OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Admin
TASK:	Respond to a Void in the Reactor Vessel
TASK NUMBER:	N1150410501
JPM NUMBER:	09-01 NRC RO Admin A1-1
ALTERNATE PATH:	[ ]
K/A NUMBER:	EPE10 EA1.1
IMPORTANCE FACTOR:	3.8 (RO) / 3.6 (SRO)

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: 2-FRCI-3 Rev. 25 Response to Void in Reactor Vessel

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 8 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 07-20-11**
Validated By:	**J Pierce, Jr** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Representative**	**Date:** 8/1/11

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: Admin

TASK: Respond to a Void in the Reactor Vessel

TASK NUMBER: N1150410501

SIMULATOR SETUP

INITIAL CONDITIONS:

Unit 2 is performing 2-EOP-FRCI-3, Response to Void in Reactor Vessel, due to an unexpected void formation in the Rx Vessel following a LOCA.

- Containment temperature is 220 degrees F.
- Containment hydrogen concentration is 1.0%.
- RCS pressure is 800 psig.

INITIATING CUE:

The CRS directs you to calculate the maximum Rx Vessel Head venting time using Attachment 1 of FRCI-3.

Successful Completion Criteria:

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

Task Standard for Successful Completion:
1. **Calculate maximum head vent time to be 20-24 minutes.**

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: Respond to a Void in the Reactor Vessel

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
		Once operator has read Initial Condition and Initiating Cue, provide them with FRCI-3 Attachment 1 and Figure 1.			
	Att. 1 Step 1	Record the following data:	Operator records the following data given in Initial Conditions: 1.1 Containment temperature: **220** 1.2 Containment hydrogen concentration (H): **1.0** 1.3 RCS pressure: **800**		
*	Att. 1 Step 2	Determine containment air volume at standard temperature and pressure 2.1 Calculate containment absolute temperature, T_{abs} T_{abs} =Containment temperature (^{o}F) +460= 2.2 Calculate containment air volume (V) at STP: V=1.28E09/T_{abs}=	Operator calculates containment absolute temperature. **220 + 460= 680** Operator calculates containment air volume at STP. **1.28E09/680=1.88E6** (actual value of 1.882353E6 will be used for bounding number, and can be used by operator)		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: Respond to a Void in the Reactor Vessel

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
*	Att. 1 Step 3	Determine maximum hydrogen vent volume 3.1 Record containment hydrogen concentration (from Step 1.2) 3.2 Record containment air volume at STP (from Step 2.2) 3.3 Calculate maximum vent volume (M) $M = \frac{(3.0\%-H) \times V}{100\%}$	Operator records **1.0** Operator records **1.88E6** (or 1.882353E6) Operator calculates maximum vent volume **$M = \frac{(3.0\%-1.0\%) \times 1.88E6 \text{ (or } 1.882353E6)}{100\%}$** **M= 37600** (or 37647)		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: Respond to a Void in the Reactor Vessel

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
*	Att. 1 Step 4	Determine maximum vent time 4.1 Record RCS pressure (from Step 1.3) 4.2 Record calculated maximum vent volume (from Step 3.3) 4.3 Record hydrogen vent flow rate (from Figure 1) 4.4 Calculate maximum vent time (T_v) T_v=M/F	Operator records **800** Operator records **37600** (or 37647) Operator records **1600-1800** (allowed extrapolation) Operator calculates maximum vent time T_v= **37600/1600** T_v= **23.5 minutes** **Note:** Using the 37647 (M) value and the 1600-1800 allowed extrapolation from Figure 1, the bounding correct answers for Tv are 20.89 minutes and 23.53 minutes. **The allowable answer for this JPM is 20-24 minutes.**		
			Once operator has provided maximum head vent time, state JPM is complete.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Y 4. Initial setup conditions are identified.

Y 5. Initiating and terminating Cues are properly identified.

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

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

Y 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 25 Date 4/28/08

Y 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

Y 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: [signature] J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Unit 2 is performing 2-EOP-FRCI-3, Response to Void in Reactor Vessel, due to an unexpected void formation in the Rx Vessel following a LOCA.

- Containment temperature is 220 degrees F.
- Containment hydrogen concentration is 1.0%.
- RCS pressure is 800 psig.

INITIATING CUE:

The CRS directs you to calculate the maximum Rx Vessel Head venting time using Attachment 1 of FRCI-3.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Admin
TASK:	TCAF a Loss of Spent Fuel Pool Cooling (Calculate the time at which SFP temperature will exceed Design Bases)
TASK NUMBER:	N1140900401
JPM NUMBER:	09-01 NRC RO Admin A1-2
ALTERNATE PATH:	[ ]
K/A NUMBER:	2.4.47
IMPORTANCE FACTOR:	RO: 3.8 / SRO: 3.6
APPLICABILITY:	EO [ ] RO [X] STA [ ] SRO [X]
EVALUATION SETTING/METHOD:	Classroom
REFERENCES:	S1.OP-AB.SF-0001, Rev. 7 Loss of Spent Fuel Pool Cooling S1.OP-AR.ZZ-0003, Rev. 17, Overhead Annunciator Window C Salem UFSAR Section 9.1.3 Spent Fuel Pool Cooling System (pg 9.1-13)
TOOLS AND EQUIPMENT:	Calculator
VALIDATED JPM COMPLETION TIME:	10 min
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A

Developed By:	**G Gauding** **Instructor**	**Date: 07-20-11**
Validated By:	**J Pierce, Jr** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Representative**	**Date:** 8/1/11

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: Admin

TASK: TCAF a Loss of Spent Fuel Pool Cooling (Calculate the time at which SFP temperature will exceed Design Bases)

TASK NUMBER: N1140900401

SIMULATOR SETUP

INITIAL CONDITIONS:

Salem Unit 1 is defueled during a regular refueling outage.
Spent Fuel Pool temperature is stable at 121°F.
On November 30th at 0100, the operating Spent Fuel Pool Cooling pump trips, and cannot be re-started.
The standby Spent Fuel Pool Cooling pump cannot be started.
At 0115, OHA C-19, SFP TEMP HI alarms.

INITIATING CUE:

At 0200, the CRS directs you to calculate the time of day at which the Unit 1 Spent Fuel Pool will reach its Design Temperature, IAW S1.OP-AB.SF-0001, if no operator actions are taken.

Assume the heat-up rate has been linear from 0100 to 0200.

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. Calculates that SFP temp will exceed Design Temp (180) @ 0436-0442. See bases for range on page 5.

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: TCAF a Loss of Spent Fuel Pool Cooling (Calculate the time at which SFP temperature will exceed Design Bases)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
		Provide candidate with blank copy of S1.OP-AB.SF-0001, Loss of Spent Fuel Pool Cooling.	IF asked, provide a copy of S2.OP-AR.ZZ-0003, Overhead Annunciator Window C. **Cue:** **IF** asked by candidate if the OHA C-19 has been adjusted to a temporary setpoint, **THEN** state" OHA C-19 has not been adjusted to a temporary setpoint.		
	AB.SF-1 Step 3.3	**INITIATE** Attachment 5, Spent Fuel Pool Heatup Trending, for Unit 1 Spent fuel Pool, as directed by the CRS.	Refers to S1.OP-AB.SF-0001, Loss of Spent Fuel Pool Cooling, Attachment 5, Spent Fuel Pool Heatup Trending.		
*	AB.SF-1 Att.5		Enters **121** as Initial SFP TEMP (A) on Attachment 5.		
	AB.SF-1 Att.5		Refers to S1.OP-AR.ZZ-0003, Overhead Annunciator Window C, and determines the alarm setpoint is 125°F.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: TCAF a Loss of Spent Fuel Pool Cooling (Calculate the time at which SFP temperature will exceed Design Bases)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
*	AB.SF-1 Att. 5		Determines the SFP TEMP (A) at "+1 HR" is **137** based on the temperature rise from 0100 (121°) to the alarm at 0115 (125°) over 15 minutes, and multiplies by 4 to get heatup for the hour of 16°.		
*	AB.SF-1 Att. 5		Determines the ΔTEMP/HR (B) at +1HR is **16.**		
	AB.SF-1 Att. 5		Performs calculation to determine the time to 180°F: (180-A)/B **(180-137)/16 = 2.6875 HRS** **Note**: 2.6875 hrs= 2 hours, 41.25 min.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: TCAF a Loss of Spent Fuel Pool Cooling (Calculate the time at which SFP temperature will exceed Design Bases)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
			Calculates the time of day at which SFP temp will reach Design Temp: Time of calculation: 0200 Time to reach 180: 2 hours, 41.25 min **04:41:15** Determination to the second is not required. The Task Standard states the band is **0436** (if rounded down to 2.6 hours, and **0442** (if round up to 2.7 hours)		
			Terminate the JPM when all paperwork has been returned to the evaluator.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Y 4. Initial setup conditions are identified.

Y 5. Initiating and terminating Cues are properly identified.

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

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

Y 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 7 Date 7/28/11

Y 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

Y 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

Salem Unit 1 is defueled during a regular refueling outage.
Spent Fuel Pool temperature is stable at 121°F.
On November 30th at 0100, the operating Spent Fuel Pool Cooling pump trips, and cannot be re-started.
The standby Spent Fuel Pool Cooling pump cannot be started.
At 0115, OHA C-19, SFP TEMP HI alarms.

INITIATING CUE:

At 0200, the CRS directs you to calculate the time of day at which the Unit 1 Spent Fuel Pool will reach its Design Temperature, IAW S1.OP-AB.SF-0001, if no operator actions are taken.

Assume the heat-up rate has been linear from 0100 to 0200.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Admin

TASK: Prepare a Manual Tagout

TASK NUMBER: N3130060301

JPM NUMBER: 09-01 NRC RO Admin A2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.2.13

IMPORTANCE FACTOR: 4.1 (RO) 4.3 (SRO)

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: OP-AA-109-115, Rev. 2, Safety Tagging Operations

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 30 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 07-20-11

Validated By: J. Pierce, SME or Instructor — **Date:** 07-28-11

Approved By: Training Department — **Date:** 8-2-11

Approved By: Operations Representative — **Date:** 8/1/11

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: Admin

TASK: Prepare a Manual Tagout

TASK NUMBER: N3130060301
SIMULATOR SETUP

INITIAL CONDITIONS:

Unit 1 is operating at 100% power.
While performing a surveillance on 11 Safety Injection Pump, a leak was observed on the pump outlet flange discharge piping.

The Work Clearance Module is not available due to an emergent power outage.

INITIATING CUE:

You are directed to perform the following:

1. Determine the correct blocking points which will allow repair of the 11 SI pump.
2. Sequence those blocking points in the correct order.
3. Determine the correct tag type for each blocking point.
4. Determine the required positions necessary to allow repair on 11 SI pump.
5. Enter all the above information on the provided OP-AA-109-115, Safety Tagging Operations Form 4.

   Specific WCM identifiers are NOT required.

Successful Completion Criteria:

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

Task Standard for Successful Completion:

1. Identifies correct blocking points.
2. Sequence tagging in order by 1: Bezels, 2: Electrical, 3: Mechanical isolation, 4: Vents and drains.
3. Identifies correct tag types for components.
4. Identifies desired positions.

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM Admin

TASK: Prepare a Manual Tagout

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
		Provide candidate with package containing several blank Form 4's, (Tagging/Untagging Worklist), a copy of OP-AA-109-115, Safety Tagging Operations, drawings 205234 sheets 1-4, 203002, 207910-207912, and 207931-207933. Several of these drawings are not required.	**Note**: If requested, provide extra blank copies of Form 4 Tagging/Untagging Work List		
*			Determines Blocking Points as per key.		
*			Sequences Blocking Points in following order: 1. Bezels 2. Electrical Isolation 3. Mechanical Isolation 4. Vents and Drains		
*			Determines correct tag type for each Blocking Point as per key.		
*			Determines position required for each Blocking Point as per key.		

NAME: _____

DATE: _____

SYSTEM Admin

TASK: Prepare a Manual Tagout

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT
			Notes for Evaluators: Attachment 2, Component Tagging Rules, contains information which allows for the following: 1. A minimum of 1 vent or drain is required to be RBT opened, there is no limit to how many can be used inside boundaries. 2. MOV's are allowed to be used as Blocking Points. It would be acceptable procedurally if the 11SJ113 AND 12SJ113 were used as Blocking Points instead of the single manual valve 1SJ114. **IF** used as blocking points, the 11/12SJ113 breakers (RBT-OFF), bezels (INFO), and valve handwheels (RBT-SHUT)would also be required to be tagged.		
			Note: Actual WCD 4278552 (CRTE) used as the bases for the blocking points in JPM, with addition of vents and drains.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

__Y__ 4. Initial setup conditions are identified.

__Y__ 5. Initiating and terminating Cues are properly identified.

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

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

__Y__ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 2 Date 6/10/11

__Y__ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

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

__Y__ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

Unit 1 is operating at 100% power.
While performing a surveillance on 11 Safety Injection Pump, a leak was observed on the pump outlet flange discharge piping.

The Work Clearance Module is not available due to an emergent power outage.

INITIATING CUE:

You are directed to perform the following:

1. Determine the correct blocking points which will allow repair of the 11 SI pump.
2. Sequence those blocking points in the correct order.
3. Determine the correct tag type for each blocking point.
4. Determine the required positions necessary to allow repair on 11 SI pump.
5. Enter all the above information on the provided OP-AA-109-115, Safety Tagging Operations Form 4.

Specific WCM identifiers are NOT required.

Key

FORM 4
TAGGING / UNTAGGING WORK LIST

□ REQUEST

□ RELEASE TYPE (circle one) FULL PARTIAL TEMPORARY

DISCIPLINE REVIEWS: _____

WORK CLEARANCE DOCUMENT NUMBER This Worksheet: Page ___ of___

Seq.	WCM Identifier	Tagging Point Description	Tag Type	Current Position	Desired Position	Apply/Release Date/Time	QO Initials	Verified Date/Time	QO Initials
1	S1SJ -11SIPP-BZL	11 SI Pump Bezel	INFO						
2	S1SJ -11SJ33-BZL	11SJ33 Bezel	INFO						
3	S1SJ -11SJ113-BZL	11SJ113 Bezel	INFO						
4	S1SJ -12SJ113-BZL	12SJ113 Bezel	INFO						
5	S14KV-1AD1AX5D	11 SI Pump 4KV breaker	RBT		DI				
6	S1230-1AY2AX3E	11SJ33 Valve Motor	RBT		OFF				
7	S1230-1AY2AX3I	11SJ113 Valve Motor	RBT		OFF				
8	S1230-1BY2AX8A	12SJ113 Valve Motor	RBT		OFF				
9	S1SJ -11SJ33	11 SI Pump Suction valve	RBT		X				
10	S1SJ -11SJ35	11 SI Pump Discharge valve	RBT		X				
11	S1SJ -11SJ65	11 SI Pump mini flow isolation	RBT		X				
12	S1SJ -11SJ922	11 SI Pump mini flow isolation	RBT		X				
13	S1SJ -1SJ114	SJ-CHG pump x-over isolation vlv	RBT		X				
14	S1SJ -11SJ113	11SJ113 Cross over	RBT		X				
15	S1SJ -12SJ113	12SJ113 Cross over	RBT		X				
16	S1SJ -1SJ181	SJ-CHG pump x-over drain vlv	RBT		O				
17	S1SJ -1SJ326	SJ-CHG pump x-over vent vlv	RBT		O				
18	S1SJ -11SJ102	11 SI Pump drain	RBT		O				
19	S1SJ -11SJ106	11 SI Pump drain	RBT		O				
20	S1SJ -11SJ104	11 SI Pump drain	RBT		O				
21	S1SJ -11SJ103	11 SI Pump vent	RBT		O				
22	S1SJ -11SJ105	11 SI Pump vent	RBT		O				

TAGGED BY: _____ DATE/TIME: _____ VERIFIED BY: _____ DATE/TIME:

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ADMINISTRATIVE

TASK: Perform Duties of Secondary Communicator During an Alert

TASK NUMBER: N1240100501

JPM NUMBER: 09-01 NRC RO Admin A4

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.39

IMPORTANCE FACTOR: 3.9 (RO) ____ (SRO)

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

EVALUATION SETTING/METHOD: Simulator

REFERENCES: Salem ECG, Attachment 8 Secondary Communicator Log, Rev. 24

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 8 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date:** **7-19-11**
Validated By:	**J Pierce, Jr** **SME or Instructor**	**Date:** **07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Representative**	**Date:** 8/1/11

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 Duties of Secondary Communicator During an Alert.

TASK NUMBER: N1240100501

****

SIMULATOR OPERATOR

CALL THE NRC OPERATIONS CENTER ON LAND LINE 1-301-951-0550 BEFORE STARTING JPMS TO INFORM THEM ERDS WILL BE ACTIVATED DURING EXAM. PLACE FOLLOWUP CALL AFTER LAST RO HAS PERFORMED JPM.

****

ENSURE modem in simulator computer room, by 3 monitors is turned ON.

Reset simulator to MODE 3 HSB IC, and place simulator in RUN.

INITIAL CONDITIONS: An ALERT was declared at Salem due to the Unit 2 reactor failing to trip when a manual trip signal was initiated. The Rx tripped when the second trip handle was used.

The unit is currently stable in MODE 3.

INITIATING CUE: You are the Secondary Communicator. You are directed to perform Salem ECG Attachment 8, Secondary Communicator Log.

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. Activate ERDS.
2. Does NOT provide plant information to outside caller.
3. Terminate ERDS.

System: ADMINISTRATIVE

Task: Perform Duties of Secondary Communicator During an Alert

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide a copy of ECG Attachment 8.			
			Fills out ECG Attachment 8 by: 1. Printing name 2. Circles ALERT and circles CM2.		
	A.1	**OBTAIN** a copy of Attachment 6 and **ASSIST** Primary Communicator with 15-minute notifications, as necessary.	**Cue**: Primary Communicator does not require assistance.		
	A.2	**DIRECT** the Shift Rad Pro Tech (SRPT) (2644) to implement **SC.EP-EP.ZZ-0301(Q)** Shift Radiation Protection Technician Response. (N/A for Common Site)	**Cue:** Shift Rad Pro Tech (Matt Hassler) has been notified to implement SC.EP-EP.ZZ-0301(Q) Shift Radiation Protection Technician Response.		
	A.3	<u>For an ALERT or higher Emergency;</u> a. <u>IF</u> an on-shift SRO is not available to fill the OSC Operations Supervisor position, **CALLOUT** an additional SRO and have him/her report to the OSC.	**Cue:** The WCC Supervisor is the OSC Supervisor.		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Perform Duties of Secondary Communicator During an Alert

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	A.3	b. **ACTIVATE** ERDS within 60 minutes from the affected unit's SPDS terminal: 1. **CLICK** <ERDS> button 2. **CLICK**<Initiate> button 3. **CHECK** for the following status: ERDS Active LINK Dialing Modem → Link Active	Uses SPDS display to activate ERDS by: 1. Clicking <ERDS> button 2. Clicking<Initiate> button 3. Checking for the following status: ERDS Active LINK Dialing Modem → Link Active		
	A.3	c. IF ERDS Activator is not successful, **CONTACT** IT Support: Network Operations (DID 7008), EOF IT Supervisor (NETS 5009), or the IT Help Desk (Ext. 5555) for assistance.	Determines ERDS Activator was successful.		
	A.4	**ENSURE** FAXed or **FAX** the ICMF to Group A.	**Cue:** The ICMF has been FAXed to Group A.		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Perform Duties of Secondary Communicator During an Alert

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Simulator Operator: After candidate has performed step A.4 above, call the desk phone and say the following:			
*		"This is Anderson Cooper calling from CNN headquarters in Atlanta. We have received a report that the Salem 2 reactor has experienced a Rx accident and the core is melting. Can you give me an update on the current condition of Salem Unit 2?"	Does **NOT** give plant information to caller. Attachment 8, Section C, INCOMING CALLS, MEDIA, CAUTION, states, "Communicators are NOT authorized to release any information to the News Media." May read either Attachment 8, section C, Incoming Calls, 3B, OR tell them he cannot provide any information. **CUE**: If asked, state the ENC is activated.		
			CUE: Once ERDS is activated AND Media call action is complete, then state, "The Station Event has been terminated. The NRC Operations Center directs you to terminate ERDS transmission."		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Perform Duties of Secondary Communicator During an Alert

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	C.4	WHEN directed by the NRC to **TERMINATE** ERDS transmission, THEN **GO TO** any SPDS terminal of the affected unit AND **PROCEED** as follows: a. **CLICK** <ERDS> button b. **CLICK**<Terminate> button c. **CHECK** for the following status: ERDS Inactive LINK Not Connected d. WHEN completed, **NOTIFY** the SM	Uses SPDS display to activate ERDS by: 1. Clicking <ERDS> button 2. Clicking<TERMINATE> button 3. Checking for the following status: ERDS Inactive LINK Not Connected **Cue**: SM notified, JPM is complete.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

__✓__ 1. Task description and number, JPM description and number are identified.

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

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

__✓__ 4. Initial setup conditions are identified.

__✓__ 5. Initiating and terminating Cues are properly identified.

__✓__ 6. Task standards identified and verified by SME review.

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

__✓__ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 24 Date 7/28/11

__✓__ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

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

__✓__ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: JMS J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

An ALERT has been declared at Salem due to the Unit 2 reactor failing to trip when a manual trip signal was initiated. The Rx tripped when the second trip handle was used.

The unit is currently stable in MODE 3.

INITIATING CUE:

You are the Secondary Communicator. You are directed to perform Salem ECG Attachment 8, Secondary Communicator Log.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Determine the required actions based on abnormal Secondary Plant chemistry conditions.

TASK NUMBER: N1140530402

JPM NUMBER: 09-01 NRC SRO Admin A1-1

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.34

IMPORTANCE FACTOR: RO 3.5 SRO

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: S2.OP-AB.CHEM-0001, Rev. 21

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 7-21-11**
Validated By:	**C Recchione** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Department**	**Date:** 8/1/11

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

TASK: Determine the required actions based on abnormal Secondary Plant chemistry conditions.

TASK NUMBER: N1140530402

INITIAL CONDITIONS:

While operating at 100% power, Salem Unit 2 has experienced a rise in Sodium levels in 22B main condenser hotwell. Chemistry samples have been reported at 0800 on September 11th:
S/G Blowdown pH: 10.1
S/G Blowdown Cl^-: 38 ppb
S/G Blowdown Na: 40 ppb
S/G blow down Cation Conductivity: 0.9 uS/cm.
Feedwater DO: 0.25 ppb

INITIATING CUE:

Using the assumption that the Secondary Chemistry conditions do not change, develop a timeline that describes how these conditions will affect Unit 2 operation, starting at 0800 on September 11th.

Assume that any plant power changes will only be the minimum required.

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. Calculates that Unit 2 must be $\leq$ 30% power by 1600 on September 18th.
2. Calculates that Unit 2 must be <5% power by 1600 on September 22nd.

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: Administrative

TASK: Determine the required actions based on abnormal Secondary Plant chemistry conditions.

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		When asked, provide a clean copy of S2.OP-AB.CHEM-0001, Abnormal Secondary Chemistry.			
			Note: Once entered, the AB would not be exited until the conditions cause were found and isolated.		
			Note: Action Levels are found on Attachment 4.		
			S/G blowdown Cl- and S/G blowdown Cation Conductivity both meet **Action Level 1 at 0800 on September 11th.**		
			Operation in Action Level 1 for 7 days is the escalation to **Action Level 2, which is entered at 0800 on September 18th**.		
*			Action Level 2 actions are directed at Step 3.28, which requires initiation of actions and **reduce power ≤30 % in the next 8 hours, by 1600 on September 18th.**		
			100 hours of operation at Action Level 2 is the escalation to **Action Level 3, which is entered at 1200 on September 22nd.**		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: Administrative

TASK: Determine the required actions based on abnormal Secondary Plant chemistry conditions.

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*			Action Level 3 actions are directed at Step 3.18, which requires initiation of actions and **reduce power <5% in the next four hours, by 1600 on September 22nd.**		
			Terminate JPM when operator turns in paperwork.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Q 4. Initial setup conditions are identified.

Q 5. Initiating and terminating Cues are properly identified.

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

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

Q 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 21 Date 12/10/10

Q 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

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

SME/Instructor: CMH Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

While operating at 100% power, Salem Unit 2 has experienced a rise in Sodium levels in 22B main condenser hotwell. Chemistry samples have been reported at 0800 on September 11th:

S/G Blowdown pH: 10.1
S/G Blowdown Cl^-: 38 ppb
S/G Blowdown Na: 40 ppb
S/G blow down Cation Conductivity: 0.9 uS/cm.
Feedwater DO: 0.25 ppb

INITIATING CUE:

Using the assumption that the Secondary Chemistry conditions do not change, develop a timeline that describes how these conditions will affect Unit 2 operation, starting at 0800 on September 11th.

Assume that any plant power changes will only be the minimum required.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Determine the TSAS(s) for a dropped rod and complete the appropriate log

TASK NUMBER: 1120700302

JPM NUMBER: 09-01 NRC SRO A1-2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.18

IMPORTANCE FACTOR: RO: ____ SRO: 3.8

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: Salem Tech Specs
OP-SA-108-115-1001, Rev. 2

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 20 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 07-21-11

Validated By: C Recchione, SME or Instructor — **Date:** 07-28-11

Approved By: Training Department — **Date:** 8-2-11

Approved By: Operations Representative — **Date:** 8/1/11

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: Determine the TSAS(s) for a dropped rod and complete the applicable log

TASK NUMBER: 1120700302

INITIAL CONDITIONS:

1. Unit 2 is at EOL in a 300 hundred day run at 100% power.
2. Control Rod 2SA4 dropped fully into the core at 1015, the reactor did not trip.
3. The crew has implemented S2.OP-AB.ROD-0002, Dropped Rod.
4. Control Rod 2SA4 has been declared inoperable, and Reactor Engineering reports it will be at least 2 hours before they determine how to recover the rod.
5. The 3rd NCO has just completed a QPTR at 1025. The highest reading quadrant is 1.031.
6. Computerized LCO tracking is not being used.

INITIATING CUE:

As CRS, determine all TSAS(s) that apply and make the appropriate log entries on OP-SA-108-114-1001, Operability Assessment and Equipment Control Program, Attachment 4-1, and Form 1.

Creation or documentation of notifications is not required.

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. Identifiy TSAS 3.1.3.4.b , 3.1.3.1.c, and 3.2.4.a are applicable with 3.1.3.1.c as the most Time Limiting TSAS.
2. Fill out Attachment 4-1 and Form 1 as per Standard in JPM body.

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Determine the TSAS(s) for a dropped rod and complete the applicable log

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with blank copy of OP-SA-108-114-1001, Operability Assessment and Equipment Control Program. Provide marked up copy of Attachment 4-1.			
*		Obtains a copy of Plant Technical Specifications and reviews for LCO applicability.	Determines the following LCO's apply: **3.1.3.4.b , 3.1.3.1.c, 3.2.4.a**		
			Refers to Section 5.2, Entry into an Active/Tracking Technical Specification (T/S) LCO Action Statements of OP-SA-108-114-1001, Operability Assessment and Equipment Control Program		
*	5.2.2	**DETERMINE** if the T/S LCO Action Statement is ACTIVE or TRACKING based on the following criteria:	Determines the LCOs are ACTIVE.		
	5.2.3	IF the cause of the SSC being INOPERABLE is a planned….evolution…	Determines the cause of the SSC being INOPERABLE it is NOT a planned evolution.		
	5.2.4	For activities that cause a TECH SPECS SSC to be INOPERABLE that do not meet the criteria of Section 5.2.3, **DOCUMENT** the condition as follows:			

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Determine the TSAS(s) for a dropped rod and complete the applicable log

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.4.A	For SAP LCO tracking, **REFER TO** guidance provided in OP-SH-108-115-1001, LCO Entry/Exit & Operability Determination SAP Guidance.	Determines computerized SAP LCO tracking is not being used as per stem.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Determine the TSAS(s) for a dropped rod and complete the applicable log

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.4.B	For LCO tracking using Attachment 4 and Form 1, **PERFORM** the following:	**CUE:** Provide copy of Attachment 4-1 and Form 1. On Att. 4-1, the first LCO Index No. should is filled in so the candidate can number sequentially.		
*		1. **ASSIGN** the next consecutive LCO Index Number obtained from the Action Statement Log Index (Attachment 4) and LOG the T/S LCO ACTION Statement on the Index.	Makes entries on Att. 4-1: • Next LCO Index No. is **11-234** • TS No's. 3.1.3.4.b. 3.1.3.1.c, 3.2.4.a • Active • Summary Descriptions • Planned? NO • Entry Date/Time • Expiration: 3.1.3.1.c- 1 hour, 3.2.4.a – 2 hrs. (or less) from QPTR completion, 3.1.3.4.b 1 hour		
		2. **UPDATE** Unit Status Board for the Technical Specification Action Statement.	**CUE:** Another operator will update the Unit Status Board.		

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Determine the TSAS(s) for a dropped rod and complete the applicable log

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.2.4.B	3. **COMPLETE** Sections 1 and 2 of Form 1 by performing the following:	Makes entries on Form 1:		
		• **RECORD** the LCO Index Number (from Attachment 4) • **RECORD** the LCO Status (Active / Tracking) • **RECORD** the applicable Technical Specification LCO number. When an INOPERABLE TECH SPECS/SSC affects multiple LCO Action Statements, **RECORD** the LCO number with the most limiting Action Time. • **RECORD** the Date/Time entered. • **RECORD** the Mode Applicability for the LCO. • **RECORD** the Date/Time Action Required. When recording the date and time that Action is required for an LCO Action Statement that has multiple actions, use the most limiting Action time. For Tracking Action Statements, record 'N/A'.	• LCO Index No: same as Att. 4 • LCO Status: Active • TS No.: 3.1.3.1.c • Date/Time entered: Same as Att. 4 • Applicability: MODES 1 & 2 • Date/Time Action Required: Within one hour from entry		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Determine the TSAS(s) for a dropped rod and complete the applicable log

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.4.B	• **RECORD** Other Applicable T/S. List only active LCO's. Applicable Tracking LCOs should be listed seperately in the Summary Description of the Log Sheet. • **RECORD** the Equipment description. • Briefly **STATE** the reason for the SSC condition in the Summary Description section and include a brief summary of actions required, including submittal of any special reports to the NRC. NOTIFY the SOS of any reporting requirements.	• Other Applicable TS: 3.2.4, 3.1.3.4.b • Equipment: Shutdown Rod 2SA4 • Summary: Brief summary of TS and the power reduction required within 1 hour from entry.		
			When candidate returns all paperwork, terminate JPM.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

G 4. Initial setup conditions are identified.

G 5. Initiating and terminating Cues are properly identified.

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

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

G 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. ~~14~~ 2 Date ~~7-25-11~~ 8/7/04

G 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

MJG 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: [signature] Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

1. Unit 2 is at EOL in a 300 hundred day run at 100% power.
2. Control Rod 2SA4 dropped fully into the core at 1015, the reactor did not trip.
3. The crew has implemented S2.OP-AB.ROD-0002, Dropped Rod.
4. Control Rod 2SA4 has been declared inoperable, and Reactor Engineering reports it will be at least 2 hours before they determine how to recover the rod.
5. The 3rd NCO has just completed a QPTR at 1025. The highest reading quadrant is 1.031.
6. Computerized LCO tracking is not being used.

INITIATING CUE:

As CRS, determine all TSAS(s) that apply and make the appropriate log entries on OP-SA-108-114-1001, Operability Assessment and Equipment Control Program, Attachment 4-1, and Form 1.

Creation or documentation of notifications is not required.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ADMINISTRATIVE

TASK: Review a completed surveillance to calculate Shutdown Margin

TASK NUMBER: 1200030301

JPM NUMBER: 09-01 NRC SRO Admin A2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.2.12

IMPORTANCE FACTOR: RO ____ SRO 4.1

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

EVALUATION SETTING/METHOD: Classroom

REFERENCES: SC.RE-ST.ZZ-0002, Rev. 19 Shutdown Margin Calculation
S1.RE-RA.ZZ-0016, Rev. 3 Figures (Cycle 21)
Salem Unit 1 Technical Specifications TSAS 3.1.3.1 Movable Control Assemblies

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 20 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 25 minutes

Developed By:	**G Gauding** **Instructor**	**Date: 07-21-11**
Validated:	**C Recchione** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Representative**	**Date:** 8/1/11

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: Review a completed surveillance to calculate Shutdown Margin

TASK NUMBER: 1200030301

INITIAL CONDITIONS:

Control Rod 1D5 was declared INOPERABLE at 2210 today due to not moving during a rod exercise test.

A NCO has completed a SDM as required by Tech Spec 3.1.3.1 IAW SC.RE-ST.ZZ-0002, Shutdown Margin Calculation, and reports that SDM is SAT.

Unit 1 Reactor Power is 70%. Control Bank D is at 174 steps.

Current boron concentration is 300 ppm.

Current core burnup is 10,000 EFPH.

INITIATING CUE:

Review the attached SDM calculation procedure SC.RE-ST.ZZ-0002 for completeness and accuracy.
Note any discrepancies found by the review on Attachment 7.

The current time is 2245. This is a time critical JPM. Time will start when procedures are given to you. Time will stop when procedures are given to proctor.

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 identifies incorrect Total Control Bank Worth at Step 4.2.1 of Att. 3.
2. Operator identifies incorrect Total Shutdown Bank Worth at Step 4.2.2 of Att. 3.
3. Operator identifies incorrect Integral Rod Worth inserted at Step 4.2.5 of Att. 3
4. Operator identifies incorrect value of Power Defect at Step 4.3.3 of Att. 3.
5. Operator completes review within 25 minutes.

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Review a completed surveillance to calculate Shutdown Margin

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
			Note to Evaluator: The actions contained in this JPM do not require the SRO candidate to perform the Shutdown Margin, only to identify the portions that have been performed incorrectly. The time critical aspect refers to the time required when the Shutdown Margin requirement of TSAS 3.1.3.1.c must be met.		
	1	Provide the candidate with the marked up copy of SC.RE-ST.ZZ-0002 and copy of S2.RE-RA.ZZ-0016, Curve Book. Time Start: _____	Ensures Sections 3 and 4 are completed.		
	2	Review Section 5 to ensure the correct Attachment was performed.	Reviews Section 5 and determines the correct Attachment (3) was performed.		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Review a completed surveillance to calculate Shutdown Margin

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3	Review the completed Shutdown Margin Calculation:			
		4.1.1 Power Level	Verifies power is 70% from stem initial conditions.		
		4.1.2 Boron Concentration	Verifies 300 ppm from initial conditions		
		4.1.3 Control Bank Position	Verifies Bank D at 174 from initial conditions.		
		4.1.3 Burnup	Verifies burnup 10,000 EFPH from initial conditions.		
		Step 4.1.5	Verifies 1 from stem.		
*		Step 4.2.1	Determines Total Control Bank Worth is incorrect from Figure 15/Table G **(Should be -3018)**		
*		Step 4.2.2	Determines Total Shutdown Bank Worth is incorrect from from Figure 16/Table H **(Should be -3743)**		
		Step 4.2.3	Verifies 722 from Figure 14/Table I		
		Step 4.2.4	Verifies 722 for 1 control rod.		
*		Step 4.2.5	Determines Integral Rod Worth Inserted is incorrect from Figure 2C/Table 1-7 or Figure 2A/Table 1-8. **(Should be 221)**		

OPERATOR TRAINING PROGRAM **NAME:**_____

JOB PERFORMANCE MEASURE **DATE:**_____

System: ADMINISTRATIVE

Task: Review a completed surveillance to calculate Shutdown Margin

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*		Step 4.2.6	Determines errors carried forward. **(Should be -5096)**		
*		Step 4.3.1	Determines errors carried forward. **(Should be -5096)**		
*		Step 4.3.2	Determines errors carried forward. **(Should be 604)**		
*		Step 4.3.3	Determines incorrect Power Defect is used. **(Should be 1937)**		
*		Step 4.3.4	Determines SDM is incorrect. **(Should be -2555)**		
*	4	Acceptance Criteria Time Stop: _____	Determines Acceptance Criteria are met. Turns in procedures within 25 minutes of start time. Total time to complete JPM MUST be 25 minutes or less.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

G 4. Initial setup conditions are identified.

G 5. Initiating and terminating Cues are properly identified.

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

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

G 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 19 Date 8/27/10

G 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

M 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: CHRIS RECCHIUTI Date: 7/28/17

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

Name: _____

Control Rod 1D5 was declared INOPERABLE at 2210 today due to not moving during a rod exercise test.

A NCO has completed a SDM as required by Tech Spec 3.1.3.1 IAW SC.RE-ST.ZZ-0002, Shutdown Margin Calculation, and reports that SDM is SAT.

Unit 1 Reactor Power is 70%. Control Bank D is at 174 steps.

Current boron concentration is 300 ppm.

Current core burnup is 10,000 EFPH.

INITIATING CUE:

Review the attached SDM calculation procedure SC.RE-ST.ZZ-0002 for completeness and accuracy.

Note any discrepancies found, corrections needed, and any actions required by the review on Attachment 7.

The current time is 2245. This is a time critical JPM. Time will start when procedures are given to you. Time will stop when procedures are given to proctor.

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2

SALEM UNIT 1

4.0 **PROCEDURE**

4.1 CRITICAL CONDITIONS

4.1.1 POWER LEVEL — 70 %RTP

4.1.2 BORON CONCENTRATION — 300 ppm

4.1.3 CONTROL BANK POSITION — Bank D at 174 Steps

4.1.4 BURNUP — 10,000 EFPH

4.1.5 # OF INOPERABLE RODS — 1 rods

4.2 CALCULATION OF ROD WORTH

4.2.1 TOTAL CONTROL BANK WORTH (Figure 15/Table G) - 3018 — (-) 2536 pcm
used 69° value. should be 3019

4.2.2 TOTAL SHUTDOWN BANK WORTH (Figure 16/Table H) 3743 — (-) 2881 pcm
used 63° value. should be 3743

4.2.3 MOST REACTIVE STUCK ROD WORTH (Figure 14/Table I) — 722 pcm

4.2.4 INOPERABLE ROD(s) WORTH — 722 pcm
1 (Item 4.1.5) x 722 (Item 4.2.3) =

4.2.5 INTEGRAL ROD WORTH INSERTED AT POSITION IN ITEM 4.1.3 (If ARO, use zero) 221 — 138 pcm
(HFP: Figure 2C/Table 1-7 or HZP: Figure 2A/Table 1-8)
used page 2 of Table 1-7 instead of page 4 for burnup. should be 221

4.2.6 TRIPPABLE ROD WORTH - 5096 — -3835 pcm
(Item 4.2.1) + (Item 4.2.2) + (Item 4.2.3) + (Item 4.2.4) + (Item 4.2.5) =

4.3 CALCULATION OF SDM (Note: See Precaution 3.4)

4.3.1 TRIPPABLE ROD WORTH (Item 4.2.6) - 5096 — -3835 pcm

4.3.2 TEN PERCENT ROD WORTH PENALTY 604 — (+) 470 pcm
(2536 / abs(Item 4.2.1) 3018 + 2881 / abs(Item 4.2.2) 3743 - 722 / (Item 4.2.3) 722) x 0.10 =
used 0 ppm boron. should be 1937

4.3.3 POWER DEFECT (Figure 17A/Table 2-1) 1937 — 2040 pcm

4.3.4 SDM - 2555 — -1325 pcm
(Item 4.3.1) + (Item 4.3.2) + (Item 4.3.3) =

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Waste Liquid
TASK:	Select Release Path for Radioactive Liquid Waste Release
TASK NUMBER:	N0680070302
JPM NUMBER:	09-01 NRC SRO Admin A3
ALTERNATE PATH:	☐
K/A NUMBER:	2.3.6
IMPORTANCE FACTOR:	RO: ____ SRO: 3.8
APPLICABILITY:	EO ☐ RO ☐ STA ☐ SRO ☒
EVALUATION SETTING/METHOD:	Classroom
REFERENCES:	S1.OP-SO.WL-0002, Rev.25, 205209 (CW), 205242 (SW)
TOOLS AND EQUIPMENT:	None
VALIDATED JPM COMPLETION TIME:	30 minutes
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	

Developed By:	**G Gauding** **Instructor**	**Date: 06-24-11**
Validated By:	**A Crampton** **SME or Instructor**	**Date: 06-30-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Department**	**Date:** 7/8/11

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 Liquid

TASK: Select Release Path for Radioactive Liquid Waste Release

TASK NUMBER: N0680070302

INITIAL CONDITIONS:

Salem Unit 2 is on day 25 of a scheduled 45 day refueling outage.
21 CCHX is in service, 22 CCHX is removed from service and drained.
All Unit 2 Circulators are O/S.
Salem Unit 1 is operating at 75% power.
12A Circulator is O/S for waterbox cleaning.
The Non-Rad Waste Treatment System is in service performing a release, and must remain in service.

Unit 1 is NOT in any active Tech Specs.
12 CVCS Monitor Tank is in Recirc using **11** CVCS Monitor Tank Pump, and Chemistry has granted permission to release the tank with a minimum dilution flow rate of 100,000 gpm.

INITIATING CUE: You are the Unit 1 CRS. Select the release path for 12 CVCS Monitor Tank IAW S1.OP-SO.WL-0002, Attachment 2, Section 2.2 Release Verification **AND** provide marked up drawings of the flow path from 12 CVCS Monitor tank to its ultimate release point.

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 the release path as 21 CCHX to 12A AND/OR 12B CW Pump I/S (Att. 2 Step 2.2.3)**
2. **Provides release flow path drawing of 12 CVCS MT to 21 CCHX, (via Unit x-conn) to discharge of 12A/12B Circulators.**

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME:_____

DATE:_____

SYSTEM: Waste Liquid

TASK: Select Release Path for Radioactive Liquid Waste Release

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Provide marked up copy of S1.OP-SO.WL-0002., and blank copies of drawings: 205230 205239-1 205229-2 205242-4 205339-1 205342-3,4,5,6 205209-2 and a colored marker.	Note: Drawings 205229-2 205242-4 205342-5 are not needed for flowpath but are included to ensure an incorrect alternate flowpath could be selected.		
*			Uses S2.OP-SO.WL-0002, Attachment 2, Section 2.2, to select the release flow path based on CCHX's available and Circulators in service, as 12 CVCS Monitor Tank to 21 CCHX, to 12A and/or 12B CW pumps I/S.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME:_____

DATE:_____

SYSTEM: Waste Liquid

TASK: Select Release Path for Radioactive Liquid Waste Release

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*			Candidates mark the appropriate drawings, from the 12 CVCS MT on drawing 205230 to 205239 Sheet 1, to 205339 Sheet 1 via x-connect line, to 205342 Sheet 4, to 205342 Sheet 3, through 21SW222, to 205342 Sheet 6, to 205342 Sheet 3, to 205209 Sheet 2.		
			Terminate JPM when candidate has returned procedures and marked up drawings.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

R 4. Initial setup conditions are identified.

AR 5. Initiating and terminating Cues are properly identified.

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

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

R 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 25 Date 3/10/16

R 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

N/A 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: _____ Date: 6/30/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

Salem Unit 2 is on day 25 of a scheduled 45 day refueling outage.

21 CCHX is in service, 22 CCHX is removed from service and drained.

All Unit 2 Circulators are O/S.

Salem Unit 1 is operating at 75% power.

12A Circulator is O/S for waterbox cleaning.

The Non-Rad Waste Treatment System is in service performing a release, and must remain in service. Unit 1 is NOT in any active Tech Specs.

12 CVCS Monitor Tank is in Recirc using **11** CVCS Monitor Tank Pump, and Chemistry has granted permission to release the tank with a minimum dilution flow rate of 100,000 gpm.

INITIATING CUE:

You are the Unit 1 CRS. Select the release path for 12 CVCS Monitor Tank IAW S1.OP-SO.WL-0002, Attachment 2, Section 2.2 Release Verification **AND** provide marked up drawings of the flow path from 12 CVCS Monitor tank to its ultimate release point.

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: 09-01 NRC SRO Admin A4-1 (ESG-1)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.41

IMPORTANCE FACTOR: RO ____ SRO 4.6

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:**	**07-05-11**
Validated By:	**B Boos** **SME or Instructor**	**Date:**	**07-28-11**
Approved By:	**Training Department**	**Date:**	8-2-11
Approved By:	**Facility Representative**	**Date:**	8/1/11

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.

This is a Time Critical JPM.

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.a (or 3.2.2.b if subcooling is 0°F)** is 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-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):EALs **3.2.2.a (or 3.2.2.b if subcooling is 0°F)** 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-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.a (or 3.2.2.b if subcooling is 0°F)** Description of Event: **Potential Loss of the Reactor Coolant System Barrier (or 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		

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-1)**

*	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 CONTACT MESSAGE FORM

I. THIS IS _____, COMMUNICATOR IN THE ☑ CONTROL ROOM
(NAME) ☐ TSC

AT THE **SALEM** NUCLEAR GENERATING STATION, **UNIT(s)** NO. _____**2**_____.

II.

☑ THIS IS NOTIFICATION OF A **ALERT** WHICH WAS

DECLARED AT _____**TIME**_____ ON _____**TODAYS DATE**_____.
(Time-24 HR CLOCK) (DATE)

EAL #(s) **3.2.2.a (or 3.2.2.b if subcooling is 0°F)**

DESCRIPTION OF EVENT: **Potential Loss of the Reactor Coolant System Barrier (Loss of the Reactor Coolant System Barrier**

III.

NOTE:
Radiological Release is defined as: Plant Effluent > Federal Limit of 2.42E+05 uCi/sec Noble Gas or 2.1E+01 uCi/sec I-131.

☑ NO RADIOLGICAL RELEASE IS IN PROGRESS. see NOTE for release definition

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS

IV. ☑ 33 FT. LEVEL WIND DIRECTION (**From**):_____ WIND SPEED: _____
(From MET Computer /SPDS) (DEGREES) (MPH)

V. ☑ **NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME**

SM INITIALS
EC Initials
(Approval to Transmit ICMF)

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

BB 4. Initial setup conditions are identified.

BB 5. Initiating and terminating Cues are properly identified.

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

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

8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 8 Date 6/30/10

9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

N/A 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: _____ Date: 07-28-2011

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

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.

This is a Time Critical JPM.

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: 09-01 NRC SRO Admin A4-2 (ESG-2)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.41

IMPORTANCE FACTOR: RO ____ SRO 4.6

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: 07-05-11**
Validated By:	**B Boos** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Facility Representative**	**Date:** 8/1/11

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.

This is a Time Critical JPM.

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-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 3	Unit: 2 EAL#(s):EALs **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-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 2 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: _____		

INITIAL CONTACT MESSAGE FORM

I. THIS IS _____, COMMUNICATOR IN THE ☑ CONTROL ROOM
(NAME) ☐ TSC
☐ EOF

AT THE **SALEM** NUCLEAR GENERATING STATION, **UNIT(s)** NO. _____**2**_____.

II.

☑ THIS IS NOTIFICATION OF A **SITE AREA EMERGENCY** WHICH WAS

DECLARED AT _____**TIME**_____ ON _____**TODAYS DATE**_____.
(Time-24 HR CLOCK) (DATE)

EAL #(s) **5.1.3**
DESCRIPTION OF EVENT: **Reactor Trip Failure with power above 5%**

III.

NOTE:
Radiological Release is defined as: Plant Effluent > Federal Limit of 2.42E+05 uCi/sec Noble Gas or 2.1E+01 uCi/sec I-131.

☑ NO RADIOLGICAL RELEASE IS IN PROGRESS. see NOTE for release definition

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS

IV. ☑ 33 FT. LEVEL WIND DIRECTION (**From**):_____ WIND SPEED: _____
(From MET Computer /SPDS) (DEGREES) (MPH)

V. ☑ **NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME**

SM INITIALS
EC Initials
(Approval to Transmit ICMF)

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

BB 4. Initial setup conditions are identified.

BB 5. Initiating and terminating Cues are properly identified.

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

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

BB 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 9 Date 9-30-10

A 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: [signature] Date: 07-28-2011

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

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.

This is a Time Critical JPM.

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: 09-01 NRC SRO Admin A4-3 (ESG-3)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.41

IMPORTANCE FACTOR: RO ____ SRO 4.6

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:** **07-05-11**
Validated By:	**B Bonner** **SME or Instructor**	**Date:** **07-28-11**
Approved By:	 **Training Department**	**Date:** 8-2-11
Approved By:	 **Facility Representative**	**Date:** 8/1/11

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.

This is a Time Critical JPM.

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 5.1.2.a** 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 2 (ALERT)		
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 2	Unit: 2 EAL#(s):EALs **5.1.2.a** 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 2 EAL#(s): **5.1.2.a** Description of Event: **Reactor Trip Failure** 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: _____		

INITIAL CONTACT MESSAGE FORM

I. THIS IS _____, COMMUNICATOR IN THE ☑ CONTROL ROOM
(NAME) ☐ TSC

AT THE **SALEM** NUCLEAR GENERATING STATION, **UNIT(s)** NO. _____**2**_____.

II.

☑ THIS IS NOTIFICATION OF A **ALERT** WHICH WAS

DECLARED AT _____**TIME**_____ ON _____**TODAYS DATE**_____.
(Time-24 HR CLOCK) (DATE)

EAL #(s) **5.1.2.a**

DESCRIPTION OF EVENT: **Reactor Trip Failure**

III.

NOTE:
Radiological Release is defined as: Plant Effluent > Federal Limit of 2.42E+05 uCi/sec Noble Gas or 2.1E+01 uCi/sec I-131.

☑ NO RADIOLGICAL RELEASE IS IN PROGRESS.

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS

see NOTE for release definition

IV. ☑ 33 FT. LEVEL WIND DIRECTION (**From**):_____ WIND SPEED: _____
(From MET Computer /SPDS) (DEGREES) (MPH)

V. ☑ **NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME**

SM INITIALS
EC Initials
(Approval to Transmit ICMF)

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.

This is a Time Critical JPM.

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: 09-01 NRC SRO Admin A4-4 (ESG-4)

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.41

IMPORTANCE FACTOR: RO: ____ SRO: 4.6

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

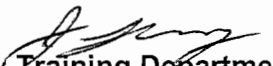
EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

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:** **07-22-11**
Validated By:	**B Bonner** **SME or Instructor**	**Date:** **07-28-11**
Approved By:	 **Training Department**	**Date:** 8-2-11
Approved By:	 **Facility Representative**	**Date:** 8/1/11

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.

This is a Time Critical JPM.

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.

OR

2. Complete the ICMF with the classification of **SAE under EAL 3.2.2.b AND 3.3.3.b** and provide it to the Primary Communicator within 15 minutes of Start Time. This is the classification if the cavitating charging pump is not recognized and it fails.

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)
			Note: This ECG call can either be an ALERT or a SAE based on whether or not the crew tripped the cavitating charging pump.		
		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) OR refers to Att. 3 (SAE)		

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)
	3	Fills out Section A of Emergency Coordinator Log Sheet, Attachment 2	Unit: 2 EAL#(s):EAL **3.2.2.b (OR 3.2.2.b AND 3.3.3.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		
	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.		

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)
*	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 (or 3.2.2.b AND 3.3.3.b)** Description of Event: **Loss of the Reactor Coolant System Barrier** **OR** **Loss of the Reactor Coolant System Barrier, Loss of the Containment Barrier.** Note: Description of Event is found in Section iV of the ECG. Fills out Section III: Verifies No Radiological Release is in progress is checked. 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 CONTACT MESSAGE FORM

I. THIS IS _____, COMMUNICATOR IN THE ☑ CONTROL ROOM
(NAME) ☐ TSC

AT THE **SALEM** NUCLEAR GENERATING STATION, **UNIT(s)** NO. _____**2**_____.

II.

☑ THIS IS NOTIFICATION OF AN **ALERT** WHICH WAS

DECLARED AT _____**TIME**_____ ON _____**TODAYS DATE**_____.
(Time-24 HR CLOCK) (DATE)

EAL #(s) **3.2.2.b** DESCRIPTION OF EVENT: **Loss of the Reactor**

Coolant System Barrier

_____

III.

NOTE:
Radiological Release is defined as: Plant Effluent > Federal Limit of 2.42E+05 uCi/sec Noble Gas or 2.1E+01 uCi/sec I-131.

☑ NO RADIOLGICAL RELEASE IS IN PROGRESS.

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS

see NOTE for release definition

IV. ☑ 33 FT. LEVEL WIND DIRECTION (**From**):_____ WIND SPEED: _____
(From MET Computer /SPDS) (DEGREES) (MPH)

V. ☑ **NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME**

SM INITIALS
EC Initials
(Approval to Transmit ICMF)

SGS Rev. 08

INITIAL CONTACT MESSAGE FORM

I. THIS IS _____, COMMUNICATOR IN THE ☑ CONTROL ROOM
(NAME) ☐ TSC
☐ EOF

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

II.

☑ THIS IS NOTIFICATION OF A **SITE AREA EMERGENCY** WHICH WAS

DECLARED AT **TIME** ON **TODAYS DATE**.
(Time-24 HR CLOCK) (DATE)

EAL #(s) **3.2.2.b AND 3.3.3.b**
DESCRIPTION OF EVENT: **Loss of the Reactor Coolant System Barrier, Loss of the Containment Barrier**

III.

NOTE:
Radiological Release is defined as: Plant Effluent > Federal Limit of 2.42E+05 uCi/sec Noble Gas or 2.1E+01 uCi/sec I-131.

☑ NO RADIOLGICAL RELEASE IS IN PROGRESS. see NOTE for release definition

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS

IV. ☑ 33 FT. LEVEL WIND DIRECTION (**From**):_____ WIND SPEED: _____
(From MET Computer /SPDS) (DEGREES) (MPH)

V. ☑ **NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME**

SM INITIALS
EC Initials
(Approval to Transmit ICMF)

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating Cues are properly identified.

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

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

_____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 8 / 9 Date 9/30/10 / 9/30/11

_____ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: Brian Bonney Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

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.

This is a Time Critical JPM.

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: 09-01 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 6/30/11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 5 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 06-17-11

Validated By: K Riedmuller, SME or Instructor **Date:** 06-30-11

Approved By: Training Department **Date:** 7/25/11

Approved By: Operations Department **Date:** 7/8/11

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.
Control Bank D is at 108 steps.
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 NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ROD CONTROL

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

*	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.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ROD CONTROL

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

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	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.**		
	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.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: ROD CONTROL

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

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	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.)		
	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%.		

SYSTEM: ROD CONTROL

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

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	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.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

KG 4. Initial setup conditions are identified.

KG 5. Initiating and terminating Cues are properly identified.

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

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

KG 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 10 Date 6-30-11

KG 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: Kevin D. Rechmuller Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

40% power, BOL.
Control Bank D is at 108 steps.
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 Generating Station
SYSTEM:	Emergency Core Cooling Systems
TASK:	Raise ECCS Accumulator Level with a Safety Injection Pump
TASK NUMBER:	0065010101
JPM NUMBER:	09-01 NRC Sim b
ALTERNATE PATH:	[ ]
K/A NUMBER:	006 A4.07
IMPORTANCE FACTOR:	4.4 (RO) / 4.4 (SRO)

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

EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: S2.OP-SO.SJ-0002, Accumulator Operations, Rev. 22

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 8 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor — **Date:** 07-09-11

Validated By: S Harris, SME or Instructor — **Date:** 07-28-11

Approved By: Training Department — **Date:** 8-2-11

Approved By: Operations Representative — **Date:** 8/1/11

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 Core Cooling Systems

TASK: Raise ECCS Accumulator Level with a Safety Injection Pump

TASK NUMBER: 006 501 01 01

INITIAL CONDITIONS: IC-254

1. The plant is at 100% power with all systems in their normal alignment with control systems in automatic.
2. 24 Accumulator is at 57.9% level.
3. The Safety Injection System is available.
4. RWST Boron Concentration is 2400 ppm.

INITIATING CUE:

Raise 24 ECCS Accumulator to 60% using 21 SI pump IAW S2.OP-SO.SJ-0002, Accumulator Operations, Section 5.2.

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. Raise 24 Accumulator to 60% using 21 SI pump, and return system to normal lineup.

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Core Cooling Systems

TASK: Raise ECCS Accumulator Level with a Safety Injection Pump

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Provide copy of S2.OP-SO.SJ-0002(Q), Accumulator Operations, with Prerequisites signed off.	Reviews procedure, and initials all Precautions and Limitations.		
	5.2.1	**ENSURE** either of the following conditions exist: • ALL RCS Cold Leg Temperatures >312°F OR • The Reactor Vessel Head is Removed.	Determines ALL RCS Cold Leg Temperatures >312°F.		
	5.2.2	IF RCS Pressure <2000 psig, THEN **ENSURE** CLOSED 21SJ134, COLD LEG DISCHARGE.	Determines RCS pressure is >2000 psig and marks step N/A..		
*	5.2.3	**START** 21 Safety Injection Pump.	Operator depresses 21 Safety Injection Pump START PB. **Cue if required**: IF operator asks for a Field Operator to do pre-start checks on 21 SI pump, THEN report as NEO that 21 SI Pump is ready for start.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Core Cooling Systems

TASK: Raise ECCS Accumulator Level with a Safety Injection Pump

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	5.2.4	**OPEN** 2SJ53, 21 SI PUMP DISCHARGE TEST LINE VALVE.	Depresses 2SJ53 21 SI PUMP DISCHARGE TEST LINE VALVE OPEN PB and notes change in light status.		
*	5.2.5	**OPEN** 2SJ123, TEST LINE TO CVCS HUT.	Depresses 2SJ123 TEST LINE TO CVCS HUT OPEN PB and notes change in light status.		
*	5.2.6	**OPEN** associated Accumulator fill valve: ♦ 21SJ20, 21 ACCUMULATOR FILL ♦ 22SJ20, 22 ACCUMULATOR FILL ♦ 23SJ20, 23 ACCUMULATOR FILL ♦ 24SJ20, 24 ACCUMULATOR FILL	Depresses 24SJ20 24 ACCUMULATOR FILL OPEN PB; notes change in light status, and monitors level on the applicable level channels.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Core Cooling Systems

TASK: Raise ECCS Accumulator Level with a Safety Injection Pump

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	5.2.7	When desired level is reached, **CLOSE** the associated Accumulator fill valve: ♦ 21SJ20, 21 ACCUMULATOR FILL ♦ 22SJ20, 22 ACCUMULATOR FILL ♦ 23SJ20, 23 ACCUMULATOR FILL ♦ 24SJ20, 24 ACCUMULATOR FILL	**Cue**: After level starts to rise in 24 Accumulator, state: "24 Accumulator level has risen to 60%." After acknowledging cue, depresses 24SJ20 24 ACCUMULATOR FILL CLOSE PB.		
	5.2.8	If required, **REPEAT** Steps 5.2.6 and 5.2.7 to fill additional Accumulators.	Determines no other Accumulators will be filled.		
*	5.2.9	**CLOSE** 2SJ53.	Depresses 2SJ53 CLOSE PB.		
*	5.2.10	**CLOSE** 2SJ123.	Operator depresses 2SJ123 CLOSE PB.		
*	5.2.11	**STOP** 21 Safety Injection Pump.	Depresses 21 SI Pump STOP PB.		
	5.2.12	IF in modes 1,2, or 3, AND 21SJ134 was CLOSED in Step 5.2.2, THEN **OPEN** 21SJ134.	Determines 21SJ134 was not previously shut.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Core Cooling Systems

TASK: Raise ECCS Accumulator Level with a Safety Injection Pump

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	5.2.13	IF required, **BLEED** off the SI Pump discharge pressure by performing the following:	Determines SI pump discharge pressure is lowering. **Cue if required**: IF candidate states intention to bleed off SI pump discharge pressure, THEN state:"SI pump discharge pressure is lowering steadily."		
	5.2.14	Direct a second Operator to **PERFORM** Independent Verification IAW Attachment 1, Section 2.0	**Cue**: Independent Verification is complete.		
	5.2.15	IF TSAS 3.5.2 was entered, THEN **REVIEW** continued applicability of ths Action Statement.	Determines TSAS 3.5.2 was NOT entered.		
	5.2.16	IF the Unit is in Mode 1 or 2, or Mode 3 with Pressurizer pressure > 1000 psig, THEN **PERFORM** S2.OP-ST.SJ-0008(Q), Emergency Core Cooling - Accumulators.	Identifies the need to perform S2.OP-ST.SJ-0008(Q) Emergency Core Cooling – Accumulators.		

TERMINATING CUE: Terminate JPM after Candidate determines whether (or not) S2.OP-ST.SJ-0008 must be performed.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

h 4. Initial setup conditions are identified.

h 5. Initiating and terminating Cues are properly identified.

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

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

h 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 22 Date 12/30/08

h 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

N/A h 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

N/A 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: _____ Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

1. The plant is at 100% power with all systems in their normal alignment with control systems in automatic.
2. 24 Accumulator is at 57.9% level.
3. The Safety Injection System is available.
4. RWST Boron Concentration is 2400 ppm.

INITIATING CUE:

Raise 24 ECCS Accumulator to 60% using 21 SI pump IAW S2.OP-SO.SJ-0002, Accumulator Operations, Section 5.2.

OPERATIONS TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Pressurizer Pressure and Level
TASK:	TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)
TASK NUMBER:	1140240401
JPM NUMBER:	09-01 NRC Sim c
ALTERNATE PATH: [X]	**K/A NUMBER:** 010 A4.01
	IMPORTANCE FACTOR: RO 3.7 / SRO 3.5

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

EVALUATION SETTING/METHOD: Simulator

REFERENCES: S2.OP-AB.PZR-0001, Rev. 18 (Rev. checked 6-30-11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 4 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 6-17-11

Validated By: W. Neiheiser, SME or Instructor **Date:** 6-30-11

Approved By: Training Department **Date:** 7-21-11

Approved By: Operations Department **Date:** 7/8/11

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

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

TASK NUMBER: 114 024 04 01

SIMULATOR SETUP: IC-253 4% power, BOL.

I/O B304 OVLO Pressurizer Relief Valve Outlet Temperature- Value: 98.6

MALF: PR018A PZR PORV 2PR1 develops leak – Value:40000 Tied to ET-1

RT-1 **PR0019A** PZR Spray Valve 2PS1 fails open

ET-1 kal06tph 23 RCP Stop

INITIAL CONDITIONS:

Reactor power is stable at 4.0% power. The power ascension is on hold temporarily.

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. **Trip Rx.**
2. **Stops 21 and 23 RCP.**
3. **Stop 22 OR 24 RCP.**

OPERATIONS TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
		Simulator Operator: Insert **RT-1** on direction of evaluator. MALF: **PR0019A** , 2PS1 fails open	**Note**: The time between the 2PS1 failing open and RCS pressure reaching 2,000 psig is ~ 4 minutes and 15 seconds.		
			Recognizes lowering PZR Pressure and/or alarm and/or change in 2PS1 position. Acknowledges OHA E-28 PZR HTR ON PRESS LO. Recognizes 22 PZR B/U heaters energized. If candidate refers to ARP for OHA E-28, it directs entry into S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.		
			Enters S2.OP-AB.PZR-0001 directly or via OHA E-28 ARP. **Note:** It is acceptable for the candidate to attempt closing 2PS1 prior to entering S2.OP-AB.PZR-001.		

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3.1	**INITIATE** Attachment 1 Continuous Action Summary.	Initiates Attachment 1 Continuous Action Summary. **Note:** There is a CAS action to trip the Rx if RCS pressure lowers to 2,000 psig and continues to drop. **IF** the candidate were to trip the Rx during this JPM based on that CAS action and not at step 3.24.A on page 6 as expected, **THEN AFTER** the candidate has tripped the Rx, verified the Main Turbine is tripped, verified SI not actuated or required and all 4KV vital buses energized, the following cue must be given: **Cue: The immediate actions of TRIP-1 have been verified by the CRS and RO. The CRS directs you to continue actions of S2.OP-AB.PZR-0001, while the remaining crew members will continue to perform TRIP-1.**		
	3.2	Is POPS in service?	Determines POPS is not in service by initial conditions or console indications.		

OPERATIONS TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3.3	Is the controlling Pressurizer Pressure Control Channel (I or III) failed?	Determines Pressurizer Pressure Control Channel (I or III) is not failed and **GOES TO** Step 3.11		
	3.11	Is the Master Pressure Controller failed? (Refer to Attachment 2 for guidance)	Determines Master Pressure Controller is not failed and **GOES TO** Step 3.17 (may not refer to Attachment 2 if 2PS1 has been noted open with pressure below closing setpoint.)		
	3.17	Is a Spray Valve(s) failed? (Refer to Attachment 2 for guidance)	Determines 2PS1 is failed open.		
	3.18	**PLACE** the Spray Valve(s) in MANUAL	Depresses MANUAL PB for 2PS1 and verifies AUTO light extinguished and MANUAL light illuminates.		
	3.19	**OPERATE** the Spray Valves to control pressure consistent with Attachment 2.	Depresses the CLOSE PB for 2PS1 and recognizes that 2PS1 remains open.		
	3.20	**PLACE** all Pressurizer heaters in MANUAL and ON	Determines all PZR heaters are in MANUAL and ON.		

OPERATIONS TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	3.21	Has pressure control been regained?	Determines pressure control has not been regained since 2PS1 remains open.		
	3.22	Is RCS pressure dropping rapidly?	Determines RCS pressure is dropping rapidly from console indication.		
	3.23	Are Reactor Trip Breakers CLOSED?	Determines Reactor Trip Breakers are closed by initial conditions or console indication.		
*	3.24 A	**PERFORM** the following: A. **TRIP** the Reactor.	 Initiates a Reactor Trip using either MANUAL TRIP handle.		
	3.24 B	B. Is Reactor Trip Confirmed?	Determines Reactor Trip is confirmed after identifying PRNI reading < 5% and IR NI indication dropping.		
*	3.24 C	**STOP** 21 AND 23 RCPs:	Depresses STOP PBs for 21 and 23 RCP and verifies start lights extinguish and stop lights illuminates. **Simulator Operator**: Ensure **ET-1** is TRUE when 23 RCP stop PB is depressed.		

OPERATIONS TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Pressurizer Pressure and Level

TASK: TCAF Pressurizer Pressure Malfunction (Failed open Pressurizer Spray Valve)

	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	3.24 D	IF Pressurizer Pressure continues to drop, THEN **STOP** all but one RCP.	Determines Pressurizer Pressure continues to drop, and depresses STOP PB on 22 OR 24 RCP and verifies start light extinguishes and stop light illuminates.		
	3.24 E	**GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection, AND **CONTINUE** with this procedure.	Begins performing Immediate Actions of 2-EOP-TRIP-1, Reactor Trip or Safety Injection. **Cue**: When candidate begins performing Immediate Actions of 2-EOP-TRIP-1, Reactor Trip or Safety Injection, state JPM is complete.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

W 4. Initial setup conditions are identified.

W 5. Initiating and terminating Cues are properly identified.

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

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

W 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 18 Date 6-30-11

W 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

(SME)/Instructor: [signature] Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

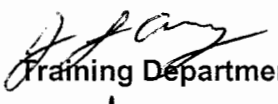
INITIAL CONDITIONS:

Reactor power is stable at 4.0% power. The power ascension is on hold temporarily.

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM 1 & 2
SYSTEM:	Emergency Operating Procedures
TASK:	Respond to a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)
TASK NUMBER:	N1150290501
JPM NUMBER:	09-01 NRC Sim d
ALTERNATE PATH:	[X]
K/A NUMBER:	EPE E05 EA1.1
IMPORTANCE FACTOR:	4.1 (RO) / 4.0 (SRO)
APPLICABILITY:	EO [ ] RO [X] STA [ ] SRO [X]
EVALUATION SETTING/METHOD:	Simulator - Perform
REFERENCES:	2-EOP-FRHS-1, Loss of Secondary Heat Sink, Rev. 24 (checked 6/20/11)
TOOLS AND EQUIPMENT:	None
VALIDATED JPM COMPLETION TIME:	5 minutes
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A

Developed By:	**G Gauding** **Instructor**	**Date: 06-17-11**
Validated By:	**J Klein** **SME or Instructor**	**Date: 06-30-11**
Approved By:	 **Training Department**	**Date:** 7-21-11
Approved By:	 **Operations Department**	**Date:** 8/1/11

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: TCAF a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)

TASK NUMBER: **N1150290501**

SIMULATOR SETUP:

IC-252 developed by : MSL rupture downstream of MSIVs. Fail auto MT trip. Fail all MSIVs open. All AFW pumps failed. Fail **2PR2** shut. 21 CVCS pp C/T. Performed TRIP-1 through Step 20. 22 CVCS pp tripped during TRIP-1.

INITIAL CONDITIONS:

- Unit 2 initiated a Rx trip from 100% power in response to a Main Steamline break at the mixing bottle.
- An automatic Safety Injection initiated.
- The Main Turbine failed to trip automatically, and was manually tripped from the control console.
- MSLI failed, and all MSIV's remain open.
- All AFW flow has been lost.
- 21 charging pump is C/T.
- 22 charging pump tripped 3 minutes ago.
- EOP-TRIP-1 was performed and a transition to FRHS-1, Loss of Secondary Heat Sink was made at Step 20.

INITIATING CUE:

You are the Reactor Operator. Perform FRHS-1 starting at Step 1.

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. Stop ALL RCPs.
2. Open 2PR1.
3. Open Rx Head Vent Valves 2RC40-2RC43.

NAME: _____

DATE: _____

SYSTEM: **Emergency Operating Procedures**

TASK: **Respond to a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)**

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Operator states he has the watch.		
	1	IS TOTAL AFW FLOW LESS THAN 22E04 LB/HR DUE TO OPERATOR ACTIONS	Determines it was not operator action which caused total AFW flow to be less than 22E04 lb/hr.		
	2	IF AT LEAST ONE INTACT OR RUPTURED SG IS AVAILABLE, THEN DO NOT FEED A FAULTED SG	Recognizes ALL SGs are faulted.		
	3	IS RCS PRESSURE GREATER THAN ANY INTACT OR RUPTURED SG PRESSURE	Checks RCS pressure on control console and determines it is greater than all SG pressures checked on control console.		
	3.1	ARE RCS T-HOTS GREATER THAN 350°F	Checks RCS Thot indication on control console and determines that RCS Thots are greater than 350°F.		
	4	IS 21 OR 22 CHARGING PUMP AVAILABLE	Determines neither 21 nor 22 charging pump is available based on initial conditions and/or control console indications.		
		GO TO STEP 23	Goes to Step 23.		

SYSTEM: **Emergency Operating Procedures**

TASK: **Respond to a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)**

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	23	CAUTION TO ESTABLISH RCS HEAT REMOVAL BY RCS BLEED AND FEED, STEPS 24 THRU 29 MUST BE PERFORMED QUICKLY AND WITHOUT INTERRUPTION	Reads Step.		
*	23	STOP ALL RCPS	Depresses STOP PB for 21-24 RCPs and verifies green stop light illuminates and red start light extinguishes.		
	24	INITIATE SI	Uses Safeguards key and initiates SI on at least one train of Safeguards initiation.		
	25	ARE SI VALVES IN SAFEGUARDS POSITION	Checks 2RP4 and/or console indication to determine that all valves listed in Table B are in Safeguards position. Table B valves are: 2SJ4 OPEN BIT INLET 2SJ5 OPEN BIT INLET 2SJ12 OPEN BIT OUTLET 2SJ13 OPEN BIT OUTLET 2CV68 CLOSED CHARGING DISCHARGE 2CV69 CLOSED CHARGING DISCHARGE (continued next page)		

SYSTEM: **Emergency Operating Procedures**

TASK: **Respond to a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)**

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Table B Valves (con't): 21-24SJ54 OPEN ACCUMULATOR OUTLET 2SJ1 OPEN RWST TO CHARGING 2SJ2 OPEN RWST TO CHARGING 2CV40 CLOSED DISCHARGE STOP 2CV41 CLOSED DISCHARGE STOP		
	25.1	IS 21 OR 22 CHARGING PUMP RUNNING	Checks control console and determines neither 21 nor 22 charging pump is running.		
	25.2	IS ANY SI PUMP RUNNING	Checks control console and determines both 21 and 22 SI pumps are running.		
	25.2	ARE VALVES IN TABLE C OPEN FOR AT LEAST ONE RUNNING SI PUMP	Checks control console indication for valves listed in Table C and determines the valves are open for at least one running SI pump. Table C valves are: 21/22 SI PUMPS 2SJ30 (FROM RWST) 21/22SJ33 (SI PUMP SUCTION) 2SJ135 (COLD LEG DISCHARGE) 21/22SJ134 (COLD LEG DISCHARGE)		
	26	OPEN BOTH PZR PORV STOP VALVES	Checks control console and determines BOTH 2PR6 and 2PR7 PORV STOP VALVES are open.		

SYSTEM: **Emergency Operating Procedures**

TASK: **Respond to a Loss of Heat Sink (Initiate Bleed and Feed with SI pumps and Rx Head Vents)**

*	STEP NO.	STEP (* Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	26	OPEN BOTH PZR PORVS	Depresses 2PR1 PZR PORV open PB and verifies green closed light extinguishes and red open light illuminates. Depresses 2PR2 PZR PORV open PB and reports that 2PR2 will not open.		
	26.1	ARE BOTH PZR PORV STOP VALVES OPEN	Checks control console and determines BOTH 2PR6 and 2PR7 PORV STOP VALVES are open.		
		ARE BOTH PZR PORVS OPEN	Determines 2PR2 PZR PORV is not open.		
*	26.1	OPEN 2RC40 THRU 2RC43 (REACTOR HEAD VENTS)	Inserts key into each 2RC40 THRU 2RC43 (REACTOR HEAD VENTS) switch on 2RP3, turns to open, and verifies each valve opens.		
			Terminate JPM when operator has opened 2RC40 thru 2RC43 Reactor Head Vents.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

JM 4. Initial setup conditions are identified.

JM 5. Initiating and terminating Cues are properly identified.

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

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

JM 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 24 Date 6-30-11

JM 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: J Klein Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

- Unit 2 initiated a Rx trip from 100% power in response to a Main Steamline break at the mixing bottle.
- An automatic Safety Injection initiated.
- The Main Turbine failed to trip automatically, and was manually tripped from the control console.
- MSLI failed, and all MSIV's remain open.
- All AFW flow has been lost.
- 21 charging pump is C/T.
- 22 charging pump tripped 3 minutes ago.
- EOP-TRIP-1 was performed and a transition to FRHS-1, Loss of Secondary Heat Sink was made at Step 20.

INITIATING CUE:

You are the Reactor Operator. Perform FRHS-1 starting at Step 1.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

TASK NUMBER: N1140420401

JPM NUMBER: 09-01 NRC Sim e

ALTERNATE PATH: [X]

K/A NUMBER: 2.4.31

IMPORTANCE FACTOR: 4.2 (RO) 4.1 (SRO)

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

EVALUATION SETTING/METHOD: Simulator - Perform

REFERENCES: S2.OP-AR.ZZ-0007, Rev. 46, Overhead Window G
S2.OP-AB.TRB-0001, Rev. 14, Turbine Trip <P-9 (Both rev checked 6-21-11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 5 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: **G Gauding** **Instructor** **Date: 06-17-11**

Validated By: **J. Klein** **SME or Instructor** **Date: 06-30-11**

Approved By: **Training Department** **Date:** 7-2-11

Approved By: **Operations Department** **Date:** 7/8/11

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: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

TASK NUMBER: N1140420401

SIMULATOR SETUP IC-255

RT-1
MALF **AN0105** SER 105 Fails-: G8 Turbine Auxiliary Cooling

MALF **TU0118A** 21MS28 Turb Stop Valve Fails Open
Override **CK23** Turbine Trip-Trip

INITIAL CONDITIONS:

40% power, BOL.
Control Bank D is at 108 steps.
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. Trip the Main Turbine.
2. Trip the Rx.

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		SIMULATOR OPERATOR: Insert **RT-1** after candidate assumes the watch.	Announces unexpected **OHA G-8** TAC EXP TK LVL HI OR LO.		
			Refers to S2.OP-AR.ZZ-0007, Overhead Window G.		
	ARP 1.0/2.0		Reviews causes and determines there are no automatic actions associated with this alarm.		
	ARP 3.1	**DETERMINE** if level alarm is high or low from the Annunciator CRT: CRT Point — Description 104 — Turbine Auxiliary Cooling Expansion Tank Level High 105 — Turbine Auxiliary Cooling Expansion Tank Level Low	Determines CRT point 105 Turbine Auxiliary Cooling Expansion Tank Level Low is in alarm.		

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.2	IF level is high, THEN:	Determines level is not high, and continues to next step.		
	3.3	IF level is low, THEN: A. Send an operator to **MAKEUP** to tank. B. Send an operator to **IDENTIFY** AND **ISOLATE** any leaks.	Dispatches an operator to makeup to tank, and identify and isolate any leaks.		
		Simulator Operator: 2 minutes after being dispatched, call control room and report: "This is the Secondary Operator. The Unit 2 TAC expansion tank level is 7" and lowering one inch per minute. The auto makeup valve is stuck shut, and I can't get the bypass valve open."			

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.4	IF unable to maintain tank level above 6 inches, THEN: A. IF >P-9 (49% power), THEN **TRIP** the Reactor, AND **GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection.	Determines tank level cannot be maintained above 6 inches, and attempts to trip the Main Turbine with the Turbine Trip handle, and reports the Main Turbine did not trip.		
*			Depresses the Turbine Trip PB and determines the Turbine has tripped. Goes to S2.OP-AB.TRB-0001.		
*		B. IF <P-9 (49% power) THEN **TRIP** the Turbine, AND **GO TO** S2.OP-AB.TRB-0001(Q), Turbine Trip Below P-9.	**Note:** IF the candidate observes the 21MS28 remaining open at this point, THEN they may determine the turbine is not tripped, and perform a MSLI by depressing all 4 MSLI PBs on either Safeguards bezel. Initiating a MSLI before the Rx is tripped is an incorrect action which may challenge SG safeties if they lift. Initiating a MSLI renders the Main Steam Dumps inoperable and prematurely isolates the SGFPs. With Rx power >P-10 (10%) and steam dumps not available, a Rx trip is required IAW CAS actions 1.0 and 2.0. See page 8 for complete discussion. Go to page 7 for required actions **IF** a Rx trip is performed here.		

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.TRB 3.1	**INITIATE** Attachment 1, Continuous Action Summary.	Initiates Attachment 1, Continuous Action Summary.		
	3.2	**VERIFY** the Turbine is tripped.	**Note:** IF the candidate observes the 21MS28 remaining open at this point, THEN they may determine the turbine is not tripped, and perform a MSLI by depressing all 4 MSLI PBs on either Safeguards bezel. Initiating a MSLI before the Rx is tripped is an incorrect action which may challenge SG safeties if they lift. Initiating a MSLI renders the Main Steam Dumps inoperable and prematurely isolates the SGFPs. With Rx power >P-10 (10%) and steam dumps not available, a Rx trip is required IAW CAS actions 1.0 and 2.0. See page 8 for complete discussion. See next page for required actions **IF** a Rx trip is performed here.		

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	EOP-TRIP-1		**IF** candidate initiates a Rx trip prior to initiating a MSLI based on CAS actions 1.0 and 2.0 which would occur if they initiated a MSLI, then successful performance of TRIP-1 immediate actions must be performed as follows:		
*	1	TRIP REACTOR	Trips the Rx using either Trip handle.		
	2	IS REACTOR TRIP CONFIRMED	Confirms Rx trip		
*	3	TRIP TURBINE	Attempts to trip the Main Turbine using the Trip handle. Determines the Trip handle did not close all Main Turbine Stop Valves. Depresses Turbine Trip bezel. Determines the Trip handle did not close all Main Turbine Stop Valves. Initiates a MSLI. Terminate JPM after MSLI has been performed.		
	3.3	Are all Turbine Stop Valves closed?	Determines all Turbine Stop Valves are NOT closed from 2RP4. Goes to Step 3.7.		
	3.7	**TRIP** the Reactor, **GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection.	Trips the Reactor using either of the Reactor Trip handles.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: Main Turbine

TASK: TCAF Main Turbine Trip < P-9 (Loss of Turbine Auxiliaries Cooling Expansion Tank Level)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Begins performing immediate actions of 2-EOP-TRIP-1, Reactor Trip or Safety Injection.		
			Terminate JPM when Reactor has been tripped.		

Turbine Trip requirements- During performance of this JPM, the candidate will receive direction from the Alarm Response Procedure S2.OP-AR.ZZ-0007, Overhead Window G, OHA G-8, page 18-19, which states "**TRIP** the Turbine and GO TO S2.OP-AB.TRB-0001, Turbine Trip <P-9."

When outside the EOP network, initiating a MSLI to perform a Turbine Trip is NOT an appropriate action, since in TRIP-1 the steps for tripping the Rx precede the steps for tripping the Turbine, and the MSLI would only be performed AFTER all attempts to trip the Rx from the control room have already been performed. IF the Rx trip were NOT confirmed, then the Turbine trip steps would include the MSLI since the overriding concern at that point would be reduction of Rx power by removing the Main Turbine from service.

After entering the EOP Network, actions for tripping the Reactor and tripping the Turbine have special definitions as described in OP-AA-101-111-1003, Use of Procedures, which **ONLY** apply while in the EOP network. When defining turbine trip while in EOP-TRIP-1, it states on page 13,
" Steps 2.2 and 3, **TRIP TURBINE,** are defined as,
"Operate the turbine trip switch"
IF turbine trip NOT confirmed,
THEN trip the turbine using the Turbine Trip bezel.
IF turbine trip NOT confirmed,
THEN initiate main steam isolation.""

For these reasons, initiating a MSLI during this JPM prior to initiating a Rx trip will be considered as failure criteria due to the possible challenge to SG safeties which may occur due to this action, and which otherwise would not occur in the JPM.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

___ 4. Initial setup conditions are identified.

___ 5. Initiating and terminating Cues are properly identified.

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

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

___ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 4 Date 6-30-11

___ 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

___ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: JKlein Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

40% power, BOL.
Control Bank D is at 108 steps.
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: AC Electrical Distribution

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

TASK NUMBER: N0620110101

JPM NUMBER: 09-01 NRC Sim f

ALTERNATE PATH: [X]

K/A NUMBER: 062 A4.01

IMPORTANCE FACTOR: 3.3 (RO) 3.1 (SRO)

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

EVALUATION SETTING/METHOD: Simulator - Perform

REFERENCES: S2.OP-IO.ZZ-0003, Rev. 35, Hot Standby to Minimum Load
S2.OP-SO.4KV-0008, Rev. 12, 4KV Group Buses Power Supply Transfer

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: 06-17-11**

Validated By: J Klein, SME or Instructor **Date: 06-30-11**

Approved By: Training Department **Date:** 7-21-11

Approved By: Operations Department **Date:** 7/8/11

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: **SAT** **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

NAME: _____

DATE: _____

SYSTEM: AC Electrical Distribution

TASK: Transfer A 4 Kv Group Bus To The Alternate Power Supply (SPT to APT)

TASK NUMBER: N0620110101

SIMULATOR SETUP IC-256 19.2% power BOL.

MALFS: **AN0637** SER 637 Fails-: J14 21ESD Breaker Failure tied to **ET-1**
RP0058 Failure of Automatic Reactor Trip

Overrides:	**C308 OVDI** 2AEGD 2E GROUP BUS FEEDER –CLOSE	OFF
All tied	**C308 OVDI** 2AEGD 2E GROUP BUS FEEDER-OPEN	ON
to ET-1	**C312 OVDI** 21ESD 2E GROUP BUS FEEDER-OPEN	ON
	C312 OVDI 21ESD 2E GROUP BUS FEEDER-CLOSED	OFF
	C307 OVDI 21HSD 2H GROUP BUS FEEDER-OPEN	ON
	C307 OVDI 21HSD 2H GROUP BUS FEEDER-CLOSED	OFF
	C601 OVDI 13 KV SECTION 1-6-OPEN	ON
	C601 OVDI 13 KV SECTION 1-6-CLOSED	OFF

Check APT voltage the same as the Group bus voltage pre-req 2.3.3

Note to Evaluator: The bus transfer sequence - H,E,F,G corresponds to RCPs 21, 22, 23, AND 24.

INITIAL CONDITIONS:

19.2% power, BOL.
The Main Turbine was synchronized 10 minutes ago.
Steam Dumps are in Tavg Mode-Auto.
Rod Control is in Auto.
Group buses are powered from the Station Power Transformers.

INITIATING CUE: You are the NCO assigned to transfer the 4KV Group Buses. The CRS directs you to transfer all 4KV Group buses from their respective Station Power Transformers to the Aux Power Transformers, starting with H Group Bus, IAW S2.OP-SO.4KV-0008, 4KV Group Buses Power Supply Transfer. All pre-requisites are complete SAT.
The CRS directs you to transfer the buses in this order: H, E, F, G

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. Transfer 2H 4KV Group bus from SPT to APT.
2. Trip Rx upon ATWT while transferring 2E 4KV Group bus from SPT to APT

SYSTEM: Electrical

TASK: Transfer A 4 Kv Group Bus To The Alternate Power Supply (SPT to APT)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
			Reviews Precautions and Limitations.		
	5.4.1	**ENSURE** all Overhead Annunciators for 2 APT are clear.	Checks OHA Windows and determines all Overhead Annunciators for 2 APT are clear.		
	5.4.2	**ENSURE** 2B APT voltage is 4.22 - 4.36KV.	Checks 2B APT reading on 2CC3 and determines 2B APT voltage is 4.22 - 4.36KV.		
	5.4.3	IF Auxiliary Power Unit Isolation Transfer is tripped, THEN **RESET** Auxiliary Power Unit Isolation Transfer (UIT).	Determines Auxiliary Power Unit Isolation Transfer is not tripped from control console indication.		
*	5.4.4	**PRESS** the Mimic Bus 2H GROUP BUS INFEED 2AHGD BREAKER pushbutton, AND **ENSURE** console bezel 2AHGD MIMIC BUS INTLK CLOSE SELECTION illuminates.	Depresses Mimic Bus 2H GROUP BUS INFEED 2AHGD BREAKER pushbutton and checks console bezel 2AHGD MIMIC BUS INTLK CLOSE SELECTION Illuminates.		

SYSTEM: Electrical

TASK: Transfer A 4 Kv Group Bus To The Alternate Power Supply (SPT to APT)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.4.5	**PRESS** control console 2AHGD CLOSE pushbutton, AND **ENSURE** the following: A. 21HSD is OPEN. B. 2AHGD is CLOSED. C. 2H 4KV Group Bus voltage is from 4.22 - 4.36KV. D. Console bezel 2AHGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.	Depresses control console 2AHGD CLOSE pushbutton, and checks the following: A. 21HSD is OPEN. B. 2AHGD is CLOSED. C. 2H 4KV Group Bus voltage is from 4.22 - 4.36KV. D. Console bezel 2AHGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.		
	5.1.1	**ENSURE** all Overhead Annunciators for 2 APT are clear.	Checks OHA Windows and determines all Overhead Annunciators for 2 APT are clear.		
	5.1.2	**ENSURE** 2B APT voltage is 4.22 - 4.36KV.	Checks 2B APT reading on 2CC3 and determines 2B APT voltage is 4.22 - 4.36KV.		
	5.1.3	IF Auxiliary Power Unit Isolation Transfer is tripped, THEN **RESET** Auxiliary Power Unit Isolation Transfer (UIT).	Determines Auxiliary Power Unit Isolation Transfer is not tripped from control console indication.		
*	5.1.4	**PRESS** Mimic Bus 2E GROUP BUS INFEED 2AEGD BREAKER pushbutton, AND **ENSURE** console bezel 2AEGD MIMIC BUS INTLK CLOSE SELECTION illuminates.	Depresses Mimic Bus 2E GROUP BUS INFEED 2AEGD BREAKER pushbutton, AND checks console bezel 2AEGD MIMIC BUS INTLK CLOSE SELECTION illuminates.		

SYSTEM: Electrical

TASK: Transfer A 4 Kv Group Bus To The Alternate Power Supply (SPT to APT)

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.5	**PRESS** control console 2AEGD CLOSE pushbutton, AND **ENSURE** the following: A. 21ESD is OPEN. B. 2AEGD is CLOSED. C. 2E 4KV Group Bus voltage is 4.22 - 4.36KV. D. Console bezel 2AEGD MIMIC BUS INTLK CLOSE SELECTION is extinguished.	Determines 2E Group bus did not transfer and recognizes a Rx trip demand signal is present. Recognizes the Rx did not trip. Announces ATWT. Trips the Rx using either trip handle.		
			Terminate the JPM when a Rx trip has been initiated.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

JM 4. Initial setup conditions are identified.

JM 5. Initiating and terminating Cues are properly identified.

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

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

JM 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 35/12 Date 6-30-11

JM 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: JKlein Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

19.2% power, BOL.
The Main Turbine was synchronized 10 minutes ago.
Steam Dumps are in Tavg Mode-Auto.
Rod Control is in Auto.
Group buses are powered from the Station Power Transformers.

INITIATING CUE:

You are the NCO assigned to transfer the 4KV Group Buses. The CRS directs you to transfer all 4KV Group buses from their respective Station Power Transformers to the Aux Power Transformers, starting with H Group Bus, IAW S2.OP-SO.4KV-0008, 4KV Group Buses Power Supply Transfer. All pre-requisites are complete SAT.

The CRS directs you to transfer the buses in this order: H, E, F, G

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Emergency Procedures
TASK:	Take Corrective Action For A Nuclear Instrumentation System Malfunction (Energize Source Range NIS IAW TRIP-2 w/one under compensated IR channel)
TASK NUMBER:	N1140230401
JPM NUMBER:	09-01 NRC Sim g
ALTERNATE PATH:	[X]
K/A NUMBER:	EPE 007 EA1.05
IMPORTANCE FACTOR:	RO: 4.0 / SRO: 4.1

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

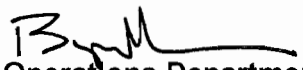
EVALUATION SETTING/METHOD: Simulator / Perform

REFERENCES: 2-EOP-TRIP-2, Rev. 27 Reactor Trip Response (rev checked 6-17-11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 05-04-2011**
Validated By:	**K Reidmuller** **SME or Instructor**	**Date: 06-30-11**
Approved By:	 **Training Department**	**Date:** 7-21-11
Approved By:	 **Operations Department**	**Date:** 7/8/11

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 Procedures

TASK: Take Corrective Action For A Nuclear Instrumentation System Malfunction (Energize Source Range NIS IAW TRIP-2 One under compensated IR channel)

TASK NUMBER: 1150030501

SIMULATOR SETUP: **IC-257 on 2011 Flash Drive**

MALF: NI0195D IR CH N36 Compensating Volts Lo - TRUE

IC setup by tripping both SGFP's and initiating a MANUAL Rx trip

Perform EOP's through Step 15 of TRIP-2

Ensure audio count rate monitor selected to 10K scale

INITIAL CONDITIONS:

A MANUAL reactor trip was initiated 15 minutes ago when both SGFP's tripped automatically. Operators performed the immediate actions of EOP-TRIP-1, Reactor Trip or Safety Injection, then transitioned to 2-EOP-TRIP-2, Reactor Trip Response. Operators have performed TRIP-2 up to Step 19, Steam Dump Mode Shift.

INITIATING CUE:

You are the board operator. Starting at Step 19, perform 2-EOP-TRIP-2 Reactor Trip Response

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 Performance for Successful Completion:
1. Transfers Main Steam Dumps to MS Pressure Control – Auto
2. Energizes BOTH SRNI Channels
3. Adjusts audio count rate monitor to 1K scale

NAME: _____

DATE: _____

SYSTEM: Emergency Procedures

TASK: Take Corrective Action For A Nuclear Instrumentation System Malfunction

*	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	19	Are Condenser Steam Dumps Available?	Checks Condenser Steam Dumps are reports they are available based on circulators in service and condenser vacuum established.		
*		Place Steam Dumps in "Manual"	Depresses Steam Dumps Manual PB on control console and verifies Manual light illuminates and Auto light extinguishes.		
*		Align Steam Dump Valve demand "Press %" and "Tavg %"	Uses Increase Demand (Open Vlv) PB on to align Steam Dump Valve demand "Press %" and "Tavg %".		
*		Place Steam Dumps in "MS Pressure Control"	Depresses "MS Pressure Control" PB on control console and verifies light illuminates and Tavg Control light extinguishes.		
*		Place Steam Dumps in "Auto"	Depresses Steam Dumps Auto PB on control console and verifies Auto light illuminates and Manual light extinguishes.		
		Adjust Steam Pressure Valve Demand to maintain SG Pressure at 1005 psig.	Adjusts Steam Pressure Valve Demand to maintain SG Pressure at 1005 psig. **Note:** Steam dumps may be placed in Manual for adjustment then returned to auto.		

NAME: _____

DATE: _____

SYSTEM: Emergency Procedures

TASK: Take Corrective Action For A Nuclear Instrumentation System Malfunction

*	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	20	Is <u>any</u> RCP running	Checks RCP status and determines all RCP's are running.		
	22	Are <u>both</u> IR Channels less than 7E-11 Amps	Checks IRNI Channel 1 and Channel II indication and determines 2N36 reads >7E-11 Amps.		
		Is undercompensation preventing proper IR operation?	Determines undercompensation of channel 2N36 is preventing proper IR operation by: - Elapsed time since trip - SUR 0 on affected channel with power above minimum display		
*	22.1	Energize Source Range Channels	Energizes Source Range Channel I by depressing RESET SOURC RANGE A		
*			Energizes Source Range Channel II by depressing RESET SOURC RANGE B		

OPERATOR TRAINING PROGRAM **NAME:** _____

JOB PERFORMANCE MEASURE **DATE:** _____

SYSTEM: Emergency Procedures

TASK: Take Corrective Action For A Nuclear Instrumentation System Malfunction

*	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	22.2	Transfer NR-45 (Nuclear Power Recorder) to Source Range Channels	Transfers NR-45 (Nuclear Power Recorder) to Source Range Channels by selecting Source Range Channel I on Pen 1 or 2, and selecting Source Range Channel II on the other Pen.		
			Terminate JPM after audio count rate scale adjustment has been verified in the control room.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

KO 4. Initial setup conditions are identified.

KO 5. Initiating and terminating Cues are properly identified.

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

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

KO 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 27 Date 6-30-11

KO 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: Kevin O. Reichmuller Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

A MANUAL reactor trip was initiated 15 minutes ago when both SGFP's tripped automatically. Operators performed the immediate actions of EOP-TRIP-1, Reactor Trip or Safety Injection, then transitioned to 2-EOP-TRIP-2, Reactor Trip Response. Operators have performed TRIP-2 up to Step 19, Steam Dump Mode Shift.

INITIATING CUE:

You are the board operator. Starting at Step 19, perform 2-EOP-TRIP-2 Reactor Trip Response.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

TASK NUMBER: N1140080401

JPM NUMBER: 09-01 NRC Sim h

ALTERNATE PATH: [X]

K/A NUMBER: 008 A4.01

IMPORTANCE FACTOR: 3.3 (RO) 3.1 (SRO)

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

EVALUATION SETTING/METHOD: Simulator - Perform

REFERENCES:
S2.OP-AB.CC-0001, Rev. 14 Component Cooling Abnormality
S2.OP-AB.RCP-0001, Rev. 21 Reactor Coolant Pump Abnormality
S2.OP-AR.ZZ-0004, Rev. 26, Overhead Window D (all rev checked 6-22-11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: G Gauding, Instructor **Date:** 06-17-11

Validated By: K Reidmuller, SME or Instructor **Date:** 06-30-11

Approved By: Training Department **Date:** 8-2-11

Approved By: Operations Department **Date:** 8/1/11 8/1/11

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: SAT UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

NAME: _____

DATE: _____

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

TASK NUMBER: N1140080401

SIMULATOR SETUP IC-258 100% power EOL.

Remote: CC29D 23 CCW pump control power OFF.

RT-1
MALF CC0172B 22 Component Cooling Water Pump Trip

RT-2
MALF CC0172A 21 Component Cooling Water Pump Trip

INITIAL CONDITIONS:

100% power, EOL.
23 CCW pump is C/T for oil leak repair.
TSAS 3.7.3 was entered 6 hours ago.

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. Trip the Reactor.
2. Trip 21-24 RCPs.
3. Isolate Letdown and swap Charging Pump suction to the RWST.

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Note for Simulator Operator: The remaining CCW pump must be tripped **PRIOR** to the determination that the Rx must be tripped and RCPs stopped in either the Reactor Coolant Pump or Component Cooling System Abnormal Procedures.	**Note to Evaluator**: The end result of this JPM will be the same whether the Component Cooling or Reactor Coolant Pump Abnormal Procedure is used. The Attachment in each procedure for Stopping RCPs is the same. S2.OP-AB.RCP-0001 steps start on page 8 S2.OP-AB.CC-0001 steps start on page 13		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Simulator Operator: Insert **RT-1** after candidate assumes the watch. **MALF CC0172B** 22 Component Cooling Water Pump Trip	Reports 22 CCW pump has tripped. The following alarms will annunciate: • OHAs D20-D23 21/22/23/24 RCP BRG CLG WTR FLO LO. • RCP Thermal Barrier Return Lo Flow. • 21 and 22 CCW Header Lo Pressure Console alarms. **Note:** Each of the Alarm Response actions is contained here, as well as the actions contained in both S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality, and S2.OP-AB.CC-0001, Component Cooling Abnormality. Either of the Abnormal Procedures may be entered directly, or through the Alarm Response Procedure to get to ABs.		
	ARP D20-23		Refers to S2.OP-AR.ZZ-0004, Overhead Window D.		
	ARP D20-23 2.0		Determines there are no automatic actions associated with these alarms.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP D20-23 3.1	**CHECK** OPEN the following Component Cooling Water valves: A. 2CC117, RCP CC MOT OP INLET V. B. 2CC118, RCP CC MOT OP INLET VALVE C. 2CC136, RCP BRG MOT OP OUTLET VALVE D. 2CC187, RCP MOTOR CC MOTOR OPERATED OUTLET VALVE.	Determines the following Component Cooling Water valves are open on CC1: A. 2CC117, RCP CC MOT OP INLET V. B. 2CC118, RCP CC MOT OP INLET VALVE C. 2CC136, RCP BRG MOT OP OUTLET VALVE D. 2CC187, RCP MOTOR CC MOTOR OPERATED OUTLET VALVE.		
	ARP D20-23 3.2	**MONITOR** 21 RCP Motor Bearing temperatures. (T0413A, T0414A T0415A, and T0416A)	Monitors 21 RCP Motor Bearing temperatures. (T0413A, T0414A T0415A, and T0416A) using P-250 computer on the Reactor Coolant Pumps screen, which has 21-24 RCP bearing temperatures. **Note:** OHA D20-23 are identical except for bearing temperature instrument numbers. Only OHA D-20 for 21 RCP is listed here, but all RCP bearing temperatures should be monitored.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP D20-23 3.3	IF either of the following conditions exist, **GO TO** S2.OP-AB.RCP-0001(Q) Reactor Coolant Pump Abnormality: • 21 RCP Motor Bearing Temperature reaches 175°F, or • CCW flow can NOT be established within 5 minutes AND 21 RCP Motor Bearing temperatures are trending up.	Determines 21 RCP Motor Bearing Temperature has not reached 175° (will reach maximum of ~ 157 °F) Determines that RCP Motor Bearing temperatures are not trending up. (The temps will rise from ~141 to 157 quickly, within 3 minutes, and the curve of the line flattens out quickly. There IS still CCW flow going to the RCPs, and it WILL keep them from reaching required pump trip temperatures. IF pace of JPM performance results in it being determined that temperatures are trending up, THEN will go to S2.OP-AB.RCP-001 here.		
	ARP D20-23 3.4	**MONITOR** CC Surge Tank and Containment Sump Pump runs for leakage indication.	Determines CC Surge Tank and Containment Sump Pump runs do not indicate leakage.		
	ARP D20-23 3.5	IF CC Console alarms header pressure low, OR Surge Tank Level High Low, THEN **INITIATE** S2.OP-AB.CC-0001, Component Cooling Abnormality.	Initiates S2.OP-AB.CC-0001, Component Cooling Abnormality based on CC header Pressure low console alarms.		
	ARP CC1 2.0	21 (22) CC HDR PRESSURE LO	Determines there are no automatic actions associated with these alarms.		

NAME: _____

DATE: _____

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP CC1 3.1	**ENSURE** Seal Injection Flow to each RCP is between 6-12 gpm NOT to exceed 40 gpm total seal injection.	Checks seal injection to each RCP between 6-12 gpm, and total seal injection flow less than 40 gpm.		
	ARP CC1 3.2	IF 2CC131 closed due to momentary high flow while balancing CC flow or pump shifting…	Determines 2CC131 did not close on high flow while balancing CC flow or pump shifting.		
	ARP CC1 3.3	IF the High flow alarm also occurs…	Determines the High flow alarm is not alarmed.		
	ARP CC1 3.4	**ENSURE** OPEN: • 2CC190, RCP THERM BAR CC OUTLET V. • 2CC117, RCP CC MOT OP INLET V. • 2CC118, RCP CC MOT OP INLET VALVE. • 2CC131, RCP THERM BAR CC CONT VALVE.	Determines the following valves are open on 2CC1: • 2CC190, RCP THERM BAR CC OUTLET V. • 2CC117, RCP CC MOT OP INLET V. • 2CC118, RCP CC MOT OP INLET VALVE. • 2CC131, RCP THERM BAR CC CONT VALVE.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	ARP CC1 3.5	IF the low flow alarm does NOT clear, THEN: A. **SEND** an operator to: 1. **MONITOR** CC flow from each RCP seal locally. 2. **ENSURE** CC valve positions to/from each RCP. B. **GO TO** S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality.			
	AB RCP 3.1	**INITIATE** Attachment 1, Continuous Action Summary.	Initiates Attachment 1, Continuous Action Summary. **Note:** The first 2 bulleted CAS actions for 1) losing CCW flow to ALL RCPs 2) not restoring CCW flow within 5 minutes of initial loss are based on a loss of ALL CCW flow. However, if a conservative decision is made that the actions of Attachment 2, Stopping Reactor Coolant Pumps are applicable, then **Simulator Operator** action will be required to **insert RT-2** so that the intiating condition for stopping RCPs is total loss of CCW flow when that decision is made.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB RCP 3.2	**MONITOR** AND **COMPARE** RCP parameters in Attachment 3 to determine affected RCP(s) until malfunction is corrected or as directed by SM/CRS.	Monitors and compares RCP parameters in Attachment 3 on the Plant Computer, Control Console, and RP Panels, and determines that all RCPs are affected.		
	AB RCP 3.3	IF Component Cooling Water supply is causing the RCP(s) abnormal condition, THEN: A. **ENSURE** the following automatic CC valves supplying RCP(s) are OPEN. • 2CC117 AND 2CC118, RCP COOLING INLET • 2CC131 AND 2CC190, RCP THERMAL BARRIER VALVE • 2CC136 AND 2CC187, RCP BEARING OUTLET B. **ENSURE** CCW Heat exchanger(s) in service IAW S2.OP-SO.CC-0002(Q), 21 & 22 Component Cooling Heat Exchanger Operation.	Determines 2CC117 AND 2CC118, RCP COOLING INLET, 2CC131 AND 2CC190, RCP THERMAL BARRIER VALVE, and 2CC136 AND 2CC187, RCP BEARING OUTLET valves are all open on control console. Determines that CCW system operation prior to the event was normal, and CCW HX(s) are in service. **Cue if required:** IF verification of CCW HX operation is begun using S2.OP-SO.CC-0002, THEN cue: "21 & 22 CCW HX's are in service."		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		C. **ENSURE** RCP Seal Injection flows are 6-12 gpm per pump, NOT to exceed 40 gpm total RCP Seal Injection Flow.	Checks RCP Seal Injection flows are 6-12 gpm per pump, total RCP Seal Injection Flow adds up to ≤ 40 gpm.		
	AB RCP 3.4	IF any RCP Motor winding temperature, indicated on 2RP4 recoder, is >235°F for Hot Loop Conditions (Modes 1-4), OR >248°F for Cold Loop Conditions (Mode 5) THEN:	Determines all RCP Motor winding temperatures, indicated on 2RP4 recoder, are <235° for Hot Loop Conditions (Modes 1-4). **Note:** 2RP4 Motor winding temperature recorder is broken, so the following cue is required. **Cue:** All RCP Motor winding temperatures, indicated on 2RP4 recoder, are <235°		
	AB RCP 3.5	IF Loss of Seal Injection is causing RCP(s) abnormal condition, AND RCP Seal Leakoff is <2.5 gpm on any RCP, THEN:	Determines Loss of Seal Injection flow is not causing RCS(s) abnormal condition.		
	AB RCP 3.6	IF affected RCP Seal Water Leakoff is <0.8 gpm or is slowly appraoching 6 gpm, AND affected Pump bearing/sea inlet temperatures are stable or lowqering, THEN:	Determines affected RCP Seal Water Leakoff is >0.8 gpm and is not slowly approaching 6 gpm from console indications.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Simulator Operator: Insert **RT-2** **MALF CC0172A** 21 Component Cooling Water Pump Trip	Determines last remaining Component Cooling water has tripped.		
	AB RCP CAS 1.0	IF AT ANY TIME, any of the validated RCP conditions exist, THEN **GO TO** Attachment 2, Stopping Reactor Coolant Pumps:	Determines Component Cooling Water flow has been lost to all RCPs and goes to Attachment 2, Stopping Reactor Coolant pumps.		

NAME: _____

DATE: _____

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.RCP Att. 2 1.0	IF Reactor Trip Breakers are CLOSED, THEN:			
*		1.1 **TRIP** the Reactor.	Trips the Reactor using either trip handle.		
*		1.2 **STOP** affected RCP(s).	Depresses stop PBs for 21-24 RCPs.		
		1.3 IF RCP shutdown was due to RCP seal Leakoff flow > 6gpm, THEN simultaneously **PERFORM** the following:	Determines RCP shutdown was not due to RCP seal Leakoff flow > 6gpm.		
		1.4 IF RCP shutdown was due to a TOTAL LOSS of Component Cooling Water (including loss of CCW to the CVCS Letdown Heat Exchanger), THEN simultaneously **PERFORM** the following:	Determines RCP shutdown was due to a TOTAL LOSS of Component Cooling Water and simultaneously performs the following:		
		• **ISOLATE** RCS letdown AND **SWAP** charging pump suction to the RWST by performing the following:			
*		a) **CLOSE** 2CV2 AND 2CV277 to isolate letdown.	Depresses the close PB for 2CV2 AND 2CV277 to isolate letdown.		
*		b) **OPEN** 2SJ1 AND 2SJ2 to swap charging pump suction to the RWST.	Depresses the open PB for 2SJ1 AND 2SJ2 to swap charging pump suction to the RWST.		
*		c) **CLOSE** 2CV40 AND 2CV41 to isolate the VCT.	Depresses the close PB for 2CV40 AND 2CV41 to isolate the VCT.		
		• **GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection AND **RETURN** to this attachment, at the SM/CRS discretion.	Goes to 2-EOP-TRIP-1, Reactor Trip or Safety Injection. Terminate JPM when immediate actions begin to be performed.		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.CC 3.1	**INITIATE** Attachment 1, Continuous Action Summary.	Initiates Attachment 1, Continuous Action Summary.		
	AB.CC 3.2	Is CCW Surge Tank level >58% and rising?	Determines CCW Surge tank level is < 58% and stable from console indication, goes to Step 3.13.		
	AB.CC 313	Is CCW Surge Tank level <42% and dropping?	Determines CCW Surge tank level is >42% and stable from console indication, goes to Step 3.40.		
	AB.CC 3.40	Is either of the following annunciators in alarm? • 21 CC HDR PRESSURE LO • 22 CC HDR PRESSURE LO	Determines both 21 and 22 CC HDR PRESSURE LO annunciators are in alarm.		
	AB.CC 3.41	**START** available CC Pumps as necessary to clear CC HDR PRESSURE LO alarms(s).	Determines no CCW pumps are available to be started to clear CC HDR PRESSURE LO alarms(s).		
		Simulator Operator: Insert **RT-2** **MALF CC0172A** 21 Component Cooling Water Pump Trip			
			Determines last remaining Component Cooling water has tripped.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	AB.CC CAS 1.0	IF AT ANY TIME, any of the validated conditions exist, THEN **STOP** RCP's IAW Attachment 2, Stopping Reactor Coolant Pumps:	Determines Component Cooling Water flow has been lost to all RCPs and goes to Attachment 2, Stopping Reactor Coolant pumps.		

SYSTEM: Component Cooling System

TASK: Take Corrective Action For A Component Cooling Water System Abnormality

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		IF Reactor Trip Breakers are CLOSED, THEN:			
*		A. **TRIP** the Reactor.	Trips the Reactor using either trip handle.		
*		B. **STOP** affected RCP(s).	Depresses stop PBs for 21-24 RCPs.		
		C. Simultaneously **PERFORM** the following:			
		• IF a total loss of Component Cooling Water was the initiating event (including loss of CCW to the CVCS Letdown Heat Exchanger), THEN **ISOLATE** RCS letdown AND **SWAP** Charging Pump suction to the RWST as follows:			
*		a. **CLOSE** 2CV2 AND 2CV277 to isolate letdown.	Depresses the close PB for 2CV2 AND 2CV277 to isolate letdown.		
*		b. **OPEN** 2SJ1 AND 2SJ2 to swap charging pump suction to the RWST.	Depresses the open PB for 2SJ1 AND 2SJ2 to swap charging pump suction to the RWST.		
*		c. **CLOSE** 2CV40 AND 2CV41 to isolate the VCT.	Depresses the close PB for 2CV40 AND 2CV41 to isolate the VCT.		
		• IF a Component Cooling Water LEAK in Containment with 2CC113 AND 2CC215 closed was the initiating event, THEN **CLOSE** the following valves:	Detemines CCW leak in containment was not the initiating event.		
		• **GO TO** 2-EOP-TRIP-1, Reactor Trip or Safety Injection.	Goes to 2-EOP-TRIP-1, Reactor Trip or Safety Injection. Terminate JPM when immediate actions begin to be performed.		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

KGA 4. Initial setup conditions are identified.

KGA 5. Initiating and terminating Cues are properly identified.

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

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

KGA 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 14 (21, 26) Date 6-30-11

KGA 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

_____ 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: Kevin M Riedmuller Date: 6-30-11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

100% power, EOL.
23 CCW pump is C/T for oil leak repair.
TSAS 3.7.3 was entered 6 hours ago.

INITIATING CUE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Control Room Evacuation

TASK: Control charging flow after Control Room evacuation.

TASK NUMBER: 1130070501

JPM NUMBER: 09-01 NRC IP-i

ALTERNATE PATH: [ ]

K/A NUMBER: APE 068 AA1.22

IMPORTANCE FACTOR: RO 4.0 SRO 4.3

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

EVALUATION SETTING/METHOD: In Plant/Simulate

REFERENCES: S2.OP-AB.CR-0001, Rev. 22 Att. 5

TOOLS AND EQUIPMENT: JAM Key

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date: 06-30-11**
Validated By:	**J Pierce, Jr** **SME or Instructor**	**Date: 07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Department**	**Date:** 8/1/11

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: CVCS

TASK: Control charging flow after Control Room evacuation.

TASK NUMBER: 1130070501

INITIAL CONDITIONS:

1. The Control Room has been evacuated in accordance with S2.OP-AB.CR-0001, Control Room Evacuation.
2. A reactor trip from 100% was initiated prior to evacuating the Control Room.

INITIATING CUE:

You have been directed to take local control of charging flow per S2.OP-AB.CR-0001, Control Room Evacuation Att. 5, starting at Step 8.0. Steps 1.0-7.0 have been completed.

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. Take local control of 2CV55.
2. Adjust air operator to change charging flow from current reading to 70 gpm.

SYSTEM: CVCS

TASK: Control charging flow after Control Room evacuation.

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Operator reviews a copy of S2.OP-AB.CR-0001, Att. 5, and proceeds to Charging Pump Alley, El. 84.	Evaluator provides copy of Attachment 5, and a JAM Key. Note: If operator inquires why steps 1.0-7.0 are not signed off, state that another operator performed those steps and still has the procedure with him in the field. Proceeds to Panel 216-2, Chg Pmps FL & PR Inst Pnl. **Note:** Panel 216-2 will alarm in the Control Room. The Control Room must be notified prior to opening this panel, and when it is secured.		
	8.0	**TAKE** local control of 2CV55, Cent Chg Pmp Flow Cont Valve, by performing the following:			
	8.1	**RECORD** the charging flow as indicated on 2FI-128A.	Records charging flow from 2FI-128A, Charging Pump Flow Indication.		
*	8.2	**PLACE** local E/P Bypass Line Selector Valve in Manual.	Locates local E/P Bypass Line Selector Valve and discusses turning valve to Manual.		

SYSTEM: CVCS

TASK: Control charging flow after Control Room evacuation.

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	8.3	Using the MANUAL hand air operator, **ENSURE** that the flow rate as noted in Step 8.1 is being maintained with 2CV55.	Reads flowrate from 2FI-128A, Charging Pump Flow Indication to ensure the flow rate is maintained with 2CV55. **Cue:** Flow rate is the same as that recorded in Step 8.1.		
	8.4	**OBSERVE** local air pressure indicator to verify local control.	Points out local air pressure indicator. **Cue:** Air pressure on local air pressure indicator is 8 psig.		

SYSTEM: **CVCS**

TASK: **Control charging flow after Control Room evacuation.**

*	STEP NO.	STEP (*Denotes a Critical Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	9.0	**NOTIFY** the CRS and STA that Steps 1.0-8.0 of Att. 5 are completed.	Locates page or states that they would walk to HSD Panel, to inform CRS and STA that steps 1-8 of Attachment 5 are completed. Note: May inform CRS and STA that Step 8 is completed, since they didn't perform Steps 1-7. **Cue:** The CRS directs you to adjust charging flow to 70 gpm (Evaluator: or a value not currently read on FI-128A).		
*			Discusses adjusting flow using MANUAL hand air operator. Raises air pressure to lower flow or lowers air pressure to raise flow. (2CV55, Cent Chg Pmp Flow Cont Valve is fail open valve) **Cue:** If candidate states they would LOWER air pressure, then provide feedback that charging flow indicated on FI-128A has risen to 5 gpm above that recorded in Step 8.1. When candidate RAISES air pressure, then provide feedback that charging flow indicated on FI-128A has lowered to 70 gpm.		

Terminating Cue: Adjusts air pressure to match new requested flow rate. State "this JPM is terminated".

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Y 4. Initial setup conditions are identified.

Y 5. Initiating and terminating Cues are properly identified.

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

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

Y 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 22 Date 7/28/11

Y 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

Y 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

1. The Control Room has been evacuated in accordance with S2.OP-AB.CR-0001, Control Room Evacuation.

2. A reactor trip from 100% was initiated prior to evacuating the Control Room.

INITIATING CUE:

You have been directed to take local control of charging flow per S2.OP-AB.CR-0001, Control Room Evacuation Att. 5, starting at Step 8.0. Steps 1.0-7.0 have been completed.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Auxiliary Feedwater
TASK:	Reset Auxiliary Feedwater Pump Turbine Trip Valve MS52
TASK NUMBER:	113 004 05 01
JPM NUMBER:	09-01 NRC IP-j
ALTERNATE PATH:	☐
K/A NUMBER:	APE 068 AA1.02
IMPORTANCE FACTOR:	4.3 (RO) / 4.5 (SRO)

APPLICABILITY:
EO ☐ **RO** ☒ **STA** ☐ **SRO** ☒

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: 8 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	**G Gauding** **Instructor**	**Date:** **06-24-11**
Validated By:	**J Pierce, Jr.** **SME or Instructor**	**Date:** **07-28-11**
Approved By:	**Training Department**	**Date:** 8-2-11
Approved By:	**Operations Department**	**Date:** 8/1/11

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY:

GRADE: ☐ **SAT** ☐ **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **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.

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
		Provide operator with the correct procedure, S2.OP-AB.CR-0001, Rev. 22, Att.13.	Operator obtains procedure.		
			Contacts Control Room and reports that they will be entering 23 AFP Room. **Note**: 23 AFP Room is a High Energy Line Break (HELB) area, and the Control Room must be contacted prior to opening door or access panel to room.		
	1.0	RESETTING 2MS52			
*	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).	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.		

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
*	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.	Points out Hand Trip Lever to ensure full engagement of the Trip Hook and Latch-up Lever. **Cue**: Trip Hook and Latch-up Lever are fully engaged.		
		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 makes contact with Sliding Nut.		

NAME:_____
DATE:_____

SYSTEM: Auxiliary Feedwater
TASK: Reset MS52

# *	STEP No.	STEP (*Denotes Critical Step) (#Denotes Sequential Step)	STANDARD	EVAL S/U	COMMENTS
*	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)	Determines shaft is not spinning.		
	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 of tappet nut and head lever IAW Att. 13, page 2.		

TERMINATING CUE: When report is made that 2MS52 is reset, state JPM is complete. Ensure Control Room is contacted after 23 AFW pump room access door/panel is shut.

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Y 4. Initial setup conditions are identified.

Y 5. Initiating and terminating Cues are properly identified.

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

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

Y 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 22 Date 1/28/12 (7/28/11)

Y 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

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

Y 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: JPS J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

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.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION:	SALEM
SYSTEM:	Control Room Evacuation
TASK:	TCAF Control Room Evacuation (Trip Turbine, Open Exciter Field Breaker, Trip SGFP's)
TASK NUMBER:	1140130401
JPM NUMBER:	09-01 NRC IP-k
ALTERNATE PATH:	[ ]
K/A NUMBER:	APE 068 AA1.04, AA1.23, AA1.27
IMPORTANCE FACTOR:	RO: All >2.5 / SRO: All >2.5

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

EVALUATION SETTING/METHOD: In Plant/ Simulate

REFERENCES: S2.OP-AB.CR-0001, Rev. 22 Att. 8 (checked 6-24-11)

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By:	G Gauding Lead Regulatory Exam Author	Date: 06-24-11
Validated By:	J. Pierce SME or Instructor	Date: 7-28-11
Approved By:	Training Department	Date: 8-2-11
Approved By:	Operations Department	Date: 8/1/11

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: Control Room Evacuation

TASK: TCAF Control Room Evacuation (Trip Turbine, Open Exciter Field Breaker, Trip SGFP's)

TASK NUMBER: 1140130401

INITIAL CONDITIONS:

The control room has been evacuated due to a bomb threat.

INITIATING CUE:

You are assigned to carry out the actions of S2.OP-AB.CR-001, Control Room Evacuation, Attachment 8, Steps 2.0-4.0: Trip the Main Turbine, open the Exciter Field Breaker, Trip both SGFP's. Assume you have the equipment required by 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. Locate and describe TRIP operation of Reset-Normal-Trip Lever at Turbine Front standard. 2. Locate and describe opening of Exciter Field Breaker. 3. At SGFP area, locate and describe at least one method of locally tripping SGFPs.

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM : ABNORMAL PROCEDURES

TASK: TCAF Control Room Evacuation: Trip MT, Open Exciter Field Breaker, Trip SGFP's

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
	1	Operator reviews procedure.	Evaluator provides copy of S2.OP-AB.CR-1, Control Room Evacuation Att. 8.		
*	2	Proceed to Turbine Front Standard, and place the Reset-Normal-Trip Lever in the TRIP position.	Proceeds to turbine front standard, locates Reset-Normal-Trip lever and points out TRIP position.		
*	3	Proceed to Excitation System Control Cubicle and open Generator Exciter Field Breaker.	Proceeds to Turb. Bldg., El. 120, (North End) locates Generator Exciter Field Breaker and discusses opening.		

OPERATOR TRAINING PROGRAM

JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM : ABNORMAL PROCEDURES

TASK: TCAF Control Room Evacuation: Trip MT, Open Exciter Field Breaker, Trip SGFP's

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	4	Locally, trip the following: • 21 SGFP • 22 SGFP	Proceeds to Turb. Bldg., El. 100, and discusses operation of at least one of the ways to locally trip the SGFPs. 1. Pulling out the OS trip plunger 2. Depressing the "Local Emergency TRIP" button under glass on side of SGFP. 3. Depressing the Emergency Stop PB on the Woodward 505 Digital Control panel. 4. Opening Thrust Oil drain valves 21PL73 or 22PL73. (21 SGFP Trip Test Loading Oil ISLN VLV behind panel; same for 22) (**If** they select a different method such as de-energizing COPU, evaluate after JPM complete) **CUE: JPM is complete**		

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

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

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

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

Y 4. Initial setup conditions are identified.

Y 5. Initiating and terminating Cues are properly identified.

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

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

Y 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 22 Date 1/28/92 (7/28/11)

Y 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

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

Y 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: J. PIERCE Date: 7/28/11

SME/Instructor: _____ Date: _____

SME/Instructor: _____ Date: _____

INITIAL CONDITIONS:

The control room has been evacuated due to a bomb threat.

INITIATING CUE: You are assigned to carry out the actions of S2.OP-AB.CR-001, Control Room Evacuation, Attachment 8, Steps 2.0-4.0: Trip the Main Turbine, open the Exciter Field Breaker, Trip both SGFP's. Assume you have the equipment required by the procedure.

Facility: SALEM 1 & 2 Scenario No.: ESG-1 Op-Test No.: 09-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100% power, BOL. 21 AFW pp C/T for oil leak repair. 21 CFCU is C/T. PZR Pressure channel II is O/S for calibration.

Turnover: Maintain 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1	PR0017A	I CRS/RO	Controlling PZR level ch failure (TS)
2	RC0002	C ALL	RCS leak (TS)
3		N ALL	Power Reduction (directed based on RCS leak)
4	RC0002	M ALL	SBLOCA (~100 gpm)
5	RP0342 RP0343	C CRS/RO	Failure of automatic High Head injection
6	AF0182A RP318E2 O/R B606	C CRS/PO	AFW fails to automatically actuate
7	O/R C206	C CRS/PO	SEC fails to reset
8	RC0002	C CRS/RO	SBLOCA escalation (ECCS flow re-initiation in TRIP-3)
			CT's 1. Establish hi head ECCS. 2. Initiate AFW flow. 3.Re-start ECCS pps

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

O/R = Override

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: RCS Leak, Escalating SBLOCA

SCENARIO NUMBER: 09-01 NRC ESG-1

EFFECTIVE DATE: See Approval Date

EXPECTED DURATION: 77 minutes

REVISION NUMBER: 00

PROGRAM:

[ ] **L.O. REQUAL**

[X] **INITIAL LICENSE**

[ ] **STA**

[ ] **OTHER** _____

Revision Summary

New Issue for 09-01 NRC Exam

PREPARED BY:	G Gauding **Lead Regulatory Exam Author**	07-04-11 **Date**
APPROVED BY:	 **Operations Training Manager**	8-2-11 **Date**
APPROVED BY:	 **Facility Representative**	8/1/11 **Date**

I. OBJECTIVES

A. Given a situation with an OHA alarm, the crew will perform action(s) to investigate and correct the cause of the alarm, IAW approved station procedures.

B. Given the unit with multiple OHAs in alarm, the crew will prioritize, validate and then determine a course of action when provided with additional information, IAW approved station procedures.

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

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

E. Given the indications of a reactor coolant system (RCS) malfunction or leak, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.

F. Given the indications of a reactor coolant system (RCS) malfunction or leak, DIRECT the response to the malfunction in accordance with the approved station procedures.

G. Given the unit at power with an RCS leak greater than the Tech. Spec. limit, take corrective action IAW AB.RC-0001.

H. 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.

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

J. 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.

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

L. Given the order or indications of a loss of coolant accident (LOCA), complete actions as the nuclear control operator to PERFORM the immediate response to the LOCA in accordance with the approved station procedures.

M. Given indication of a loss of coolant accident (LOCA), DIRECT the immediate response to the LOCA in accordance with the approved station procedures.

N. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

A. Controlling PZR level channel fails low

B. 17 gpm RCS leak

C. 100 gpm SBLOCA

D. 1800 gpm SBLOCA

III. SCENARIO SUMMARY

A. The crew takes the watch with the unit at 100% power, BOL. 21 AFW pump is C/T for oil bubbler repair. 21 CFCU is C/T after it tripped 1 hour ago. I&C is performing a channel calibration of PZR Pressure Channel II. 2PR7 is shut with power removed to comply with TSAS 3.4.5.b. All bistables associated with PZR Pressure Channel II are tripped IAW S2.IC.-CC.RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II. Orders for the shift are to maintain 100% power.

B. Shortly after taking the watch the controlling PZR level channel will fail low, and a 17 gpm RCS leak will commence ramping in over 12 minutes. The CRS will enter S2.OP-AB.CVC-0001, Loss of Charging. The crew will respond and take manual control of the Master Flow Controller, swap to an operable level channel, restore letdown and PZR level, and return the system to auto. The CRS will enter the appropriate Tech Spec.

C. The crew will diagnose the RCS leak based on indications and alarms. The CRS will enter S2.OP-AB.RC-0001, Reactor Coolant System Leak. The crew will swap to a centrifugal charging pump and quantify the leak. The CRS will identify that the Unidentified RCS leak rate exceeds Tech Spec limits, and a unit shutdown is required.

D. During the power reduction, the RCS leak will worsen to a 100 gpm SBLOCA. The crew will identify that the RCS leak rate exceeds the capacity of the CVCS makeup system. The CRS will direct a Rx trip and Safety Injection be initiated.

E. The High Head ECCS injection valves 2SJ12 and 2SJ13 fail to open on the Safety Injection signal. The crew opens the valves from the control room to establish High Head ECCS injection.

F. AFW fails to initiate based on: 21 AFW pump C/T, 22 AFW pump fails to start on the SEC initiation signal, and 23 AFW pump governor fails to minimum speed. The crew establishes AFW flow by blocking and resetting 2B SEC and starting 22 AFW pump. 23 AFW pump remains unavailable for the remainder of the scenario.

G. The crew performs diagnostics in EOP-TRIP-1, Rx Trip Response, and transitions to EOP-TRIP-3, Safety Injection Termination based on the size of the RCS LOCA. The 2C SEC cannot be reset, and will be deenergized to establish control over C bus equipment.

H. Once ECCS equipment has been removed from service, the SBLOCA will increase in size. The crew will diagnose the inability to maintain PZR level, and start ECCS pumps to maintain PZR and RCS subcooling.

I. The scenario will be terminated when the crew has started sufficient ECCS pumps to maintain PZR level and RCS subcooling .

IV. INITIAL CONDITIONS

____ IC-241 100% power, BOL

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

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	**21 AFW pump C/T.**
___ 11	**21 CFCU C/T.**
___ 12	**2PR7 shut and deenergized.**
___ 13	**S2.IC-CC-RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II, Exhibit 1 signed and on NCO desk or provided to crew for turnover.**
___ 14	**SGBD directed to Condenser placard on 2CC3.**
___ 15	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description	
	1	EVENT ACTION:	MONP254 <10 // CONT ROD BANK C < 10 (RX TRIP)
		COMMAND:	<update as needed>
		PURPOSE:	

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	PR0017A PZR LEVEL CH I (LT459) FAILS H/L	N/A	N/A	N/A	RT-1	0
_____ 02	RC0002 RCS LEAK INTO CONTAINMENT (equiv to 0-4 inches)	N/A	0	00:15:00	RT-1	17
_____ 03	RP0342 2SJ12 FAILS TO AUTO OPEN ON SEC	N/A	N/A	N/A	N/A	
_____ 04	RP0343 2SJ13 FAILS TO AUTO OPEN ON SEC	N/A	N/A	N/A	N/A	
_____ 05	RP318E2 Aux Feed Pump 22 Fails to Start on SEC	N/A	N/A	N/A	N/A	
_____ 06	AN0302 SER 302 FAILS - :E35 2PR2 PROTECTION CH II LOOP UNSAFE/IN TEST	N/A	N/A	N/A	N/A	SER POINT FAILS/OVRD TO ON
_____ 07	AN0328 SER 328 FAILS - :A12 REACTOR PROT SYS CHANNEL II INSTRUMENT LOOP IN TEST	N/A	N/A	N/A	N/A	SER POINT FAILS/OVRD TO ON

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	AF20D 21 AFW PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
_____ 02	PR02D PZR HI PR RX TRP CH 2 PC456A BS	N/A	N/A	N/A	N/A	TRIP
_____ 03	PR13D PZR LO PR BLK SI CH 2 PC456B BS	N/A	N/A	N/A	N/A	TRIP
_____ 04	PR06D PZR LO PR RX TRP CH 2 PC456C BS	N/A	N/A	N/A	N/A	TRIP
_____ 05	PR10D PZR LOW PRESS SI CH 2 PC456D BS	N/A	N/A	N/A	N/A	TRIP
_____ 06	RC02D OT DELTA T TRIP CH II BS (421C)	N/A	N/A	N/A	N/A	TRIP
_____ 07	RC06D OT DELTA T R/BCK CH II BS (421D)	N/A	N/A	N/A	N/A	TRIP
_____ 08	PR35D PORV STOP VALVE 2PR7 TAGGED	N/A	N/A	N/A	N/A	TAGGED
_____ 09	CT191-1D 21 CFCU BKR #1 High Speed 125VDC	N/A	N/A	N/A	N/A	OFF
_____ 10	CT191-2D 21 CFCU BKR #2 High Speed 125VDC	N/A	N/A	N/A	N/A	OFF
_____ 11	CT191-3D 21 CFCU BKR #3 Low Speed 125VDC	N/A	N/A	N/A	N/A	OFF
_____ 12	DG03D DEENERGIZE "C" SEC CABINET	N/A	N/A	N/A	RT-3	YES

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
_____ 01	B606 F DI 23 AUX FEED PUMP-SPEED DECREASE	N/A	N/A	N/A	ET-1	ON
_____ 02	B606 E DI 23 AUX FEED PUMP-SPEED INCREASE	N/A	N/A	N/A	ET-1	OFF
_____ 03	C206 A DI 2C SFGD EMER OPR-EMERG LOADING RESET	N/A	N/A	N/A	N/A	OFF

OTHER CONDITIONS:

	Description

____ 1. None

V. SEQUENCE OF EVENTS

A. State shift job assignments and review scenario objectives.

B. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).

C. Inform the crew "The simulator is running. You may commence panel walkdowns at this time. CRS please inform me when your crew is ready to assume the shift".

D. Allow sufficient time for panel walk-downs. When informed by the CRS that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

1. PZR Level Controlling Channel (LT459) Fails Lo

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

MALF: PR0017A PZR level CH 1 (LT459) Fails Low
Final Value: 0

MALF: RC0002 RCS leak into containment
Final Value: 17
Ramp: 15 minutes

RO announces OHA E-36, PZR HTR OFF LVL LO, and console alarm PZR LO LVL as unexpected, and diagnoses failure of PZR controlling level channel.

RO may place Master Flow Controller in manual and reduce flow to minimize level rise in PZR prior to Abnormal Procedure entry.

CRS enters S2.OP-AB.CVC-0001, Loss of Charging.

CRS directs initiation of Attachment 1, Continuous Action Summary.

RO reports letdown is isolated.

RO reports 23 charging pump is running.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports there is no indication of cavitation.		
	RO reports PZR level channel I has failed low.		
Note: RCP seal injection flow will lower as charging flow is lowered, and CV71 may have to be adjusted to maintain at least 6 gpm seal injection flow to each RCP.	RO takes manual control of charging flow if not previously done, and lowers charging flow to minimize level rise in PZR.		
	RO selects channel III for control, and reports expected clearing of OHA E-36, PZR HTR OFF LVL LO, and console alarm PZR LO LVL.		
	RO reports OHA E20, PZR HTR ON LVL HI as expected due to no letdown flow.		
	RO places control heaters and one group of backup heaters in ON.		
Note: An auto makeup to the VCT may occur depending on how quickly crew restores letdown flow, and is an expected condition.	PO restores letdown by: - Ensuring open 2CV7 - Placing 2CV18 in Manual closed - Opening 2CV18 until close PB extinguishes. - Opening 2CV2 and 2CV277 and placing in auto. - Ensure charging flow 85-90 gpm. - Open a 75 gpm orifice while adjusting 2CV18 to maintain letdown pressure ~300 psig. - When selected orifice is open, place 2CV18 in auto.		
	CRS directs RO to restore charging flow		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	controller to auto when PZR level is restored to program.		
Note: Charging flow should not be lowered lower than ~65 gpm to ensure adequate cooling of letdown flow through the Regen HX and prevent flashing in the Letdown line.	RO manually lowers charging flow to restore PZR level is restored to program.		
	CRS directs PO to remove PZR level channel I from service IAW S2.OP-SO.RPS-0003.		
	CRS enters TSAS 3.3.1.1 action 6.		
	PO verifies PZR Level channel III selected for control, Channel II selected for alarm, and selects PZR level recorder to channel II or III.		
	PO informs CRS that IC support is required to perform remainder of procedure.		
Note: Crew may identify rising 2R11A prior to RMS alarm. CRS should enter S2.OP-AB.RC-0001, Reactor Coolant System Leak, or S2.OP-AB.RAD-0001, Abnormal Radiation upon indication that containment radiation level is rising.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

2. RCS leak

Note: The 2R11A monitor, Containment Particulate, will go into warning at ~8 minutes from leak onset. Warning does not provide annunciation. 2R11A will go into Alarm ~ 11 minutes after leak onset, and will cause OHA A-6 to annunciate.

RO announces unexpected OHA A-6, RMS Trouble.

RO reports 2R11A is in alarm.

Note: Master Flow Controller may be in auto or manual at this point.

CRS enters S2.OP-AB.RC-0001, Reactor Coolant System Leak, or S2.OP-AB.RAD-0001, Abnormal Radiation.

Note: OHA C-2 will annunciate ~13 minutes after RT-1 insertion.

RO reports unexpected OHA C-2, CNTMT SUMP PMP START.

CRS directs initiation of Attachment 1, Continuous Action Summary.

RO reports RCS temperature is >350°F, and the unit is in MODE 1.

RO raises charging flow to determine if PZR level can be maintained stable or rising, and reports that with maximum charging flow, PZR level is dropping slowly.

RO reports a centrifugal charging pump is not running.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO places 2 CFCUs in slow speed and 2 CFCUs in fast speed IAW CAS Step 4.0. RO transfers to a centrifugal charging pump as follows: - Ensures Master Flow Controller in auto. - Shuts 2CV55. - Starts a centrifugal charging pump - Place 23 charging pump speed controller in manual and lowers 23 charging pump speed to minimum while adjusting 2CV55. - Stops 23 charging pump when at minimum flow. - Adjusts 2CV55 to stabilize PZR level. - Maintains RCP seal injection flow 6-12 gpm per pump not to exceed 40 gpm total seal injection flow. RO swaps to 45 gpm letdown orifice if required to stabilize PZR level.		
Note: Alarm is due to the letdown HX CCW TCV 2CC71 opening due to the increased letdown flow, and will clear when 2nd orifice is shut.	RO reports 2CC131 Discharge Flow Lo console alarm when second letdown orifice is placed in service, and reports its clearing when 2nd orifice is removed from service.		
Note: With RCS leak fully ramped in the leakrate is 20 gpm.	RO stabilizes PZR level and estimates RCS leak rate. RO reports PZR level can be maintained stable or rising. RO ensures CVCS makeup system in service.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS directs initiation of S2.OP-ST.RC-0008, RCS Water Inventory Balance. CRS identifies Tech Spec 3.4.7.2.b for RCS unidentified leakage.		
Role Play: When directed by Lead Evaluator, call the CRS as the Operations Director. State" **This is John Garecht. The Shift Manager has just updated me on the status of the Unit 2 RCS leak rate. I want you to have Unit 2 Rx shutdown within the next 2 hours. Commence the Unit 2 shutdown expeditiously**."			
3. Power Reduction	CRS briefs crew on load reduction. CRS enters S2.OP-AB.LOAD-0001, Rapid Load Reduction. CRS directs initiation of Attachment 1, Continuous Action Summary. CRS directs RO and PO to coordinate and initiate a Turbine Load Reduction (at least 1% per minute.) RO calculates boration required for load reduction.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO initiates boration.		
Note: Digital EHC is set up for a SGFP trip to 66% turbine power at 15% per minute. PO must change rate to the rate directed by the CRS.	PO initiates load reduction at rate directed by CRS, and ensures load reduction starts.		
	RO maintains Tavg on program during load reduction by ensuring control rods automatically insert when Tavg-Tref deviation reaches +1.5°F.		
	RO energizes all PZR heaters.		
Proceed to next event after sufficient power reduction has been performed at direction of Lead Evaluator.			

4. SBLOCA

Simulator Operator: Modify MALF RC0002 from 17 to 100 with no ramp or delay on direction from Lead Evaluator.			
	RO reports OHAs E-28 PZR HTR ON PRESS LO and C-38 CFCU LK DET HI.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports PZR pressure lowering. RO reports PZR level dropping faster than expected for the downpower. RO reports PZR level cannot be maintained on program.		
5. Rx Trip, failure of High Head ECCS injection.	CRS directs RO to trip the Rx, confirm the trip, initiate Safety Injection, then perform immediate actions of EOP-TRIP-1. RO trips the Rx using either Trip handle. RO confirms the Rx trip and initiates Safety Injection with either key switch.		
Simulator Operator: Ensure **ET-1** is True upon the Rx trip. This inserts the 23 AFW pump governor failure.	RO performs Immediate Actions for TRIP-1: - Trip reactor - Confirms reactor trip - Trips turbine - Verifies at least one 4KV vital bus energized - Reports SI initiated CRS and RO verify performance of immediate actions.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports AFW status: - 21 AFW pump not available. - 22 AFW pump not running. - 23 AFW pump coasting down with speed demand at zero. RO announces Unit 2 Rx trip, Safety Injection on plant page. PO reports SEC loading is not complete for energized vital buses, and determines 22 AFW pump did not start.		
Note: When the 2B SEC is reset, 22 AFW pump will start due to the lo-lo SG NR signal which is present.	PO blocks and resets 2B SEC.		
CT #1: (E-O--F) **Establish the minimum required AFW flow rate (22E4 lbm/hr) to the SGs before transition out of EOP-TRIP-1.** **SAT_____ UNSAT_____**	PO reports 22 AFW pump is running. PO throttles AFW flow to no less than 22E4 lbm/hr.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 2SJ12 and 2SJ13 have not opened as expected.		
CT #2: (E-O--I) **Establish flow from at least one High Head ECCS pump before transition out of EOP-TRIP-1.** **SAT_____ UNSAT_____**	RO opens 2SJ12 and 2SJ13 to establish high head ECCS injection flow.		
	RO reports 21/22CA330's are shut.		
	RO reports containment pressure has remained less than 15 psig, and will report to CRS if it exceeds 15 psig.		
	RO reports no indication of high steam flow coincident with low steam pressure or lo-lo Tavg.		
	PO reports all 4KV vital busses are energized.		
	RO reports control room ventilation is in Accident Pressurized mode.		
	RO runs 2 switchgear supply and one exhaust fans.		
	RO reports 2 CCW pumps in operation.		
	RO reports cold leg recirc has not been established.		
	RO reports greater than 100 gpm charging flow SI systems charging flowmeter.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports RCS pressure is >1540 psig. PO reports AFW flow is > 22E4 lbm/hr. PO receives permission to throttle AFW flow < 22E4 lbm hr when at least one SG NR level is > 9%, and maintains intact SG NR levels between 9-33%. RO reports all RCPs are running. RO reports RCS Tavg is stable at or trending to 547°F. RO reports both reactor trip breakers are open. RO reports both PZR PORVs are shut and both PORV block valves are open. RO reports all RCPs running and spray valves shut. RO reports RCS pressure is > 1350 psig. RO maintains seal injection flow to all RCPs. PO reports no SGs are depressurizing in an uncontrolled manner or completely depressurized. RO reports no indications of any SGTR. RO reports no radiation monitors in Table F are in warning, alarm, or rising.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports containment pressure remains < 4 psig.		
	RO reports containment sump is <46%.		
	RO reports RCS subcooling is >0°F.		
	PO reports AFW flow is either >22E4 lbm/hr or at least one SG NR level is >9%.		
	RO reports RCS pressure is stable or rising.		
Note: If PZR level is <11% at this point, it should be rising due to ECCS injection flow. CRS will loop back to step 29 until PZR level is > 11%.	RO reports PZR level is > 11%.		
	CRS transitions to EOP-TRIP-3, Safety Injection Termination.		
	RO resets SI and Phase A isolation.		
	RO opens 21/22CA330s.		
	RO reports neither spray valve is failed open.		
	PO resets A SEC, and reports C SEC will not reset.		
Note: 2C SEC will not block because there is no SI present to block.	PO attempts to block 2C SEC, or reports that the block function is unavailable due to SI reset actions already performed.		
	PO reports 2C SEC will not reset.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS dispatches an operator to deenergize 2C SEC.		
Simulator Operator: 2 minutes after being dispatched, insert **RT-3** to deenergize 2C SEC. **REMOTE: DG03D Deenergize 2C SEC**	RO reports OHAs A-29 SEC 2A-2C TEST OR TRBL and A-41 AUX ALM SYS PRINTER as expected due to deenergizing 2C SEC. PO reports all 230V control centers are reset. RO stops all but one centrifugal charging pump. RO reports RCS pressure is rising slowly. RO reports charging pump suction is aligned to the RWST. RO reports 2CV139 and 2CV140 are open. RO closes BIT isolation valves 2SJ4, 2SJ5, 2SJ12, and 2SJ13. RO closes Charging Flow Control Valve 2CV55. RO opens Charging Discharge Valves 2CV68 and 2CV69. RO maintains PZR level >25% by adjusting 2CV55, while maintaining RCP seal injection flow to RCPs.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports PZR level is stable or rising. RO reports RCS pressure > 1540 psig and stable or rising. RO stops 21 and 22 SI pumps, and 21 and 22 RHR pumps. RO reports RCS subcooling >0°F. RO reports PZR level >11%.		
Simulator Operator: Modify RC0002 from 100 to 1800 with no ramp or delay after Step 10 is completed.	RO reports RCS pressure and PZR level are lowering rapidly. RO raises charging flow to maintain PZR level >11%. RO reports that PZR level will not be able to be maintained >11%.		
CRS should start the idle centrifugal charging pump and both SI pumps. RHR pumps may be started since the RCS leak rate will not have been determined. SI pumps may not be started until it is determined that RCS pressure will	CRS directs starting of ECCS pumps.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
lower below the shutoff head of the pumps (~1560 psig).			
	RO starts the idle centrifugal charging pump and both SI pumps.		
CT #3: (FSAR) Start ECCS pumps to restore/maintain RCS subcooling and PZR level. **SAT_____ UNSAT_____**			
Terminate scenario when the idle centrifugal charging pump and both SI pumps have been started.			

VI. SCENARIO REFERENCES

A. Alarm Response Procedures (Various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. Salem FSAR
E. OP-AA-101-111-1003, Use of Procedures
F. S2.OP-AB.CVC-0001, Loss of Charging
G. S2.OP-AB.RC-0001, Reactor Coolant System Leak
H. 2-EOP-TRIP-1, Rx Trip or Safety Injection
I. 2-EOP-TRIP-3, Safety Injection Termination

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 100% RCS BORON: 1150 MWe 1230

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

NA

REACTIVITY PARAMETERS

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

3.7.1.2.a action a for 21 AFW pump. 69 hours remain in LCO action time.

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

S2.IC-CC-RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II.

ABNORMAL PLANT CONFIGURATIONS:

2PR7 shut and power removed to comply with TSAS 3.4.5.b for PZR Pressure Channel II being out of service for channel calibration.

PZR Pressure Channel IV selected for Alarm.

CONTROL ROOM:

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

PRIMARY:

21 CFCU C/T after its high speed breakers tripped 1 hour ago. TSAS 3.6.2.3 action a.
3.4.5.b for PZR Pressure Channel II calibration. 70 hours left in action time.
3.3.1.1 action 6 and 3.3.2.1 action 19 for PZR Pressure Channel II PT-456.

SECONDARY:

21 AFW pump C/T.

RADWASTE:

No discharges in progress

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

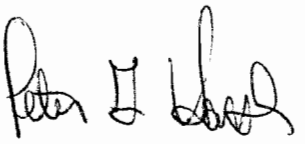
II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...

- 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: 09-01 NRC ESG-1 **REVIEWER:** 

Initials		Qualitative Attributes
	1.	The scenario has clearly stated objectives in the scenario.
	2.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
	3.	The scenario consists mostly of related events.
	4.	Each event description consists of: • 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
	5.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.
	6.	The events are valid with regard to physics and thermodynamics.
	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
	8.	The simulator modeling is not altered.
	9.	All crew competencies can be evaluated.
	10.	The scenario has been validated.
	11.	If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4

SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. (ES-301 Section D.5.d)

Initial		Quantitative Attributes (as per ES-301-4, and ES-301 Section D.5.d)
_____	6	Total malfunctions inserted: 5-8
_____	2	Malfunctions that occur after EOP entry: 1-2
_____	2	Abnormal Events: 2-4
_____	1	Major Transients: 1-2
_____	2	EOPs entered/requiring substantive actions: 1-2
_____	0	EOP contingencies requiring substantive actions: 0-2
_____	3	Crew Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5

ESG CRITICAL TASKS

09-01 NRC ESG-1

CT #1: (E-O--F) **Establish the minimum required AFW flow rate (22E4 lbm/hr) to the SGs before transition out of EOP-TRIP-1.**

BASIS: Failure to establish the minimum required AFW flow rate, under the postulated plant conditions, results in "adverse consequence(s) or a significant degradation in the mitigative capability of the plant."

CT #2: (E-O--I) **Establish flow from at least one High Head ECCS pump before transition out of EOP-TRIP-1**

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

CT #3: (FSAR) **Start ECCS pumps to restore/maintain RCS subcooling and PZR level.**

BASIS: Salem FSAR assumes a minimum of one train of ECCS pumps available for a SBLOCA. When ECCS pumps are secured in EOP-TRIP-3 and a subsequent SBLOCA causes a loss of PZR level (and eventually subcooling), operator action to start ECCS pumps is required to restore the minimum complement of ECCS pumps assumed in the Accident Analysis.

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

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	**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
N	Initiate feed and bleed

Complete this evaluation form for each ESG.

Facility: SALEM 1 & 2 Scenario No.: ESG-2 Op-Test No.: 09-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 70% power, MOL. 25 Service Water pump is C/T for strainer work.

Turnover: Raise power to 75% at 10% per hour, place 3rd Condensate pump I/S, continue power ascension to 90%power.

Event No.	Malf. No.	Event Type*	Event Description
1		N ALL	Raise Power
2	**O/R AG04**	C CRS/PO	In service ABV Exhaust fan trip (TS)
3	**NI0193A**	I ALL	PR NI Channel fails (TS)
4	**BF0105A**	C	21 SGFP oil leak
5	EH0327 O/R B433	R ALL	21 SGFP trip, MT fails to auto runback (PO manually initiates turbine runback, RO uses manual rod control)
6	SG0078B	M ALL	22 SG Tube leak / tube rupture
7	RP0058 RP0059A RP0059B O/R B440 O/R B441 O/R C310 O/R C510	C ALL	ATWT/FRSM
8	CN0086 MS0093	C CRS/PO	Loss of condenser vacuum during SGTR cooldown
			3 CT, insert neg reactivity, isolate rupt SG, cooldown to target temp

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

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: SGFP trip, ATWT/FRSM, SGTR

SCENARIO NUMBER: 09-01 NRC ESG-2 (Modified ESG-905)

EFFECTIVE DATE: See Approval Date

EXPECTED DURATION: 75 minutes

REVISION NUMBER: 01

PROGRAM:

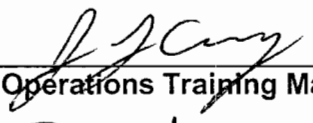
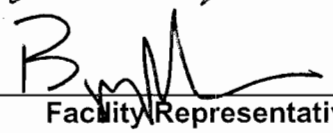
[ ] **L.O. REQUAL**

[X] **INITIAL LICENSE**

[ ] **STA**

[ ] **OTHER** _____

Revision Summary
Modified ESG-0905 as follows:
Initial power level is now 69.5% vs. 90%.
Changed initial conditions so that only 22 Condensate pump is O/S.
Added additional Tech Spec component failure.
Added Main turbine runback failure.
Added 25 SW C/T.

PREPARED BY:	G Gauding **Lead Regulatory Exam Author**	07-04-11 **Date**
APPROVED BY:	 **Operations Training Manager**	8-2-11 **Date**
APPROVED BY:	 **Facility Representative**	8/1/11 **Date**

I. OBJECTIVES

A. Given a situation with an OHA alarm, the crew will perform action(s) to investigate and correct the cause of the alarm, IAW approved station procedures.

B. Given the unit with multiple OHAs in alarm, the crew will prioritize, validate and then determine a course of action when provided with additional information, IAW approved station procedures.

C. Given the unit at power with the generator synchronized to the grid, the crew will perform a power increase to 100% at 10%/hr, IAW S2.OP-IO.ZZ-0004(Q).

D. Given a failure of a power range detector, take corrective action for a power range instrument failure IAW AB.NIS-0001.

E. Given the unit at power and a trip of an operating main feedwater pump, take corrective action IAW AB.CN-0001.

F. 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.

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

H. Given a steam generator tube leak, take corrective action, IAW S2.OP-AB.SG-0001.

I. Given the order or indications of a steam generator tube leak (SGTL), perform actions as the nuclear control operator to RESPOND to the tube leak in accordance with the approved station procedures.

J. Given the order or indications of a steam generator tube leak (SGTL), DIRECT the response to the tube leak, in accordance with the approved station procedures.

K. 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.

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

M. 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 the approved station procedures. Given indication of a steam generator tube rupture (SGTR), DIRECT the response to the SGTR in accordance with the approved station procedures.

N. 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.

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

P. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

A. Raise power

B. PRNI fails high

C. 21 SGFP oil leak/ trip

D. MT fails to auto runback

E. 22 SG Tube leak / rupture

F. ATWT/FRSM

G. Loss of Condenser vacuum during cooldown

III. SCENARIO SUMMARY

A. The crew takes the watch with the unit at 70% power, MOL. 25 SW pump is C/T for strainer work. A Tech Spec 3.0.3 required power reduction was in progress due to declaring both ECCS trains inoperable based on discovery of non 1E rated bearings installed on both Safety Injection pumps during the last refueling outage. The correct documentation paperwork showing that the bearings were actually qualified was found, and the load reduction stopped at 70%.

B. Shortly after the crew assumes the watch, 22 Auxiliary Building Exhaust fan will trip. The crew will start the standby exhaust fan, and the CRS will identify the appropriate Tech Spec.

C. Power Range Nuclear Instrument 2N42 fails high. The crew will determine a load rejection has not occurred and place rod control in manual. The crew will perform actions to remove the failed channel from service. The CRS will identify the appropriate Tech Specs.

D. After the PRNI failure has been addressed, 21 SGFP will develop an oil leak which will lead to its tripping. The Main Turbine will fail to automatically runback, and the crew will manually lower Main Turbine load.

E. A large SGTR will ramp in over 10 minutes following a six minute delay from 21 SGFP trip. The crew will diagnose the tube rupture, and the CRS will order a Rx trip and Safety Injection.

F. The Rx will not trip from the control room, and the crew will enter and perform 2-EOPFRSM-1, response to Nuclear Power Generation. The crew will establish rapid boration and the Rx will be tripped locally.

G. The crew will transition to 2-EOP-TRIP-1, and initiate a Safety Injection if an automatic SI has not yet occurred. The crew will transition to 2-EOP-SGTR-1, Steam Generator Tube Rupture.

H. The crew will identify and isolate the 22 SG. The crew will perform a cooldown to target temperature. During the cooldown, Main Condenser vacuum will be lost, and steam dumping will be shifted from the Main Steam Dumps to the intact SG MS10's.

I. The scenario will be terminated when the crew has demonstrated the ability to maintain RCS temperature below the target temperature.

IV. INITIAL CONDITIONS

____ IC-242 69.5% power, MOL

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

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	**25 SW pump C/T**
___ 11	**SGBD directed to Condenser placard on 2CC3.**
___ 12	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description	
	4	EVENT ACTION: COMMAND: PURPOSE:	monp187 < 540 // HOTTEST INCORE T/C TEMP.0 <update as needed>
	5	EVENT ACTION: COMMAND: PURPOSE:	kb433wad // ROD BANK SELECTOR SW-MAN <update as needed>
	6	EVENT ACTION: COMMAND: PURPOSE:	monp187 < 518 // HOTTEST INCORE T/C TEMP.0 <update as needed>
	7	EVENT ACTION: COMMAND: PURPOSE:	monp299 < 2500 // 21 SGFP SPEED <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	RP318G4 22 Aux Bldg Exhaust Fan Fails to Start on SEC	N/A	N/A	N/A	N/A	
_____ 02	BF0105A 21 STM GEN FEED PUMP TRIP	N/A	N/A	N/A	RT-5	CONTROL OIL PRESSURE LOW
_____ 03	EH0327 TURBINE FAILS TO RUNBACK ON SGFP TRIP	N/A	N/A	N/A	N/A	
_____ 04	SG0078B 22 STEAM GENERATOR TUBE RUPTURE	00:06:00	0	00:10:00	ET-7	900
_____ 05	AN3735 AAS 735 FAILS - :21 TGA SUMP LEVEL HIGH	N/A	N/A	N/A	RT-10	AAS POINT FAILS/OVRD TO ON
_____ 06	AN3736 AAS 736 FAILS - :22 TGA SUMP LEVEL HIGH	00:00:10	N/A	N/A	RT-10	AAS POINT FAILS/OVRD TO ON
_____ 07	AN3737 AAS 737 FAILS - :23 TGA SUMP LEVEL HIGH	00:00:17	N/A	N/A	RT-10	AAS POINT FAILS/OVRD TO ON

_____ 08	AN3738 AAS 738 FAILS - :24 TGA SUMP LEVEL HIGH	00:00:27	N/A	N/A	RT-10	AAS POINT FAILS/OVRD TO ON
_____ 09	AN3739 AAS 739 FAILS - :25 TGA SUMP LEVEL HIGH	00:00:35	N/A	N/A	RT-10	AAS POINT FAILS/OVRD TO ON
_____ 10	MS0093 LOSS OF STM DMP VAC PERMISSIVE	N/A	N/A	N/A	ET-6	
_____ 11	CN0086 LOSS OF MAIN CONDENSER VACUUM	N/A	N/A	N/A	ET-4	100
_____ 12	RP0058 FAILURE OF AUTOMATIC RX TRIP	N/A	N/A	N/A	N/A	
_____ 13	RP0059A FAILURE OF MANUAL RX TRIP	N/A	N/A	N/A	N/A	
_____ 14	RP0059B FAILURE OF MANUAL SI/RX TRIP	N/A	N/A	N/A	N/A	
_____ 15	NI0193B PR CH N42 FAILS HI/LO	N/A	N/A	N/A	RT-3	200

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	RP07D 21 MG SET MOTOR BKR	N/A	N/A	N/A	RT-13	STOP
_____ 02	RP08D 22 MG SET MOTOR BKR	N/A	N/A	N/A	RT-13	STOP
_____ 03	SW39D 25 SW PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
_____ 04	SW40D 25 SW PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
_____ 01	AG04 F DI 22 AUX BLDG EXHAUST FAN STOP	N/A	N/A	N/A	RT-1	ON
_____ 02	B440 F DI REACTOR TRIP BREAKER 'A'-TRIP	N/A	N/A	N/A	N/A	OFF
_____ 03	B441 F DI REACTOR TRIP BREAKER 'B'-TRIP	N/A	N/A	N/A	N/A	OFF
_____ 04	C310 F DI 2E6D PRESSURE HEATER BUS 480V-OPEN	N/A	N/A	N/A	N/A	OFF
_____ 05	C510 F DI 2G6D PRESSURE HEATER BUS 480V-OPEN	N/A	N/A	N/A	N/A	OFF
_____ 06	B433 5 DI ROD BANK SELECTOR SW-AUTO	N/A	N/A	N/A	ET-5	OFF

OTHER CONDITIONS:

	Description
____	1.

V. SEQUENCE OF EVENTS

A. State shift job assignments and review scenario objectives.

B. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).

C. Inform the crew "The simulator is running. You may commence panel walkdowns at this time. CRS please inform me when your crew is ready to assume the shift".

D. Allow sufficient time for panel walk-downs. When informed by the CRS that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

1. Raise Power

Note: RCS Tavg-Tref when simulator is taken out of freeze is ~+0.2 degrees. The rate at which Tavg is lowering is .07°F/min.

Note: ~ 60 pcm will be added per 700 gallons of dilution. Xenon is building in at 60 pcm/hr. An additional 1,185 gallons is required for 10% per hour load ascension, assuming ½ from dilution and ½ from control rods.

CRS briefs crew on power ascension.

RO initiates a 900 gallon dilution.

RO reports console alarm VCT Pressure Hi-Lo when it alarms.

RO operates 2CV243 DEGAS as necessary to lower VCT pressure < 50 psig and maintain < 50 psig.

PO sets up Digital EHC for 10% per hour load change.

PO initiates turbine load ascension and verifies turbine load rises.

RO monitors Tavg and announces expected control rod movement when it occurs.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

2. 22 ABV Exhaust Fan stops

Simulator Operator: Insert **RT-1** on direction from Lead Evaluator during power change.

OVERRIDE: AG04 F DI 22 AUX BLDG EXHAUST FAN STOP

RO reports AIR FLOW LO for 22 ABV Exhaust fan.

RO reports 22 ABV Exhaust fan was running, but is now stopped.

CRS dispatches an operator to check the status of 22 ABV Exhaust Fan breaker 2BX1AX12X.

Role Play: 2 minutes after being dispatched, report as the NEO that breaker 2BX1AX12X is open, and there is nothing abnormal with the breaker, and there is no indication that the breaker tripped.

Note: CRS may direct PO to attempt to restart 22 ABV Exhaust Fan since no apparent reason for it to stop running is present, but it will not start.

CRS directs PO to start 23 ABV Exhaust Fan IAW S2.OP-SO.ABV-0001, Auxiliary Building Ventilation System Operation.

Note: P&L 3.6 identifies that TSAS 3.7.7 is applicable.

RO starts 23 ABV Exhaust fan and ensures

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	AIR FLOW LO alarm clears. CRS enters TSAS 3.7.7 action a for not having all three ABV exhaust fans operable.		
Proceed to next event on direction from Lead Evaluator.			
3. PRNI channel fails			
Simulator Operator: Insert **RT-3** on direction from Lead Evaluator. **MALF: NI0193B PR CH II FAILS HI/LO** **Final Value: 200**	RO announces control rods inserting at 72 steps per minute with no load rejection in progress, requests permission and places Rod Control in manual, and reports rod motion stopped.		
Simulator Operator: Ensure **ET-5** is true when rod control is placed in manual. This inserts the AUTO rod control failure.	CRS directs PO to place the load ascension on hold. PO depresses Hold PB on digital EHC and ensures the load ascension stops.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO announces OHA E-28 PZR HTRS ON PRESS LO (if it alarms depending on how much rod insertion) as expected due to rod insertion and acknowledges bezel indication of 22 B/U htr group energizing in auto.		
Direct entry into S2.OP-AB.NIS-0001 may be performed. Steps are below.	CRS enters S2.OP-AB.ROD-0003, Continuous Rod Motion or S2.OP-AB.NIS-0001, Nuclear Instrumentation System Malfunction.		
	CRS verifies with RO that placing rod control in manual stopped rod movement.		
	RO reports PRNI channel I has failed high.		
Note: There is no direction in S2.OP-AB.ROD-0003 to lower turbine load to restore Tavg.	RO reports outward rod motion is blocked by the Overpower Rod Stop.		
	RO reports rod motion was in the inward direction.		
	RO reports PRNI channel I has failed high.		
S2.OP-AB.NIS-0001 steps	CRS enters S2.OP-AB.NIS-0001, Nuclear Instrumentation System Malfunction.		
	CRS ensures rod control is in manual.		
	If not performed earlier, CRS directs PO to place the turbine load change on hold.		
	RO reports indications of 2N42 PRNI failed high.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS directs PO to remove failed channel from service IAW S2.OP-SO.RPS-0001, Nuclear Instrumentation Channel Trip/Restoration.		
S2.OP-SO.RPS-0001 Steps	PO verifies tripping of associated bistables will not result in an ESF or RPS actuation. PO ensures 2N42 is not selected on 2N45 recorder. CRS enters 3.3.1.1, Action 2 and 6 if not entered previously. PO informs crew prior to taking any action that will cause alarm status change. PO places Detector Current Comparator, Upper Section, switch in PRN42 and ensures the Channel Defeat light illuminates and OHA E-38 is clear. PO places Detector Current Comparator, Lower Section, switch in PRN42 position and verifies Channel Defeat light illuminates and OHA E-46 is clear. PO places Power Mismatch Bypass switch in Bypass PRN42. PO places Rod Stop Bypass switch in Bypass PRN42 and ensures the overpower rod stop for channel I on 2RP4 is illuminated and OHA E-31 is clear. PO places Comparator Channel Defeat switch in N42 and ensures the Comparator Defeat		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	lamp illuminates and OHA E-39 is clear. PO reports to CRS that S2.OP-SO.RPS-001 is complete with the exception of actions required to be taken by I&C technician to trip the associated bistables.		
Note: CRS may elect to leave rods in manual due to step 3.6 of S2.OP-AB.NIS-0001 not being complete until I&C trips bistables. Continue to next event if this is the case.	CRS directs RO to withdraw control rods to restore Tavg to within +/- 1.5 degrees of Tref. RO withdraws control bank D rods in a slow and deliberate manner, and places rod control in Auto when Tavg is within +/- 1.5 degrees of Tref.		
Proceed to next event after rods are restored to auto or at direction of Lead Evaluator.	Crew updates AFD penalty minutes acquired if AFD went out of target band.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

4. 21 SGFP Trip on Low Control Oil Pressure

Simulator Operator: Insert **RT-5** on cue from the Lead Evaluator.

MALF: BF0105A 21 SGFP trip
Final Val = 4
(It will take ~ 90 seconds for reservoir lo level alarm to come in)

PO announces unexpected 21 SGFP Turb Oil Res Lvl HI-LO alarm and refers to ARP.

No report from the field will be made prior to 21 SGFP trip.

CRS dispatches an NEO to investigate the SGFP low oil pressure.

CRS briefs crew on required actions for a SGFP trip with Rods in manual.

Note: This alarm will occur approx 5 min after RT-5 insertion.

PO reports OHA G-23, 21/22 SGFP Deviation and 21 SGFP speed decreasing

CRS directs trip of 21 SGFP to initiate auto runback.

Simulator Operator: Ensure **ET-7** is true when 21 SGFP speed lowers to <2500 rpm. This inserts the SGTR on a 10 minute ramp after a 6 minute delay.

PO trips 21 SGFP.

Note: If Crew trips Reactor proceed to Event 7.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS enters S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality. PO reports the automatic Main Turbine runback has not occurred. PO performs immediate actions by initiating Main Turbine runback by: - Adjusting ramp rate to ≤15%/MIN - Adjusting SETTER-SETTER: ≤66% - Selecting SETTER GO		
Note: Auto rod control is failed.	RO performs immediate actions by manually inserting rods to maintain Tavg on program IAW Attachment 2, Section 3.0. CRS initiates Attachment 1, Continuous Action Summary for S2.OP-AB.CN-0001. PO reports 21 SGFP tripped. RO reports power is > P-10. RO initiates boration as required to maintain control rods above the RIL and restore AFD. PO verifies 22 SGFP speed has risen and is maintaining SG levels. PO reports the Polisher Bypass valves, 21-23CN108s, are open. PO opens the CN47, Heater String Bypass Valve, opens, and shuts 21-24GB4 SG Blowdown Isolation Valves, and 21-24GB185 Blowdown Throttle Valves.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO presses 21 SGFP trip PB if not performed previously and ensures AFP AUTO ARMED bezel lit for 21 SGFP. RO energizes PZR heaters.		
Note: Proceed to next event on RMS alarm for 22 Steam Generator Tube Leak.			
6. 22 Steam Generator Tube Leak			
	RO reports 2R53B for 22 SG in warning, followed shortly by 2R15 alarm.		
Note: CRS will order Rx trip and SI when it is apparent that the tube leak is larger than the capacity of the RCS makeup system.	CRS enters S2.OP-AB.SG-0001, Steam Generator Tube Leak.		
	CRS initiates Attachment 1, Continuous Action Summary. RO reports 2R19B when it alarms.		
Simulator Operator: 3 minutes after being dispatched, insert RT-10 to deenergize TGA sumps.	CRS directs NEO to deenergize the Turbine-Generator Area and Condensate Polishing Sumps.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS directs swapping to a centrifugal charging pump, but orders Manual Rx Trip and SI when PZR level cannot be maintained IAW CAS.		
Note: Proceed to next event when CRS orders a reactor trip.	CRS direct RO to trip the Rx, confirm the Rx trip, then initiate SI IAW CAS of S2.OP-AB.SG-0001.		

7. ATWT / FRSM

	RO attempts to trip the Rx and reports the Rx did not trip.		
	Crew identifies ATWT.		
	RO attempts to trip the Rx with the other trip handle and reports the Rx did not trip.		
	RO attempts to trip the Rx by opening both Rx trip breaker PBs and reports the Rx did not trip.		
	RO attempts to trip the Rx by opening PZR heater bus infeed breakers and reports the Rx did not trip.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports trip not confirmed.		
	RO trips the Main Turbine.		
Note: If the RO attempts to attain a faster rod speed by placing rods in auto, rod motion will stop and rods must be returned to manual and inserted.	RO initiates rod insertion in manual.		
	CRS/RO verify immediate actions of EOP-TRIP-1 are complete.		
CT #1 (FR-S.1-C) Insert negative reactivity into to the core by at least one of the following methods prior to completing step 4 of FRSM-1: • **Insert control rods** • **Initiate Emergency Boration** **SAT_____ UNSAT_____**	CRS enters EOP-FRSM-1, Response to Nuclear Power Generation.		
	PO starts/ensures 21 and 22 AFW Pumps running.		
Note: The earliest AFW should be isolated to 22 SG is at Step 10 of FRSM-1, and then only if at least 1 SG NR level is >9%.	PO reports AFW flow <44E04 lb/hr.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO starts 23 AFW pump. RO starts 21 and 22 charging pumps. RO reports no SI has occurred. RO initiates Rapid Boration by : - Starting both Boric Acid Pumps in Fast Speed; - Opening 2CV175 Rapid borate Stop Valve; - Closing 21/22CV160 BAT Recirc Valves; - Verifies Rapid Boration flow indicated on Rapid Borate flowmeter; - Maintaining charging flow >87 gpm. RO reports PORVs operating as expected for current RCS pressure, and that both PORV block valves are open. RO reports containment isolation valves 2VC5 and 2VC6 are shut. PO performs APPX-3 SI verification when SI occurs.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Simulator Operator: Open the reactor trip breakers 3 minutes after the order is given but no sooner than completion of the Rapid Boration decision step in FRSM-1. Delete **MALFs: RP0058, RP0059A, and RP0059B.** Modify **I/O Overrides B440** and **B441 to ON (opens RTBs)** De-energize Rod Drive MG Sets using **RT-13**: **RP07D = Stop** **RP08D = Stop**	CRS sends NEO to open RTBs, Rod Drive MG Motor and Generator breakers. PO reports all Turbine Stop Valves closed. RO reports when the Reactor is tripped. PO maintains AFW flow >44E4 lbm/hr until at least one SG NR level is > 9%, then throttle AFW flow to maintain SG NR levels 9-33%. CRS sends NEO to isolate dilution paths and PO checks no primary water flow on FI111A. PO reports no faulted SG or uncontrolled cooldown. RO reports no CETs are >1200°F.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO confirms reactor trip by 3 PRNIs <5% and IRNIs SUR negative. CRS directs Chemistry to sample RCS for boron. CRS directs performance of Shutdown Margin. CRS transitions back to TRIP-1 after completing FRSM-1.		
Note: Proceed to next event after transition back to TRIP-1			
5. Steam Generator Tube Rupture			
Evaluators: Log reentry time into TRIP-1 to start clock for critical tasks: TIME: ____:____:	RO verifies reactor and turbine trip.		
	RO reports all 4kV Vital Buses energized. RO reports either: - SI has actuated OR - SI has not actuated, and SI is required by plant conditions. RO initiates SI if auto SI has not occurred. RO announces Unit 2 Reactor Trip, Safety		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	Injection (twice) on PA.		
CT #2 (E-3-A): Isolate AFW to the ruptured SG within 10 minutes of reentry into TRIP-1 and subsequently close 22MS167, 22MS18, 22MS7 AND 22GB4 to isolate the ruptured SG prior to transition to SGTR-3. **TIME: : :** **SAT UNSAT**	PO closes 22AF11 and 22AF21 to isolate AFW flow into 22 SG.		
	PO identifies all SG NR levels >9% and throttles AFW to SGs.		
	PO verifies SEC loading complete for all available equipment on energized 4kV Vital Buses.		
	PO reports proper safeguards valve alignments.		
	PO reports MSLI not required.		
	PO reports all 4KV vital buses are energized.		
	RO reports Control Room Ventilation in Accident Pressurized Mode.		
	RO runs 2 Switchgear Room Supply fans and one exhaust fan.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 2 CCW pumps running.		
	RO reports cold leg recirc has not been established.		
	RO reports greater than 100 gpm charging flow SI systems charging flowmeter.		
	RO reports RCS pressure is >1540 psig.		
	RO/PO verifies AFW flow >22E04 lb/hr or SG level > 9%.		
	RO reports all RCPs are running.		
	RO reports RCS Tavg is stable at or trending to 547°F.		
	RO reports both reactor trip breakers are open.		
	RO reports both PZR PORVs are shut and PORV block valves status.		
	RO reports all RCPs running and spray valves shut.		
	IF RCS pressure is < 1350 psig and ECCS flow is established, then RO stops all RCPs.		
	RO maintains seal injection flow to all RCPs.		
	RO reports no faulted SGs.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports 22 SG NR level is rising in an uncontrolled manner. CRS transitions to EOP-SGTR-1, Steam Generator Tube Rupture. PO reports 22 SG NR level is rising in an uncontrolled manner. PO sets 22MS10 to 1045 psig, and reports 22MS10 is shut.		
SEE CT#2 PREVIOUS PAGE	PO shuts 22MS167, and reports 22MS18, 22MS7, and 22GB4 are shut PO reports 21 or 23 is not the ruptured SG.		
Role Play: 5 minutes after requested, report 2SS327 closed.	CRS dispatches an operator to close 2SS327. PO reports 22 SG is isolated from intact SGs. PO reports 22 SG NR level >9% and that all feedwater flow is isolated to 22 SG. RO reports power is available to 2PR6, and power is deenergized to 2PR7. CRS leaves power deenergized to 2PR7. RO verifies PORV status is correct for current RCS pressure. RO reports 2PR6 is open and 2PR7 is shut. PO reports no SGs are faulted.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO adjusts AFW flow to maintain at least 1 SG NR level > 9%, and all SG NR levels 9-33%. RO/PO reset Safeguards Actuations: • Resets SI • Resets Phase A • Opens 21 & 22CA330 • Resets each SEC • Resets each 230V Control Center. RO stops 21 & 22 RHR pumps. PO reports 22 SG is isolated and >375 psig. CRS dispatches NEO to shift Gland Sealing Steam to Unit 1. PO notifies CRS when 22MS10 starts to open.		
Simulator Operator: Ensure **ET-4** inserts when highest incore thermocouple is less than 540°. **MALF: CN0086** Loss Of Cond Vacuum	CREW commences RCS cooldown with the Steam Dumps using intact SGs to value determined from Table D (503 deg) PO places Steam Dumps in manual. PO adjusts steam pressure valve demand to zero. PO places steam dumps to MS Pressure Control.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO adjusts steam pressure valve demand to 25%.		
Proceed to next event when highest incore thermocouple is less than 540°.	When Tavg low-low is reached, **PO** bypasses Tavg and verifies steam dumps reopen.		
8. Loss of Condenser Vacuum/ Steam Dumps			
	RO reports "DO HI" in alarm as not expected.		
Note: Crew should monitor steam dumps but not swap to MS10s early as this is an increased release to the public.	PO reports OHA G-5 Condenser Vac Lo.		
Note: CRS may implement S2.OP-AB-COND-1 for loss of vacuum.	CRS briefs crew on potential loss of steam dumps with degrading vacuum. CRS dispatches an NEO to look for vacuum leaks.		
Simulator Operator: Insure **ET-6** inserts when CET is <518. **MALF: MS0093** Loss of Stm Dump Vac Permissive	PO reports Steam Dump valves have closed.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS returns to step 15.2 and answers "Steam Dumps not available" PO re-commences cooldown by fully opening 21,23, and 24MS10.		
CT #3 (E-3-B): Establish/ maintain RCS temperature to maintain minimum required subcooling. SAT____ UNSAT____	RO reports hottest CET is < 503°F. PO stops the cooldown and dumps steam as required to maintain temperature < target temperature.		
Terminate scenario when crew has demonstrated the ability to maintain temperature at target temperature.			

VI. SCENARIO REFERENCES

A. Alarm Response Procedures (Various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. OP-AA-101-111-1003, Use of Procedures
E. S2.OP-AB.ROD-0001, Continuous Rod Motion
F. S2.OP-AB.NIS-0001, Nuclear Instrumentation System Malfunction
G. S2.OP-AB.CN-0001, Main Feedwater/Condensate System Abnormality
H. 2-EOP-TRIP-1, Rx Trip or Safety Injection
I. 2-EOP-FRSM-1, Response to Nuclear Power Generation
J. 2-EOP-SGTR-1, Steam Generator Tube Rupture

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 69.5% RCS BORON: 937 MWe 840

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

NA

REACTIVITY PARAMETERS

Power reduction from 100% to 70% at 1% per minute was completed 30 minutes ago.
Power ascension to 100% power will be performed at 10% per hour.
Xenon is building in at 60 pcm per hour.
Reactivity plan for the power ascension is to perform 900 gallon batch dilutions every 30 minutes, while using rod control to maintain AFD and Tavg on program.
Rx fuel is conditioned to 100% power.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

IOP-4, Power Operation Step 5.1.19 is complete.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

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

PRIMARY:

SECONDARY:

Main Turbine power is 71% (PT-505/506 ~537 psig)

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

25 SW pump C/T for strainer work.

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: 09-01 NRC ESG-2 **REVIEWER:**

Initials		Qualitative Attributes
	1.	The scenario has clearly stated objectives in the scenario.
	2.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
	3.	The scenario consists mostly of related events.
	4.	Each event description consists of: • 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
	5.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.
	6.	The events are valid with regard to physics and thermodynamics.
	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
	8.	The simulator modeling is not altered.
	9.	All crew competencies can be evaluated.
	10.	The scenario has been validated.
	11.	If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4

SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. (ES-301 Section D.5.d)

Initial		Quantitative Attributes (as per ES-301-4, and ES-301 Section D.5.d)
_____	7	Total malfunctions inserted: 5-8
_____	1	Malfunctions that occur after EOP entry: 1-2
_____	2	Abnormal Events: 2-4
_____	1	Major Transients: 1-2
_____	2	EOPs entered/requiring substantive actions: 1-2
_____	1	EOP contingencies requiring substantive actions: 0-2
_____	3	Crew Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5

ESG CRITICAL TASKS

09-01 NRC ESG-2

CT #1: (FR-S.1-C) Insert negative reactivity into the core by at least one of the following methods prior to completing the immediate actions of FR-S.1 (FRSM)

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-3-A) Isolate AFW to the ruptured SG within 10 minutes of entry into TRIP-1 and subsequently close 22MS167, 22MS18, 22MS7 and 22GB4 in SGTR-1.

BASIS: Failure to isolate the ruptured SG causes a loss of differential pressure between the ruptured SG and the intact SGs. Upon a loss of differential pressure, the crew must transition to a contingency procedure that constitutes an incorrect performance that "...necessitates the crew taking compensating actions which complicates the event mitigation strategy..."

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 subcriticality 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

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 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-3 Op-Test No.: 09-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100%, EOL. 21 CFCU is C/T.
Turnover: Maintain current power.

Event No.	Malf. No.	Event Type*	Event Description
1	**CC0172B**	C CRS/RO	CCW pump trip (TS) (standby pp fails to auto start)
2	**O/R C808 O/R C805**	C ALL	Loss of 2B 4KV bus (TS)
3		R ALL	Power reduction to <100%.
4	MS0088Cr	M	Steam Leak in containment.
5	RP0058	C RO	ATWT, (auto demand-no trip-manual trip works)
6	MS0090Cr VL0420-423	M ALL	MSLI fails, Multiple SG depressurization,
7	RP0276A,B RP0277A,B	C CRS RO	Auto CS & Phase B isolation fails.
			Recovery of single SG in LOSC-2.
			CTs man init trip, man inti phase B, lower AFW flow to nlt 1E4 lbm/hr

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

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: Loss of 2B 4KV/460V, Steam leak in containment

SCENARIO NUMBER: 09-01 NRC ESG-3

EFFECTIVE DATE: See Approval Date

EXPECTED DURATION: 80 minutes

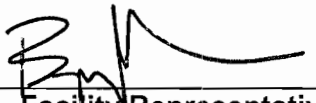
REVISION NUMBER: 00

PROGRAM:

- [ ] **L.O. REQUAL**
- [X] **INITIAL LICENSE**
- [ ] **STA**
- [ ] **OTHER** _____

Revision Summary

New Issue for 09-01 NRC Exam

PREPARED BY:	G Gauding **Lead Regulatory Exam Author**	07-10-11 **Date**
APPROVED BY:	 **Operations Training Manager**	8-2-11 **Date**
APPROVED BY:	 **Facility Representative**	8/1/11 **Date**

I. OBJECTIVES

A. Given a situation with an OHA alarm, the crew will perform action(s) to investigate and correct the cause of the alarm, IAW approved station procedures.

B. Given the unit with multiple OHAs in alarm, the crew will prioritize, validate and then determine a course of action when provided with additional information, IAW approved station procedures.

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 indication 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 a loss of a 4 Kv vital bus, take corrective action, IAW S2.OP-AB.4KV-0002.

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

G. Given indications of a loss or malfunction of a safety related electrical distribution system, DIRECT the response to the loss or malfunction in accordance with the approved station procedures.

H. Given the unit at 100% power with a steam leak, the crew will take corrective action for a steam leak, IAW S2.OP-AB.STM-0001

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 indication of excessive steam flow, DIRECT the response to excessive flow in accordance with the approved station procedures.

K. 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.

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

M. 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.

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

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

P. Given indication of a loss of secondary coolant, DIRECT the response to the loss of secondary coolant, in accordance with the approved station procedures.

Q. Given the order or indications of a multiple steam generator depressurization, perform actions as the nuclear control operator to RESPOND to the generator depressurization in accordance with the approved station procedures.

R. Given indication of a multiple steam generator depressurization, DIRECT the response to the generator depressurization in accordance with the approved station procedures.

S. Given the order or indications of excessive containment pressure, perform actions as the nuclear control operator to RESPOND to the excessive pressure in accordance with the approved station procedures.

T. Given indication of excessive containment pressure, DIRECT the response to the excessive pressure in accordance with the approved station procedures.

U. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

A. 22 CCW pump trip

B. Loss of 2B 4KV/460V bus (EDG energizes)

C. Steam leak in containment

D. Steam rupture in containment with failure of MSLI.

E. Recovery of single SG in LOSC-2

III. SCENARIO SUMMARY

A. The crew takes the watch with the unit at 100% power, EOL. 21 CFCU is C/T after it tripped 1 hour ago. Orders for the shift are to maintain 100% power.

B. Shortly after assuming the watch, 22 CCW pump will trip, with no auto start of the standby pump. Operators will take manual control and start 23 CCW pump. The CRS will enter TSAS 3.7.3 for less than 2 operable CCW loops.

C. Once the CCW pump Tech Spec has been identified, 2B 4KV vital bus infeed breakers will open, along with the 4KV-460V tie breaker. 2B EDG will start and load 2B Vital bus in SEC MODE II*, Single Vital Bus Undervoltage. The crew will respond to stabilze the plant IAW S2.OP-AB.4KV-0002, Loss of 2B 4KV Vital Bus. 22 AFW pump will start, and Rx power will rise above 100% power. 22 AFW pump will not be able to be stopped from the control room, nor will the 21 or 22 AF21 valves respond if AFW flow from 22 AFW pump is attempted to be lowered. The crew will perform a power reduction to less than 100% power. The CRS will identify the appropriate Tech Spec.

D. Once power has been reduced to < 100% power, a small steam leak in containment will ramp in over 5 minutes. The crew will identify changing containment conditions, and respond IAW S2.OP-AB.STM-0001, Excessive Steam Flow. Once the need for a unit shutdown is made, the steam line will rupture in containment.

E. The Rx will not automatically trip, and will be tripped by the crew. Auto and manual MSLI fails to shut the MSIV's. Containment Spray and Phase B isolation fail to actuate and will be manually initiated.

F. The crew will transition to 2-EOP-LOSC-1, Steam Generator Depressurization, then 2-EOP-LOSC-2 for Multiple Steam Generator Depressurization.

G. The crew will perform 2-EOP-FRCE-1, Response to Excessive Containment Pressure to ensure containment cooling systems are in correct lineup.

H. While in 2-EOP-LOSC-2, a single SG MS167 will be locally shut, and the crew will take the CAS action to transition to EOP-LOSC-1.

I. The scenario will be terminated when the crew has transitioned back to 2-EOP-LOSC-1.

IV. INITIAL CONDITIONS

____ IC-243 100% power, EOL

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

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	**21 CFCU C/T.**
___ 11	**SGBD directed to Condenser placard on 2CC3.**
___ 12	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description	
	3	EVENT ACTION: COMMAND: PURPOSE:	ka604dmm // 23 CC PUMP-MANUAL DOR KA604PBM <update as needed>
	5	EVENT ACTION: COMMAND: PURPOSE:	ka604dmm // 23 CC PUMP-MANUAL DOR QA604AWM <update as needed>
	7	EVENT ACTION: COMMAND: PURPOSE:	ka604dmm // 23 CC PUMP-MANUAL DOR QA604DBM <update as needed>
	9	EVENT ACTION: COMMAND: PURPOSE:	MONP254 <10 // CONT ROD BANK C < 10 (RX TRIP) DOR KB515LCP -1 0 <update as needed>
	11	EVENT ACTION: COMMAND: PURPOSE:	MONP254 <10 // CONT ROD BANK C < 10 (RX TRIP) DOR KB515PNP <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	CC0172B 22 COMPONENT COOLING PUMP TRIP	N/A	N/A	N/A	RT-1	
_____ 02	EL0156 LOSS OF 460/230V INFD BKR 2B4D	N/A	N/A	N/A	RT-3	
_____ 03	MS0088Cr 23 Main Steam Line Leak Inside Cont BEFORE orifice	N/A	0	00:05:00	RT-5	1.5
_____ 04	MS0090Cr 23 Main Steam Line Leak Inside Cont AFTER orifice	N/A	N/A	N/A	RT-7	80
_____ 05	RP0058 FAILURE OF AUTOMATIC RX TRIP	N/A	N/A	N/A	N/A	
_____ 06	VL0420 21MS167 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	95.211
_____ 07	VL0421 22MS167 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	95.211
_____ 08	VL0422 23MS167 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	95.211
_____ 09	VL0423 24MS167 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	95.211

_____ 10	RP0276A AUTO PHASE B FAILS TO ACT, TRN	N/A	N/A	N/A	N/A	
_____ 11	RP0276B AUTO PHASE B FAILS TO ACT, TRN	N/A	N/A	N/A	N/A	
_____ 12	RP0277A AUTO CNT SPRY FAILS TO ACT,TRN	N/A	N/A	N/A	N/A	
_____ 13	RP0277B AUTO CNT SPRY FAILS TO ACT,TRN	N/A	N/A	N/A	N/A	
_____ 14	AF0181B 22 AUX FEEDWATER PUMP TRIP	N/A	N/A	N/A	ET-9	

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	CT191-1D 21 CFCU BKR #1 High Speed 125VDC	N/A	N/A	N/A	N/A	OFF
_____ 02	CT191-2D 21 CFCU BKR #2 High Speed 125VDC	N/A	N/A	N/A	N/A	OFF
_____ 03	CT191-3D 21 CFCU BKR #3 Low Speed 125VDC	N/A	N/A	N/A	N/A	OFF

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
_____ 01	C808 F DI 24BSD 2B VITAL BUS FEEDER-OPEN	N/A	N/A	N/A	RT-3	ON
_____ 02	C805 F DI 23BSD 2B VITAL BUS FEEDER-OPEN	N/A	N/A	N/A	RT-3	ON
_____ 03	B512 F DI 22 AUX FEED PUMP-STOP	N/A	N/A	N/A	N/A	OFF
_____ 04	A604 A LO 23 CC PUMP - AUTO	N/A	N/A	N/A	N/A	ON
_____ 05	A604 B LO 23 CC PUMP - MANUAL	N/A	N/A	N/A	N/A	OFF
_____ 06	A604 E DI 23 CC PUMP - START	N/A	N/A	N/A	N/A	OFF
_____ 07	B515 D DI 21AF21 CLOSE	N/A	N/A	N/A	N/A	OFF
_____ 08	B515 F DI 22AF21 CLOSE	N/A	N/A	N/A	N/A	OFF

OTHER CONDITIONS:

	Description
_____ 1.	None

V. SEQUENCE OF EVENTS

A. State shift job assignments and review scenario objectives.

B. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).

C. Inform the crew "The simulator is running. You may commence panel walkdowns at this time. CRS please inform me when your crew is ready to assume the shift".

D. Allow sufficient time for panel walk-downs. When informed by the CRS that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

1. **22 CCW pump Trip**

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

MALF: CC0172B 22 Component Cooling Pump Trip

RO announces unexpected alarms:

- 22 CCW pump trip
- Thermal Barrier Discharge Flow Low
- 21/22CC header pressures low
- OHA's D20-23 RCP BRG CLG WTR FLO LO

PO reports standby CCW pump did not auto start.

CRS directs PO to manually start 23 CCW pump.

Simulator Operator:
Ensure ET's 3, 5, & 7 are TRUE when 23 CCW pump manual PB is depressed. This deletes the overrides which made 23 CCW pump look like it was in Auto when it was in Manual.

PO places 23 CCW pump in manual, and starts 23 CCW pump.

PO reports all alarms associated with 22 CC pump trip have cleared.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS dispatches personnel to investigate 22 CCW pump trip.		
Note: An entry condition for S2.OP-AB.CC-001 is CC header low pressure. Starting the standby pump will restore CCW header pressure, and entry into AB.CC is not required. The steps for AB.CC are listed here **if** the CRS enters the procedure. Step 3.44 is a procedural loop that directs CRS to return to step 3.2 for rediagnosis after CCW header pressure is restored or confirmed.	CRS enters S2.OP-AB.CC-001, Component Cooling Abnormality, and directs initiation of Attachment 1, Continuous Action Summary.		
	PO reports Surge Tank level is neither rising nor lowering.		
	PO reports CCW header low pressure alarm status.		
IF dispatched to remove control power from 22 CCW pump, call control room 2 minutes after being dispatched for a first check, then use REMOTE CC25D to OFF to deenergize 22 CCW pump control power.	If CCW pump not started previously, then PO will start 23 CCW pump.		
	PO reports CC HDR PRESSURE LO alarms are clear		
	PO reports CCW HX temps not high or rising.		
Role Play: 2 minutes after being dispatched to breaker, report overcurrent flags are tripped for 22 CCW pump 4KV breaker.			
Role Play: 3 minutes after being dispatched to 22 CCW pump, report that there is nothing obviously wrong with 22 CCW pp.	CRS enters TSAS 3.7.3 for only one operable CCW loop.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Continue to next event on direction from Lead Evaluator.			
2. UV on 2B 4KV vital bus with loss of 2B 460/230V vital bus.			
Simulator Operator: Insert **RT-3** on direction from Lead Evaluator. **MALF: EL0156 Loss of 460/230V Infeed Bkr 2B4D** **O/R: C808 OVDI 24BSD 2B Vital Bus Feeder-Open Final Value: ON** **O/R: C805 OVDI 23BSD 2B Vital Bus Feeder-Open Final Value: ON**	RO/PO announce multiple OHA and Console alarms.		
Note: The Full Core Display Rod Bottom lights will all illuminate and IRPI indication will go to zero.	Crew diagnoses the loss of 2B 4KV vital bus, and 2B EDG is loading in MODE II* (Single Vital Bus UV).		
Note: The 2B4D 460V breaker open bezel and 22 CCW pump stop bezel will flash continuously,			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
and are unable to be silenced until control power is removed from the breakers. **Note:** The 2B4D 460V breaker should have remained shut during the SEC loading sequence, but has tripped open.			
	CRS enters S2.OP-AB.4KV-0002, Loss of 2B 4KV Vital Bus.		
Note: Rx power rises above 100% with the addition of cold AFW. When the crew determines a power reduction must be performed, go to steps on page 16 of this guide.			
	CRS directs initiation of Attachment 1, Continuous Action Summary. CRS dispatches an operator to monitor 2B EDG. RO reports 2SW26 is open based on having no power to close it, and Main Turbine and TGA parameters related to SW cooling water are stable, and dispatches an operator to locally check position.		
IF dispatched to remove control power from 22 CCW pump, call control room 2 minutes after being dispatched for a first check, then use REMOTE CC25D to OFF to deenergize 22 CCW pump control power.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
IF dispatched to remove control power from breaker 2B4D, call control room 2 minutes after being dispatched for a first check, then use REMOTE ED53D to OFF to deenergize breaker 2B4D control power.			
	RO reports 21 charging pump was not supplying seal injection and charging flow.		
	RO reports 22 RHR pump was not providing core cooling.		
	PO reports 2B vital bus is energized from 2B EDG.		
	RO reports OHA E-20 PZR HTR ON LVL HI when it annunciates due to 21 charging pump running.		
	PO resets emergency loading for 2B EDG.		
	PO resets 2B 230V control center.		
	PO reports 2SW26 is open based on having no power to close it, and Main Turbine and TGA parameters related to SW cooling water are stable.		
	CRS directs stopping of loads being powered from 2B EDG:		
	PO stops 24 SW pump based on 4 SW pumps in service.		
	RO stops 21 charging pump based on 23		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	charging pump in service.		
Note: Charging flow will lower to ~ 65 gpm when 21 charging pump is secured.	RO adjusts charging flow as required to maintain 6-12 gpm seal injection flow to each RCP, and not exceed 40 gpm total seal injection flow. RO reports letdown did not isolate. PO reports stable SG levels. PO depresses 22 AFW pump start PB. RO opens 21-24SS94s. CRS determines if SGBD is to be restored. PO restores SGBD to service if required. RO/PO depresses 22 AFW pump stop PB and reports 22 AFW pump remains in service. If CRS directs PO to close 21AF21 and 22AF22, PO reports 21AF21 and 22AF22 remain open.		
IF directed to locally open 22 AFW pump breaker, do NOT open it unless the power reduction has been performed. IF power reduction to < 100% power has been performed, AND direction to locally open breaker has been given, then: 1. Delete I/O B512 for 22 AFW pump Stop PB.	CRS dispatches personnel to 22 AFW pump breaker.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
2. Open 22 AFW pump breaker with REMOTE AF28D to TRIP.			
3. Power Reduction to less than 100% power.	CRS directs PO to initiate a power reduction. RO calculates boration required for power reduction, and initiates boration. PO initiate turbine load reduction to power specified by CRS at directed rate, and ensures load reduction starts. PO ensures load reduction stops at the specified level, and sets digital EHC up for the SGFP runback (66% @15%/minute).		
Note: Time considerations may preclude identification of all Tech Specs associated with the B Bus probable. Post scenario query may be necessary for all Tech Spec identifications.	CRS enters TSAS **3.6.2.3** action b for 3 CFCUs inoperable (21 C/T, 22 and 24 have no power.) CRS enters TSAS **3.6.1.1** for Containment Integrity based on 2SW26 being inoperable. CRS enters TSAS **3.8.1.1** for off-site power to 4KV vital bus. CRS enters TSAS **3.8.2.1** for loss of power to 4KV/460V vital buses. CRS enters TSAS **3.9.12** for less than full complement of FHV fans operable. CRS enters TSAS **3.4.5** for loss of power to PORV Block valve 2PR7. CRS enters **3.8.2.3** and **3.8.2.5** for 125V and 28VDC battery chargers.		
Continue to next event at lead Evaluators direction.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment

4. Steam Leak in Containment

Simulator Operator: Insert **RT-5** on direction from Lead Evaluator.

MALF: MS0088Cr Main Steam Line Leak Inside Containment
Ramp: 5 minutes
Final Value: 1.5

RO reports CFCU leak detection HI, as unexpected.

RO reports rising level on 23 and 25 CFCU leak detection.

RO reports rising containment pressure, and Containment Pressure High console alarm.

PO determines no rise in CNTMT radiation and that a steam leak is inside containment based on rising containment pressure.

CRS enters S2.OP.AB.STM-0001, Excessive Steam Flow.

Simulator Operator: Based on rate of containment pressure rise CRS may decide to trip reactor.
IF CRS announces his intention of tripping the Rx, insert **RT-7** prior to trip direction with concurrence of Lead Evaluator.

CRS directs initiation of Attachment 1 Continuous Action summary.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Malf: MS0090Cr 23 Main Stm Line Leak **Final Value: 80**			
	PO verifies EHC system operating correctly, and MS10s and Steam Dumps are closed.		
Simulator Operator: Once a rate and plan is determined by the CRS, or at Lead Evaluators direction, then enter **RT-7**. **Malf: MS0090Cr 23 Main Stm Line Leak** **Final Value: 80**	CRS determines a shutdown is required and plans rate and reactivity management. RO calculates boration required.		
Note: It takes ~ 8 seconds from the insertion of RT-7 for the automatic Rx trip signal to be generated.			
CT#1 (E-0-A) Manually trip the reactor from the control room prior to SG dryout **SAT_____ UNSAT_____**	RO reports demand for RX trip F Window annunciates, and initiates a manual reactor trip and informs CRS of ATWT.		
	CRS directs MSLI and verification of Safety Injection when RX trip is confirmed. RO reports MSLI failed and reports SI has auto initiated, and backs up SI initiation.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO continues with Immediate Actions of EOP-TRIP-1, Rx Trip or Safety Injection: - Trips Turbine - Reports all Vital AC buses energized - Reports SI actuated After Immediate Actions of EOP-TRIP-1 are completed, CRS may order PO to attempt MSLI isolation at 2CC3 and 2CC2 controls (fast and slow close). CRS/RO verify immediate actions of EOP-TRIP-1 are complete by performing verification of immediate action steps.		
Note: STA will arrive in the control room 10 minutes after being called to initiate monitoring of CFSTs.	RO announces Rx trip and Safety injection.		
Note: With <u>all</u> SGs faulted, AFW flow should not be isolated to <u>any</u> SG.	PO throttles AFW flow to no less than 22E4 lbm/hr with CRS concurrence. PO reports SEC loading is not complete for A and B vital buses. Reports A bus is 21 AFW pump and 21 CFCU which are both C/T. Reports B bus is 2B4D breaker and 22 ABV Supply fan. PO reports all available equipment started. PO reports 21 and 23 AFW pumps are operating. RO reports numerous safeguards valves have failed to realign due to no power available from		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	2B 460/230V buses, but reports that all valves have a redundant valve in the flowpath that has shut. CRS dispatches personnel to realign safeguards valves which have not aligned to their safeguards positions. RO reports 21 and 22CA330s are shut.		
CT#2 (E-0-E) Manually initiate Phase B and Spray Actuation before transition from Step 11 of 2-EOP-TRIP-1. **SAT____ UNSAT____**	RO reports containment pressure is > 15 psig. RO reports Phase B and Containment Spray have not automatically initiated. RO manually initiates CS and Phase B, stops RCPs, and verifies Phase B valve alignments. RO reports High Steam Flow SI status and failure of MSLI to shut MS167s.		
Role Play: Respond when contacted that you will assemble a team of operators and mechanics and attempt to shut the valves you were directed to shut. **If** CRS dispatches an NEO directly to attempt closure of any MS167, state that you will report to the WCC to pick up a Safety Man.	CRS contacts WCC to assist in closing MS167s locally. PO reports all 4KV vital busses are energized.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports CAV is in Accident Pressurized mode.		
Note: The 2C SEC must be blocked and reset to allow start of 23 switchgear supply fan.	RO runs 2 switchgear room supply fans and 1 exhaust fan.		
	RO reports 2 CCW pumps are running.		
	RO reports correct ECCS pump alignment and expected flows for RCS conditions.		
Note: PO should have lowered AFW flow to as close to 22E4 lbm/hr as possible.	PO reports AFW flow is >22E4 lbm/hr, and maintains total AFW flow >22E4 lbm/hr.		
	RO reports all RCPs are stopped.		
	PO reports RCS temperature is not being controlled, and MSLI has failed to close any MS167.		
	RO reports both reactor trip breakers are open.		
	RO reports both PZR PORVs are shut and both Block valves are open.		
	PO reports all SG pressures lowering in an uncontrolled manner or completely depressurized.		
	CRS transitions to EOP-LOSC-1, Loss of Secondary Coolant.		
Timing of scenario will determine when FRCE Red or Purple path is	STA reports Red or Purple path on Containment environment.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
reported by the STA. When FRCE transition is made, go to FRCE steps on page 24.			
	CRS transitions to EOP-FRCE-1, Response to Excessive Containment Pressure.		
LOSC-1 steps begin here.	PO reports all MS167s are open.		
Role Play if not previously performed: Respond when contacted that you will assemble a team of operators and mechanics and attempt to shut the valves you were directed to shut. **If** CRS dispatches an NEO directly to attempt closure of any MS167, state that you will report to the WCC to pick up a Safety Man.	CRS dispatches personnel to shut 21-24MS167s if not previously performed.		
	PO reports all SG pressures lowering in an uncontrolled manner or completely depressurized.		
	CRS transitions to EOP-LOSC-2, Multiple Steam Generator Depressurization.		
LOSC-2 steps begin here	PO ensures all BF19s, BF40s, BF13s, MS10's, MS7s, MS18s, and GB4s are shut, and reports all MS167s remain open.		
	CRS dispatches operators to close MS167s one loop at a time if not previously dispatched.		
Note: When SGs are completely depressurized, 23 AFW pump will slow down due to inadequate	CRS determines 23 AFW pump is needed to maintain SG levels.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
steam supply. If 23AF21 and 24AF21 were shut earlier in scenario, they will have to be opened to establish AFW flow.			
	CRS directs performance of Shutdown Margin monitoring.		
	RO reports RCS cooldown rate is > 100°F/hr.		
CT#3 (FRCE Bases) Reduce AFW to no less than 1E4 lbm/hr per SG prior to exiting FRCE-1. **Note:** Can be performed in LOSC-2 or FRCE-1, but must be completed prior to exiting FRCE-1. **SAT UNSAT**	PO minimizes AFW flow to all SGs while maintaining a minimum of 1E4 lbm/hr to each SG.		
	RO reports RCS Thot status.		
Note: Once the SGs have completely depressurized, RCS pressure will rapidly rise to the PZR PORV setpoint.	RO reports all RCPs stopped.		
	RO reports when RCS pressure is being controlled by automatic PZR PORV cycling.		
Simulator Operator: Modify the MALF associated with the MS167 the CRS has directed be closed first **from 95.1 to 0,** or if no specific loop has been selected, delete the MALF associated with the loop which has the highest SG pressure. MALFS:			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
VL0420 21MS167 fails to position VL0421 22MS167 fails to position VL0422 23MS167 fails to position VL0423 24MS167 fails to position			
	PO reports selected MS167 valve is shut.		
Note: IF step 8 is reached prior to identification of MS167 shut and SG pressure rising, the crew will perform SI reduction steps 8-20 before transitioning to LOSC-1.	PO reports selected SG pressure is rising.		
	CRS transitions to LOSC-1 based on a single SG pressure rise.		
FRCE-1 Steps begin here.	PO verifies Phase A isolation valve shut and 2VC5 and 2VC6 shut. RO reports: - Containment pressure > 15 psig - LOCA-5 not in effect - Containment Spray in service - Phase B isolation valves shut - RCPs stopped. RO reports CFCU status: - 21 CFCU C/T. - 22 and 24 CFCU have no power to fans, but SEC shut the respective 460V Low Speed breakers, and SW is being supplied to CFCUs. - 23 and 25 CFCU running normally in Low Speed.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports MSIVs remain open. PO minimizes AFW to all SGs while maintaining at least 1E4 lbm/hr per SG.		
Simulator Operator: Once AFW flow has been minimized, **Modify the MALF** associated with the MS167 the CRS has directed be closed first **from 95.1 to 0,** or if no specific loop has been selected, delete the MALF associated with the loop which has the highest SG pressure. MALFS: VL0420 21MS167 fails to position VL0421 22MS167 fails to position VL0422 23MS167 fails to position VL0423 24MS167 fails to position	PO verifies all BF19s, BF40s, and BF13s are shut or dispatches operators to locally shut them. PO reports selected MS167 valve is shut. PO reports selected SG pressure is rising. PO maintains at least 1E4 lbm/hr to each SG. CRS transitions to procedure in effect (LOSC-1 or 2) STA reports RED path on Heat Sink CSF after PO reduces AFW flow.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	CRS transitions to EOP-FRHS-1, Response to Loss of Secondary Heat Sink, and verifies it was operator action that lowered AFW flow less than 22E4 lbm/hr, and returns to procedure in effect (LOSC-1 or LOSC-2).		
Terminate scenario after the transition to LOSC-1 on rising SG pressure has been made.			

VI. SCENARIO REFERENCES

A. Alarm Response Procedures (Various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. Salem FSAR
E. OP-AA-101-111-1003, Use of Procedures
F. S2.OP-AB.CC-0001, Component Cooling Abnormality
G. S2.OP-AB.4KV-0002, Loss of 2B 4KV Vital Bus
H. S2.OP-AB.STM-0001, Excessive Steam Flow
I. 2-EOP-TRIP-1, Rx Trip or Safety Injection
J. 2-EOP-LOSC-1, Loss of Secondary Coolant
K. 2-EOP-LOSC-2, Multiple Steam Generator Depressurization
L. 2-EOP-FRCE-1, Response to Excessive Containment Pressure
M. 2-EOP-FRHS-1, Loss of Secondary Heat Sink

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 100% RCS BORON: 19 MWe 1230

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

NA

REACTIVITY PARAMETERS

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

21 CFCU C/T after its high speed breakers tripped 1 hour ago. TSAS 3.6.2.3 action a.

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

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

PRIMARY:

SECONDARY:

RADWASTE:

No discharges in progress

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: 09-01 NRC ESG-3 **REVIEWER:** Robert Bloss

Initials	Qualitative Attributes
	1. The scenario has clearly stated objectives in the scenario.
	2. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
	3. The scenario consists mostly of related events.
	4. Each event description consists of: • 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
	5. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.
	6. The events are valid with regard to physics and thermodynamics.
	7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
	8. The simulator modeling is not altered.
	9. All crew competencies can be evaluated.
	10. The scenario has been validated.
	11. If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
	12. ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4

SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. (ES-301 Section D.5.d)

Initial		Quantitative Attributes (as per ES-301-4, and ES-301 Section D.5.d)
JJ	6	Total malfunctions inserted: 5-8
JJ	1	Malfunctions that occur after EOP entry: 1-2
JJ	3	Abnormal Events: 2-4
JJ	2	Major Transients: 1-2
JJ	1	EOPs entered/requiring substantive actions: 1-2
JJ	1	EOP contingencies requiring substantive actions: 0-2
JJ	3	Crew Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5

ESG CRITICAL TASKS

09-01 NRC ESG-3

CT#1 (E-0-A) Manually trip the reactor from the control room prior to SG dryout

Basis: Failure to manually trip the reactor causes a challenge to the subcriticality CSF beyond that irreparably introduced by the postulated conditions. Additionally, it constitutes an "incorrect performance that necessitates the crew taking compensating action which complicates the event mitigation strategy and demonstrates the inability of the crew to recognize a failure of the automatic actuation of the RPS."
For a specific scenario, select a parameter that is related to the initial trip initiation signal and that is supported by analysis as being safety significant... a candidate for a safety-significant parameter that can be developed into a performance standard is SG wide-range water level. (Footnote 3.d)

CT#2 (E-0-E) Manually initiate Phase B and Spray Actuation before transition from Step 11 of 2-EOP-TRIP-1.

Basis Failure to actuate the minimum required complement of containment cooling equipment under the postulated conditions constitutes a "demonstrated inability by the crew to recognize a failure/incorrect auto actuation of an EFS system or component." In this case, the minimum required complement of containment cooling equipment can be manually actuated from the control room. Therefore, failure to manually actuate the minimum required complement of containment cooling equipment also represents a "demonstrated inability by the crew to effectively direct/manipulate ESF controls that would lead to violation of the facility license condition."

CT#3 (FRCE Basis) Reduce AFW to no less than 1E4 lbm/hr per SG prior to exiting FRCE-1.

Basis Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable severe challenge to the integrity CSF. Also failure to perform the critical task increases the challenges to the subcriticality and the containment CSFs beyond those irreparably introduced by the postulated plant conditions. Thus, failure to perform the critical task constitutes "demonstrated inability by the crew to take an action or combination of actions that would prevent a challenge to plant safety" (con't next page)

ATTACHMENT 5

ESG CRITICAL TASKS

The standard which has been applied to this CT in this scenario encompasses the reason for minimizing AFW flow to 1E4 lbm/hr in FRCE with multiple faulted SGs. The reason this is done is to prevent thermal shock conditions to SG components if the SG was allowed to dry out, and then subsequently have AFW flow reinitiated. This meets the definition given on Attachment 2 of Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...

- degradation of any barrier to fission product release.

Not maintaining verifiable minimum AFW flow (1E4th) when it is possible to do so could result in a SGTR when cold feedwater is subsequently reinitiated.

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

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	**Y**	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
N	Initiate feed and bleed

Complete this evaluation form for each ESG.

Facility: SALEM 1 & 2 Scenario No.: ESG-4 (Spare) Op-Test No.: 09-01 NRC

Examiners: _____ Operators:
_____
_____

Initial Conditions: 100% power, EOL. 21 AFW pp C/T for oil leak repair. 21 CFCU is C/T. PZR Pressure channel II is O/S for calibration.

Turnover: Maintain current power.

Event No.	Malf. No.	Event Type*	Event Description
1	**SG0095A**	I CRS/PO	SG NR Ch failure (TS)
2	TA0314	R ALL	Stator Water runback (AFD TS)
3	RC0002	C CRS/RO	RCS leak
4	RC0001	M CRS/RO	LBLOCA
5	RP0277A,B	C CRS RO	CS fails to actuate
6	RP318A1,2	C ALL	Lo Head ECCS fails to actuate
7	CV62B	C RO	Charging pump cavitation
			CT's: Init Cont Spray, initiate Lo head ECCS, xfer to CLR, trip cavitating charging pp.

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

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: LOCA

SCENARIO NUMBER: 09-01 NRC ESG-4 (909)

EFFECTIVE DATE: See Approval Dates below

EXPECTED DURATION: 70 minutes

REVISION NUMBER: 01

PROGRAM:

[ ] **L.O. REQUAL**

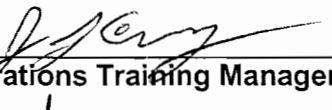
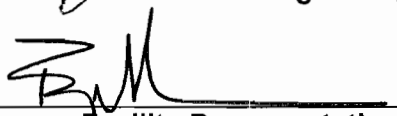
[X] **INITIAL LICENSE**

[ ] **STA**

[ ] **OTHER** _____

Revision Summary

Rev. 1- Removed the steady state rod stepping
Added OHA G-20 to IC.

PREPARED BY:	G Gauding **Lead Regulatory Exam Author**	07-22-11 **Date**
APPROVED BY:	 **Operations Training Manager**	8-2-11 **Date**
APPROVED BY:	 **Facility Representative**	8/1/11 **Date**

I. OBJECTIVES

A. Given the unit with a condition requiring a stator water runback, the crew will take action to verify or perform the actions needed for the runback, IAW approved station procedures.

B. Given a situation requiring rapid boration, the crew will initiate a rapid boration and terminate when required IAW approved station procedures.

C. Given the unit at power with an RCS leak greater than the Tech. Spec. limit, take corrective action IAW AB.RC-0001.

D. Given the indications of a reactor coolant system (RCS) malfunction or leak DIRECT the response to the malfunction in accordance with the approved station procedures.

E. Given the indications of a reactor coolant system (RCS) malfunction or leak perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.

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

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

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

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

J. Given a safety injection has occurred and equipment has failed to START equipment that has failed to automatically start in accordance with the approved station procedures.

K. Given indication of a loss of coolant accident (LOCA) DIRECT the immediate response to the LOCA in accordance with the approved station procedures.

L. Given the order or indications of a loss of coolant accident (LOCA), complete actions as the nuclear control operator to PERFORM the immediate response to the LOCA in accordance with the approved station procedures.

M. Given a loss of coolant accident (LOCA) and plant conditions to support cold leg recirculation DIRECT actions to transfer to cold leg recirculation DIRECT actions to transfer to cold leg recirculation.

N. Given the order or a loss of coolant accident (LOCA) and plant conditions to support cold leg recirculation perform actions as the nuclear control operator to TRANSFER to cold leg recirculation in accordance with the approved station procedures.

O. Given indication of excessive containment pressure DIRECT the response to the excessive pressure in accordance with the approved station procedures.

R. Given the order or indications of excessive containment pressure perform actions as the nuclear control operator to RESPOND to the excessive pressure in accordance with the approved station procedures.

S. Given the unit in the EOPs and an excessive containment pressure the crew will reduce containment pressure IAW approve station procedures.

II. MAJOR EVENTS

A. 21 SG Ch II NR level fails high.

B. Automatic Stator Water Runback

C. RCS leak/SBLOCA

D. LBLOCA

III. SCENARIO SUMMARY

A. The crew will take the turnover at 100% power, EOL. I&C is performing a channel calibration of PZR Pressure Channel II. 2PR7 is shut with power removed to comply with TSAS 3.4.5.b. All bistables associated with PZR Pressure Channel II are tripped IAW S2.IC.-CC.RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II. Orders for the shift are to maintain 100% power.

B. Shortly after assuming the watch, 21 SG NR level Ch. II fails high. The crew will verify no ADFCS malfunction and the CRS will enter the appropriate Tech Spec.

C. A Stator Water Main Turbine runback will initiate due to Low Rectifier Flow, and the runback will terminate at ~900 Mwe when the condition clears. Operators will ensure positive control of the Main Turbine and borate the RCS to restore control rods above the RIL.

D. Due to the rod insertion AFD will go out of the target band, and the CRS will identify entry into the appropriate Tech Spec.

E. Once control rods have been restored above the RIL a RCS leak will begin ramping in, and operators will enter S2.OP-AB.RC-0001. The crew will attempt swap to a centrifugal charging pump and quantify the leak, but the crew will diagnose that the leak is larger than the capacity of the CVCS make up system. Operators will trip the Rx and initiate a Safety Injection.

F. 2C 4KV Vital bus will deenergize upon the Rx trip, and the SEC will load 2C vital bus on its EDG. 21 CCW pump will trip, and 23 CCW pump control will transfer and remain in manual. 22 charging pump will not start on SEC initiation, and operators will block the SEC and start 22 charging pump. The RCS leak will turn into a LBLOCA. Automatic Phase B and Containment Spray will not occur, and operators will manually initiate Cont Spray and manually start Containment Spray pumps. Operators will perform diagnostics in TRIP-1 and transition to LOCA-1.

G. The crew will transition to LOCA-3 when RWST level reaches 15.2 ft. The crew will perform the transfer to CL Recirc with all 4KV vital busses energized and 2C bus energized from its EDG. During the transfer, 22 charging pump will cavitate when 2SJ1 and 2SJ2 are shut, and operators will stop the pump. If the pump is not stopped, it will fail, and a LOCA outside containment will occur.

H. The scenario will terminate when 22 charging pump is tripped, or after indications of CVCS system piping failure have occurred if the pump was not secured.

IV. INITIAL CONDITIONS

____ IC-244

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

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	**OHA G-20 in alarm.**
___ 11	**2PR7 shut and deenergized.**
___ 12	**S2.IC-CC-RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II, Exhibit 1 signed and on NCO desk or provided to crew for turnover.**
___ 13	**SGBD directed to Condenser placard on 2CC3.**
___ 14	Complete Attachment 2 "Simulator Ready-for-Training/Examination Checklist."

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description	
	1	EVENT ACTION:	MONP254 <10 // CONT ROD BANK C < 10 (RX TRIP)
		COMMAND:	
		PURPOSE:	<update as needed>
	3	EVENT ACTION:	gbc18axd < 0.851 // (2D5) CONTROL ROD POSITION
		COMMAND:	DMF TA0314
		PURPOSE:	<update as needed>
	5	EVENT ACTION:	kb117lck // 2SJ2 RWST TO CHG PUMP CLOSE
		COMMAND:	
		PURPOSE:	<update as needed>
	7	EVENT ACTION:	MONP254 <10 // CONT ROD BANK C < 10 (RX TRIP)
		COMMAND:	
		PURPOSE:	<update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	AN0302 SER 302 FAILS - :E35 2PR2 PROTECTION CH II LOOP UNSAFE/IN TEST	N/A	N/A	N/A	N/A	SER POINT FAILS/OVRD TO ON
_____ 02	AN0328 SER 328 FAILS - :A12 REACTOR PROT SYS CHANNEL II INSTRUMENT LOOP IN TEST	N/A	N/A	N/A	N/A	SER POINT FAILS/OVRD TO ON
_____ 03	TA0314 STATOR WATER FLOW SIGNAL FAIL	N/A	N/A	N/A	RT-3	
_____ 04	SG0095A 21 SG LVL XMTR (519) CH II FAIL	N/A	N/A	N/A	RT-1	120
_____ 05	RC0002 RCS LEAK INTO CONTAINMENT (equiv to 0-4 inches)	N/A	100	00:05:00	RT-5	1000
_____ 06	RC0001A RCS RUPTURE OF RC LOOP 21	00:05:00	N/A	N/A	ET-7	
_____ 07	RP318S2 22 CHRG PMP FAILS TO STRT ON SEC	N/A	N/A	N/A	N/A	
_____ 08	CV0208A 21 CHARGING PUMP TRIP	00:15:00	N/A	N/A	ET-7	
_____ 09	RP0277A AUTO CNT SPRY FAILS TO ACT,TRN	N/A	N/A	N/A	N/A	
_____ 10	RP0277B AUTO CNT SPRY FAILS TO ACT,TRN	N/A	N/A	N/A	N/A	
_____ 11	CV0043 CHARGING LINE LEAK IN AUX BLDG	N/A	N/A	N/A	RT-9	550
_____ 12	CV0208B 22 CHARGING PUMP TRIP	00:02:00	N/A	N/A	RT-9	
_____ 13	AN0289 SER 289 FAILS - :H45 GENERATOR STATOR COOLING SYSTEM TROUBLE	N/A	N/A	N/A	RT-11	SER POINT FAILS/OVRD TO OFF
_____ 14	RM0210B1 AREA RAD MONITOR 2R4 FAILS ANYWHERE	00:00:30	N/A	N/A	RT-9	15
_____ 15	AN0737 SER 737 FAILS - :A6 RMS HI RAD OR TRBL-CHG PUMPROOM CH 2R4	00:00:30	N/A	N/A	RT-9	SER POINT FAILS/OVRD TO ON
_____ 16	CC0172A 21 COMPONENT COOLING PUMP TRIP	00:00:30	N/A	N/A	ET-1	
_____ 17	RP318A1 RHR PUMP 21 Fails to Start on SEC	N/A	N/A	N/A	N/A	
_____ 18	RP318A2 RHR PUMP 22 Fails to Start on SEC	N/A	N/A	N/A	N/A	
_____ 19	AN0269 SER 269 FAILS - :G20 SEAL & CYLINDER HEATING STEAM SYSTEM TROUBLE	N/A	N/A	N/A	N/A	SER POINT FAILS/OVRD TO ON

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	PR02D PZR HI PR RX TRP CH 2 PC456A BS	N/A	N/A	N/A	N/A	TRIP
_____ 02	PR13D PZR LO PR BLK SI CH 2 PC456B BS	N/A	N/A	N/A	N/A	TRIP
_____ 03	PR06D PZR LO PR RX TRP CH 2 PC456C BS	N/A	N/A	N/A	N/A	TRIP
_____ 04	PR10D PZR LOW PRESS SI CH 2 PC456D BS	N/A	N/A	N/A	N/A	TRIP
_____ 05	RC02D OT DELTA T TRIP CH II BS (421C)	N/A	N/A	N/A	N/A	TRIP
_____ 06	RC06D OT DELTA T R/BCK CH II BS (421D)	N/A	N/A	N/A	N/A	TRIP
_____ 07	PR35D PORV STOP VALVE 2PR7 TAGGED	N/A	N/A	N/A	N/A	TAGGED
_____ 08	CV62B 22 CHG PUMP SUCTION VALVE 2CV49	N/A	N/A	N/A	ET-5	.000045

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/ Severity
_____ 01	A604 B DI 23 CC PUMP - MANUAL	N/A	N/A	N/A	ET-7	ON
_____ 02	A604 A DI 23 CC PUMP - AUTO	N/A	N/A	N/A	ET-7	OFF
_____ 03	C812 F DI 24CSD 2C VITAL BUS FEEDER-OPEN	N/A	N/A	N/A	N/A	ON
_____ 04	C809 F DI 23CSD 2C VITAL BUS FEEDER-OPEN	N/A	N/A	N/A	ET-7	ON
_____ 05	A604 E DI 23 CC PUMP - START	N/A	N/A	N/A	ET-7	OFF

OTHER CONDITIONS:

	Description
____ 1.	PZR Pressure Channel IV selected for Alarm

V. SEQUENCE OF EVENTS

A. State shift job assignments and review scenario objectives.

B. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).

C. Inform the crew "The simulator is running. You may commence panel walkdowns at this time. CRS please inform me when your crew is ready to assume the shift".

D. Allow sufficient time for panel walk-downs. When informed by the CRS that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
1. **21 SG NR level Channel II fails high**			
Simulator Operator: Insert **RT-1** on direction from Lead Evaluator **MALF: SG0095A** 21 SG lvl xmtr (519) CH II fails Final Value: 120			
	PO announces OHA G-15 ADFCS Trouble, and 21 SG Isolation Level Hi-Hi console alarms as unexpected.		
	PO refers to ARP.		
	PO identifies 21 SG NR level CH II has failed high.		
	PO verifies all ADFCS parameters are normal and still being controlled in automatic.		
	CRS contacts I&C or WCC and informs them of channel failure.		
Proceed to next event after Tech Spec call at direction of Lead Evaluator.	CRS enters TSAS 3.3.1.1 Action 6, and 3.3.2.1 action b 19.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
2. Stator Water Runback			
Simulator Operator: Insert **RT-3** on direction from Lead Evaluator. **MALF: TA0314** Stator Water Flow Signal Fail Final Value: True			
	PO announces OHA's H-38 GEN STAT RUNBACK, and H-45 GEN STAT CLG SYS TRBL as unexpected.		
Simulator Operator: Ensure **ET-3** is True when control bank D lowers to 192 steps **or** at lead evaluators direction. This deletes the Main Turbine runback.			
	PO reports the Main Turbine is running back.		
Note: The runback was initiated at 30% per minute, but the Main Turbine Governor valves respond slower than that. When the load reduction signal clears, the DEHC reference will stop changing, but the turbine governor valves will still be closing, and Mwe will lower another ~100 before reference equals actual.	RO monitors primary plant and ensures control rods start stepping inward in auto when demanded due to power mismatch and Tref-Tavg deviation OR inserts rods if in Manual.		
	PO starts standby Stator Cooling Water pump IAW ARP.		
	RO/PO initiates boration.		
Role Play: 5 minutes after being	CRS dispatches an operator to the Stator		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
dispatched, insert **RT-11** which will clear OHA H-45. Then call control room as NEO and report: Panel 968 alarm A-1L, Inlet Flow Low was flashing, but cleared when I acknowledged it. Inlet flow is reading 600 gpm. There are currently NO alarms on the panel.	Water Panel 968 to investigate and determine panel alarm status IAW ARP for OHA H-38.		
	PO verifies that when OHA H-38 clears, the DEHC reference stops lowering.		
Note: Emergency Boration is to continue until control rods are at least 2 steps higher than the RIL, and OHA E-16 clears.	WHEN OHA E-16 ROD INSERT LMT LO-LO annunciates, THEN RO/PO initiates Emergency Boration IAW S2.OP-SO.CVC-0008 as directed by ARP by: - Determining that there is no set time duration for the boration per step 5.1.1. - Starts at least one Boric Acid Transfer pump in FAST speed. - Ensures charging flow is > 75 gpm. - Opens 2CV175 Rapid Borate Stop Valve - Closes 21 and 22CV160, Recirc Vlvs - Ensures boric acid flow is >36 gpm on 2FI-113A. OR - Ensures charging flow is >75 gpm on 2FI-128B - Starts at least one Boric Acid Transfer pump in FAST speed. - Ensures the 2CV179 and 2CV181 are shut. - Manually open 2CV172. - Open 2CV185.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	- Close 2CV160 and 2CV161. - Ensure Boric Acid flow >36gpm on 2FI-110A.		
PO ensures generator MVARs within band.			
CRS enters S2.OP-AB.LOAD-0001, Rapid Load Reduction.			
IF emergency boration was initiated, THEN WHEN OHA E-16 clears, RO stops the emergency boration by: - Stopping the Boric Acid Transfer pump started above - Closing the 2CV175 - Throttling open 21 and 22CV160 as required. OR - Place the running Boric Acid pump in Slow Speed. - Close the 2CV172 and 2CV185. - Return the CVCS Makeup system to AUTO. - Throttle open 2CV160 and 2CV161.			
CRS enters TSAS 3.2.1 Action a.2 for AFD			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
3. RCS leak / LOCA			
Simulator Operator: Insert **RT-5** at direction of Lead Evaluator. **MALF: RC0002** RCS leak into containment Initial Value: 100 gpm Final Value: 1000 gpm Ramp: 5 minutes			
	RO announces OHA C-2, CNTMT SUMP PUMP START as unexpected.		
	CREW identifies 2R11A indication rising, and PZR pressure and level slowly lowering.		
	CRS enters AB.RC-001.		
	RO announces OHA C-38 CFCU LK DET HI, and OHA C-30 CFCU LK DET HI-HI when alarmed as unexpected.		
	CRS directs PO to initiate CAS.		
	RO reports PZR level is NOT stable or rising.		
	RO begins transfer to centrifugal charging pump by: - Ensuring Master Flow Controller is in AUTO - Closing 2CV55 - Starting 21 or 22 charging pump - Lower 23 charging pump speed to minimum in Manual while adjusting 2CV55 - Stopping 23 charging pump when speed demand is at minimum.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	- Ensuring RCP seal injection flow 6-10 gpm per pump not to exceed 40 gpm total		
	RO adjusts 2CV55 to stabilize PZR level.		
	RO estimates RCS leakrate.		
	RO reports that PZR level can NOT be maintained stable or rising, and the leak rate is > than the capability of the CVCS make-up system, and recommends tripping the Rx and initiating a Safety Injection.		
	CRS directs the RO to trip the Rx, confirm the trip, initiate Safety injection, then go to TRIP-1.		
	RO trips the Rx using a Rx Trip handle, confirms the Rx trip, and uses key to manually initiate Safety Injection.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
4. LBLOCA			
Simulator Operator: Ensure **ET-7** is TRUE upon the Rx trip. This will: Initiate the LBLOCA after 5 min. delay. Swap 23 CCW pump to manual to prevent it from auto starting. Trip 21 CCW pump after 30 sec delay. Open both infeed bkrs to 2C 4KV vital bus and cause EDG to load. Trip 21 charging pump after a 15 minute delay.	-		
	RO performs TRIP-1 immediate actions from memory: - Verifies Rx tripped - Verifies Rx trip confirmed - Trips the Main Turbine - Verifies at least one 4KV vital bus energized. - Verifies Safety Injection actuated.		
	CRS reads immediate action steps to RO and RO verifies performance.		
	RO/PO reports 2C 4KV vital bus is energized from 2C EDG.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 22 charging pump, 21 and 22 RHR pumps failed to start.		
	Crew blocks ALL SECs on 2RP1.		
	Crew resets Emergency loading on ALL SECs.		
	RO starts 22 Charging pump, 21 RHR pump, and 22 RHR pump.		
CT #1 (E-0—H) Manually start at least one RHR pump prior to transition out of EOP-TRIP-1. **SAT____ UNSAT____**			
	RO makes pager announcement Unit 2 Rx trip, Safety Injection.		
	PO reports all AFW pumps running, and requests permission to throttle AFW flow while maintaining 22E4 lbm/hr or 9% level in at least one SG NR level.		
	CRS directs PO to throttle AFW flow.		
	PO lowers 23 AFW pump speed to minimum, and throttles 21-24AF21's to maintain AFW flow ~ 22E4 lbm/hr.		
	RO/PO identifies that the RCS leak has turned into a LBLOCA by control board indications.		
	RO reports control console indication of Containment Spray and Phase B actuation, but no Containment Spray system components have actuated.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
CT #2 (E-0--E) Initiate Containment Spray prior to exiting TRIP-1. **SAT _____ UNSAT _____**	CRS refers/returns to Step 11 and directs RO initiate Containment Spray by: - Initiate phase B and Spray actuation. - RO inserts BOTH keys into CS actuation and turns at same time. - RO reports spray valve realignment. - Start 21 and 22 CS pumps - RO inserts key and turns for 21 and 22 CS pumps and reports both CS pumps are running. - Initiate MSLI - RO reports MSLI initiated. - Stop 21-24 RCPs - RO depresses stop PB for all RCPs. - Ensure valve groups in Table D in safeguards position. - PO reports all Table D valves in safeguards position.		
	RO reports MSLI has been initiated.		
	CRS directs SM implement the ECG.		
	PO reports all 3 4KV vital busses are energized with 2C 4KV vital bus energized from 2C EDG.		
	RO reports control room ventilation is in Accident Pressurized mode.		
	RO reports 2 swgr supply and 1 swgr exhaust fans are running.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Note: The PO should NOT attempt to start 23 CCW pump here, since 2C vital 4kv bus is powered from the EDG and there is no direction in TRIP-1 to start the second CCW pump. **IF** the PO attempts to start 23 CCW pump, it will neither start nor backflash due to scenario setup override.	PO reports only 22 CCW pump is running.		
	CRS dispatches an operator to shut 2CC37 and 2CC48.		
	CREW performs ECCS flow evaluation and determines all ECCS pumps are injecting to RCS as expected for LBLOCA and cont press.		
	PO reports AFW status and is maintaining 22E4 lbm/hr or 15% (adverse cont numbers in effect) level in at least one SG NR level, then maintaining 15-33%.		
	RO reports all RCPs are stopped and MSLI actuated.		
	RO reports both RTBs open.		
	RO reports both PORVs shut with 2PR6 open and 2PR7 shut with power removed.		
	RO reports all RCPs are stopped.		
	RO ensures seal injection flow is maintained to all RCPs.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Note: All SG pressures will be dropping due to the LBLOCA with 21 SG pressure lower than the remaining 3 SGs due to the RCS rupture being on that loop.	PO reports there are no faulted or ruptured SGs.		
	CRS transitions to LOCA-1 on containment radiation levels.		
Note: 21 charging pump will trip 15 minutes after the Rx trip.	RO reports 21 charging pump has tripped.		
Note: Upon the transition out of TRIP-1, CFST monitoring becomes active.			
	Crew identifies that a PURPLE path exists on both the Thermal Shock and Containment Environment Critical Function Status Trees.		
	CRS transitions to FRTS-1 based on RCS cool down rate and Table A conditions.		
	RO reports RCS pressure is less than 420 psig (adverse).		
	CRS transitions back to LOCA-1.		
	Crew identifies a PURPLE path still exists for Containment Environment (if containment pressure remains above 15 psig).		
	CRS transitions to FRCE-1 based on PURPLE path for containment Environment.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO verifies actions previously performed: - CFCUs running in low speed with proper SW flow. - RCPs stopped - Both CS pumps running. - Containment isolations - MSLI - No faulted SGs.		
	CRS transitions back to LOCA-1.		
	PO reports no faulted SG's.		
	PO reports AFW status and is maintaining 22E4 lbm/hr or 15% (adverse cont numbers in effect) level in at least one SG NR level, then maintaining 15-33%.		
	PO reports no indications of SGTR.		
	RO resets SI, Phase A, and Phase B.		
	RO opens both CA330s.		
	PO resets all SECs.		
	RO resets SGBD Sample Isolation Bypass and opens 21-24SS94s.		
	CRS directs chemistry to sample SGs for boron and activity.		
	RO reports both PORVs shut with 2PR6 open and 2PR7 shut with power removed.		
	RO reports subcooling is less than zero.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports both CS pumps are running.		
	RO reports subcooling is less than zero.		
	RO reports RHR is not aligned for CL recirc.		
	RO reports RHR flow is > 300 gpm on both SJ49s.		
	CRS requests assistance from TSC to restore off-site power to 2C 4KV vital bus.		
	RO reports both RHR pumps and both SJ44s are available.		
	RO/PO reports no rad monitors in Table C are in warning or alarm.		
	CRS directs chemistry to sample the RCS and analyze for failed fuel and boron.		
	CRS consults TSC about equipment availability to assist in long term recovery.		
	CRS verifies operators were dispatched in TRIP-1 to shut 2CC37 and 2CC48.		
	RO reports both RHR pumps are running.		
	RO reports RHR flow is > 300 gpm on both SJ49s.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
If the crew arrives at Step 18.2 prior to RWST level of 15.2', they will enter a "do loop" with return to step 16. When RWST lo level alarm actuates, continue below. **LOG TIME OF RWST LO-LO LEVEL ALARM for CT#2 EVALUATION** ____:____:____	RO reports RWST level.		
	RO reports RWST lo level alarm as expected alarm.		
	CRS transitions to LOCA-3.		
Simulator Operator: Upon entry into LOCA-3, **DELETE I/O A604 OVDI** for the **START PB for 23 CCW pump** and ENSURE it does **NOT** start. Be prepared to remotely STOP 23 CCW pump if required, as it affects scenario outcome and must **NOT** be running but capable of starting when crew arrives at step 28.2			
	RO reports both Cont Sump Level >62% are lit.		
	RO depresses Sump Auto Armed PBs for 21 and 22SJ44.		
	PO removes lockouts for 2SJ67, 2SJ68 and 2SJ69.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 21 and 22SJ44 are open.		
CT# 3: (ES-1.3—A) Transfer to Cold Leg Recirculation such that at least one train of ECCS is in operation in the recirculation mode within the following time frames. **1. From RWST lo level alarm to initiating closed on 2SJ69 - ≤3.7 minutes** **2. From RWST lo level alarm to one containment spray pump stop ≤5.5 minutes** **3. From RWST lo level alarm to switchover completion (includes restarting ECCS pumps if stopped on RWST lo-lo level) - ≤ 11.2 minutes.** **SAT _____ UNSAT _____**	RO reports both RHR pumps are running and shuts 2SJ69. **LOG TIME 2SJ69 Close is initiated:** _____:_____:_____ **LOG TIME Containment Spray pump stopped:** _____:_____:_____		
	RO reports SI is reset, and all SECs are reset.		
	PO reports 230V load centers are reset.		
	RO reports 2SJ69 is closed.		
	RO reports both CS pumps are operating and stops 22 CS pump.		
	RO shuts 21 and 22RH19s, and stops 23 charging pump if running.		
	CRS selects step 11 as the correct flowpath transition.		
	PO reports C bus is energized from its EDG.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports 3 SW pumps are running.		
	RO reports both CCHXs are in service.		
	RO reports 23 CCW pump is NOT running.		
	RO reports 22 CS pump is NOT running.		
	RO starts 23 CCW pump.		
	RO reports 21 and 22CC16s are open.		
	RO shuts 2SJ67 and 2SJ68.		
	RO reports RH1 and RH2 are shut.		
	RO reports both RHR pumps are running and opens 21 and 22SJ45s.		
	RO reports 21 and 22SJ113s are open.		
LOG TIME ECCS Pumps verified running: _____:_____:_____	RO reports 22 charging pump and 21 and 22 SI pumps are running.		
	PO removes lockout from 2SJ30.		
Simulator Operator: Ensure **ET-5** is TRUE when the close PB for 2SJ2 is depressed. This inserts the closure of 22 charging pump suction isolation valve 22CV49 and will cause 22 charging pump to cavitate. During validation, oscillations between 48-90 Amps were observed, and the pump did NOT trip on OC.	RO shuts 2SJ30, 2SJ1, and 2SJ2.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO/PO recognizes 22 charging pump is cavitating by amperage indication, discharge flow and BIT flow, and discharge pressure oscillations.		
CT#4 Trip the cavitating charging pump prior to pump/system piping damage. **SAT ____ UNSAT ____**	RO trips 22 charging pump.		
Simulator Operator: IF the crew does **NOT** trip 22 charging pump within 3 minutes of the initiation of cavitation, **THEN** insert **RT-9.** This simulates a failure of the charging system piping in the Aux Building resulting in a LOCA outside containment, then trips 22 charging pump after an additional 2 minute delay. **MALF: CV0043** Charging Line Leak in Aux Bldg Final Value: 550 **MALF: CV0208B** 22 Chg Pump trip Delay: 2 minutes Final Value: True **MALF: RM0210B1** Area Rad Monitor 2R4 fails anywhere Delay: 30 sec Final Value:15 **MALF: AN0737** SER 737 Fails -: A6 RMS Hi Rad or Trouble			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
TERMINATE the scenario when 22 charging pump has been secured, whether by operator action or when it trips 5 minutes after cavitating starts.			
Note: Some of the following steps may be performed depending on when, or if, the crew recognizes the 22 charging pump cavitation, and should be evaluated accordingly.	RO places 21 and 22RH29 controllers in Manual and ensures valves are shut.		
	CRS implements FRPs as necessary.		
	CRS dispatches operator to tag SJ44 breakers open.		
	RO verifies Phase A and Phase B are reset, and CA330s are open.		
	PO stops 2A and 2B EDGs.		
Evaluator Note: The correct classification is an **ALERT** under EAL 3.2.2.b. (**If** the 22 charging pump is NOT stopped by the operators and the charging system failure occurs as described on the previous page, **then** the correct ECG classification will be a **SAE** based on 3.2.2.b AND 3.3.3.b			

VI. SCENARIO REFERENCES

A. Alarm Response Procedures (Various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. OP-AA-101-111-1003, Use of Procedures
E. 2-EOP-TRIP-1, Rx Trip or Safety Injection
F. 2-EOP-LOCA-1 Loss of Coolant Accident
G. 2-EOP-LOCA-3 Transfer to Cold Leg Recirculation
H. S2.OP-AB.LOAD-0001 Rapid Load Reduction
I. S2.OP-AB.RC-0001 Reactor Coolant System Leak

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 100 RCS BORON: 18 MWe 1230

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

NA

REACTIVITY PARAMETERS

Core Burnup: 12,600 EFPH

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

3.4.5.b for PZR Pressure Channel II calibration. 70 hours left in action time.

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

S2.IC-CC-RCP-0018, 2PT-456 Pressurizer Pressure Protection Channel II.

ABNORMAL PLANT CONFIGURATIONS:

2PR7 shut and power removed to comply with TSAS 3.4.5.b for PZR Pressure Channel II being out of service for channel calibration.
PZR Pressure Channel IV selected for Alarm.

CONTROL ROOM:

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

PRIMARY:

3.3.1.1 action 6 and 3.3.2.1 action 19 for PZR Pressure Channel II PT-456.

SECONDARY:

OHA G-20 SEAL CVL HTG STM SYS TRBL is in alarm due to Gland Sealing Steam high pressure. NEO is investigating.
Heating steam is aligned to Unit 1.

RADWASTE:

No discharges in progress

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: This form is used as guidance for the examination team as they conduct their review for the proposed scenarios. (*PRIOR TO SBT TESTING COMPLETE/TRANSCRIBE THIS FORM (Reviewer Name, Initials and Comments) ELECTRONICALLY HERE)*

SCENARIO IDENTIFIER: 09-01 NRC-ESG-4 **REVIEWER:** Robert B/OSM

Initials		Qualitative Attributes
	1.	The scenario has clearly stated objectives in the scenario.
	2.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
	3.	The scenario consists mostly of related events.
	4.	Each event description consists of: • 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
	5.	No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.
	6.	The events are valid with regard to physics and thermodynamics.
	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
	8.	The simulator modeling is not altered.
	9.	All crew competencies can be evaluated.
	10.	The scenario has been validated.
	11.	If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 4

SIMULATOR SCENARIO REVIEW CHECKLIST

Note: The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. (ES-301 Section D.5.d)

Initial		Quantitative Attributes (as per ES-301-4, and ES-301 Section D.5.d)
_____	8	Total malfunctions inserted: 5-8
_____	4	Malfunctions that occur after EOP entry: 1-2
_____	2	Abnormal Events: 2-4
_____	1	Major Transients: 1-2
_____	2	EOPs entered/requiring substantive actions: 1-2
_____	1	EOP contingencies requiring substantive actions: 0-2
_____	3	Crew Critical Tasks: 2-3

COMMENTS:

ATTACHMENT 5

ESG CRITICAL TASKS

09-01 NRC ESG-4 (Spare)

CT#1 (E-0—H) Manually start at least one RHR pump prior to transition out of EOP-TRIP-1.

Basis- Failure to manually start at least on low-head ECCS pump under the postulated conditions constitutes "mis-operation or incorrect crew performance which leads to degraded...capacity."

``

CT#2 (E-0--E) Manually actuate at least the minimum required complement of containment cooling equipment before exiting TRIP-1.

Basis- Failure to manually actuate the minimum required complement of containment cooling equipment under the postulated conditions constitutes a "demonstrated inability by the crew to recognize a failure/incorrect auto actuation of an ESF system or component." Failure to manually actuate containment spray represents a "demonstrated inability of the crew to effectively direct/manipulate ESF controls that would lead to a violation of the facility license condition."

CT# 3: (ES-1.3—A) Transfer to Cold Leg Recirculation such that at least one train of ECCS is in operation in the recirculation mode within the following time frames:

1. From RWST lo level alarm to initiating closed on 2SJ69 - $\leq$3.7 minutes.
2. From RWST lo level alarm to one containment spray pump stop- $\leq$5.5 minutes.
3. From RWST lo level alarm to switchover completion (includes restarting ECCS pumps if stopped on RWST lo-lo level) - $\leq$ 11.2 minutes.

Basis: Failure to establish cold leg recirculation within the time frame specified in the FSAR is a "demonstrated inability of the crew to effectively direct/manipulate ESF controls that would lead to a violation of the facility license condition."

CT#4: Trip the cavitating Charging Pump prior to pump/system piping damage.

Basis: Failure to trip a cavitating charging pump during the transfer to cold leg recirculation when indications of cavitation are present, leads to the possibility of system damage and the advent of a loss of coolant outside the containment building. (As is the case in this scenario.)

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

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
Y	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

Complete this evaluation form for each ESG.