated conditions.

CT#2: (E-2--A) Isolate the faulted SG before transition out of LOSC-1, by isolating all feedwater to the faulted SG (closing 22AF11 and 22AF21 valves,) and isolating the faulted SG from the intact SGs by closing unaffected MS167, MS7, and MS18s.

BASIS: Failure to isolate a faulted SG that can be isolated causes challenges to CSFs beyond those irreparably introduced by the postulated conditions. Also, depending on the plant condition, it could constitute a demonstrated inability of the crew to recognize a failure of the automatic actuation of an ESF system or component.
Failure to isolate the faulted SG such that multiple SGs are allowed to blow down for an extended time can significantly worsen the power excursion. Similarly, failure to isolate all feedwater flow, including AFW, to the faulted SG such that it continues to blow down for an extended time can significantly worsen the power excursion.

CT#3 (If required) (E-3--B) Establish/Maintain RCS temperature so a transition from SGTR-1 does not occur because Tave is too high to maintain minimum subcooling, OR below the RCS temperature that causes an extreme challenge (Red) or severe (Purple) challenge to the sub criticality and/or the integrity CSF.

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

ATTACHMENT 6

ESG – PSA RELATIONSHIP EVALUATION

SALEM ESG - PRA RELATIONSHIPS EVALUATION FORM

EVENTS LEADING TO CORE DAMAGE

Y/N	EVENT	Y/N	EVENT
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

Y/N	COMPONENT, SYSTEM, OR TRAIN	Y/N	COMPONENT, SYSTEM, OR TRAIN
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

Y/N	OPERATOR ACTION
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
Y	Cooldown the RCS and depressurize the system
Y	Isolate the affected Steam generator which has the tube ruptures
N	Early depressurize RCS
N	Initiate feed and bleed

Complete this evaluation form for each ESG.