

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM 1 & 2
SYSTEM: ADMINISTRATIVE
TASK: Review a completed surveillance to calculate the Quadrant Power Tilt Ratio.

TASK NUMBER: 0150020201 *10/20/6*

JPM NUMBER: INDIA ILT *Audit* SRO Admin 1.1
NRC

ALTERNATE PATH: K/A NUMBER: 2.1.7

IMPORTANCE FACTOR: RO 4.4
SRO

APPLICABILITY:
EO RO STA SRO

EVALUATION SETTING/METHOD: Classroom / Perform

REFERENCES: S1.OP-ST.NIS-0002(Q), Rev. 11 Power Distribution - QPTR
Salem Unit 1 Technical Specifications

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL: N/A - A *[Signature]* *[Signature]* 10/26/6
Bargaining Unit Representative OPS Training Supervisor OPS Manager or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the SM or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: Minutes
ACTUAL TIME CRITICAL COMPLETION: N/A
JPM PERFORMED BY: GRADE: SAT UNSAT
REASON, IF UNSATISFACTORY:
EVALUATOR'S SIGNATURE: DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

TASK NUMBER: 114 503 03 01

INITIAL CONDITIONS: Reactor Power has been maintained at 100% for the last 180 days.

INITIATING CUE: The following detector voltages have been recorded from the Power Range NI Detectors:

	N41	N42	N43	N44
UPPER	169	166	145	165
LOWER	168	176	140	168

You have been directed to review the completed surveillance to calculate the existing Quadrant Power Tilt Ratio.

The current time is 2230 on October 5, 2006.

Document any discrepancies that you identify or actions that you would take on Attachment 4, Section 1.0, Comments.

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).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: ADMINISTRATIVE

Task: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Obtains completed copy of procedure S1.OP-ST.NIS-0002(Q).	Provide completed surveillance.		
	5.4.2	Candidate is performing Step 5.4.3 to review the completed surveillance for accuracy and completeness.	Candidate should review procedure for completeness. <i>NOTE:</i> If candidate identifies that Independent Verification has not been completed, then give direction to continue with the review and document discrepancy and action as necessary. The missing IV should be documented in the Comments Section of Att. 5.		
#	5.1.1	If one Power Range Channel is inoperable and reactor thermal power is >75%,	Determines that all 4 Power Range Channels were operable.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: ADMINISTRATIVE

Task: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.2	Reviews the following data on Attachment 2: A. Date B. Time C. Reactor Power D. Reason for performing QPTR	Determines that data is recorded correctly on Attachment 2. Reason for QPTR performance is identified on Initial Conditions.		
	5.1.3	Ensures on Attachment 1 that the Upper and Lower Detector currents are recorded, and the respective 100% NI Current Values for Channels N-41, N-42, N-43 and N-44 Detectors from S2.RE-RA.ZZ-0011, (RE Manual), Table 2.	Reviews that detector currents are recorded on the correct Attachments.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: ADMINISTRATIVE

Task: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.4	Review Attachment 1 calculations	<p>Reviews calculations and determines that Section 1.0 UPPER DETECTORS, SUM OF DETECTOR RATIOS is incorrect. It should be 3.997. Determines the AVERAGE UPPER DETECTOR RATIO is incorrect. It should be 0.994. This makes ALL the Upper Detector Power Tilts incorrect. The correct values are:</p> <p>Sum Of Detector Ratios = 3.997</p> <p>Average Upper Detector Ratio = 0.994</p> <p><u>POWER TILT</u></p> <p>N41=1.027</p> <p>N42=0.997</p> <p>N43=0.984</p> <p>N44=0.993</p> <p>Determines Section 2.0, LOWER DETECTORS numbers and calculations are correct</p>		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

System: ADMINISTRATIVE

Task: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.5	Reviews Attachment 2.	<p>Identifies that erroneous calculation on Section 1.0 of Attachment 1 have been carried over to Attachment 2, in the Upper Section Power Tilt and the Maximum Power Tilt. The Power Tilt (1) Upper Detector numbers should be the same as in the previous step (5.1.4) above.</p> <p>Identifies that the Maximum Power Tilt (1) for the Upper Detectors is incorrect and determines the Maximum Tilt should be 1.027</p> <p>Documents in Comments Section.</p>		
	5.1.6	Reviews Attachment 2 for second verification	<p>Identifies that Second Verification was signed off as being completed, but was NOT performed.</p> <p>Documents in Comments Section.</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

System: ADMINISTRATIVE

Task: Review the completed surveillance to Calculate a Quadrant Power Tilt Ratio.

* #	STEP NO.	STEP (* Denotes a Critical Step) (# Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.1.7	IF the Maximum Power Tilt for any detector exceeds 1.02, THEN refer to T/S 3.2.4 for corrective actions.	Identifies Maximum Power Tilt is 1.027. Identifies that the entry into TS 3.2.4 is required. Identifies that ACTION must be taken IAW TS 3.2.4 within 2 hours. *** Within 2 hours of 2200, either QPTR must be restored to less than 1.02, or Rx thermal power must be reduced 3% from RATED THERMAL POWER for each 1% QPTR is in excess of 1.0. To comply with TS, power must be reduced less than 91% by 2400 on 10/6/06. Documents in Comments Section.		
*	6	Test results documented by initializing the SAT or UNSAT column IAW the stated Acceptance Criteria.	Determines that the procedure was completed improperly because of miscalculation. Documents in Comments Section.		

Terminating Cue: NONE, JPM is complete when candidate turns in completed JPM with comments in the Documentation section.

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE****INITIAL CONDITIONS:**

Reactor Power has been maintained at 100% for the last 180 days.

All Power Range Nuclear Instrumentation are indicating normally for the current power level.

OHA E-38 UPPER SECT DEV ABV 50% PWR is in alarm. The Annunciator Response Procedure requires performance of a QPTR surveillance. Section 5.1 was used to complete the surveillance and the procedure is ready for SM/CRS review.

Document any discrepancies or actions that you would take on Attachment 4, Section 1.0, Comments.

Inform Evaluator when you have completed the Documentation Section, Attachment 4.

INITIATING CUE:

You have been directed to perform the CRS review of the attached surveillance procedure for accuracy and completeness.

PSEG Internal Use Only

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

SI.OP-ST.NIS-0002(Q) - REV. 11

POWER DISTRIBUTION - QUADRANT POWER TILT RATIO

USE CATEGORY : I

- A. Biennial Review Performed: Yes ___ No
- B. Change Package(s) and Affected Document Number(s) incorporated into this revision:
◆ None
- C. OTSC incorporated into this revision.
◆ None

REVISION SUMMARY:

- ◆ Added Step 3.6 stating: "Out of specification results should NOT be expected, when performing a manual QPTR calculation IAW Section 5.1 following installation of new NI current values, when one or more NI channels have not been updated with new NI current values." Also added CRCA 70047703 to Reference Section. These changes are informative and provide clarification only and are therefore considered editorial in nature IAW NC.DM-AP.ZZ-0001(Q). (70047703-50)
- ◆ Added Note (2) to Attachment 1 to provide guidance for 100% NI Current values. This change is clarifying and editorial as described in NC.DM-AP.ZZ-0001(Q). (Reviewer Comment)
- ◆ Revised Steps 5.4.1, 5.4.2, 5.4.3 and Attachment 4 by deleting STA review of procedure and making a review for NCO then SM/CRS. These changes are part of "Change Management" program to remove STA from extraneous duties. The intent of these changes have been previously approved in SH.OP-AS.ZZ-0002 and various administrative documents covering the duties of the STA and is therefore editorial in nature. (80076347-30)

IMPLEMENTATION REQUIREMENTS

Effective Date AUG 31 2005

None

APPROVED:

[Signature]
Operations Manager - Salem

8/8/05
Date

POWER DISTRIBUTION - QUADRANT POWER TILT RATIO

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	PURPOSE	2
2.0	PREREQUISITES	2
3.0	PRECAUTIONS AND LIMITATIONS	2
4.0	EQUIPMENT/MATERIAL REQUIRED	3
5.0	PROCEDURE	4
5.1	QPTR Calculation using Manual Calculation	4
5.2	QPTR Calculation using the Plant Computer	6
5.3	Acceptance Criteria	8
5.4	Review and Completion	8
6.0	RECORDS	9
7.0	REFERENCES	9
<u>ATTACHMENTS</u>		
Attachment 1	QPTR Calculation Data using Manual Calculation	10
Attachment 2	QPTR Test Data using Manual Calculation	11
Attachment 3	QPTR Test Data using the Plant Computer	12
Attachment 4	Completion Sign-Off Sheet	13

1.0 PURPOSE

- 1.1 To provide the instructions necessary to verify that the Quadrant Power Tilt Ratio (QPTR) is within the limit in order to satisfy the following T/S Surveillance Requirements: [C0265]
- 1.1.1. 4.2.4.a, by performance of a QPTR Calculation once per 7 days when the alarm is OPERABLE.
 - 1.1.2. 4.2.4.b, by performance of a QPTR Calculation at least once per 12 hours during steady state operation when the alarm is inoperable.
 - 1.1.3. 4.2.4.c, by obtaining a core power distribution measurement to determine QTPR at least once per 12 hours when one Power Range Channel is inoperable and Thermal Power >75% of Rated Thermal Power.

These requirements are applicable in Mode 1 above 50% of Rated Thermal Power.

- 1.2 To provide instruction to fulfill the requirements of T/S 3.3.1.1, Table 3.3-1, Action 2.c. This requirement is applicable in Mode 1 and is invoked when one Power Range Channel is inoperable and Thermal Power >75% of Rated Thermal Power or trip setpoint is >85% of Rated Thermal Power.

2.0 PREREQUISITES

- A* 2.1 IDENTIFY sections of this procedure that are NOT to be performed with "N/A".

3.0 PRECAUTIONS AND LIMITATIONS

- A* 3.1 Procedure Use and adherence policy as found in NC.NA-AP.ZZ-0001(Q), Nuclear Procedure System, is applicable to this procedure.
- A* 3.2 Steps identified with a dollar sign (\$) are those items required to meet Technical Specification acceptance criteria. Such steps, if not satisfactorily completed, may have reportability requirements and are to be brought to immediate attention of the SM/CRS.
- A* 3.3 In a situation where one Power Range Channel is inoperable and thermal power is >75%, Reactor Engineering shall obtain a core power distribution measurement, by performing an incore flux map or through use of the Power Distribution Monitoring System (BEACON), to confirm the QPTR once every 12 hours, IAW T/S Surveillance Requirement 4.2.4.c in addition to the 3 channel QPTR required by 3.3.1.1, Table 3.3-1, Action 2.c.
- A* 3.4 Either Sections 5.1 or 5.2 can be used to satisfy this surveillance. However, Section 5.2, QPTR Calculation using the Plant Computer, can not be used if the 1-MIN QPTR quality is not "Good", during the installation of new currents into the Power Range Channels, or if a Power Range Channel is inoperable.

s1.OP-ST.NIS-0002(Q)

- 3.5 T/S 3.0.4 allows entry into a TSAS provided that the associated ACTION does NOT require a unit shutdown. There are no unit shutdown requirements in any of the T/S 3.2.4 ACTIONS. Therefore, it is acceptable to increase reactor power to >50% RTP when the QPTR is >1.02 AND ≤1.09 provided that T/S 3.2.4 is entered and complied with (80017036).
- 3.6 Out of specification results should NOT be expected, when performing a manual QPTR calculation LAW Section 5.1 following installation of new NI current values, when one or more NI channels have not been updated with new NI current values. [70047703]

4.0 EQUIPMENT/MATERIAL REQUIRED

4.1 Additional Tools and Equipment:

- ◆ Calculator

5.0 **PROCEDURE**

5.1 **OPTR Calculation using Manual Calculation**

NOTE

A core power distribution measurement may be obtained either by performing an incore flux map or through use of the Power Distribution Monitoring System (BEACON).

N/A 5.1.1. **IF** one PR Channel is inoperable **AND** RTP is >75%,
THEN NOTIFY Reactor Engineering to obtain a core power distribution measurement to calculate QPTR in addition to the requirements of this procedure.

5.1.2. **RECORD** the following data on Attachment 2:

- ◆ Date
- ◆ Time
- ◆ Reactor Power
- ◆ Reason for performing QPTR Calculation

NOTE

The Upper and Lower detectors selector switch should be positioned to the 0.5 milliamperes position when obtaining readings.

5.1.3. **RECORD** the following on Attachment 1:

- ◆ NI Channels N-41, N-42, N-43 and N-44 **Upper** Detector current readings, (Power Range B, Detector A, 0-500 microamperes scale).
- ◆ NI Channels N-41, N-42, N-43 and N-44 **Lower** Detector current readings, (Power Range B, Detector B, 0-500 microamperes scale).
- ◆ Respective 100% NI Current Values for Channels N-41, N-42, N-43 and N-44 Detectors, from S1.RE-RA.ZZ-0011(Q), (Reactor Engineering Manual), Table 2.

5.1.4. **COMPLETE** Attachment 1 calculations.

A 5.1.5. **RECORD** the following on Attachment 2:

- A A. "Power Tilt" for each detector.
- A B. "Maximum Power Tilt" and applicable detector identification information.
- A C. Test Results by initialing SAT or UNSAT column
S IAW stated Acceptance Criteria.

A 5.1.6. **DIRECT** a second Operator to perform Independent Verification of calculations in Attachment 1. [C0284]

N/A 5.1.7. **IF** the Maximum Power Tilt for any detector exceeds 1.02, **THEN REFER** to T/S 3.2.4 for corrective actions.

5.2 **OPTR Calculation using the Plant Computer**

N/A 5.2.1. **IF** any of the below conditions are true,
THEN PERFORM Section 5.1. Section 5.2 shall **NOT** be used to determine the
QPTR.

- ◆ A 1-MIN QPTR has a quality other than "Good". (Examples of invalid qualities are "Good EC", "Bad", "Fair", and "Poor")
- ◆ New currents are being installed into the Power Range Channels.
- ◆ A Power Range Channel is INOPERABLE.

5.2.2. **RECORD** the following data on Attachment 3:

- ◆ Date
- ◆ Time
- ◆ Reactor Power
- ◆ Reason for performing QPTR Calculation

5.2.3. **ACCESS** the 1 min QPTR data from the Plant Computer as follows:

- A. From the Process Diagram icon in the Application Program, **SELECT RADIAL FLUX TILTS**, by placing the cursor on the "M" at the end of the appropriate bar and depressing the left hand mouse button.
- B. **SELECT FT0302 - NIS CHANNEL FLUX AND QPTR** by placing the cursor on the applicable bar and depressing the left hand mouse button.
- C. **UPDATE** the screen by placing the cursor on the UPDATE block in the upper right hand corner and depressing the left hand mouse button.

NOTE

Section 5.1 is to be performed when the RFT PROGRAM RUNNING INDICATOR does **NOT** show "Running". The Plant Computer QPTR calculation is invalid.

- D. **VERIFY** that RFT PROGRAM RUNNING INDICATOR shows "Running".
- E. **GENERATE** a screen copy of the results.
- F. **RECORD** 1-MIN QPTR values on Attachment 3.
- G. Using the right hand mouse button for "information", **VERIFY** that all 1-MIN QPTR points have "Good" quality.

N/A
\$

5.2.4. **RECORD** the following on Attachment 3:

- A. **"Maximum Power Tilt"** and applicable detector identification information.
- B. **Test Results** by initialing SAT or UNSAT column IAW stated Acceptance Criteria.

5.2.5. **ATTACH** the screen copy of the results to this procedure.

5.2.6. **IF** the Maximum Power Tilt for any detector exceeds 1.02, **THEN REFER** to T/S 3.2.4 for corrective actions.

5.3 Acceptance Criteria

S

5.3.1. This surveillance is satisfactory when Attachment 2 or 3 is completed with the Test Data meeting the Acceptance Criteria stated.

OR

N/A

5.3.2. This surveillance is unsatisfactory.

- A. **INITIATE** NOTF(s) to correct the unsatisfactory condition(s).
- B. **RECORD** the NOTF number(s) AND the reason for unsatisfactory completion on Attachment 4 in the Comments Section.
- C. **NOTIFY** Reactor Engineering.

5.4 Review and Completion

S

5.4.1. **COMPLETE** Attachment 4, Sections 1.0 and 2.0, AND FORWARD this procedure to NCO for review and approval.

M

S

5.4.2. NCO **PERFORM** the following:

M

S

A. **REVIEW** this procedure with Attachments 1-4 for completeness and accuracy.

M

S

B. **COMPLETE** Attachment 4, Section 3.0.

M

C. **FORWARD** completed procedure to SM/CRS for review.

5.4.3. SM/CRS **PERFORM** the following:

A. **REVIEW** this procedure with Attachments 1-4 for completeness and accuracy.

B. **COMPLETE** Attachment 4, Section 3.0.

C. **FORWARD** completed procedure to Operations Staff.

END OF PROCEDURE SECTION

6.0 RECORDS

6.1 Retain following IAW NC.DM-AP.ZZ-0011(Q), Records Management Processes:

Attachments 1-4

7.0 REFERENCES

7.1 Updated Final Safety Analysis Report:

- 7.1.1. 4.3.1, Design Bases
- 7.1.2. 7.7.3.6, Incore Instrumentation
- 7.1.3. Section 15.1.2.3, Power Distribution

7.2 Cross-References:

7.2.1. Technical Specifications Unit 1:

- A. 3.2.4, Quadrant Power Tilt Ratio
- B. 4.2.4.a, Power Distribution Surveillance Requirement
- C. 4.2.4.b, Power Distribution Surveillance Requirement
- D. 4.2.4.c, Power Distribution Surveillance Requirement
- E. 3.3.1.1, Action 2.c, Reactor Trip System Instrumentation
- F. 3.3.3.14, Power Distribution Monitoring System

7.2.2. Procedures:

- A. NC.NA-AP.ZZ-0001(Q), Nuclear Procedure System
- B. NC.DM-AP.ZZ-0011(Q), Records Management Processes
- C. S1.RE-RA.ZZ-0011(Q), Reactor Engineering Manual, Table 2
- D. SC.RE-SO.NIS-0001(Q), BEACON Operation & Calculation Verification

7.3 Commitments:

- 7.3.1. C0265, NSO LER 311/89-015-00
- 7.3.2. C0283, NRC VIOL 311/87-018-01
- 7.3.3. C0284, NSO LER 272/90-014-00

7.4 Other:

- 7.4.1. DCP IEC-3389, P-250 Plant Computer Replacement
- 7.4.2. CRCA 70047703, Rx Engineer review identified QPTR error

ATTACHMENT 1
 (Page 1 of 1)

QPTR CALCULATION DATA USING MANUAL CALCULATION

1.0 UPPER DETECTORS

Detector Current (microamperes)	÷ 100% NI Value (2)	= Detector Ratio	÷ Average Upper Detector Ratio	= Power Tilt (1)
N41T= 169	165.5	1.021	1.004	1.017
N42T= 166	167.5	0.991		0.987
N43T= 145	148.3	0.978		0.974
N44T= 165	167.2	0.987		0.983
Sum of Detector Ratios		= 4.016		
# of Operable Detectors		÷ 4		
Average Upper Detector Ratio		= 1.004		
Independent Verification of calculation performed by:				

2.0 LOWER DETECTORS

Detector Current (microamperes)	÷ 100% NI Value (2)	= Detector Ratio	÷ Average Lower Detector Ratio	= Power Tilt (1)
N41B= 168	166.7	1.008	0.994	1.014
N42B= 176	176.5	0.997		1.003
N43B= 140	142.2	0.985		0.991
N44B= 168	170.6	0.985		0.991
Sum of Detector Ratios		= 3.975		
# of Operable Detectors		÷ 4		
Average Lower Detector Ratio		= 0.994		
Independent Verification of calculation performed by:				

- (1) Record Power Tilt to three significant digits to the right of the decimal.
- (2) Reference Notes in S1.RE-RA.ZZ-0011(Q), Table 2 for specific applicability requirements.

ATTACHMENT 2

(Page 1 of 1)

QPTR TEST DATA USING MANUAL CALCULATION

Date: 10/5/6	Time: 2200	Reactor Power: 100.0 %
--------------	------------	------------------------

REASON FOR PERFORMING QPTR: (Check as applicable)

- Unit in Mode 1 operating at >50% thermal power.
- Unit in Mode 1 operating at ≤50% thermal power and verification that QPTR is within limits prior to exceeding 50% thermal power.
- OHA E-38 or E-46 annunciated or is inoperable and thermal power is >50%.
- IAW T/S 3.3.1.1 Action 2c, One Power Range Channel is inoperable AND trip setpoints are >85% or thermal power is >75%.

Upper Detector	Power Tilt (1)	Lower Detector	Power Tilt (1)
N41T	1.017	N41B	1.014
N42T	0.987	N42B	1.003
N43T	0.974	N43B	0.991
N44T	0.983	N44B	0.991

Maximum Power Tilt (1)	Detector	Acceptance Criteria	Test Results	
			SAT	UNSAT
1.017	N41 Upper	≤1.02 and (2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1.014	N41 Lower		<input checked="" type="checkbox"/>	<input type="checkbox"/>

- (1) Carry forward the Power Tilt value on Attachment 1 with three significant digits to the right of the decimal.
- (2) IAW T/S 3.3.1.1, Action 2c, when applicable, the 3 channel QPTR is verified consistent with Reactor Engineering core power distribution measurement to satisfy surveillance requirement 4.2.4.c.

ATTACHMENT 3
 (Page 1 of 1)

QPTR TEST DATA USING THE PLANT COMPUTER

Date:	Time:	Reactor Power:	%
-------	-------	----------------	---

REASON FOR PERFORMING QPTR: (Check as applicable)

- Unit in Mode 1 operating at >50% thermal power.
- Unit in Mode 1 operating at ≤50% thermal power and verification that QPTR is within limits prior to exceeding 50% thermal power.
- OHA E-38 or E-46 annunciated or is inoperable and thermal power is >50%.

Detector	Plant Computer Points	1-MIN QPTR (1)
CHAN 41 UPPER	YFT0114N	
CHAN 41 LOWER	YFT0124N	
CHAN 42 UPPER	YFT012N	
CHAN 42 LOWER	YFT0122N	
CHAN 43 UPPER	YFT0111N	
CHAN 43 LOWER	YFT0121N	
CHAN 44 UPPER	YFT0113N	
CHAN 44 LOWER	YFT0123N	

Maximum Power Tilt (1)	Detector	Acceptance Criteria	Test Results	
			SAT	UNSAT
	Upper	≤1.02		
	Lower			

(1) RECORD 1-MIN QPTR with three significant digits to the right of the decimal.

S1.OP-ST.NIS-0002(Q)

ATTACHMENT 4
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 COMMENTS:

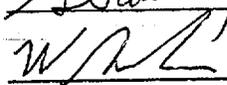
(Include test deficiencies and corrective actions.)

All QPTR < 1.02. No actions required.

ATTACHMENT 4
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

2.0 SIGNATURES:

Print	Initials	Signature	Date
G. Sauding	GS		10/5/6
B. Neiheiser	BN		10/5/6

INDEPENDENT VERIFICATION:

3.0 NCO REVIEW AND SM/CRS FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1-4 is reviewed for completeness and accuracy. All deficiencies, including corrective actions, are clearly recorded in COMMENTS Section above. [C0283]

Signature:  Date: 10/5/6

NCO

Signature: _____ Date: _____

SM/CRS

PSEG Internal Use Only

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

S1.OP-ST.NIS-0002(Q) - REV. 11

Correct data

POWER DISTRIBUTION - QUADRANT POWER TILT RATIO

USE CATEGORY : I

- A. Biennial Review Performed: Yes ___ No ✓
- B. Change Package(s) and Affected Document Number(s) incorporated into this revision:
 - ◆ None
- C. OTSC incorporated into this revision.
 - ◆ None

REVISION SUMMARY:

- ◆ Added Step 3.6 stating: "Out of specification results should NOT be expected, when performing a manual QPTR calculation IAW Section 5.1 following installation of new NI current values, when one or more NI channels have not been updated with new NI current values." Also added CRCA 70047703 to Reference Section. These changes are informative and provide clarification only and are therefore considered editorial in nature IAW NC.DM-AP.ZZ-0001(Q). (70047703-50)
- ◆ Added Note (2) to Attachment I to provide guidance for 100% NI Current values. This change is clarifying and editorial as described in NC.DM-AP.ZZ-0001(Q). (Reviewer Comment)
- ◆ Revised Steps 5.4.1, 5.4.2, 5.4.3 and Attachment 4 by deleting STA review of procedure and making a review for NCO then SM/CRS. These changes are part of "Change Management" program to remove STA from extraneous duties. The intent of these changes have been previously approved in SH.OP-AS.ZZ-0002 and various administrative documents covering the duties of the STA and is therefore editorial in nature. (80076347-30)

IMPLEMENTATION REQUIREMENTS

Effective Date AUG 31 2005

None

APPROVED:

[Signature]
Operations Manager - Salem

8/8/05
Date

Used 9/25/06 data

Correct data

S1.OP-ST.NIS-0002(Q)

ATTACHMENT 1
 (Page 1 of 1)

QPTR CALCULATION DATA USING MANUAL CALCULATION

1.0 UPPER DETECTORS

Detector Current (microamperes)	÷ 100% NI Value (2)	= Detector Ratio	÷ Average Upper Detector Ratio	= Power Tilt (1)
N41T= 170.0 ¹⁶⁹ 168.8	165.5	1.021	0.994	1.027
N42T= 166	167.5	0.991		0.997
N43T= 147.45	148.3	0.978		0.984
N44T= 165	167.2	0.987		0.993
Sum of Detector Ratios		= 3.997		
# of Operable Detectors		÷ 4		
Average Upper Detector Ratio		= 0.994		
Independent Verification of calculation performed by:				

2.0 LOWER DETECTORS

Detector Current (microamperes)	÷ 100% NI Value (2)	= Detector Ratio	÷ Average Lower Detector Ratio	= Power Tilt (1)
N41B= 168	166.7	1.008	0.994	1.014
N42B= 176	176.5	0.997		1.003
N43B= 140	142.2	0.985		0.991
N44B= 168	170.6	0.985		0.991
Sum of Detector Ratios		= 3.975		
# of Operable Detectors		÷ 4		
Average Lower Detector Ratio		= 0.994		
Independent Verification of calculation performed by:				

- (1) Record Power Tilt to three significant digits to the right of the decimal.
- (2) Reference Notes in S1.RE-RA.ZZ-0011(Q), Table 2 for specific applicability requirements.

Correct data & calcs

s1.OP-ST.NIS-0002(Q)

ATTACHMENT 2

(Page 1 of 1)

QPTR TEST DATA USING MANUAL CALCULATION

Date: 10/5/6	Time: 2200	Reactor Power: 100.0%
--------------	------------	-----------------------

REASON FOR PERFORMING QPTR: (Check as applicable)

- Unit in Mode 1 operating at >50% thermal power.
- Unit in Mode 1 operating at ≤50% thermal power and verification that QPTR is within limits prior to exceeding 50% thermal power.
- OHA E-38 or E-46 annunciated or is inoperable and thermal power is >50%.
- IAW T/S 3.3.1.1 Action 2c, One Power Range Channel is inoperable AND trip setpoints are >85% or thermal power is >75%.

Upper Detector	Power Tilt (1)	Lower Detector	Power Tilt (1)
N41T	1.027	N41B	1.014
N42T	0.997	N42B	1.003
N43T	0.984	N43B	0.991
N44T	0.993	N44B	0.991

Maximum Power Tilt (1)	Detector	Acceptance Criteria	Test Results	
			SAT	UNSAT
1.027	N41 Upper	≤1.02 and (2)		<i>AS</i>
1.014	N41 Lower		<i>AS</i>	

- (1) Carry forward the Power Tilt value on Attachment 1 with three significant digits to the right of the decimal.
- (2) IAW T/S 3.3.1.1, Action 2c, when applicable, the 3 channel QPTR is verified consistent with Reactor Engineering core power distribution measurement to satisfy surveillance requirement 4.2.4.c.

ATTACHMENT 3
 (Page 1 of 1)

QPTR TEST DATA USING THE PLANT COMPUTER

Date:	Time:	Reactor Power:	%
-------	-------	----------------	---

REASON FOR PERFORMING QPTR: (Check as applicable)

- Unit in Mode 1 operating at >50% thermal power.
- Unit in Mode 1 operating at ≤50% thermal power and verification that QPTR is within limits prior to exceeding 50% thermal power.
- OHA E-38 or E-46 annunciated or is inoperable and thermal power is >50%.

Detector	Plant Computer Points	1-MIN QPTR (1)
CHAN 41 UPPER	YFT0114N	
CHAN 41 LOWER	YFT0124N	
CHAN 42 UPPER	YFT0112N	
CHAN 42 LOWER	YFT0122N	
CHAN 43 UPPER	YFT0111N	
CHAN 43 LOWER	YFT0121N	
CHAN 44 UPPER	YFT0113N	
CHAN 44 LOWER	YFT0123N	

Maximum Power Tilt (1)	Detector	Acceptance Criteria	Test Results	
			SAT	UNSAT
	Upper	≤1.02		
	Lower			

(1) RECORD 1-MIN QPTR with three significant digits to the right of the decimal.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

TASK NUMBER: 1200030301

JPM NUMBER: INDIA Admin A1-2

K/A NUMBER: 2.1.25

APPLICABILITY:

IMPORTANCE FACTOR:

EO

RO

SRO

X

RO

3.1

SRO

EVALUATION SETTING/METHOD: Simulator or Control Room

REFERENCES: SC.RE-ST.ZZ-0002, Rev. 14^{15 A} 10/27/06 Shutdown Margin Calculation
S1.RE-RA.ZZ-0012, Rev. 107 Figures (Cycle 18)

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 15 MIN

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVED:

N/A

Bargaining Unit
Representative

OTM

Operations Director or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the SM or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION TIME: _____

JPM PERFORMED BY: _____

GRADE:

SAT

UNSAT

REASON, IF UNSATISFACTORY: _____

EVALUATOR'S SIGNATURE: _____

DATE: _____

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

SETUP INSTRUCTIONS

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

TASK NUMBER: 1200030301

SIMULATOR IC: N/A

**MALFUNCTIONS
REQUIRED:** NONE

**OVERRIDES
REQUIRED:** NONE

**SPECIAL
INSTRUCTIONS:**

Complete SC.RE-ST.ZZ-0002 up through step 5.2 including Attachment 3.

Att. 3 values are

100

800

D @ 228

11,200

1

3150

3585

595

595

2100 (This value should be 0)

-3445 (This value should be -5545)

-3445 (This value should be -5545)

614

2025

-806 (This value should be 2906)

Complete section 4.4 as if the SDM was -806 pcm.....UNSAT

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

TASK NUMBER: 1200030301

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.
2. 1 control rod in Control Bank A has been declared INOPERABLE due to a determination that non-qualified repair parts were used on the Rod Control circuitry.
3. Core exposure is 11,200 GWD/MTU.

INITIATING CUE:

The NCO assigned to perform the Shutdown Margin calculation IAW TSAS 3.1.3.1 Action C.3, reports that SDM is below the minimum required for MODE 1 operation and that Rapid Boration is required.

Review the attached SDM calculation procedure SC.RE-ST.ZZ-0002, and determine if Rapid Boration is required. Note any discrepancies on Attachment 7.

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).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
1		Provide the candidate with the marked up copy of SC.RE-ST.ZZ-0002 and Att. 1	Ensures section 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
JOB PERFORMANCE MEASURE**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	3	Review the completed Shutdown Margin Calculation by verifying the following: <ul style="list-style-type: none"> • Power Level • Boron Concentration • Burnup • # of INOPERABLE Rods <ul style="list-style-type: none"> • Step 4.2.1 • Step 4.2.2 • Step 4.2.3 • Step 4.2.4 • Step 4.2.5 • Step 4.2.6 	Verifies power is 100% from stem initial conditions. Using Figure 30, verifies boron concentration is 800 ppm. CUE: If candidate asks for RCS boron concentration, state 800 ppm. This would normally be available to the condidate in the control room from Control Room Logs. Verifies burnup from stem initial conditions. Verifies 1 from stem. Verifies 3150 from Figure 15 Verifies 3585 from Figure 16 Verifies 595 from Figure 17 Verifies 595 for 1 control rod. Determines INTEGRAL ROD WORTH INSERTED has been improperly determined. Correct number should be ZERO, since there are no rods inserted. Determines the TRIPPABLE ROD WORTH is incorrect because of 4.2.5 being incorrect. Correct number should be 5545.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT Evaluation)
*	Cont	<ul style="list-style-type: none"> • Step 4.3.1 • Step 4.3.2 	<p>Determines error propagation continues. Correct number should be 5545. Determines 614 is correct number for 10% penalty. Determines Power Defect is correct Determines SDM is incorrect. Actual SDM is 2906 pcm.</p>		
*		<ul style="list-style-type: none"> • Step 4.3.3 • Step 4.3.4 	<p>Due to graph interpolation requirements, a +/- 200 pcm range is acceptable for actual SDM.</p>		
*	4	Acceptance Criteria	<p>Determines Acceptance criteria are actually met, and Rapid Boration is NOT required.</p> <p>Terminate the JPM once the attachment has been reviewed and correct values obtained, AND the candidate determines Rapid Boration is NOT required.</p>		

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.
2. 1 control rod in Control Bank A has been declared INOPERABLE due to a determination that non-qualified repair parts were used on the Rod Control circuitry.
3. Core exposure is 11,200 GWD/MTU.

INITIATING CUE:

The NCO assigned to perform the Shutdown Margin calculation IAW TSAS 3.1.3.1 Action C.3, reports that SDM is below the minimum required for MODE I operation and that Rapid Boration is required.

Review the attached SDM calculation procedure SC.RE-ST.ZZ-0002, and determine if Rapid Boration is required.
Note any discrepancies on Attachment 7.

PSEG NUCLEAR L.L.C.
SALEM GENERATING STATION/REACTOR ENGINEERING
SC.RE-ST.ZZ-0002(Q) - REV. 15
SHUTDOWN MARGIN CALCULATION

USE CATEGORY:

- A. (Optional) Biennial Review performed: Yes __ No X NA __
B. Change Package(s) and Affected Document Number(s) Incorporated in this revision:
• None
C. OTSC(s) Incorporated Into this revision:
• None

REVISION SUMMARY:

1. Minor editorial change to Attachment 3, Step 4.3.2 to properly calculate rod worth penalty. This revision satisfies the requested action documented in 80034519 Operation 0080.

IMPLEMENTATION REQUIREMENTS

Effective Date 10/27/06

APPROVED: *[Signature]*
Manager Reactor Engineering (or Designee)

10/26/06
Date

SHUTDOWN MARGIN CALCULATION

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	PURPOSE.....	2
2.0	PREREQUISITES	3
3.0	PRECAUTIONS AND LIMITATIONS.....	3
4.0	EQUIPMENT/MATERIAL REQUIRED.....	4
5.0	PROCEDURE.....	5
5.1	Shutdown Margin Calculation.....	5
5.2	Acceptance Criteria.....	5
5.3	Completion and Review.....	6
6.0	RECORDS.....	7
7.0	REFERENCES	7

ATTACHMENTS

Attachment 1	Shutdown Margin Verification With No Xenon Credit.....	9
Attachment 2	Detailed Shutdown Margin Calculation Work Sheet.....	12
Attachment 3	Shutdown Margin Verification Mode 1 or 2.....	21
Attachment 4	Rod Insertion Limit Shutdown Margin Calculation Prior to Mode 1	24
Attachment 5	Refueling Boron Concentration for Mode 6	26
Attachment 6	Shutdown Margin Verification for Boration Concurrent with Cooldown....	28
Attachment 7	Completion/Sign-Off Sheet	31

1.0 **PURPOSE**

1.1 The purpose of this procedure is to provide instructions necessary to perform the following:

- 1.1.1 To determine the boron concentration required for a desired temperature and rod configuration so that Shutdown Margin (SDM) can be maintained while going to that condition.
- 1.1.2 To verify that the SDM requirements are met when the Reactor Coolant System (RCS) is borated concurrently with cooldown.
- 1.1.3 To determine the amount of reactivity by which the reactor is subcritical (k_{eff}) and the amount of SDM available while at a specific reactor temperature and rod position.
- 1.1.4 To verify that the SDM requirements are met in Mode 1 or 2 .
- 1.1.5 To verify that the SDM requirements are met at rod insertion limits prior to entering Mode 1 after a refueling outage.
- 1.1.6 To determine the RCS and Refueling Canal boron concentration which will ensure adequate SDM is maintained during refueling operations.

1.2 According to Technical Specifications (T/S) this requirement is applicable as follows:

- ◆ At least once per 24 hours.
 - Modes 3 & 4 T/S 4.1.1.1.e
 - Mode 5 T/S 4.1.1.2.b
- ◆ Within 1 hour after detection of an inoperable control rod and at least once per 12 hours thereafter while rod is inoperable.
 - Mode 1 & 2 T/S 3.1.3.1 Action a and action c.3
 - Modes 1 - 4 T/S 4.1.1.1.a
 - Mode 5 T/S 4.1.1.2.a
- ◆ Prior to initial operation above 5% rated thermal power after each fuel loading with control banks at the maximum insertion limit in the COLR.
 - Modes 2 - 4 T/S 4.1.1.1.d
- ◆ Within 1 hour of detection of NO OPERABLE source range channels and at least once per 12 hours thereafter (Modes 3, 4, and 5).
 - Mode 3 - 5 T/S 3.3.1.1, Table 3.3-1 Action 5

- ◆ When boration is required for the following T/S LCO's:
 - Modes 1 - 3 T/S 3.1.2.2, Reactivity Control, Flow Paths
 - Modes 1 - 3 T/S 3.1.2.4, Reactivity Control, Charging Pumps
 - Modes 1 - 4 T/S 3.1.2.6, Reactivity Control, Borated Water Sources
- ◆ Prior to and during refueling operations
 - Mode 6 T/S 3.9.1
- ◆ Whenever a SDM calculation is needed to ensure the reactor has adequate SDM.

2.0 PREREQUISITES

None

3.0 PRECAUTIONS AND LIMITATIONS

- S 3.1 The NAME, INITIALS and SIGNATURE of all personnel performing steps in this procedure, and the DATE of performance, shall be recorded on Attachment 7.
- S 3.2 All deficiencies and corrective actions taken during the performance of this procedure, including termination, shall be documented in the Comments section of Attachment 7.
- S 3.3 Conditional steps should be evaluated by the user and, if not applicable, marked "N/A." Conditional steps include the words IF, WHEN, and OR.
- S 3.4 Non-conditional steps, which are determined to be not applicable should be marked "N/A," initialed by the Reactor Engineer, and clearly explained in the Comments section of Attachment 7.
- S 3.5 The Supervisor-Reactor Engineering may substitute reactivity worths on the work sheet at his/her discretion. This allows the use of the latest determined reactivity worths that might not be incorporated into the Figures. Reactivity substitutions of any type should be noted on Attachment 7 and should be initialed by the Supervisor-Reactor Engineering and the Shift Manager/Control Room Supervisor (SM/CRS) prior to use in the SDM calculation.
- S 3.6 SDM shall be ≥ 1300 pcm in Modes 1-4 (T/S 3.1.1.1).
- S 3.7 SDM shall be ≥ 1000 pcm in Mode 5 (T/S 3.1.1.2).

- A 3.8 Maintaining SDM does NOT ensure that the reactor remains subcritical. Take note of k_{eff} to ensure against ACCIDENTAL CRITICALITY. Ensure that the required k_{eff} is maintained for the desired mode.
- A 3.9 Since reactivity data will change with fuel exposure, use the most recent burn-up when reading reactivity data.
- A 3.10 Reactivity effects of samarium have not been included in this procedure. After a shutdown, samarium concentration always increases tending to further poison the core. Any SDM calculated by this procedure would actually be more conservative since no credit is taken for samarium.

4.0 EQUIPMENT/MATERIAL REQUIRED

- N/A 4.1 Excel Spreadsheets (i.e. S1(2)RE-STZZ-0002(Q).xls) (Optional)

5.0 **PROCEDURE**

S

5.1 **Shutdown Margin Calculation**

S

5.1.1 **SELECT** the applicable step below (e.g., 5.1.1.A):

N/A

A. **IF** SDM is to be verified with no xenon credit (for Modes 3, 4, or 5), including IRPI Calibrations and/or Rod Drop Time Testing, **THEN COMPLETE** Attachment 1.

N/A

B. **IF** calculating the amount of reactivity by which the reactor is sub-critical (k_{eff}) and the amount of shutdown margin available in Modes 2, 3, 4 or 5 at any time in core life from a known critical condition **THEN COMPLETE** Attachment 2 (Detailed SDM Calculation).

S

C. **IF** SDM is to be verified (per T/S 4.1.1.1.a) with reactor critical (Mode 1 or 2) and one or more control rods are inoperable **THEN COMPLETE** Attachment 3.

N/A

D. **IF** SDM is to be verified (per T/S 4.1.1.1.d) prior to initial operation above 5% rated thermal power following a refueling outage with control banks at the maximum insertion limit **THEN COMPLETE** Attachment 4.

N/A

E. **IF** determining a Mode 6 boron concentration in the Reactor Coolant System, the fuel storage pool, the refueling canal, and the refueling cavity which ensures the most restrictive reactivity condition is met per T/S 3.9.1, **THEN COMPLETE** Attachment 5.

N/A

F. **IF** the reactor is in Mode 3 with the shutdown banks and control banks fully inserted and SDM is to be verified for RCS boration concurrent with cooldown (Modes 3, 4 or 5) **THEN COMPLETE** Attachment 6.

5.2 **Acceptance Criteria**

\$

5.2.1 **WHEN** the acceptance criteria in the applicable attachment is met, **THEN** this surveillance is satisfactory.

\$

5.2.2 **IF** the acceptance criteria in the applicable attachment is **NOT** met, **THEN** this surveillance is unsatisfactory. **PERFORM** the following:

—

A. **NOTIFY** the SM/CRS.

—

B. **NOTIFY** Nuclear Fuels.

—

C. **NOTIFY** the Supervisor – Reactor Engineering

5.3 **Completion and Review**

5.3.1 **COMPLETE** Attachment 7, Sections 1.0, 2.0 and **DIRECT** a Qualified Individual, IAW the requirements of NC.NA-AP.ZZ-0014(Q), Training, Qualification and Certification, to **PERFORM** an Independent Verification of this procedure.

5.3.2 Independent Verifier **PERFORM** an Independent Verification of this procedure. **COMPLETE** Attachment 7, Section 3.0 and **FORWARD** this procedure to the Control Room Supervisor (CRS) for review.

5.3.3 **SM/CRS PERFORM** the following:

A. **REVIEW** this procedure with all applicable attachments for completeness and accuracy.

B. **COMPLETE** Attachment 7, Sections 2.0 and 4.0.

C. **FORWARD** the completed procedure to Operations Staff. The most recently completed procedure should be maintained in the appropriate control room file. Ops Staff should **FORWARD** the previously completed procedure for records retention.

END OF PROCEDURE SECTION

6.0 **RECORDS**

RETAIN the following IAW RM-AA-101, Records Management Program:

- Attachment 1 (as applicable)
- Attachment 2 (as applicable)
- Attachment 3 (as applicable)
- Attachment 4 (as applicable)
- Attachment 5 (as applicable)
- Attachment 6 (as applicable)
- Attachment 7

7.0 **REFERENCES**

7.1 **Salem Common:**

- 7.1.1 INPO SER 15-92, Loss of Shutdown Reactivity Margin
- 7.1.2 DEF DES-91-00778
- 7.1.3 NDR, The Nuclear Design and Startup Report of the Current Cycle for Salem 1 **OR** Salem 2 Nuclear Power Plant
- 7.1.4 LCR S00-04, Request for Change to Technical Specifications Position Indicating System-Shutdown, Salem Generating Station, Unit Nos. 1 and 2, Facility Operating License DPR-70 and DPR-75, Docket Nos. 50-272 and 50-311
- 7.1.5 LCR S02-12, Request for Change to Technical Specifications for Fuel Storage Pool Boron Concentration Fuel Assembly Storage in the Spent Fuel Pool, Salem Generating Station, Unit Nos. 1 and 2, Facility Operating License DPR-70 and DPR-75, Docket Nos. 50-272 and 50-311.
- 7.1.6 DS1.8-0074, Relaxation of Keff During IRPI Calibration and Rod Drop Time Measurement.
- 7.1.7 NFS 05-014, Considerations to Remove Administrative Shutdown Keff Requirement.
- 7.1.8 NUTS 80086443, Relaxation of Keff During Lower Mode Control Rod Testing

7.2 **Salem 1:**

- 7.2.1 Safety Evaluation SECL-92-140, Salem Unit 1, Cycle 11 Operation with Increased Auxiliary Feedwater Flow
- 7.2.2 NFS 93-666, Salem Unit 1 cycle 12 Reload Safety Evaluation for Operation in Modes 5 through 1 and NRC Notification.
- 7.2.3 DCP 1EC-3254, Boric Acid Concentration Reduction Program.
- 7.2.4 Technical Specification Amendment No. 205.
- 7.2.5 Technical Specification Amendment No. 232
- 7.2.6 Technical Specification Amendment No. 262

7.3 **Salem 2:**

- 7.3.1 NFU 92-155, Salem Unit 2 Administrative Shutdown Margin Requirements
- 7.3.2 NFU 92-181, Salem Unit 2 Cycle 7 Reload Safety Evaluation for Operation in all Modes and NRC Notification
- 7.3.3 DCP 2EC-3225, Boric Acid Concentration Reduction Program
- 7.3.4 NRC Docket No. 50-311, Amendment No. 197
- 7.3.5 Technical Specification Amendment No. 187
- 7.3.6 Technical Specification Amendment No. 213
- 7.3.7 Technical Specification Amendment No. 244

7.4 **Technical Specifications:**

- 7.4.1 3/4.1.1.1, Boration Control, Shutdown Margin $T_{avg} > 200^{\circ}\text{F}$
- 7.4.2 3/4.1.1.2, Boration Control, Shutdown Margin $T_{avg} \leq 200^{\circ}\text{F}$
- 7.4.3 3/4.1.2.2, Reactivity Control, Flow Paths - Operating
- 7.4.4 3/4.1.2.4, Reactivity Control, Charging Pumps - Operating
- 7.4.5 3/4.1.2.6, Reactivity Control, Borated Water Sources - Operating
- 7.4.6 3/4.1.3.1, Reactivity Control, Movable Control Assemblies Group Height
- 7.4.7 3/4.1.3.5, Reactivity Control, Control Rod Insertion Limits
- 7.4.8 3/4.3.1.1, Instrumentation, Reactor Trip System Instrumentation
- 7.4.9 S1 3/4.4.9.1, S2 3/4.4.10.1 Pressure/Temperature Limits, Reactor Coolant System
- 7.4.10 3/4.9.1, Refueling Operations, Boron Concentration

7.5 **Cross-References:**

- 7.5.1 RM-AA-101, Records Management Program
- 7.5.2 S1(2).OP-SO.CVC-0006(Q), Boron Concentration Control
- 7.5.3 S1(2).OP-SO.CVC-0008(Q), Rapid Boration
- 7.5.4 S1(2).OP-SO.RCS-0001(Q), Rod Control System Operation
- 7.5.5 S1.RE-RA.ZZ-0012(Q), Figures
- 7.5.6 NC.NA-AP.ZZ-0014(Q), Training, Qualification and Certification
- 7.5.7 SC.RE-ST.ZZ-0003(Q), Core Reactivity Balance Calculation
- 7.5.8 S2.RE-RA.ZZ-0016(Q), Curvebook

**ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2**

Page 1 of 3

SALEM UNIT

1.0 **PURPOSE**

- 1.1 The purpose of this attachment is to determine the SDM with a critical reactor .
- 1.2 This attachment satisfies the surveillance requirements of T/S 4.1.1.1.1.a and 4.1.1.1.2.
- 1.3 This attachment **SHALL** be performed within 1 hour after detection of an inoperable control rod and at least once per 12 hours thereafter while the rod(s) is (are) inoperable.
- 1.4 This attachment is used to ensure adequate shutdown margin IAW SC.RE-ST.ZZ-0003(Q), Core Reactivity Balance Calculation.

2.0 **PREREQUISITES**

A

- 2.1 The reactor is in Mode 1 or Mode 2 with $k_{eff} \geq 1.0$

3.0 **PRECAUTIONS AND LIMITATIONS**

A

- 3.1 All figures are located in S1.RE-RA.ZZ-0012(Q), Figures or S2.RE-RA.ZZ-0016(Q) Curvebook.

A

- 3.2 All data from the Figures should be taken as the absolute value shown in the figure. Any mathematical signs (+/-) should be propagated throughout the rest of the calculation.

A

- 3.3 This calculation does **NOT** consider the effects of RCS boron concentration, RCS average temperature, fuel burnup, xenon concentration, or samarium concentration. Tave will decrease from the critical condition to the hot zero power shutdown condition. However, the reactivity effect of this will be accounted for in the power defect. The other factors will stay constant from the critical condition to the hot zero power shutdown condition.

ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2

Page 2 of 3

SALEM UNIT 1

4.0 PROCEDURE

4.1 CRITICAL CONDITIONS

- 4.1.1 POWER LEVEL 100 %RTP
- 4.1.2 BORON CONCENTRATION 800 ppm
- 4.1.3 CONTROL BANK POSITION Bank D at 228 Steps
- 4.1.4 BURNUP 11,200 MWD/MTU or EFPH
- 4.1.5 # OF INOPERABLE RODS 1 rods

4.2 CALCULATION OF ROD WORTH

- 4.2.1 TOTAL CONTROL BANK WORTH (Figure 15) (-) 3150 pcm
- 4.2.2 TOTAL SHUTDOWN BANK WORTH (Figure 16) (-) 3585 pcm
- 4.2.3 MOST REACTIVE STUCK ROD WORTH (S1-Figure 17;
S2-Figure 14/Table I) 595 pcm
- 4.2.4 INOPERABLE ROD(S) WORTH 595 pcm
 $\frac{1}{\text{Item 4.1.5}} \times \frac{595}{\text{Item 4.2.3}} =$
- 4.2.5 INTEGRAL ROD WORTH INSERTED (S1-Figure 4;
S2 - Figure 2C(Table 1-7) or 2A(Table 1-8)) 2,100 pcm
- 4.2.6 TRIPPABLE ROD WORTH -3445 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

- 4.3.1 TRIPPABLE ROD WORTH (Item 4.2.6) -3445 pcm
- 4.3.2 TEN PERCENT ROD WORTH PENALTY 614 pcm
 $(\frac{3150}{\text{Figure 15}} + \frac{3585}{\text{Figure 16}} - \frac{595}{\text{Item 4.2.3}}) \times 0.10 =$
- 4.3.3 POWER DEFECT (S1 -Figure 2; S2 - Figure 17A/Table 2-1) 2,025 pcm
- 4.3.4 SDM -806 pcm
(Item 4.3.1+Item 4.3.2+Item 4.3.3) =

**ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2**

Page 3 of 3

SALEM UNIT /

4.4 ACCEPTANCE CRITERIA

S 4.4.1 REQUIRED SDM (per T/S 3.1.1.1) MODE 1 OR 2:
(-)1.3 % $\Delta k/k$ = (-) 1300 PCM

S 4.4.2 IS THE SDM (Item 4.3.4) EQUAL TO OR MORE NEGATIVE THAN (-)1300 PCM?
YES: then surveillance is SAT:
NO: then surveillance is UNSAT:

S 4.4.3 IF the SDM is UNSAT,
THEN NOTIFY SM/CRS to initiate rapid boration, IAW S1(S2).OP-SO.CVC-0008(Q),
Rapid Boration, UNTIL the required SDM is attained.

Completed by: S. Sanding Date: 10/27/6 Time: 1500

Verified (IV) by: _____ Date: _____ Time: _____

CORRECT VALUES

SC.RE-ST.ZZ-0002(Q)

**ATTACHMENT 3
SHUTDOWN MARGIN VERIFICATION
FOR MODES 1 OR 2**

Page 2 of 3

SALEM UNIT 1

4.0 PROCEDURE

4.1 CRITICAL CONDITIONS

- 4.1.1 POWER LEVEL 100 %RTP
- 4.1.2 BORON CONCENTRATION 800 ppm
- 4.1.3 CONTROL BANK POSITION Bank D at 228 Steps
- 4.1.4 BURNUP 11,200 MWD/MTU or EFPH
- 4.1.5 # OF INOPERABLE RODS 1 rods

4.2 CALCULATION OF ROD WORTH

- 4.2.1 TOTAL CONTROL BANK WORTH (Figure 15) (-)3150 pcm
- 4.2.2 TOTAL SHUTDOWN BANK WORTH (Figure 16) (-)3585 pcm
- 4.2.3 MOST REACTIVE STUCK ROD WORTH (S1-Figure 17;
S2-Figure 14/Table I) 595 pcm
- 4.2.4 INOPERABLE ROD(S) WORTH 595 pcm
 $\frac{1}{\text{Item 4.1.5}} \times \frac{595}{\text{Item 4.2.3}} =$

- 4.2.5 INTEGRAL ROD WORTH INSERTED (S1-Figure 4;
S2 - Figure 2C(Table 1-7) or 2A(Table 1-8)) 0 pcm
- 4.2.6 TRIPPABLE ROD WORTH -5545 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

- 4.3.1 TRIPPABLE ROD WORTH (Item 4.2.6) -5545 pcm
- 4.3.2 TEN PERCENT ROD WORTH PENALTY 614 pcm
 $(\frac{3150}{\text{Figure 15}} + \frac{3585}{\text{Figure 16}} - \frac{595}{\text{Item 4.2.3}}) \times 0.10 =$
- 4.3.3 POWER DEFECT (S1 -Figure 2; S2 - Figure 17A/Table 2-1) 2025 pcm
- 4.3.4 SDM -2906 pcm
(Item 4.3.1+Item 4.3.2+Item 4.3.3) =

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM
SYSTEM: ADMINISTRATIVE (TAGGING)
TASK: Review, for approval, a Tagging Request
TASK NUMBER: 1220050302
JPM NUMBER: INDIA NRC - SRO ADMIN A.2

ALTERNATE PATH: K/A NUMBER: 2.2.13
IMPORTANCE FACTOR: RO 3.8 SRO
APPLICABILITY: EO RO STA SRO

EVALUATION SETTING/METHOD: Perform (In-Plant or Classroom)

REFERENCES: NC.NA-AP.ZZ-0015, REV. 19 SH.OP-AP.ZZ-0015, REV.20
P&IDs 205334, 203061

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 mins.

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

N/A - A BARGAINING UNIT REPRESENTATIVE
[Signature] OPERATIONS TRAINING MANAGER
[Signature] 10/26/06 OPERATIONS DIRECTOR Or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

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

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (TAGGING)
TASK: Review, for approval, a Tagging Request

TASK NUMBER: 1220050302

INITIAL CONDITIONS:

1. Unit 2 is at 100% power.
2. A small leak has developed on an instrument connection for 21 SI Pump. The leak location is just upstream of 21SJ92, SI PUMP DISCH PRESS TAP The SM has authorized clearing and tagging 21 SI Pump to allow maintenance to replace the line.
3. No other ECCS-related technical specification action statements are in effect.

INITIATING CUE:

You are the Unit 2 CRS. The Work Control Center has forwarded this Tagging Request for your review and approval. If there is any enhancement or correction required to WCD, record it on the Initial Conditions paperwork.

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.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: ADMINISTRATIVE (TAGGING)
TASK: Review, for approval, a Tagging Request

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Prove candidate with "Tear-off Sheet" and the Tagging Request.			
		START TIME: _____			
	1	Refers to SH.OP-AP.ZZ-0015 or NC.NA-AP.ZZ-0015, as necessary.	NOTE: Ensure that a reference-grade copy of SH.OP-AP.ZZ-0015 and NC.NA-AP.ZZ-0015 are available.		
* * *	2	Reviews tagging request against P&ID blocking points	Notes that: 1. 2SJ30, RWST to SI Pump Stop Valve, is listed as a blocking point. Closing 2SJ30 would render both 21 and 22 SI Pumps inoperable. The proper blocking point should be 21SJ33 instead of 2SJ30. 2. 21 SI pump Recirculation Line is not isolated from a potential energy source. Check valves are NOT relied upon for personnel protection. Isolation valve 21SJ65 should be tagged in the closed position. 3. ECCS cross-connect line going from pump suction to the 21SJ113 and 22SJ113 is not tagged. 4. Returns Tagging Request to WCC, with changes requested.		

OPERATOR TRAINING PROGRAM
 JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (TAGGING)

TASK: Review, for approval, a Tagging Request

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	TERMINATE JPM			
	5	STOP TIME: _____			

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

1. Unit 2 is at 100% power.
2. A small leak has developed on an instrument connection for 21 SI Pump. The leak location is just upstream of 21SJ92, SI PUMP DISCH PRESS TAP The SM has authorized clearing and tagging 21 SI Pump to allow maintenance to replace the line.
3. No other ECCS-related technical specification action statements are in effect.

INITIATING CUE:

You are the Unit 2 CRS. The Work Control Center has forwarded this Tagging Request for your review and approval. If there is any enhancement or correction required to WCD, record it on the Initial Conditions paperwork.

TAGGING WORK LIST

Printed By: TRAIN22
 Date: 10/12/2006
 Time: 12:45:18
 Page: 1 of 3

Plant: Nuclear Business Unit
 Document No: 4177940
 Header Description: 21 Safety Injection Pump
 Tagged For Group
 ESO #:

VAR.1 VAR.2
 MAINTENANCE SHEET

SNT	Technical Object Description Location	ARC-FL	Untag Cond	Tag Cond	Type	As Left	INIT
00010	S2SJ-21SIPP-BZL 21 SAFETY INJECTION PUMP BEZEL 1212200002-SA #2 CONTROL ROOM AREA.		NB	NA	INF	---	---
00020	S24KV-2AD1AX5D 21 SAFETY INJECTION PUMP 1206400001-SA 4KV VITAL BUS & BATTERY ROOM. IP DATA: MODES 1,2, & 3 BKR SHALL BE RACKED IN. MODES 4,5 & 6 ONLY 1 OF 4 S.I. PUMPS SHALL BE OPERABLE WITH RCS COLD LEG TEMP < 312 DEGREES. Related WCD : 000004177641		IP	DI	RBT	---	---
00030	S2125-2AD1AX5D# CONTROL POWER 1206400001-SA 4KV VITAL BUS & BATTERY ROOM.		BD	DF	RBT	---	---
00040	S2SJ-2S330 RWST TO SI PUMPS STOP VALVE 1208400005-SA 21 SI PMP AREA Location Detail : IN U/2 AUX 84 FT. ELEV., SECT 5, 1 FT. FROM THE EAST WALL A ND 2 FT. UP FLOOR IP DATA: VALVE NORMALLY OPEN & LOCKED OUT.		IP	X	RBT	---	---
00050	S2SJ-21S335 21 SI PUMP DISCH VALVE 1208400005-SA 21 SI PMP AREA Location Detail : 3 FT. FROM THE WEST WALL AND 2 FT. UP FROM FLOOR IP DATA: LOCKED OPEN CRITERIA: 4 TECH SPEC: 4.5.2.B.1 & 4.5.3.1 NORMAL POSITION IS LOCKED OPEN ON BACKSEAT AS PER FSAR 6.3. Related WCD : 000004177641		IP	X	RBT	---	---
00100	S2SJ-21SJ104 SI PUMP DRN 1208400005-SA 21 SI PMP AREA		X	O	RBT	---	---

Signature: _____
 Date: _____

Update By _____
 Date: _____

TAGGING WORK LIST

Printed By:	TRAIN22
Date:	10/12/2006
Time:	12:45:18
Page:	2 of 3

Plant: Nuclear Business Unit
 Document No: 4177940
 Header Description: 21 Safety Injection Pump
 Tagged For Group: Group
 ESO #:

VAR.1 VAR.2
 MAINTENANCE SHEET

SNT	Technical Object Description Location	ARC-FL	Untag Cond	Tag Cond	Type	As Left	INIT
							Status
00110	S2SJ-21SJ103 SI PMP SUCT VENT 1208400005-SA 21 SI PMP AREA Location Detail : IN U/2 AUX 84 FT. ELEV., SECT. 5, 5 FT. FROM THE WEST WALL A ND 3 FT. UP FLOOR		X	D	RBT	---	---
					ITG		
00110	S2SJ-21SJ105 SI PMP VENT 1208400005-SA 21 SI PMP AREA Location Detail : IN U/2 AUX 84 FT. ELEV., SECT. 5, 5 FT. FROM THE EAST WALL A ND 4 FT. UP FLOOR		X	D	RBT	---	---
					ITG		
00200	S2SJ-21SJ92 SI PUMP DISCH PRESS TAP 1208400005-SA 21 SI PMP AREA		OB	D	VER	---	---
					ITG		

Signature: _____

Date: _____

Comments: _____

Update By: _____
Date: _____

TAGGING WORK LIST

Plant **Nuclear Business Unit**
Document No **4177940**
Header Description **21 Safety Injection Pump**
Tagged For **Group**
ESD #:

Printed By **TRAIN22**
Date **10/12/2006**
Time **12:45:18**
Page **3 of 3**

VAR.1 VAR.2
MAINTENANCE SHEET

SNT	Technical Object Description Location	ARC-FL	Untag Cond	Tag Cond	Type	As Left	INIT
-----	---	--------	------------	----------	------	---------	------

Tagging Long Text

Reviewed By _____
Date _____

SUMMARY

Total No of Tags = 9

INF = 1

RBT = 7

VER = 1

DI -- BKR RACKED OUT TO DISCONNECT POSITION

NA -- NO APPLICABLE POSITION

O -- VALVES OPEN POS, BKRS OPEN/OFF

OF -- OFF POSITION

X -- VALVES CLOSED, BKRS CLOSED/ON

Signature: _____

Date: _____

Update By: _____

Date: _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM
SYSTEM: ADMINISTRATIVE (ALARA)
TASK: Determine Radiological Conditions For Personnel Exposure
TASK NUMBER: N1200100104
JPM NUMBER: INDIA NRC - SRO ADMIN A.3

ALTERNATE PATH: K/A NUMBER: 2.3.2
IMPORTANCE FACTOR: RO 2.9 SRO
APPLICABILITY: EO RO STA SRO

EVALUATION SETTING/METHOD: Classroom

REFERENCES: NC.NA-AP.ZZ-0024(Q), Radiation Protection Program
NC.RP-TI.ZZ-0602(Q), Radiation and Contamination Surveys
NC.RP-TI.ZZ-0204(Q), Posting of Radiological Signs and Barriers

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 5 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL: N/A-B
BARGAINING UNIT REPRESENTATIVE
OPERATIONS TRAINING MANAGER
OPERATIONS DIRECTOR Or designee 12/26/06

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (ALARA)

TASK: Determine Radiological Conditions For Personnel Exposure

TASK NUMBER: N1200100104

INITIAL CONDITIONS:

1. Unit 2 is at 100% power.
2. Preparations are being made to start 12 RHR pump IAW S1.OP-SO.RHR-0001, INITIATING RHR, to sample the 12 RHR loop.

INITIATING CUE:

You are the Unit 2 Field Supervisor and have been directed to go to 12 RHR Pump to oversee the pump start. Upon arrival to the pump room, you have been informed that there will be a slight delay in starting the pump. Given the survey map, identify an appropriate waiting area and the basis for your decision.

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.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (TAGGING)

TASK: Review, for approval, a Tagging Request

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Prove candidate with "Tear-off Sheet" and the Tagging Request.			
		START TIME: _____			
	1	Obtain survey map	Provide the attached survey map.		
*	2	Determine low dose area.	Applicant determines the areas furthest away from the RHR HX room (lower left and lower right areas of the survey map) have the lowest general area dose rates (<1 mR/hr). <i>TERMINATING CUE: Candidate determines the low dose area.</i>		
	4	TERMINATE JPM			
	5	STOP TIME: _____			

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

1. Unit 2 is at 100% power.
2. Preparations are being made to start 12 RHR pump IAW S1.OP-SO.RHR-0001, INITIATING RHR, to sample the 12 RHR loop.

INITIATING CUE:

You are the Unit 2 Field Supervisor and have been directed to go to 12 RHR Pump to oversee the pump start. Upon arrival to the pump room, you have been informed that there will be a slight delay in starting the pump. Given the survey map, identify an appropriate waiting area and the basis for your decision.



Radiological Survey

MAP # 11045Z2

Location: S1 AUX 045' 12 RHR ROOMS Date: 9/15/2006 Time: 0330 RWP: 1

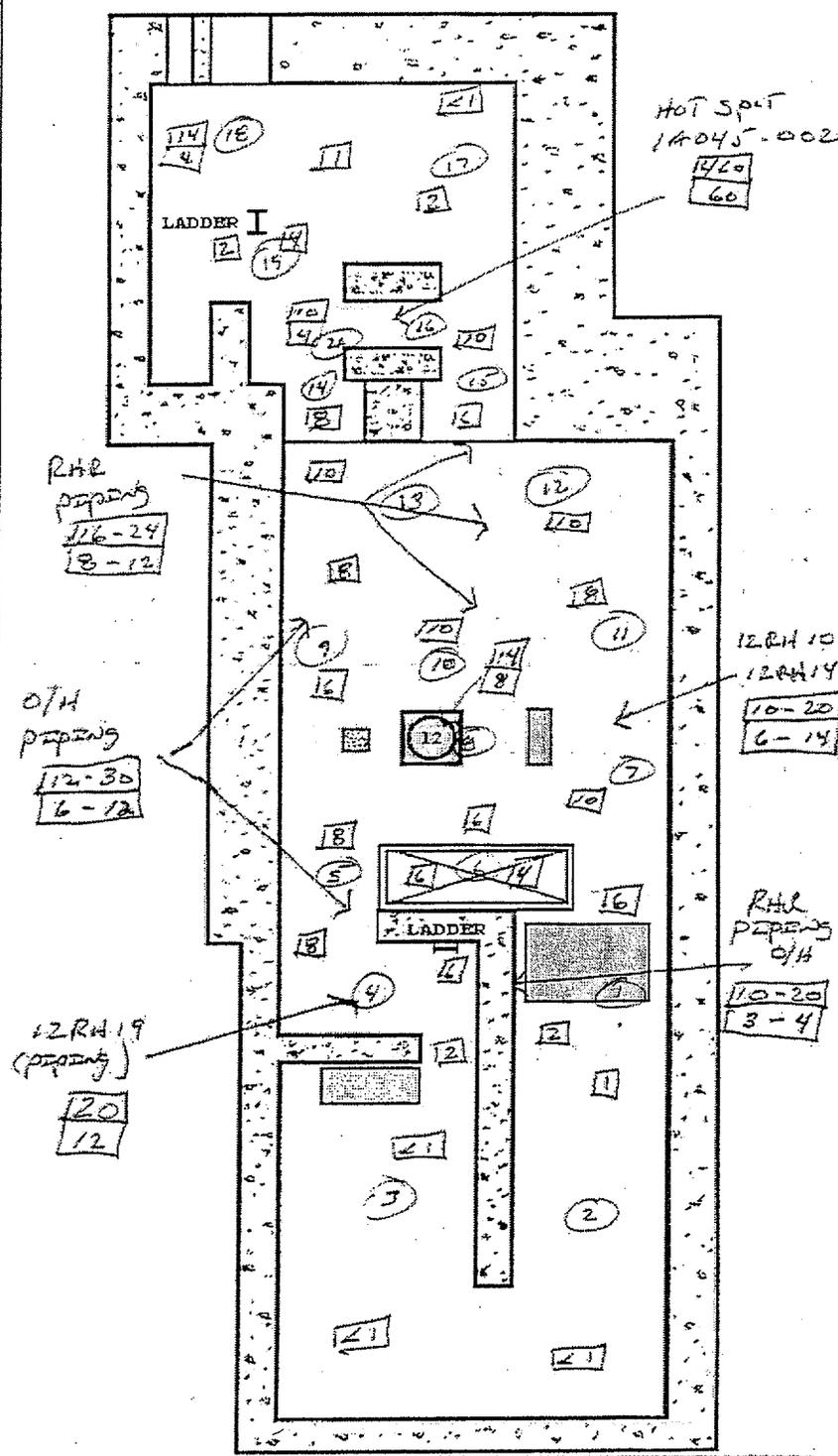
Radiation Survey		
7	Instrument R02	Serial# 0937
7	Instrument N/A	Serial# N/A

Contamination Survey		
B,y	Instrument RM-14	Serial# 7177
u	Instrument N/A	Serial# N/A

Contamination B,y			
LOC	dpm/100cm2	LOC	dpm/100cm2
1	2K	11	1K
2	<1K	12	4K
3	21K	13	21K
4	1K	14	21K
5	1K	15	2K
6	2K	16	1K
7	<1K	17	<1K
8	3K	18	<1K
9	<1K	19	<1K
10	2K	20	1K

Survey Type	Contamination α		
	LOC	ccpm	dpm/100cm2
<input checked="" type="checkbox"/> Clean Area			
<input type="checkbox"/> Routine			
<input checked="" type="checkbox"/> Monthly			
<input type="checkbox"/> S.O.J.			
<input type="checkbox"/> Other			

Surveyed By: **Jeff McManus**
 Print: **JEFF MCMANUS**
 Sign: *[Signature]*
 COMMENTS: *monthly/POST HRA, CA NEWPA (PADLOCKED) Best month 2250 m m/hr*
 Dose Rates along masslinn path <1 mRem/hr unless otherwise noted
 Masslinn results <1000 dpm/16cm2 on floors, walls & equipment
 Verified Radiological postings, labels, marking, and barriers



Dose Rate, mRem/hr Smear Location

Technician Review		Supervisor Review		
NAME: <i>[Signature]</i>	BADGE #: 0717	NAME: <i>[Signature]</i>	BADGE #: 02230	DATE: 9-20-06

ATTACHMENT 3

Page 1 of 1

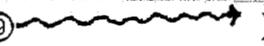
GUIDELINES FOR COMPLETING RADIOLOGICAL SURVEY MAPS

Record Data

- A. General Area (GA) beta-gamma radiation measurements are recorded in mR/hr within a square (e.g., 45 mR/hr beta-gamma is recorded as \square_{45}).
- B. GA beta radiation measurements are recorded in mrad/hr within a square with mrad/hr, or beta annotated next to it (e.g., 90 mrad/hr is recorded as \square_{90} mrad/hr or \square_{90} beta or \square_{90} β /hr.)
- C. GA neutron measurements are recorded in mrem/hr within a triangle (e.g., 30 mrem/hr neutron is recorded as \triangle_{30}).
- D. Contact radiation measurements described in A, B, and C above, are recorded with the word "contact" or the letter 'C' written next to the square. (e.g., 45 mrem/hr beta-gamma on contact is recorded as \square_{45} contact or \square_{45} c.)
- E. Any radiation measurements described in A, B, and C above, that are not recorded in general area or contact measurements should have the correct distance written next to it. (e.g., 30 mR/hr at 30 centimeters is recorded as \square_{30} @ 30 cm.)

NOTE

Use measurement units indicated above whenever possible. If other units are used (e.g., cpm, R/rad/hr), write the units next to the measurement.

- F. Identify contamination smear locations with a unique number within a circle and record the results in the spaces provided. $\textcircled{4}$
- G. Identify step-off-pads with this symbol: 
- H. Identify any radiological boundaries with a unique symbol (e.g. ~~x x x x x~~)
- I. Identify air sample locations with an asterisk (*).
- J. Identify gross area swipes with a unique letter/number within a circle and an attached line/arrow representing the area traversed. Results should be recorded in activity / gross swipe or activity / 16cm². (e.g. \textcircled{A} )
- K. With the exception of clean area surveys, document radiological postings. If the postings are >1R/hr, Exclusion Area, or Very High radiation Area, document the access control method (e.g., locked, flashing lights, guarded).

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: India NRC - SROA.4 (ESG-4)

ALTERNATE PATH: K/A NUMBER: 2.4.38
IMPORTANCE FACTOR: N/A 4.0
RO SRO
APPLICABILITY: EO RO STA SRO

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

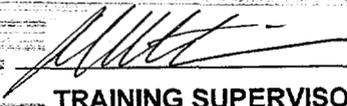
TOOLS AND EQUIPMENT: Inform Simulator Operators - DO NOT ERASE ANY PROCEDURES UNTIL THE SRO EVALUATOR APPROVES

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

N/A
BARGAINING UNIT REPRESENTATIVE


TRAINING SUPERVISOR


OPERATIONS MANAGER or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM 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 Attachment and provide an ICMF to the Primary Communicator within the required time limit.

Successful Completion Criteria:

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

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 (F-ESG-1)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential 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 or 4 as applicable to scenario flow		
	3	Fills out Section A of the Attachment	<ul style="list-style-type: none"> • Unit: 2 • EAL#(s): 7.1.3 for SAE OR 7.1.4.c for GE • Time: NOW • Date: TODAY • Initials as EC 		

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 (F-ESG-1)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators CUE: I am the Primary Communicator		
*	5	Complete the ICMF CUE: For purposes of the examination, if a release occurred during the event then check the "radiological release in progress" block. The OS would have checked that block if the ECG had been done in real time. KEY ATTACHED	<u>Fills out Section II:</u> <ul style="list-style-type: none"> Ensures the correct Attachment 3 for SAE or Attachment 4 for GE Time: NOW Date: TODAY EAL#(s): 7.1.3 for SAE OR 7.1.4.c for GE <ul style="list-style-type: none"> *Description of Event: Brief description capturing the major elements <u>Fills out Section III:</u> <ul style="list-style-type: none"> No release in progress <u>Fills out Section IV:</u> CUE: Wind direction is from 265°, 12 mph If GE was called, using Appendix 1 of ECG Attachment 4 indicates the PAR is evacuate ALL sectors 0-5 miles based on the GE NOT being a Barrier Table 10 pt. GE. <u>Initials for approval to transmit</u>		

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 (F-ESG-1)**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6.	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

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

INITIATING CUE:

You are the Duty SM. Classify the event, complete the Attachment and provide an ICMF to the Primary Communicator within the required time limit.

India ESG-4 Key

SAE

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 Now ON Today
(TIME - 24 HOUR CLOCK) (DATE)

EAL #(s) 7.1.3
DESCRIPTION OF EVENT: Loss of power to ALL 4KV
VITAL BUSES AND > 15 minutes have
elapsed.

III. NO RADIOLOGICAL RELEASE IS IN PROGRESS. } see NOTE
 THERE IS A RADIOLOGICAL RELEASE IN PROGRESS. } for release
definition

IV. 33 FT. LEVEL WIND DIRECTION (From): 265 WIND SPEED: 12
(From MET Computer /SPDS) (DEGREES) (MPH)

V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

INITIALS HERE
EC Initials
(Approval to Transmit ICMF)

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

India ESG-4 Key GE

ECG
ATT 4
Pg. 5 of 5

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

IIa. THIS IS NOTIFICATION OF A GENERAL EMERGENCY WHICH WAS

DECLARED AT Now ON Today
(TIME - 24 HOUR CLOCK) (DATE)

EAL #(s) 7.1.4.c

DESCRIPTION OF EVENT: Loss of power to ALL 4KV Vital Buses and 15 minutes have elapsed and Heat Sink Red Path

IIb.

THIS IS NOTIFICATION OF A PROTECTIVE ACTION RECOMMENDATION UPGRADE WHICH WAS MADE AT _____ HRS ON _____

(24 HOUR CLOCK)

(DATE)

Reason for PAR Upgrade: _____

III. NO RADIOLOGICAL RELEASE IS IN PROGRESS.

THERE IS A RADIOLOGICAL RELEASE IN PROGRESS.

see NOTE
for release
definition

IV. 33 FT. LEVEL WIND DIRECTION (From): 265 WIND SPEED: 12
(From MET Computer /SPDS) (DEGREES) (MPH)

V. WE RECOMMEND EVACUATION AS FOLLOWS ALL Sectors 0-5 Dist.- Miles

WE RECOMMEND SHELTERING AS FOLLOWS _____

WE RECOMMEND THE USE OF KI IN ACCORDANCE WITH STATE PROCEDURES

EC Initials (Approval to Transmit ICMF)

NOTE:

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

APPENDIX 1

PREDETERMINED PROTECTIVE ACTION RECOMMENDATIONS

CAUTION:

IF, TRAVEL CONDITIONS PRESENT AN EXTREME HAZARD (SEVERE ICE, SNOW, WIND, FLOOD, QUAKE DAMAGE, ETC.), CONSIDER SHELTER IN PLACE OF EVACUATE IN THE BELOW SELECTED PAR

PAR REQUIRED FOR GENERAL EMERGENCY

GE BASED
ON 10
POINTS ON
BARRIER
TABLE
?

YES

EVACUATE ALL SECTORS 0-5 MILES
EVACUATE DOWNWIND ± 1 SECTOR 5-10 MILES
SHELTER ALL REMAINING SECTORS 5-10 MILES

(See next page to determine downwind sectors)

NO

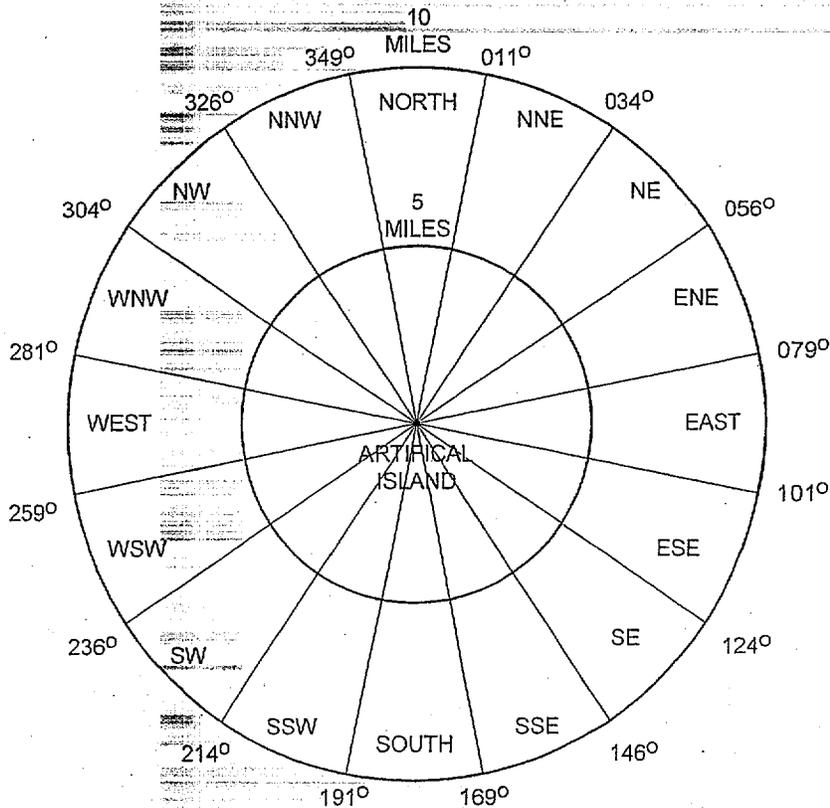
EVACUATE ALL SECTORS 0-5 MILES

DEFAULT PAR
(any other GE)

APPENDIX I (continued)
RECOMMENDED PROTECTIVE ACTION WORKSHEET

WIND DIRECTION FROM		PAR AFFECTED SECTORS	
DEGREES	COMPASS		DOWNWIND ±1 SECTORS
349 - 011	N	⇒	SSE - S - SSW
011 - 034	NNE	⇒	S - SSW - SW
034 - 056	NE	⇒	SSW - SW - WSW
056 - 079	ENE	⇒	SW - WSW - W
079 - 101	E	⇒	WSW - W - WNW
101 - 124	ESE	⇒	W - WNW - NW
124 - 146	SE	⇒	WNW - NW - NNW
146 - 169	SSE	⇒	NW - NNW - N
169 - 191	S	⇒	NNW - N - NNE
191 - 214	SSW	⇒	N - NNE - NE
214 - 236	SW	⇒	NNE - NE - ENE
236 - 259	WSW	⇒	NE - ENE - E
259 - 281	W	⇒	ENE - E - ESE
281 - 304	WNW	⇒	E - ESE - SE
304 - 326	NW	⇒	ESE - SE - SSE
326 - 349	NNW	⇒	SE - SSE - S

NOTE: CONSIDER ADDING A SECTOR TO THE PAR IF THE WIND DIRECTION (FROM) IS WITHIN ±3° OF A SECTOR DIVIDING LINE.



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:

India NRC – SROA.4 (ESG-3)

ALTERNATE PATH:

K/A NUMBER:

2.4.38

IMPORTANCE FACTOR:

N/A

4.0

RO

SRO

APPLICABILITY:

EO

RO

STA

SRO

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

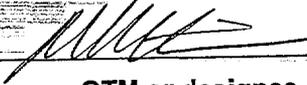
VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

N/A

BARGAINING UNIT REPRESENTATIVE



OTM or designee



OPERATIONS DIRECTOR or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM 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 Attachment and provide an ICMF to the Primary Communicator within the required time limit.

Successful Completion Criteria:

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

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)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential 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		
	3	Fills out Section A of the Attachment	<ul style="list-style-type: none"> • Unit: 2 • EAL#(s): 3.1.1.b AND 3.2.1.b OR 8.1.3.c • Time: NOW • Date: TODAY • Initials as EC 		

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)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators CUE: I am the Primary Communicator		
*	5	Complete the ICMF KEY ATTACHED	<u>Fills out Section II:</u> <ul style="list-style-type: none"> Ensures the correct Attachment 3 for SAE Time: NOW Date: TODAY EAL#(s): 3.1.1.b AND 3.2.1.b OR 8.1.3.c *Description of Event: Brief description capturing the major elements <u>Fills out Section III:</u> <ul style="list-style-type: none"> No release in progress <u>Fills out Section IV:</u> CUE: Wind direction is from 265°, 12 mph <u>Initials for approval to transmit</u>		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

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

INITIATING CUE:

You are the Duty SM. Classify the event, complete the Attachment and provide an ICMF to the Primary Communicator within the required time limit.

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 Now ON Today
(TIME - 24 HOUR CLOCK) (DATE)

EAL #(s) 3.1.1.b, 3.2.1.b (OR) 8.1.3.C

DESCRIPTION OF EVENT: HEAT SINK Red PATH

III. NO RADIOLOGICAL RELEASE IS IN PROGRESS.

THERE IS A RADIOLOGICAL RELEASE IN PROGRESS.

} see NOTE
for release
definition

IV.

33 FT. LEVEL WIND DIRECTION (From): 265 WIND SPEED: 12
(From MET Computer /SPDS) (DEGREES) (MPH)

V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

Initials here

EC Initials

(Approval to Transmit ICMF)

NOTE:

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

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:

India NRC - SROA.4 (ESG-2)

ALTERNATE PATH:

K/A NUMBER:

2.4.38

IMPORTANCE FACTOR:

N/A

4.0

RO

SRO

APPLICABILITY:

EO

RO

STA

SRO

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

APPROVAL:

N/A

BARGAINING UNIT REPRESENTATIVE

OTM or designee

OPERATIONS DIRECTOR or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM 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 Attachment and provide an ICMF to the Primary Communicator within the required time limit.

Successful Completion Criteria:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Emergency Plan

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential 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 OS 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		
	3	Fills out Section A of the Attachment	<ul style="list-style-type: none"> • Unit: 2 • EAL#(s): 3.2.2.b • Time: NOW • Date: TODAY • Initials as EC 		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators CUE: I am the Primary Communicator		
*	5	Complete the ICMF KEY ATTACHED	<u>Fills out Section II:</u> <ul style="list-style-type: none"> Ensures that the correct Attachment is used for Alert Time: NOW Date: TODAY EAL#(s): 3.2.2.b *Description of Event: Brief description capturing the major elements <u>Fills out Section III:</u> <ul style="list-style-type: none"> No release in progress <u>Fills out Section IV:</u> CUE: Wind direction is from 265°, 12 mph <u>Initials for approval to transmit</u>		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

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

INITIATING CUE:

You are the Duty SM. Classify the event, complete the Attachment and provide an ICMF to the Primary Communicator within the required time limit.

India ESG-2

ECG
ATT 2
Pg. 2 of 2

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 Now ON Today
(Time - 24 HR CLOCK) (DATE)

EAL # 3.2.2.b DESCRIPTION OF EVENT: Loss of RCS BARRIER

III. NO RADIOLOGICAL RELEASE IS IN PROGRESS. } see NOTE
 THERE IS A RADIOLOGICAL RELEASE IN PROGRESS. } for release
definition

IV. 33 FT. LEVEL WIND DIRECTION (From): 265 WIND SPEED: 12
(From MET Computer /SPDS) (DEGREES) (MPH)

V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

Initials here

EC Initials
(Approval to Transmit ICMF)

NOTE:

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

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:

India NRC - SROA.4 (ESG-1)

ALTERNATE PATH:

K/A NUMBER:

2.4.38

IMPORTANCE FACTOR:

N/A

4.0

APPLICABILITY:

RO

SRO

EO

RO

STA

SRO

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

APPROVAL:

N/A

BARGAINING UNIT
REPRESENTATIVE

OTM or designee

OPERATIONS DIRECTOR
or designee

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM 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 Attachment and provide an ICMF to the Primary Communicator within the required time limit.

Successful Completion Criteria:

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

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 (F-ESG-1)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential 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 OS 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		
	3	Fills out Section A of the Attachment	<ul style="list-style-type: none"> • Unit: 2 • EAL#(s): 3.2.3.a • Time: NOW • Date: TODAY • Initials as EC 		

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 (F-ESG-1)

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators CUE: I am the Primary Communicator		
*	5	Complete the ICMF CUE: KEY ATTACHED	<u>Fills out Section II:</u> <ul style="list-style-type: none"> Ensures the correct Attachment 3 for SAE Time: NOW Date: TODAY EAL#(s): 3.2.3.a *Description of Event: Brief description capturing the major elements <u>Fills out Section III:</u> <ul style="list-style-type: none"> No release in progress <u>Fills out Section IV:</u> CUE: Wind direction is from 265°, 12 mph <u>Initials for approval to transmit</u>		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

Terminating Cue: Repeat back message from the operator on the status of the JPM, and then state "This JPM is complete"

INITIAL CONDITIONS:

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

INITIATING CUE:

You are the Duty SM. Classify the event, complete the Attachment and provide an ICMF to the Primary Communicator within the required time limit.

India ESG-1 Key

ECG
ATT 2
Pg. 2 of 2

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 Now ON Today
(Time - 24 HR CLOCK) (DATE)

EAL # 3.2.3.a DESCRIPTION OF EVENT: STEAM GENERATOR TUBE Rupture

III. NO RADIOLOGICAL RELEASE IS IN PROGRESS. } see NOTE
 THERE IS A RADIOLOGICAL RELEASE IN PROGRESS. } for release definition

IV. 33 FT. LEVEL WIND DIRECTION (From): 265 WIND SPEED: 12
(From MET Computer /SPDS) (DEGREES) (MPH)

V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

Initials here
EC Initials
(Approval to Transmit ICMF)

NOTE:

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