

**Facility:** Salem Units 1 & 2**Date of Examination:** 1/10/00**Examination Level (circle one):** RO**Operating Test Number:** 1

| Administrative Topic/Subject Description |                          | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |  |
|--|--------------------------|--|--|
| A.1                                      | ECP Calculation          | 2.1.25   | 3.1 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data<br><br>JPM: Provided with ECP data, determine the required RCS boron concentration |
|  | Shift Turnover           | 2.1.3  | 3.0 - Knowledge of shift turnover practices.<br><br>JPM: As oncoming RO, complete a shift turnover attachment  |
| A.2                                      | Tagging                  | 2.2.13   | 3.6 - Knowledge of tagging and clearance procedures<br><br>JPM: Evaluate a tagging request and determine the order of operations   |
| A.3                                      | Release Rate Calculation | 2.3.10   | 2.9 - Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure<br><br>JPM: Provided with a set of conditions, perform a total gaseous release rate calculation           |
| A.4                                      | Reporting Time Limit     | 2.4.39   | 3.3 - Knowledge of RO's responsibilities in emergency plan implementation<br><br>QUESTION: Given a set of conditions, determine if reporting time requirements have been met   |
|  | NRC Communications       | 2.4.39   | 3.3 - Knowledge of RO's responsibilities in Emergency Plan implementation<br><br>QUESTION: Specify the internal requirements for maintaining an open telephone line with NRC   |

OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE

STATION: SALEM  
SYSTEM: Administrative  
TASK: Calculate an ECP  
TASK NUMBER: 120 002 03 01  
JPM NUMBER: RO - A1.1

APPLICABILITY: EO ☐ RO ☒ SRO ☒  
K/A NUMBER: 2.1.25  
IMPORTANCE FACTOR: 

|     |     |
|-----|-----|
| 2.8 | 3.1 |
| RO  | SRO |

EVALUATION SETTING/METHOD: Control Room or Classroom

REFERENCES: S2.RE-RA.ZZ-0001, Rev.6  
Estimated Critical Position  
S2.RE-RA.ZZ-0012, Rev.38  
Figures

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 20 min.

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVED:

  
PRINCIPAL TRAINING SUPERVISOR

  
OPERATIONS MANAGER

**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 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:** Calculate an ECP

**TASK NUMBER:** 120 002 03 01

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:**

1. Complete procedure S2.RE-RA.ZZ-0001, Estimated Critical Position up to step 5.2.7, Intended Critical Boron Concentration Determination.
2. Obtain a copy of the REM Figures from S2.RE-RA.ZZ-0012 to provide to the student. Figures 2, 4, 6, 8, 10, 12, 14 & 30 are needed.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate an ECP

**TASK NUMBER:** 120 002 03 01

**INITIAL CONDITIONS:**

The Unit 2 Reactor is shutdown with preparations being made for a Reactor Startup.

S2.RE-RA.ZZ-0001, Estimated Critical Position has been completed through Attachment 1, 6.5.

**INITIATING CUE:**

Complete Sections 7.0 and 8.0 of Attachment 1.

**Successful Completion Criteria:**

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

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate an ECP

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|---|-------------|---|
|        |             | Provide the candidate with the partially completed copy of S2.RE-RA.ZZ-0001, Estimated Critical Position. Indicate that it has been completed correctly, to this point. |   |             |   |
|        | 1           | Reviews the completed sections of the procedure.  | Reviews the precautions and limitations.  |             |   |
|        | 2           | OBTAIN HFP ARO Equilibrium Boron Concentrations from Figure 30 of S2.RE-RA.ZZ-0012.   | Locates the figure and uses Cycle Burnup to determine an Equilibrium Boron Concentration of $1030 \pm 20$ ppm<br><br>When the correct Figure is located, provide the candidate with the package of REM Figures. |             |   |
|        | 3           | Calculate the corrected Previous Boron Concentration.   | Determines the corrected concentration to be 1000 ppm.  |             |   |
|        | 4           | OBTAIN Differential Boron Worths from Figure 12 of S2.RE-RA.ZZ-0012.  | Figure 12: reads approx. -7.6 pcm/ppm   |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Calculate an ECP

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
|        | 5           | CALCULATE the First Estimate of Boron Concentration Change as directed on Attachment 1 <ul style="list-style-type: none"> <li>Differential Boron Worth</li> <li>Boron Concentration Change</li> </ul>  | Calculates -637.6 ppm  |             |   |
|        | 6           | CALCULATE the Second Estimate of Boron Concentration Change as directed on Attachment 1 <ul style="list-style-type: none"> <li><math>[2 \times (7.1.4) - (7.2.2)] \div 2</math></li> <li>Differential Boron Worth</li> <li>Boron Concentration Change</li> </ul> | Calculates 717 ppm<br><br>Uses Figure 12 and determines Differential Boron Worth at 717 and 6000 MWD/MTU to be -7.8<br><br>Calculates the change to be -620                                  |             |   |
| *      | 7           | Calculate the Intended Critical Boron Concentration as directed on Attachment 1.   | Calculates the intended critical concentration to be 1582-1658 ( $\pm 38$ ppm around 1620). The basis for the spread is to maintain any error within the $\pm 300$ pcm administrative limit. |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate an ECP

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        |             | Limits on Intended Critical Control Rod Position   |   |             |   |
|        | 8           | Determine the Rod Insertion Limit for 0% RTP from Figure 14 of S2.RE-RA.ZZ-0012.   | Locates Figure 14 and determines the RIL to be 58 steps on Control Bank C.  |             |   |
|        | 9           | Determine Control Bank Positions from Figure 4 of S2.RE-RA.ZZ-0012 for subsequent steps.<br><br>A. Intended Position + 1000 pcm. <ul style="list-style-type: none"> <li>• INTEGRAL Rod Worth at (5.1) + 1000</li> <li>• Control Bank Position at (5.1) + 1000</li> </ul> | Locates Figure 4.<br><br><br><br><br><br><br><br><br><br>Determines and enters Bank C 14 steps (10-18) and Bank D as 0 steps. |             |   |

**TERMINATING CUE:** Candidate completes the +1000 limit calculation. Inform candidate the JPM is being terminated at this point because the remainder is just repetitive graph reading.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate an ECP

**OPEN REFERENCE:**

**TASK NUMBER:** 120 002 03 01

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT ☐ -UNSAT



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

The Unit 2 Reactor is shutdown with preparations being made for a Reactor Startup.

S2.RE-RA.ZZ-0001, Estimated Critical Position has been completed through Attachment 1, 6.5.

**INITIATING CUE:**

Complete Sections 7.0 and 8.0 of Attachment 1.

RO : SRO  
A1.1 : A1.1

S2.RE-RA.ZZ-0001(Q)

ATTACHMENT 1  
ESTIMATED CRITICAL POSITION WORKSHEET  
Page 1 of 6

NOTE

See procedure Section 5.2 for comprehensive directions for completing this attachment. The attachment itself no longer contains the applicable Figure numbers. This information is now contained in Section 5.2 of the procedure

1.0 PREVIOUS CRITICAL CONDITIONS

- 1.1 Date: Six Days Ago Time \_\_\_\_\_
- 1.2 Power Level 100 %RTP
- 1.3 Boron Concentration 1000 ppm
- 1.4 Control Bank Position  
Bank C 225 steps  
Bank D 225 steps
- 1.5 Cycle Exposure 6000 MWD/MTU

SHUTDOWN CONDITIONS

- 2.1 Reactor Trip Date Six Days Ago Time \_\_\_\_\_  
OR  
Orderly Shutdown Date \_\_\_\_\_ Time \_\_\_\_\_
- Approximate Shutdown Rate N/A %/min
- 2.2 Power Level Prior to Shutdown 100 %RTP

3.0 INTENDED CRITICAL CONDITIONS

- 3.1 Date 24 hours from now Time \_\_\_\_\_
- 3.2 Control Bank Position  
Bank C 126 steps  
Bank D 0 steps
- 3.3 Cycle Exposure 6000 MWD/MTU

ATTACHMENT 1 (cont'd)  
Page 2 of 6REACTIVITY WORTHS AT PREVIOUS CRITICAL CONDITIONS

- 4.1 Integral Rod Worth at Position in (1.4) (+) 0 pcm
- 4.2 Power Defect at Power in (1.2) and Boron Concentration in (1.3) (+) 1625 pcm
- 4.3 Xenon Reactivity at Time in (1.1) (-) 2570 pcm

## NOTE

Step 4.4: If previous conditions were steady state, use 588.

- 4.4 Samarium Reactivity at Time in (1.1) (-) 588 pcm

5.0 REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS

- 5.1 Integral Rod Worth at Position in (3.2) (+) 1220 pcm

- 5.2 Xenon Reactivity

- 5.2.1 Elapsed Time from (2.1) to (3.1) 168 hrs

- 5.2.2 Xenon Reactivity at Time in (5.2.1) and Power in (2.2) (-) 0 pcm

- 5.3 Samarium Reactivity

- 5.3.1 Elapsed Time from (2.1) to (3.1) 168 hrs

## NOTE

Step 5.3.2: If previous conditions were steady state and Figure 10 was used, add 588 to value obtained from figure

- 5.3.2 Samarium Reactivity at Time in (5.3.1) and Power in (2.2) 318 (-) 706 pcm

9 REACTIVITY CHANGES AND SUM

|     |                                   |                  |
|-----|-----------------------------------|------------------|
| 6.1 | Integral Rod Worth (4.1)-(5.1)    | <u>-1220</u> pcm |
| 6.2 | Power Defect (4.2)                | <u>+1625</u> pcm |
| 6.3 | Xenon Reactivity (5.2.2)-(4.3)    | <u>+2570</u> pcm |
| 6.4 | Samarium Reactivity (5.3.2)-(4.4) | <u>+1864</u> pcm |
| 6.5 | SUM (6.1)+(6.2)+(6.3)+(6.4)       | <u>+4839</u> pcm |

7.0 INTENDED CRITICAL BORON CONCENTRATION DETERMINATION

7.1 Correction to Previous Boron due to Burnup Differences between Previous and Intended Critical Conditions

7.1.1 HFP ARO Equilibrium Poison Boron  
Concentration at Burnup in (1.5) 1030 ppm7.1.2 HFP ARO Equilibrium Poison Boron  
Concentration at Burnup in (3.3) 1030 ppm7.1.3 Boron Concentration Difference  
(7.1.1)-(7.1.2) 0 ppm7.1.4 Corrected Previous Boron Concentration  
(1.3)-(7.1.3) 1000 ppm

7.2 First Estimate of Boron Concentration Change

7.2.1 Differential Boron Worth at Concentration in (7.1.4) and  
Burnup in (3.3) for  $T_{avg}=547^{\circ}\text{F}$  -7.6 pcm/ppm7.2.2 Boron Concentration Change  
(6.5)÷(7.2.1) -636.7 ppm

## ATTACHMENT 1 (cont'd)

Page 4 of 6

- 3 Second Estimate of Boron Concentration Change
- 7.3.1  $[2 \times (7.1.4) - (7.2.2)] \div 2$  + 117 ppm
- 7.3.2 Differential Boron Worth at Concentration in (7.3.1) and  
Burnup in (3.3) for  $T_{avg}=547^{\circ}\text{F}$  - 7.8 pcm/ppm
- 7.3.3 Boron Concentration Change  
(6.5)  $\div$  (7.3.2) - 620 ppm
- 7.4 Intended Critical Boron Concentration  
(7.1.4)-(7.3.3) 1620 ppm
- 8.0 LIMITS ON INTENDED CRITICAL CONTROL ROD POSITION
- 8.1 Rod Insertion Limit (TS 3.1.3.5) Bank C 58 steps
- 8.2 Intended Position + 1000 pcm (Mode 2)
- 8.2.1 Integral Rod Worth (5.1) + 1000 2220 pcm
- 8.2.2 Control Bank Position at Worth  
in (8.2.1) Bank C 14 steps  
Bank D 0 steps
- 8.3 Intended Position + 500 pcm
- 8.3.1 Integral Rod Worth (5.1) + 500 1720 pcm
- 8.3.2 Control Bank Position at Worth  
in (8.3.1) Bank C 61 steps  
Bank D 0 steps
- 8.4 Intended Position + 400 pcm
- 8.4.1 Integral Rod Worth (5.1) + 400 1620 pcm
- 8.4.2 Control Bank Position at Worth  
in (8.4.1) Bank C 74 steps  
Bank D 0 steps

ATTACHMENT 1 (cont'd)  
Page 5 of 6

8.5 Intended Position + 300 pcm

8.5.1 Integral Rod Worth (5.1) + 300

1520 pcm8.5.2 Control Bank Position at Worth  
in (8.5.1)Bank C 84 stepsBank D 0 steps

8.6 Intended Position - 300 pcm

8.6.1 Integral Rod Worth (5.1) - 300

920 pcm8.6.2 Control Bank Position at Worth  
in (8.6.1)Bank C 168 stepsBank D 40 steps

8.7 Intended Position - 400 pcm

8.7.1 Integral Rod Worth (5.1) - 400

820 pcm8.7.2 Control Bank Position at Worth  
in (8.7.1)Bank C 179 stepsBank D 51 steps

8.8 Intended Position - 500 pcm

8.8.1 Integral Rod Worth (5.1) - 500

720 pcm8.8.2 Control Bank Position at Worth  
in (8.8.1)Bank D 64 steps

Completed By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
SNSS/NSS

9.0 CONFIGURATION AT 10-8 AMPS

9.1 Date \_\_\_\_\_

Time \_\_\_\_\_

9.2 Boron Concentration

RCS \_\_\_\_\_ ppm

PZR \_\_\_\_\_ ppm

9.3 Control Bank Position

9.3.1 Actual Position

Bank C \_\_\_\_\_ steps

Bank D \_\_\_\_\_ steps

9.3.2 Minimum Position (8.1)

Bank C \_\_\_\_\_ steps

9.3.3 Maximum Position (8.8.2)

Bank D \_\_\_\_\_ steps

Completed By \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Reviewed By \_\_\_\_\_  
SNSS/NSS

Date \_\_\_\_\_ Time \_\_\_\_\_

## COMPLETION/SIGN-OFF SHEET

Page 1 of 1

## 1.0 COMMENTS:

(Procedure and test deficiencies shall be documented with corrective actions in this section.)

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## SIGNATURES:

Print

Signature

Date

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## 3.0 FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 has been reviewed for completion and accuracy. All deficiencies have been clearly recorded, including the corrective actions, in the Comments section above.

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_  
SNSS/NSS



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the Oncoming Reactor Operator

**TASK NUMBER:** 122 022 03 01

**JPM NUMBER:** NRC EXAM

**APPLICABILITY:**

EO ☐ RO ☒ SRO ☒

**K/A NUMBER:** 2.1.3

|                           |     |     |
|---------------------------|-----|-----|
| <b>IMPORTANCE FACTOR:</b> | 3.0 | 3.4 |
|                           | RO  | SRO |

**EVALUATION SETTING/METHOD:** Control Room ~~or Simulator~~

**REFERENCES:** SH.OP-AP.ZZ-0107, Rev. 0  
Shift Turnover

**TOOLS AND EQUIPMENT:** NONE

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**

  
PRINCIPAL TRAINING SUPERVISOR

  
OPERATIONS MANAGER

**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 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:** Conduct a Shift Turnover as the Oncoming Reactor Operator

**TASK NUMBER:** 122 022 03 01

**SIMULATOR IC:** Any at power I/C

**MALFUNCTIONS  
REQUIRED:** N/A

**OVERRIDES  
REQUIRED:** N/A

**SPECIAL  
INSTRUCTIONS:**

1. Complete the Turnover Checklist as the off-going Reactor Operator as follows:
  - Enter the Date and check one of the Shift choices.
  - Complete the OPERATING STATUS section.
  - Mark Shutdown Safety Assessment Checklist as N/A
  - Enter "NONE" under the Abnormal System Operations and/or Alignments (From RO/PO) line.
  - Enter "NONE" under the Major Evolutions/Work Activities in Progress (From CRS) line.
  - Enter "Completed the 4.0.5 P for the 11 RHR Pump" under the Major Evolutions/Work Activities Completed Last Shift (From CRS) line.
  - Sign and Date the Checklist as Off-going Reactor Operator.
2. Complete a Safety System Status checklist.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the Oncoming Reactor Operator

**TASK NUMBER:** 122 022 03 01

**INITIAL CONDITIONS:**

Per the current status of the plant.

**INITIATING CUE:**

You are the oncoming Unit 1 Reactor Operator for your second consecutive day on day shift. Assume that the off-going Reactor Operator has provided an oral briefing. Complete the Unit 1 Reactor/Plant Operator Turnover Checklist.

**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:** Conduct a Shift Turnover as the Oncoming Reactor Operator

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)            | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|---|-------------|---|
|        | 1           | Obtains a copy of the Salem-Unit 1 Reactor/Plant Operator Turnover Checklist. | When the Checklist has been obtained, provide the candidate with the prepared Checklist.  |             |   |
| *      | 2           | Control Room Narrative Logs   | Reviews the Narrative Logs back to the last time on shift or 72 hours, whichever is shorter.<br><br><i>CUE:</i> Review only the logs for the previous shift.                          |             |   |
| *      | 3           | Control Room Operating Log  | Reviews the logs for Out Of Specification readings only.<br><br><i>CUE:</i> Review only the logs for the previous shift.  |             |   |
| *      | 4           | Aux. Alarm Summary (Unexplained Alarms Only).                                 | Reviews the alarm summary for items that are not appropriate for the plant conditions when the alarm was received.<br><br><i>CUE:</i> Review only the summary for the previous shift. |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the Oncoming Reactor Operator

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
| *      | 5           | Technical Specification Action Statement Log.                      | Reviews the log noting out of service equipment, active LCOs, and any applicable time requirements. |             |   |
| *      | 6           | Temporary Modification Log.  | Locates T-Mod Log<br><br><i>CUE:</i> No new T-Mod's have been installed since your last shift.      |             |   |
|        | 7           | Shutdown Safety Assessment (Attachment 28).                        | Pre-marked as N/A   |             |   |
|        | 8           | Reviews the Operating Status section.                              | Notes plant conditions and any releases in progress.  |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the Oncoming Reactor Operator

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
| *      | 10          | Performs a Control Board walk down.                                | Walks down the Control Boards noting: <ul style="list-style-type: none"> <li>• Status of safety related systems.</li> <li>• Running equipment and train alignments.</li> <li>• Inoperable Equipment and LCOs.</li> <li>• Reasons for annunciator alarms</li> <li>• Tagged equipment.</li> </ul> |             |   |
|        | 11          | Abnormal System Operations and/or Alignments.                      | Pre-marked NONE   |             |   |
|        | 12          | Major Evolutions/Work Activities in progress.                      | Pre-marked NONE   |             |   |
|        | 13          | Major Evolutions/Work Activities completed last shift.             | Notes the 4.0.5P for the 11 RHR Pump was completed last shift.  |             |   |

**TERMINATING CUE:** Signs Checklist as Oncoming Reactor Operator.

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the Oncoming Reactor Operator

**OPEN REFERENCE:**

**TASK NUMBER:** 122 022 03 01

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

Per the current status of the plant.

**INITIATING CUE:**

You are the oncoming Unit 1 Reactor Operator for your second consecutive day on day shift. Assume that the off-going Reactor Operator has provided an oral briefing. Complete the Unit 1 Reactor/Plant Operator Turnover Checklist.



- 3.10 (Salem) The information Systems department is responsible for modifying the shift turnover database (SOTOC) whenever the shift turnover forms are modified.

#### 4.0 **PROCESS DESCRIPTION**

This procedure gives detailed guidelines to be utilized by shift personnel during shift relief to ensure a complete and proper turnover of information and equipment pertaining to their operating stations. The turnover should consist of, at a minimum, appropriate log/document reviews, oral briefings, and completion of applicable checklists.

#### 5.0 **PROCEDURE**

##### 5.1 **Shift/Individual Relief and Turnover** **[CD-206C]**

- 5.1.1 Turnover is the presentation of plant-related information by the offgoing operator to the oncoming operator. The turnover can take place any time prior to relief, as long as it does not interfere with the offgoing operators' ability to perform their assigned duties. Turnover is to consist of the following as a minimum: **[CD-825B]**

- Log reviews (narratives and red-circled items)
- Oral briefing
- Special Instructions
- Assurance that critical plant parameters are within allowable limits (parameters and allowable limits shall be described on the checklist, e. g. out of spec readings on NEO and RO/PO Logs, etc.). **[CD-421Y]**
- Assurance of the availability and proper alignment of all systems essential to the prevention and mitigation of operational transients and accidents (e.g. by a check of the Main Control Boards, surveillance logs, etc.). **[CD-421Y, CD-408A]**
- Identification of systems and components that are in a degraded mode of operation permitted by the Technical Specifications. **[CD-421Y]**

- 5.1.2 The plant should be in a STABLE CONDITION before beginning the shift turnover process. **[CD-217B]**

- 5.1.3 When turnover must occur during non-stable conditions, one off-going RO/PO should maintain responsibility for monitoring the control boards while the other shift crew members turn over their watches. Once an oncoming RO/PO has completed the turnover, that oncoming RO/PO should then assume responsibility for monitoring the control boards while the last offgoing RO/PO turns over the watch.

## 5.2 Offgoing Shift Personnel

- 5.2.1 Prior to shift relief, the off-going personnel should give an oral briefing to their watch-station relief by discussing important items affecting plant operation. This should include the condition, status, and steps of any procedure or surveillance in progress.
- 5.2.2 Each off-going operator should prepare a listing highlighting planned evolutions, comments, equipment abnormalities, and other items affecting plant operations to aid in the turnover. The appropriate attachment should be used to document this information.
- 5.2.3 (Hope Creek only) At the end of each shift, the RO/PO should audit the placement of the keys for keylock control switches on Panels 10C650, 10C651, 1AC633, 1BC633, and 10C607. These keys are individually labeled according to their own unique control switch function and are normally removed from their respective keylock switches during operation. The Rx Mode Switch and the Scram Discharge Volume Hi Level Scram Bypass Switch must be inserted into their keylock switches. The 4 RPS Channel Switches must be inserted into their keylock switches. The remaining keys must be affixed to the control room panels with magnetic strips. The RO/PO should report any problems to the CRS and should make note of the completed audit on Attachment 6, Equipment Status Checklist. (Hope Creek only)  
[CD-105A, CD-239X, CD-359X, CD-379X, CD-639X]

## 5.3 Oncoming Shift Personnel

- 5.3.1 Prior to assuming the shift, the oncoming individuals should review various logs which pertain to the assigned watch stations. The review prior to watch assumption should include material generated since the last time on shift or within the past 72 hours, whichever is shorter. Except as noted below, the balance of unreviewed material generated within the previous 5 days should be reviewed after turnover is complete. Material not available in the Control Room due to previous transmittal need not be retrieved for review. Available unexpired operational Night Orders generated since the individual's last time on shift should be reviewed.

### 5.3.2 Control Board Walk-Downs

All oncoming licensed operators (except the OS as described below) should WALK-DOWN the control boards under their cognizance with the off-going operator verifying checklist items. Discussions should include, but are not limited to:

- Status of safety-related systems [CD-787D]
- Running equipment and train alignments
- Inoperable equipment and Limiting Conditions for Operations, including surveillance requirements
- Reasons for annunciator alarms
- Tagged equipment including any surveillance or equipment work in progress at time of shift relief
- Unusual occurrences during the last 24 hours

5.3.3 The oncoming OS should walk down the control room boards within four hours following the turnover.

5.3.4 A Shift Briefing should be conducted as part of the shift turnover activities.

- The CRSs should conduct and coordinate the briefing for their unit.
- The Reactor Operator (RO) should present the overall unit operating status, including items such as operating mode and reactor power level, Tech Spec Action Statements, Tech Spec requirements and compensatory actions required due to degraded equipment or systems.
- Each NEO should present any abnormal operation or alignment of major systems or equipment, major equipment operating in a degraded condition, compensatory actions required due to degraded equipment or systems, safety hazards and concerns.
- The CRS should present a summary of major plant changes since the shift last had the duty, administrative information critical to shift performance, and upcoming evolutions planned for the shift, including major maintenance activities, surveillances, major lineups and tagouts, and Night Orders/Temporary Standing Orders.
- The STA should present Operations' Department Technical Specification Action Statements which require action during the shift, and Safety System Status.
- Chemistry and Radiation Protection personnel should be requested to present their watchstation status, including actions necessary to comply with Technical Specification compensatory measures.
- The OS should present information significant to both units, priorities for the next 12 hours, and introduce guest speakers who wish to address the operating shift.

5.3.5 When the on-coming shift member is satisfied with the turnover, the off-going shift member makes a narrative log entry such as "Relieved by (name of on-coming person)", and signs the narrative log. This constitutes formal documentation that a proper turnover has been completed.

5.3.6 The Oncoming licensed operators should announce their assumption of responsibilities to the Control Room crew.

5.3.7 Completed turnover checklists are forwarded to the operations staff for short-term retention and transfer to the Central Records Facility

#### 5.4 Short Term Relief (Less than 1 hour duration)

- 5.4.1 If the watchstation relief is to be for a short duration, the individual being relieved should:
- A. Ensure the relief is briefed on watchstation operating status.
  - B. Make an entry on Attachment 27 documenting the watch relief (Salem only).
  - C. When the individual resumes responsibility for the watchstation, the individual being relieved should brief the returning watchstander on any changes which have occurred.
  - D. At the end of the shift, attach the "Short Term Relief Log" to the narrative log for the watch station affected. (Salem only)
- 5.3.2 If the individual watchstation relief is to be for a long duration, or for the remainder of the shift, a full turnover should be performed for the affected watchstation.

#### 6.0 REFERENCES

- 6.1 NUREG 0578 SECTION 2.2.1.C
- 6.2 ANS 3.2/ANSI 18.7 - 1982
- 6.3 INPO Performance Objectives And Criteria For Plant Evolutions, Part OP. 6
- 6.4 INPO Good Practice, OP-201 [CD-314B]
- 6.5 INPO Good Practice, OP-206 [CD-825B]
- 6.6 INPO SOER 86-01R05

#### 6.7 Closing Documents

|   |   |
|---|---|
| CD-105A NRC BULL 80-17                            | CD-402E INPO SOER 86-01R05                          |
| CD-408A INPO SER 025-81                           | CD-850G INPO FINDING CY.6-2-1988                    |
| CD-740A SIL 068                                   | CD-239X NHO HSAR F07-0033-00 (UFSAR 7.2.2.2)        |
| CD-217B O+MR 111                                  | CD-359X NHO HSAR F07-0115-00 (UFSAR 7.3.2.1.2.a)    |
| CD-314B GP OP-201                                 | CD-379X NHO HSAR F07-0139-00 (UFSAR 7.4.2.1.3)      |
| CD-194C NRC CIRC 76-07                            | CD-639X NHO HSAR F09-0161-00 (UFSAR 9.3.5.2)        |
| CD-206C NRC BULL 73-06                            | CD-418Y NHO HSAR F01-050B-08 (UFSAR 1.10.2.I.A.1.2) |
| CD-382E LER 86-036                                |   |
| CD-787D INPO SER 15-85                            |   |
| CD-975E NHO ISE 87.0P 3-2                         |   |
| CD-421Y NHO HSAR F01-050H-08 (UFSAR 1.10.2.I.C.2) |   |

**ATTACHMENT 1a**  
**HOPE CREEK - OPERATIONS SUPERINTENDENT RELIEF CHECKLIST**

Date: \_\_\_\_\_

Oncoming Check Off (Review the following Prior to Relief):

1. CRS Narrative Log
2. Night Orders - Read and Initialed
3. Action Statement Log (AP-108)
4. INOP Instrument/Alarm Log (DL-10)
5. Turnover OS Keys

DAYS      NIGHTS

|  |  |         |
|--|--|---------|
|  |  | CD-421Y |
|  |  |         |
|  |  | CD-421Y |
|  |  | CD-975E |
|  |  |         |

After Relief Check Off (Review/Perform As Soon As Practical):

DAYS      NIGHTS

1. Shift Briefing
2. Shift Chemistry Summary
3. RO/PO Narrative and Console Logs
4. Daily Planning Schedule
5. Main Control Boards (10C650, 10C651)
6. Radwaste Status (includes narrative log review)
7. "Out of Spec" Items on NEO Watch Station Logs
8. Review Installed T - Mod Status

|  |  |         |
|--|--|---------|
|  |  | CD-194C |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  |         |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  | CD-740A |

\_\_\_\_\_  
Oncoming OS (Days)

\_\_\_\_\_  
Oncoming OS (Nights)

Notes: Review information back to last time on shift or 72 hrs. If >5 days, review previous 5 days after relief. OS should walkdown the control room boards within four hours of the turnover. Review unexpired Night Orders since last time on shift.

**ATTACHMENT 12**  
**(Page 1 of 1)**

DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

SHIFT (Check one)  
☐ 0700-1900    ☐ 1900 - 0700

**SALEM - UNIT 1 CONTROL ROOM SUPERVISOR**  
**TURNOVER CHECKLIST**

Page 1 of \_\_\_\_

| <b>DOCUMENT REVIEW</b>                       | <b>Initials</b> |
|--|-----------------|
| Control Room Narrative Logs                  |                 |
| Technical Specification Action Statement Log |                 |
| Temporary Modification Log (Changes Only)    |                 |
| Temporary Standing Orders                    |                 |

| <b>OPERATING STATUS</b> |  |                     |  |
|-------------------------|--|---------------------|--|
| Mode                    |  | Radioactive Gas     |  |
| Reactor Power           |  | Release in Progress |  |
| Gross MWe               |  | Liquid Release      |  |
| RCS Boron               |  | In Progress         |  |
| Safety System Status    |  | Safety System       |  |
|                         |  | Status Basis        |  |

| <b>Initials</b>                               |  |
|---|--|
| <b>CONTROL BOARD WALKDOWN (Including OHA)</b> |  |

- 1 ABNORMAL SYSTEM OPERATIONS and/or ALIGNMENTS (From RO/PO)
- 2 MAJOR EVOLUTIONS / WORK ACTIVITIES IN PROGRESS
3. MAJOR EVOLUTIONS / WORK ACTIVITIES COMPLETED LAST SHIFT
- 4 PRIORITIES NEXT 12 HOURS

\_\_\_\_\_  
Offgoing  
Control Room Supervisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Oncoming  
Control Room Supervisor

\_\_\_\_\_  
Date

## ATTACHMENT 14

(Page 1 of 1)

DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

SHIFT (Check one)

☐ 0700-1900    ☐ 1900 - 0700

# SALEM - UNIT 1 REACTOR / PLANT OPERATOR TURNOVER CHECKLIST

Page 1 of \_\_\_\_

| DOCUMENT REVIEW   |  | Initials |
|---|--|----------|
| Control Room Narrative Logs                                     |  |          |
| Control Room Operating Log (out of specification readings only) |  |          |
| Aux. Alarm Summary (unexplained alarms only)                    |  |          |
| Technical Specification Action Statement Log                    |  |          |
| Temporary Modification Log (Changes Only)                       |  |          |
| Shutdown Safety Assessment Checklist (Attachment 28)            |  |          |

| OPERATING STATUS     |  |                            |  |
|----------------------|--|----------------------------|--|
| Mode                 |  | Radioactive Gas            |  |
| Reactor Power        |  | Release in Progress        |  |
| Gross MWe            |  | Liquid Release             |  |
| RCS Boron            |  | In Progress                |  |
| Safety System Status |  | Safety System Status Basis |  |

Initials

| CONTROL BOARD WALKDOWN (Including OHA / Panels / Lamps) | Initials |
|---|----------|
|   |          |

- 1 ABNORMAL SYSTEM OPERATIONS and/or ALIGNMENTS
- 2 MAJOR EVOLUTIONS / WORK ACTIVITIES IN PROGRESS (From CRS)
3. MAJOR EVOLUTIONS / WORK ACTIVITIES COMPLETED LAST SHIFT (From CRS)

\_\_\_\_\_  
Offgoing  
Reactor Operator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Oncoming  
Reactor Operator

\_\_\_\_\_  
Date



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Evaluate a tagging request as WCC-RO

**TASK NUMBER:** 1145040504

**JPM NUMBER:**

**APPLICABILITY:** EO ☐ RO ☒ SRO ☒

**K/A NUMBER:** 2.2.13

**IMPORTANCE FACTOR:**

|     |     |
|-----|-----|
| 3.6 | 3.8 |
| RO  | SRO |

**EVALUATION SETTING/METHOD:** Control Room, WCC, Classroom

**REFERENCES:** NC.NA-AP.ZZ-0015 SH.OP-AP.ZZ-0015  
TRIS Standard Request-11 SW  
Pp

**TOOLS AND EQUIPMENT:** None

**VALIDATED JPM COMPLETION TIME:** 15 mins.

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**  PRINCIPAL TRAINING SUPERVISOR  OPERATIONS MANAGER

**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 TIME:** \_\_\_\_\_

**JPM PERFORMED BY:** \_\_\_\_\_ **GRADE:** ☐ SAT ☐ UNSAT

**REASON, IF UNSATISFACTORY:** \_\_\_\_\_

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Evaluate a tagging request as WCC-RO

**TASK NUMBER:** 1145040504

**INITIAL CONDITIONS:**

1. The unit is at power. 11 SW Pump is going to be tagged for strainer replacement.

**INITIATING CUE:**

You are the WCC-RO. Given the blocking point list for 11 SW Pump, determine the blocking point position, the blocking point tag type, and the proper sequence for tagging 11 SW Pump.

**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:**

**TASK:**

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT<br>Evaluation) |
|--------|-------------|---|---|-------------|--|
|        | 1           | Provide candidate with "JPM Tear Off Sheet" and then the Blocking Point List for 11 SW Pump and a worksheet or blank page.  | Candidate reviews initial conditions, initiating cue, and Blocking Point List |             |  |
| *      | 2           | For each component, the candidate determines: <ul style="list-style-type: none"> <li>• Blocking Point Position</li> <li>• Blocking Point Tag Type</li> <li>• Proper sequence of operations</li> </ul> | See attached sheet  |             |  |

TERMINATION CUE: Candidate completes the worksheet and returns it to the evaluator.

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Evaluate a tagging request as WCC-RO

**TASK NUMBER:** 1145040504

**QUESTION:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESPONSE:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESULT:** ☐ -SAT ☐ -UNSAT

**QUESTION:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESPONSE:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESULT:** ☐ -SAT ☐ -UNSAT

## **JOB PERFORMANCE MEASURE**

### **INITIAL CONDITIONS:**

1. The unit is at power. 11 SW Pump is going to be tagged for strainer replacement.

### **INITIATING CUE:**

You are the WCC-RO. Given the blocking point list for 11 SW Pump, determine the blocking point position, the blocking point tag type, and the proper sequence for tagging 11 SW Pump.

# 11 SW Pump Blocking Point List

RO A.2

| Component                           | Sequence | Tag Type | Position |
|-------------------------------------|----------|----------|----------|
| 11 SW Pump Bezel Cover              |          |          |          |
| 11SW1-Pp Discharge Valve            |          |          |          |
| 11SW3-Strainer Outlet Valve         |          |          |          |
| 11SW18-Strainer Vent Valve          |          |          |          |
| 11SW19-Strainer Inlet Drain Valve   |          |          |          |
| 11SW25-Strainer B/D Outlet Valve    |          |          |          |
| 11SW412-Strainer Outlet Drain Valve |          |          |          |
| 1CY1SW1G-11 SW Strainer Breaker     |          |          |          |
| 1CD1AX3D-Pump Motor Breaker         |          |          |          |

# 11 SW Pump Blocking Point List KEY

RO A.2

| Component   | Sequence    | Tag Type | Position |
|---|-------------|----------|----------|
| 11 SW Pump Bezel Cover  | *1 or 9     | INFO     | N/A      |
| 11SW1-Pp Discharge Valve  | 4 or 5 or 6 | RBT      | X        |
| 11SW3-Strainer Outlet Valve   | 4 or 5 or 6 | RBT      | X        |
| 11SW18-Strainer Vent Valve  | 9           | RBT/VER  | O        |
| 11SW19-Strainer Inlet Drain Valve   | 7 or 8      | RBT      | O        |
| 11SW25-Strainer B/D Outlet Valve  | 4 or 5 or 6 | RBT      | X        |
| 11SW412-Strainer Outlet Drain Valve                                       | 7 or 8      | RBT      | O        |
| 1CY1SW1G-11 SW Strainer Breaker   | 3           | RBT      | O        |
| 1CD1AX3D-Pump Motor Breaker   | 2           | RBT      | DI or O  |
|   |             |          |          |
| * Re-order remaining numbers if bezel cover is listed as 9 rather than 1. |             |          |          |
| RBT/VER-either is acceptable  |             |          |          |

**ATTACHMENT 2**  
**(Page 11 of 11)**

**GENERIC COMPONENT MANIPULATIONS**

**BEZEL BLOCKS (970103114)**

Bezels are not normally be used as blocking points if items such as fuses, breakers, and switches can be used to remove the ability to operate the equipment from the Bezel.

If a Bezel block is used, it will be attached in such a manner as not to obstruct the view of other components on the bezel.


Prior to application of the flag to the Bezel Cover, the NCO will prepare the flag with the following information from the Tagging Request Worksheet:

- A. The Tagging Request number (if applicable).
- B. The TRIS+ identifier (if applicable).
- C. Any information needed.
- D. The Tagged Position (if applicable)

When equipment is made inoperable by a Tagging Request and the Bezel is not used as a blocking point the NCO may install an "Information" (INF) Bezel cover and annotate it on the Tagging Request to ensure removal upon release of the Tagging Request.

**SEQUENCING BLOCKING POINTS**

When sequencing blocking points use the following method for guidance:

- A. Split all the blocking points into workable sections or blocks  
(ex. bezels, breakers, isolations, drains, vents, etc.)
-  B. Should the order in which the blocking points inside each section or block have no impact on the request number each section or block alike.  
(ex. bezels 001, 001, 001, breakers 002, 002, 002, isolations 003, 003.....)
- C. Should the blocking points have to be tagged or released in a certain order then number them sequentially.  
(ex. bz101, bz102, bz103, bkr04, bkr05, bkr06, isol07, isol08.....)

If sequenced in blocks, the Operator in the field may sequence within the blocks at own discretion provided entire blocks are done in sequence prior to proceeding to next block.

If individually sequenced, blocking points must be manipulated in the specific order indicated.



**ATTACHMENT 1**  
**(Page 1 of 8)**

**GENERAL TAGGING GUIDANCE**

- 1.0 **Preparing a tagging request and choosing blocking points:**
- 1.1 Means of attaching a tag shall have the general design and basic characteristics of being at least equivalent to a nylon cable tie, with a minimum unlocking strength of 50 lbs.
- 1.2 Ensure support and major equipment are linked in some fashion so that equipment is not inadvertently released without supporting equipment available.
- 1.3 Ensure equipment within tagging boundaries is protected from damage due to inadvertent operation. (I.e., Pump breakers should be tagged when suction or discharge valves are tagged shut; heat exchanger vents should be tagged open when a heat exchanger is isolated.) Provide appropriate vents and drains for isolated equipment and as necessary for evolution.
- 1.4 It may be necessary to link more than one Tagging Request via special instructions in order to ensure complete system release upon work completion.
- 1.5 Utilize "Special Instructions" when a tagging evolution may or will cause an alarm. If the tagging results in a control room overhead alarm with multiple inputs and no reflash capability, address disabling the alarming input so that the remainder of the overhead inputs will remain functional. Ensure the alarm is returned to service when the tagging is released.
- 1.6 Use caution when tagging air supplies to dampers as they may supply several components.
- 1.7 Review the fail safe position of a component prior to tagging it.
- 1.8 Rack-in/Rack-out type breakers should be tagged to the DI (disconnect) position vice the "open" position. These breakers may be tagged to the TD (test/disconnect) position with the concurrence of the job supervisor when breaker testing is to be performed.
- 1.9 Ensure adequate freeze protection exists when tagging heating and heat tracing.
- 1.10 Tagging Differential Pressure Transmitters should be coordinated with I&C to ensure that the transmitter is properly isolated prior to tagging.
- 1.11 The following is the basic sequence for tagging equipment (releasing a component would be the reverse):
  - A. Remote Operators
  - B. Electrical
  - C. High energy/pressure source
  - D. Low energy/pressure source
  - E. Drain valves
  - F. Vent valves
  - G. Grounds

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate

**TASK NUMBER:** 114 001 04 01

**JPM NUMBER:** RO - A3

**K/A NUMBER:** 2.3.10

**APPLICABILITY:**

EO ☐ RO ☒ SRO ☒

|                           |     |     |
|---------------------------|-----|-----|
| <b>IMPORTANCE FACTOR:</b> | 2.9 | 3.3 |
|                           | RO  | SRO |

**EVALUATION SETTING/METHOD:** Control Room or Classroom

**REFERENCES:** S1.OP-AB.RAD-0001  
Abnormal Radiation

**TOOLS AND EQUIPMENT:** Calculator

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**

  
PRINCIPAL TRAINING SUPERVISOR

  
OPERATIONS MANAGER

**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 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:** Calculate Total Gaseous Release Rate

**TASK NUMBER:** 114 001 04 01

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:** Obtain a copy of Attachment 4 from S1.OP-AB.RAD-0001 to provide to the candidate.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate

**TASK NUMBER:** 114 001 04 01

**INITIAL CONDITIONS:**

Twenty (20) minutes ago, an off-site release began as indicated by RMS alarms. The source is not yet determined.

S1.OP-AB.RAD-0001, Abnormal Radiation is being implemented.

The following Radiation Monitors are NOT available:

- 1R41D
- 2R41D
- 2R16

**INITIATING CUE:**

Calculate the Total Off-site Release Rate IAW S1.OP-AB.RAD-0001, Abnormal Radiation, using Attachment 4, Total Release Rate Calculations.

**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: Calculate Total Gaseous Release Rate

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 1           | Locates S1.OP-AB.RAD-0001, Abnormal Radiation  | When procedure is located, provide the candidate with a copy of S1.OP-AB.RAD-0001, Attachment 4, Total Release Rate Calculations. |             |   |
|        | 2           | IF the following conditions can be met: <ul style="list-style-type: none"> <li>1R41D is operable</li> <li>Plant Vent Flow Rate instrumentation is functional</li> <li>2R41D is operable</li> </ul> | Determines 1R41D is not operable and this step is N/A.  |             |   |
| *      | 3           | IF 1R41D OR 2R41D is unavailable, THEN PERFORM Total Release Rate Calculation based on available monitors IAW applicable Section of this Attachment.   | Determines Section 5.0 is the section to be used.   |             |   |
|        | 4           | Locates and records the reading from 1R16.   | Locates 1R16 indication<br><br><i>CUE:</i> 1R16 is reading 2.35E6 cpm.  |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)                        | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 5           | Locates and records the Unit 1 Plant Vent Flow Rate.                                      | Locates Unit 1 Plant Vent Flow Rate indication<br><br><i>CUE:</i> Unit 1 Plant Vent Flow Rate is 80,000 cfm. |             |   |
|        | 6           | Locates and records the reading from 2R45B/C.   | Locates 2R45 indication<br><br><i>CUE:</i> 2R45C is reading 7.65E1 uci/cc.                                   |             |   |
|        | 7           | Locates and records the Unit 2 Plant Vent Flow Rate.                                      | Locates Unit 2 Plant Vent Flow Rate indication<br><br><i>CUE:</i> Unit 2 Plant Vent Flow Rate is 80,000 cfm. |             |   |
|        | 8           | Calculate the release rate for 1R16:<br><br>1R16 cpm X 1.31E-5 X Plant Vent Flow cfm =    | Determines 1R16 Release rate:<br><br>2.35E6 X 1.31E-5 X 80,000 = 2.46E6 uci/sec                              |             |   |
|        | 9           | Calculate the release rate for 2R45B:<br><br>2R45B/C uci/cc X 472 X Plant Vent Flow cfm = | Determines 2R45B/C Release rate:<br><br>7.65E1 X 472 X 80,000 = 2.89E9 uci/sec                               |             |   |

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
| *      | 10          | Calculates Total Release Rate:<br><br>1R16 + 2R45B/C =             | Determines the Total Release Rate:<br><br>$2.46E6 + 2.89E9 = 2.89E9$ uci/sec<br>*(2.79-3.0E9) |             |   |

**TERMINATING CUE:** Completes Initials/Time/Date block

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate

**OPEN REFERENCE:**

**TASK NUMBER:** 114 001 04 01

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

Twenty (20) minutes ago, an off-site release began as indicated by RMS alarms. The source is not yet determined.

S1.OP-AB.RAD-0001, Abnormal Radiation is being implemented.

The following Radiation Monitors are NOT available:

- 1R41D
- 2R41D
- 2R16

**INITIATING CUE:**

Calculate the Total Off-site Release Rate IAW S1.OP-AB.RAD-0001, Abnormal Radiation, using Attachment 4, Total Release Rate Calculations.

# SALEM ADMIN QUESTIONS

**RO**

**A4.1**

**PAGE 1 OF 1**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

---

**QUESTION:**

Given the following conditions:

- You are the Primary Communicator
- At 0050, the Control Room Crew becomes aware of a Loss of Overhead Annunciators (OHA's) and initiates corrective action.
- At 0105 the OHA's are still not in service
- The OS declares an UNUSUAL EVENT at 0115
- The OS provides the Initial Contact Message Form to you at 0122

What is the latest time you can notify the states of NJ and DEL and still meet reporting requirements?

**ANSWER:**

0130, 15 minutes from the declaration.

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

**K/A NUMBER:** 2.4.39 3.3

**REFERENCES:** ECG Section I, Introduction and Usage, Page 7 of 10, Rev. 00  
ECG Attachment 6, Primary Communicator Log, Page 1, Rev. 01

**RO**

**A4.2**

**PAGE 2 OF 2**

ROA4

Rev. 11/21/99 11:24 AM  
Last printed 11/21/99 11:24 AM

Page 1 of 1

# SALEM ADMIN QUESTIONS

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_

## QUESTION:

An emergency event is in progress and the NRC Operations Center has requested that an open telephone line be continuously manned.

What are the requirements to man the open line and what duties may the assigned individual perform?

## ANSWER:

The line may be manned if an additional communicator is available (preferably a RO or SRO) and the person is not required to perform actions to mitigate the emergency.

## RESPONSE:

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.4.39 3.3

REFERENCES: ECG Attachment 6, Primary Communicator Log, Rev. 01, Page 6

**Facility:** Salem Units 1 & 2**Date of Examination:** 1/10/00**Examination Level (circle one):** SRO(U)/SRO(I)**Operating Test Number:** 1

| Administrative Topic/Subject Description |                                  | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |   |
|--|----------------------------------|--|---|
| A.1                                      | Reactor Startup                  | 2.1.25   | 3.1 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.<br><br>JPM: Evaluate criticality data by comparing a 1/M Plot to the ECP |
|  | Shift Turnover                   | 2.1.3  | 3.4 - Knowledge of shift turnover practices<br><br>JPM: As oncoming Control Room Supervisor, complete a shift turnover attachment   |
| A.2                                      | Temporary Modifications          | 2.2.11   | 3.4 - Knowledge of the process for controlling temporary changes<br><br>QUESTION: Evaluate evolutions and identify a temporary modification   |
|  | Post-maintenance Retest          | 2.2.21   | 3.5 - Knowledge of pre- and post-maintenance operability requirements<br><br>QUESTION: Specify post-maintenance retest requirements   |
| A.3                                      | Actions for High Dose Rates      | 2.3.1  | 3.0 - Knowledge of 10CFR20 and related facility radiation control requirements.<br><br>QUESTION: Given a set of conditions, specify actions to be taken when a high dose rate is encountered                      |
|  | Very High Radiation Area Entry   | 2.3.1  | 3.0 - Knowledge of 10CFR20 and related facility radiation control requirements.<br><br>QUESTION: Determine the authorization/notification requirements for entry into a Very High Radiation Area entry.           |
| A.4                                      | Release Rate Calc/Classification | 2.4.41   | 4.1 - Knowledge of the Emergency Action Level Thresholds and Classifications.<br><br>JPM: Provided with a set of conditions, perform a total gaseous release rate calculation and classify the event              |

OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Supervise a Reactor Startup as Control Room Supervisor

TASK NUMBER: 1120170101

JPM NUMBER: NRC-SROU-ADM-A1.1

APPLICABILITY: EO ☐ RO ☐ SRO ☒

K/A NUMBER: 2.1.25

IMPORTANCE FACTOR: 3.1

RO SRO

EVALUATION SETTING/METHOD: Simulator, Control Room or Classroom

REFERENCES: S2.RE-RA.ZZ-0001, Rev.6 Estimated Critical Position

S2.RE-RA.ZZ-0002, Rev.5 Inverse Count Rate Ratio During Control Rod Withdrawal

S2.RE-RA.ZZ-0012, Rev.38 Figures

TOOLS AND EQUIPMENT: Ruler

VALIDATED JPM COMPLETION TIME: 15 MIN

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVED:

*J. C. Lloyd Jr.*  
PRINCIPAL TRAINING SUPERVISOR

*D. H. Hall*  
OPERATIONS MANAGER

**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 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:** Supervise a Reactor Startup as Control Room Supervisor

**TASK NUMBER:** 112 017 01 01

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:**

1. Complete procedure S2.RE-RA.ZZ-0001, Estimated Critical Position using the following data:  
(or use the ECP From ROECP JPM)
  - a) Cycle Exposure = 6000 MWD/MTU
  - b) Previous Boron Concentration = 1000 ppm
  - c) ECP 6 days after a trip from 100%
  - d) Startup to be 24 hours from the ECP calculation
  - e) Intended Critical Rod Position as Control Bank C at 126 steps
2. Mark up a copy of S2.RE-RA.ZZ-0002, Inverse Count Rate Ratio During Control Rod Withdrawal and Attachment 1, Inverse Count Rate Ratio for Control Bank Withdrawal with the following points and provide this Attachment to the Candidate:
  - a) Control Bank A at 0 steps and ICRR = 1.0
  - b) Control Bank A at 50 steps and ICRR = 0.99
  - c) Control Bank A at 100 steps and ICRR = 0.965
  - d) Control Bank A at 128 steps and ICRR = 0.94
3. Mark up a copy of S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load up to step 5.3.15.H

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Supervise a Reactor Startup as Control Room Supervisor

**TASK NUMBER:** 112 017 01 01

**INITIAL CONDITIONS:**

A Unit 2 Reactor Startup is in progress IAW S2.OP-IO.ZZ-0003.

An Inverse Count Rate Ratio is being performed IAW S2.RE-RA.ZZ-0002 as directed by S2.OP-IO.ZZ-0003.

Control Bank A has been withdrawn to 128 steps.

**INITIATING CUE:**

You are the Control Room Supervisor and will be continuing the 1/M Plot based on information provided by the Reactor Engineer (Evaluator). Review the applicable procedures and simulate the startup in 50 step increments.

**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: Supervise a Reactor Startup as Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)                           | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
|        |             | The Candidate reviews the procedures provided.   | <p><b>EVALUATOR:</b> Provide the candidate with copies of the following procedures marked up to show current plant status:</p> <ul style="list-style-type: none"> <li>S2.RE-RA.ZZ-0001, Estimated Critical Position.</li> <li>S2.RE-RA.ZZ-0002, Inverse Count Rate Ratio During Control Rod Withdrawal.</li> <li>S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.</li> </ul> |             |   |
|        |             |  | <p>When the Candidate has reviewed the procedures, then:</p> <p><b>CUE:</b> Inform the Candidate to continue the startup by directing the RO to continue rod withdrawal.</p>   |             |   |
|        | 1           | WITHDRAW Control Banks A, B and C STOPPING at $\leq 50$ step increments to obtain ICRR data. |  |             |   |

SROSU

5/4

NTC-207

DATE: 08/31/98



# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Supervise a Reactor Startup as Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
| *      | 2           | Candidate directs the RO to withdraw Control Bank "B" to 50 steps.  | <p><i>CUE:</i> The RO acknowledges and reports Control Bank B is at 50 steps.</p> <p><i>CUE:</i> The Reactor Engineer reports the ICRR is 0.80.</p>  |             |   |
|        | 3           | Candidate plots the ICRR value.                                     | Plots the ICRR and determines predicted criticality will be at $184 \pm 10$ steps on Control Bank C.   |             |   |
| *      | 4           | Candidate directs the RO to withdraw Control Bank "B" to 100 steps. | <p><i>CUE:</i> The RO acknowledges and reports Control Bank B is at 100 steps.</p> <p><i>CUE:</i> The Reactor Engineer reports the ICRR is 0.60.</p> |             |   |
|        | 5           | Candidate plots the ICRR value.                                     | Plots the ICRR and determines predicted criticality will be at $124 \pm 10$ steps on Control Bank C.   |             |   |

SROSU

*5*

NTC-207

DATE: 08/31/98

# OPERATOR TRAINING PROGRAM

NAME: \_\_\_\_\_

## JOB PERFORMANCE MEASURE

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Supervise a Reactor Startup as Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 6           | Candidate directs the RO to withdraw Control Bank "B" to 150 steps.  | <p><i>CUE:</i> The RO acknowledges and reports Control Bank B is at 150 steps.</p> <p><i>CUE:</i> The Reactor Engineer reports the ICRR is 0.11.</p>   |             |   |
| *      | 7           | Candidate plots the ICRR value.  | Plots the ICRR and determines predicted criticality will be at $32 \pm 10$ steps on Control Bank C.  |             |   |
| *      | 8           | Per S2.OP-IO.ZZ-0003: When the ICRR value reaches 0.125, DETERMINE the deviation between the Estimated Critical Position (ECP) and Predicted Critical Rod Position (from the ICRR), and take appropriate action. | <p>The Candidate determines the ICRR to be less than 0.125 and initials and complies with the step.</p> <p>The Candidate refers to the ECP and determines:</p> <ul style="list-style-type: none"> <li>The Predicted Critical Rod Position is below the RIL.</li> </ul> |             |   |

SROSU

*76*

NTC-207

DATE: 08/31/98

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Supervise a Reactor Startup as Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 9           | IF the ICRR plot indicates the predicted Critical Rod Position is below the Rod Insertion Limit (RIL), THEN INITIATE Rapid Boration, INSERT Control Rod Banks and RECALCULATE the ECP. | <p>The Candidate directs the following actions and initials the step:</p> <ul style="list-style-type: none"> <li>Initiation of Rapid Boration.</li> <li>Insertion of all Control Rod Banks.</li> <li>ECP to be re-calculated.</li> </ul> <p><b>CUE:</b> The action you directed have been initiated.</p> |             |   |

**TERMINATING CUE:** When the candidate directs the required actions, the JPM may be terminated.

SROSU

*87*

NTC-207

DATE: 08/31/98

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Supervise a Reactor Startup as Control Room Supervisor

**OPEN REFERENCE:**

**TASK NUMBER:** 112 017 01 01

**QUESTION:**

**RESPONSE:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESULT:** ☐ -SAT ☐ -UNSAT

*8/31/98*

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

A Unit 2 Reactor Startup is in progress IAW S2.OP-IO.ZZ-0003.

An Inverse Count Rate Ratio is being performed IAW S2.RE-RA.ZZ-0002 as directed by S2.OP-IO.ZZ-0003.

Control Bank A has been withdrawn to 128 steps.

**INITIATING CUE:**

You are the Control Room Supervisor and will be continuing the 1/M Plot based on information provided by the Reactor Engineer (Evaluator). Review the applicable procedures and simulate the startup in 50 step increments.

SROSU

18-9 *llll*

NTC-207

DATE: 08/31/98

RO : SRO  
A1.1 : A1.1

S2.RE-RA.ZZ-0001(Q)

ATTACHMENT 1  
ESTIMATED CRITICAL POSITION WORKSHEET  
Page 1 of 6

NOTE

See procedure Section 5.2 for comprehensive directions for completing this attachment. The attachment itself no longer contains the applicable Figure numbers. This information is now contained in Section 5.2 of the procedure

1.0 PREVIOUS CRITICAL CONDITIONS

- 1.1 Date: Six Days Ago Time \_\_\_\_\_
- 1.2 Power Level 100 %RTP
- 1.3 Boron Concentration 1000 ppm
- 1.4 Control Bank Position Bank C 225 steps  
Bank D 225 steps
- 1.5 Cycle Exposure 6000 MWD/MTU

SHUTDOWN CONDITIONS

- 2.1 Reactor Trip Date Six Days Ago Time \_\_\_\_\_  
OR  
Orderly Shutdown Date \_\_\_\_\_ Time \_\_\_\_\_
- Approximate Shutdown Rate N/A %/min
- 2.2 Power Level Prior to Shutdown 100 %RTP

3.0 INTENDED CRITICAL CONDITIONS

- 3.1 Date 24 hours from now Time \_\_\_\_\_
- 3.2 Control Bank Position Bank C 126 steps  
Bank D 0 steps
- 3.3 Cycle Exposure 6000 MWD/MTU

ATTACHMENT 1 (cont'd)  
Page 2 of 6REACTIVITY WORTHS AT PREVIOUS CRITICAL CONDITIONS

- 4.1 Integral Rod Worth at Position in (1.4) (+) 0 pcm
- 4.2 Power Defect at Power in (1.2) and Boron Concentration in (1.3) (+) 1625 pcm
- 4.3 Xenon Reactivity at Time in (1.1) (-) 2570 pcm

## NOTE

Step 4.4: If previous conditions were steady state, use 588.

- 4.4 Samarium Reactivity at Time in (1.1) (-) 588 pcm

5.0 REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS

- 5.1 Integral Rod Worth at Position in (3.2) (+) 1220 pcm
- 5.2 Xenon Reactivity
- 5.2.1 Elapsed Time from (2.1) to (3.1) 168 hrs
- 5.2.2 Xenon Reactivity at Time in (5.2.1) and Power in (2.2) (-) 0 pcm
- 5.3 Samarium Reactivity
- 5.3.1 Elapsed Time from (2.1) to (3.1) 168 hrs

## NOTE

Step 5.3.2: If previous conditions were steady state and Figure 10 was used, add 588 to value obtained from figure

- 5.3.2 Samarium Reactivity at Time in (5.3.1) and Power in (2.2) 318 (-) 706 pcm

9 REACTIVITY CHANGES AND SUM

|     |                                   |                  |
|-----|-----------------------------------|------------------|
| 6.1 | Integral Rod Worth (4.1)-(5.1)    | <u>-1220</u> pcm |
| 6.2 | Power Defect (4.2)                | <u>+1625</u> pcm |
| 6.3 | Xenon Reactivity (5.2.2)-(4.3)    | <u>+2570</u> pcm |
| 6.4 | Samarium Reactivity (5.3.2)-(4.4) | <u>+1864</u> pcm |
| 6.5 | SUM (6.1)+(6.2)+(6.3)+(6.4)       | <u>+4839</u> pcm |

7.0 INTENDED CRITICAL BORON CONCENTRATION DETERMINATION

7.1 Correction to Previous Boron due to Burnup Differences between Previous and Intended Critical Conditions

7.1.1 HFP ARO Equilibrium Poison Boron  
Concentration at Burnup in (1.5) 1030 ppm

7.1.2 HFP ARO Equilibrium Poison Boron  
Concentration at Burnup in (3.3) 1030 ppm

7.1.3 Boron Concentration Difference  
(7.1.1)-(7.1.2) 0 ppm

7.1.4 Corrected Previous Boron Concentration  
(1.3)-(7.1.3) 1000 ppm

7.2 First Estimate of Boron Concentration Change

7.2.1 Differential Boron Worth at Concentration in (7.1.4) and  
Burnup in (3.3) for  $T_{avg}=547^{\circ}\text{F}$  -7.6 pcm/ppm

7.2.2 Boron Concentration Change  
(6.5)÷(7.2.1) -636.7 ppm



## ATTACHMENT 1 (cont'd)

Page 4 of 6

- 3 Second Estimate of Boron Concentration Change
- 7.3.1  $[2 \times (7.1.4) - (7.2.2)] \div 2$  + 717 ppm
- 7.3.2 Differential Boron Worth at Concentration in (7.3.1) and  
Burnup in (3.3) for  $T_{avg}=547^{\circ}\text{F}$  - 7.8 pcm/ppm
- 7.3.3 Boron Concentration Change  
(6.5)  $\div$  (7.3.2) - 620 ppm
- 7.4 Intended Critical Boron Concentration  
(7.1.4)-(7.3.3) 1620 ppm
- 8.0 LIMITS ON INTENDED CRITICAL CONTROL ROD POSITION
- 8.1 Rod Insertion Limit (TS 3.1.3.5) Bank C 58 steps
- 8.2 Intended Position + 1000 pcm (Mode 2)
- 8.2.1 Integral Rod Worth (5.1) + 1000 2220 pcm
- 8.2.2 Control Bank Position at Worth  
in (8.2.1) Bank C 14 steps  
Bank D 0 steps
- 8.3 Intended Position + 500 pcm
- 8.3.1 Integral Rod Worth (5.1) + 500 1720 pcm
- 8.3.2 Control Bank Position at Worth  
in (8.3.1) Bank C 67 steps  
Bank D 0 steps
- 8.4 Intended Position + 400 pcm
- 8.4.1 Integral Rod Worth (5.1) + 400 1620 pcm
- 8.4.2 Control Bank Position at Worth  
in (8.4.1) Bank C 74 steps  
Bank D 0 steps

## ATTACHMENT 1 (cont'd)

Page 5 of 6

- 8.5 Intended Position + 300 pcm
- 8.5.1 Integral Rod Worth (5.1) + 300 1520 pcm
- 8.5.2 Control Bank Position at Worth  
in (8.5.1) Bank C 84 steps  
Bank D 0 steps
- 8.6 Intended Position - 300 pcm
- 8.6.1 Integral Rod Worth (5.1) - 300 920 pcm
- 8.6.2 Control Bank Position at Worth  
in (8.6.1) Bank C 168 steps  
Bank D 40 steps
- 8.7 Intended Position - 400 pcm
- 8.7.1 Integral Rod Worth (5.1) - 400 820 pcm
- 8.7.2 Control Bank Position at Worth  
in (8.7.1) Bank C 179 steps  
Bank D 51 steps
- 8.8 Intended Position - 500 pcm
- 8.8.1 Integral Rod Worth (5.1) - 500 720 pcm
- 8.8.2 Control Bank Position at Worth  
in (8.8.1) Bank D 64 steps

Completed By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
SNSS/NSS

9.0 CONFIGURATION AT 10-8 AMPS

9.1 Date \_\_\_\_\_

Time \_\_\_\_\_

9.2 Boron Concentration

RCS \_\_\_\_\_ ppm

PZR \_\_\_\_\_ ppm

9.3 Control Bank Position

9.3.1 Actual Position

Bank C \_\_\_\_\_ steps

Bank D \_\_\_\_\_ steps

9.3.2 Minimum Position (8.1)

Bank C \_\_\_\_\_ steps

9.3.3 Maximum Position (8.8.2)

Bank D \_\_\_\_\_ steps

Completed By \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Reviewed By \_\_\_\_\_  
SNSS/NSS

Date \_\_\_\_\_ Time \_\_\_\_\_

## COMPLETION/SIGN-OFF SHEET

Page 1 of 1

## 1.0 COMMENTS:

(Procedure and test deficiencies shall be documented with corrective actions in this section.)

## SIGNATURES:

Print

Signature

Date

## 3.0 FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 has been reviewed for completion and accuracy. All deficiencies have been clearly recorded, including the corrective actions, in the Comments section above.

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_  
SNSS/NSS

## SALEM GENERATING STATION/SYSTEM ENGINEERING DEPARTMENT

S2.RE-RA.ZZ-0002(Q) - REV. 5

## INVERSE COUNT RATE RATIO DURING CONTROL ROD WITHDRAWAL

USE CATEGORY: **II**REVISION SUMMARY Biennial Review Performed Yes X No     

Step 5.1.2 E, added statement to Record the Estimated Critical Position on Attachment 1, Page 1 of 3, and added space on Attachment 1, Page 1 of 3, to record the value.

Removed Control Bank B position of 222 on Attachment 1, Page 3 of 3. This position was incorrect. This change was IAW BPEV 980527203.

Removed the Manager - Salem System Engineering approval signature. The removal of this level of approval authority does not change the intent of this procedure. This implementing procedure still meets the minimum required approval signatures as per NAP-1, Procedure Approval Matrix.

For use with JPM SROSH.

SROU A1.1

IMPLEMENTATION REQUIREMENTS

Effective Date: 10/12/98

APPROVED: Jan M. Stary A

Supervisor - Reactor Engineering

10/12/98  
Date

# INVERSE COUNT RATE RATIO DURING CONTROL ROD WITHDRAWAL

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| 5.0            | PROCEDURE .....  | 3           |
|                | 5.1 Inverse Count Rate Ratio During Control Rod Withdrawal ..... | 3           |
| 6.0            | RECORDS .....  | 4           |
| 7.0            | REFERENCES .....   | 4           |



## ATTACHMENTS

|   |  |   |
|---|--|---|
| 1 | ICRR During Rod Withdrawal Worksheet ..... | 5 |
| 2 | Normal NIS Switch Positions .....          | 8 |
| 3 | Completion/Sign-off Sheet .....            | 9 |








**1.0 PURPOSE**

To provide the instructions necessary to obtain data used for monitoring core reactivity changes during rod withdrawal.

**2.0 PREREQUISITES**

-  2.1 ENSURE Attachment 2, Normal NIS Switch Positions, has been verified prior to performing this procedure.
-  2.2 ENSURE at least two Source Range Neutron Flux channels are operable in accordance with (IAW) Technical Specification 3.3.1.1.

**3.0 PRECAUTIONS AND LIMITATIONS**

-  3.1 RECORD The NAME, SIGNATURE and INITIALS, of all personnel performing steps in this procedure, and the DATE of performance on Attachment 3.
-  3.2 DOCUMENT all deficiencies and corrective actions taken during the performance of this procedure, including Termination, in the Comments section of Attachment 3.
-  3.3 EVALUATE conditional steps and, if not applicable, mark them "N/A." Conditional steps include words such as IF, WHEN and OR.
-  3.4 MARK non-conditional steps which are evaluated as being not applicable "N/A," and have them initialed by the Reactor Engineer, and clearly explain the justification in the Comments section of Attachment 3.
-  3.5 IF, at any time during the rod withdrawal, an unexpected increase or decrease in count rate by a factor of five occurs on any one operating source range channel, THEN SUSPEND all operations involving positive reactivity insertion. Positive reactivity insertion may then be resumed by a mutual agreement of the OS/CRS and a Reactor Engineer.
-  3.6 IF, at any time during the rod withdrawal, an unexpected increase or decrease in count rate by a factor of two occurs simultaneously on all operating source range channels, THEN SUSPEND all operations involving positive reactivity insertion. Positive reactivity insertion may then be resumed by a mutual agreement of the OS/CRS and a Reactor Engineer.
-  3.7 IF a post refueling initial criticality, IF the extrapolation of the inverse count rate ratio plot predicts criticality prior to an all rods out condition, THEN SUSPEND rod withdrawal. Withdrawal may then be resumed by a mutual agreement of the OS/CRS and a Reactor Engineer.

4.0 EQUIPMENT/MATERIAL REQUIRED

S2.RE-RA.ZZ-0002(Q)

4.1 Calculator

4.2 Straight Edge

5.0 PROCEDURE

5.1 Inverse Count Rate Ratio During Control Rod Withdrawal

18 5.1.1 Using Attachment 1, DETERMINE the Reference Count Values as follows:

18 A. IF the count rate is greater than 50 counts/second, THEN, using a 10 second counting interval, OBTAIN 10 reference counts.

18 B. IF the count rate is less than 50 counts/second, THEN, using a 30 second counting interval, OBTAIN 10 reference counts.

18 C. For each channel, COMPUTE the average counts.

18 5.1.2 DETERMINE the inverse count rate ratio at each control rod bank withdrawal increment as follows:

18 A. Using the counting interval that was used in Step 5.1.1, OBTAIN AND RECORD 3 separate integral count measurements for each channel.

18 B. CALCULATE AND RECORD the average counts for each channel.

18 C. CALCULATE AND RECORD the Inverse Count Rate Ratio (ICRR).

$$\text{ICRR} = \frac{\text{Channel Ref. Counts}}{\text{Channel Ave. Counts}}$$

18 D. PLOT the ICRR on the linear graphs provided or graph paper.

NOTE

The point at which the extrapolation intersects the horizontal axis defines that rod position at which criticality is anticipated.

18 E. WHEN two data points have been plotted, THEN, for the last two data points, PERFORM a linear extrapolation of the ICRR plot to the point at which the extrapolation intersects the horizontal axis. RECORD this as the Estimated Critical Position (ECP) on Attachment 1, Page 1 of 3.

18 5.1.3 REPEAT step 5.1.1 or 5.1.2 as necessary.

END OF PROCEDURE SECTION



**6.0     RECORDS**

- 6.1     Retain a copy of the following IAW NC.NA-AP.ZZ-0003(Q), Document Management Program:

Attachment 1

Attachment 2

Attachment 3

- 6.2     Retain the original above listed Attachments in the Operations Department Files.

**7.0     REFERENCES**

- 7.1     S2.OP-IO.ZZ-0003(Q), Hot Standby to Minimum Load

7.2     **Cross References**

- 7.2.1   NC.NA-AP.ZZ-0003(Q), Document Management Program

## ICRR DURING ROD WITHDRAWAL WORKSHEET

Shutdown Bank \_\_\_\_\_ or Control Bank \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Pg \_\_\_\_ of \_\_\_\_

Counting Interval  
\_\_\_\_\_ sec.

[illegible]

| Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      |
|---------------------------------|------|---------------------------------|------|---------------------------------|------|---------------------------------|------|
|                                 |      |                                 |      |                                 |      |                                 |      |
|                                 |      |                                 |      |                                 |      |                                 |      |
|                                 |      |                                 |      |                                 |      |                                 |      |
| Ave                             | Ave  | Ave                             | Ave  | Ave                             | Ave  | Ave                             | Ave  |
|                                 |      |                                 |      |                                 |      |                                 |      |
| ICRR                            | ICRR | ICRR                            | ICRR | ICRR                            | ICRR | ICRR                            | ICRR |
| ECP                             |      | ECP                             |      | ECP                             |      | ECP                             |      |

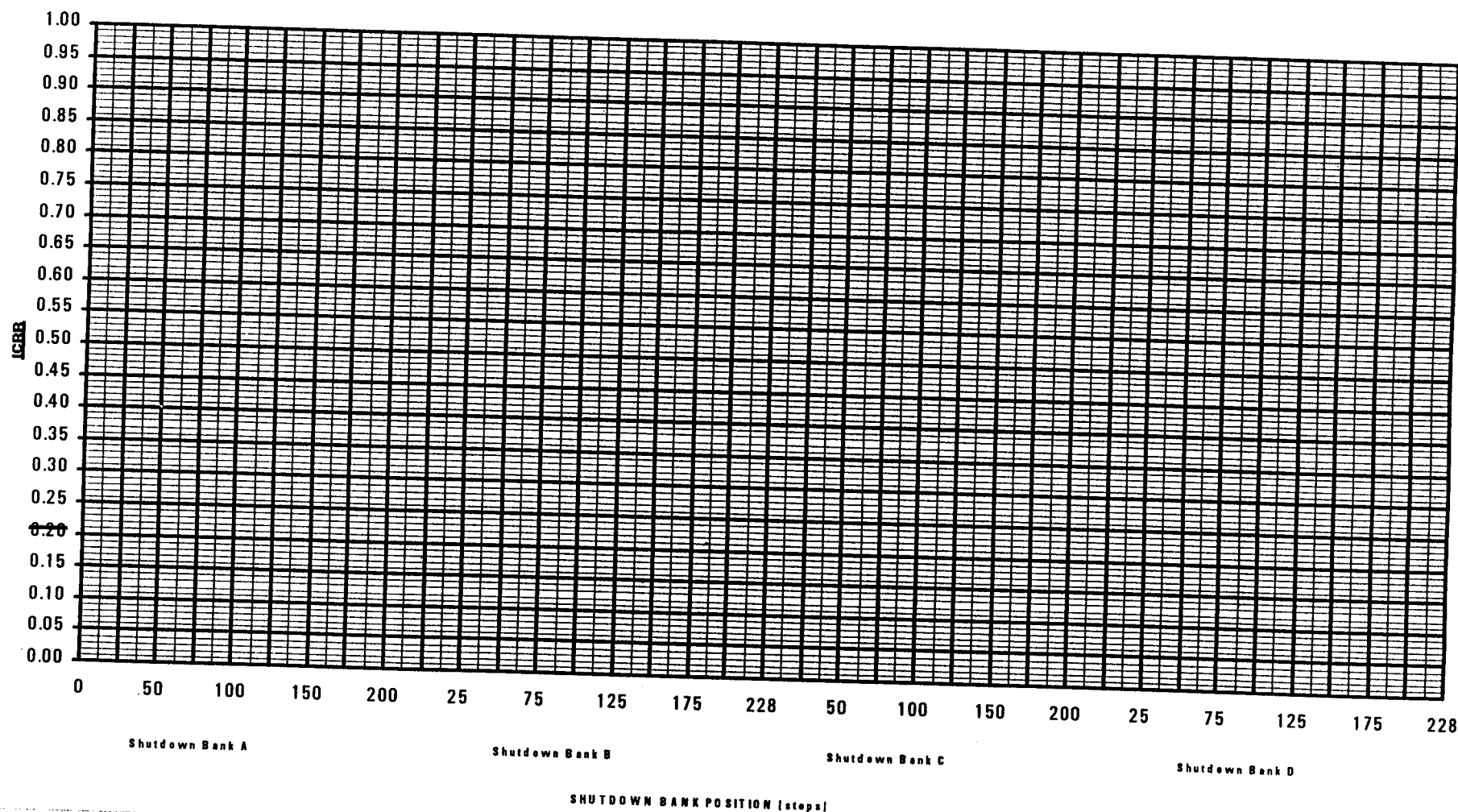
| Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      | Bank__ at __ steps<br>N-31 N-32 |      |
|---------------------------------|------|---------------------------------|------|---------------------------------|------|---------------------------------|------|
|                                 |      |                                 |      |                                 |      |                                 |      |
|                                 |      |                                 |      |                                 |      |                                 |      |
|                                 |      |                                 |      |                                 |      |                                 |      |
| Ave                             | Ave  | Ave                             | Ave  | Ave                             | Ave  | Ave                             | Ave  |
|                                 |      |                                 |      |                                 |      |                                 |      |
| ICRR                            | ICRR | ICRR                            | ICRR | ICRR                            | ICRR | ICRR                            | ICRR |
| ECP                             |      | ECP                             |      | ECP                             |      | ECP                             |      |

Completed by \_\_\_\_\_

ATTACHMENT 1 (Page 2 of 3)  
INVERSE COUNT RATE RATIO FOR SHUTDOWN BANK WITHDRAWAL

Prepared By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

OS/CRS: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



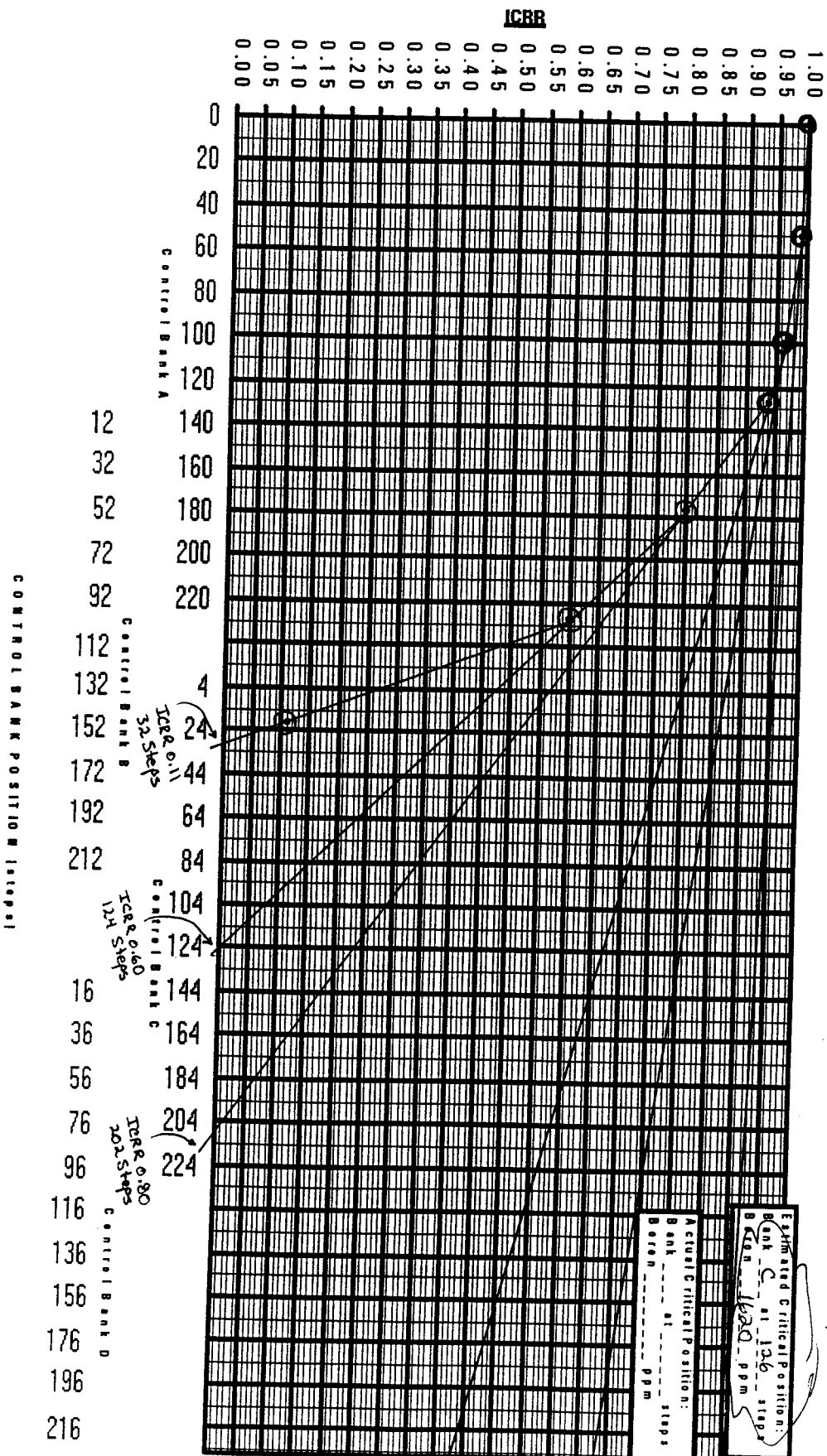
ATTACHMENT 1 (Page 3 of 3)  
INVERSE COUNT RATE RATIO FOR CONTROL BANK WITHDRAWAL

Prepared By: John Stellagmeir

OSICRS:

Date:                       
Time:                     

From:  
Data Prepared  
ECP



## ATTACHMENT 2

## NORMAL NIS SWITCH POSITIONS

| ASSEMBLY<br>LOCATION | SWITCH          | POSITION          | REMARKS |
|----------------------|-----------------|-------------------|---------|
| Scaler-Timer (1)     | Polarity        | (-) Negative      |         |
| Scaler-Timer (1)     | Display-Preset  | Display Count--   |         |
| Scaler-Timer (1)     |                 | Preset Time (Sec) |         |
| Scaler-Timer (1)     | Sample Mode PWR | Auto              |         |
| Scaler-Timer (1)     | Power Switch    | On                |         |

(1) Used with Audio Count Rate System (Refueling Mode)

## COMPLETION/SIGN-OFF SHEET

1.0 COMMENTS:

(Procedure and test deficiencies shall be documented with corrective actions in this section.)

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

2.0 SIGNATURES:

(All personnel performing procedural steps shall record their name, signature, initials and date in this section.)

[illegible]

### 3.0 FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 have been reviewed for completion and accuracy with all deficiencies being clearly recorded, including the corrective actions, in the Comments section above.

Signature \_\_\_\_\_ Date \_\_\_\_\_  
Supervisor - Reactor Engineering

ATTACHMENT 1 (Page 3 of 3)  
INVERSE COUNT RATE RATIO FOR CONTROL BANK WITHDRAWAL

Prepared By: \_\_\_\_\_

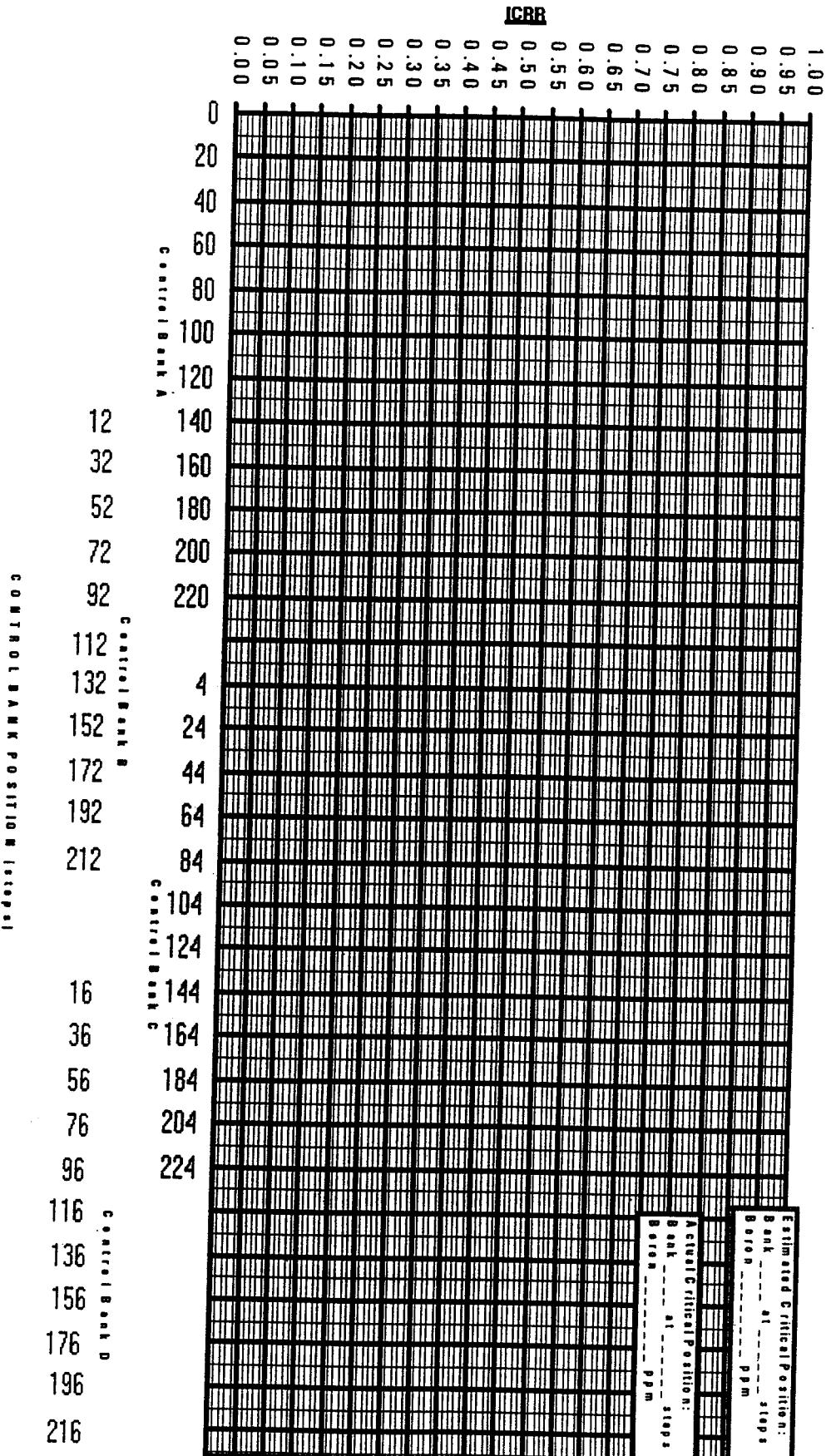
Date: \_\_\_\_\_

OS/CRS: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Time: \_\_\_\_\_



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the oncoming Control Room Supervisor

**TASK NUMBER:** 122 022 03 01

**JPM NUMBER:** NRC-SROU-ADM-A1.2

**APPLICABILITY:** EO ☐ RO ☐ SRO ☒

**K/A NUMBER:** 2.1.3

**IMPORTANCE FACTOR:**

|    |     |
|----|-----|
|    | 3.4 |
| RO | SRO |

**EVALUATION SETTING/METHOD:** Control Room

**REFERENCES:** SH.OP-AP.ZZ-0107, Rev. 0  
Shift Turnover

**TOOLS AND EQUIPMENT:** NONE

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**    
PRINCIPAL TRAINING SUPERVISOR OPERATIONS MANAGER

**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 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:** Conduct a shift turnover as the oncoming Control Room Supervisor

**TASK NUMBER:** 122 022 03 01

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** N/A

**OVERRIDES  
REQUIRED:** N/A

**SPECIAL  
INSTRUCTIONS:**

1. Complete the Turnover Checklist as the off-going Control Room Supervisor as follows:
  - Enter the Date and check one of the Shift choices.
  - Complete the OPERATING STATUS section.
  - Enter "NONE" under the Abnormal System Operations and/or Alignments (From RO/PO) line.
  - Enter "NONE" under the Major Evolutions/Work Activities in Progress line.
  - Enter "Completed the 4.0.5 P for the 11 RHR Pump" under the Major Evolutions/Work Activities Completed Last Shift line.
  - Enter "Turbine Valve Testing" under the Priorities for the Next 12 Hours line.
  - Sign and Date the Checklist as Off-going Control Room Supervisor.
2. Complete a Safety System Status checklist.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the oncoming Control Room Supervisor

**TASK NUMBER:** 122 022 03 01

**INITIAL CONDITIONS:**

Per current unit conditions.

**INITIATING CUE:**

You are the Oncoming Unit 1 Control Room Supervisor for your second consecutive day on day shift.  
Complete the Unit 1 Control Room Supervisor Turnover Checklist.

**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: Conduct a Shift Turnover as the oncoming Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)             | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 1           | Obtains a copy of the Salem-Unit 1 Control Room Supervisor Turnover Checklist. | When the Checklist has been obtained, provide the Candidate with the prepared Checklist.  |             |   |
| *      | 2           | Control Room Narrative Logs  | Reviews the Narrative Logs back to the last time on shift or 72 hours whichever is shorter.<br><br><i>CUE:</i> Review only the logs for the previous shift. |             |   |
| *      | 3           | Technical Specification Action Statement Log.                                  | Reviews the log noting out of service equipment and active LCOs and any applicable time requirements.   |             |   |
| *      | 4           | Temporary Modification Log.  | Locates the T-Mod Log<br><br><i>CUE:</i> No changes have occurred since your previous shift.  |             |   |
| *      | 5           | Temporary Standing Orders.   | Locates the TSO Book<br><br><i>CUE:</i> No TSO's have been issued since your previous shift.  |             |   |

SROU-TRNOVR

5/4

NTC-207

DATE: 08/31/98

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Conduct a Shift Turnover as the oncoming Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
| *      | 6           | Reviews the Operating Status section.                              | Notes plant conditions and any releases in progress.  |             |   |
| *      | 7           | Performs a Control Board walk down.                                | Walks down the Control Boards noting: <ul style="list-style-type: none"> <li>• Status of safety related systems.</li> <li>• Running equipment and train alignments.</li> <li>• Inoperable Equipment and LCOs.</li> <li>• Reasons for annunciator alarms</li> <li>• Tagged equipment.</li> </ul> |             |   |
|        | 10          | Abnormal System Operations and/or Alignments.                      | Pre-marked NONE   |             |   |
|        | 11          | Major Evolutions/Work Activities in progress.                      | Pre-marked NONE   |             |   |
|        | 12          | Major Evolutions/Work Activities completed last shift.             | Notes the 4.0.5P for the 11 RHR Pump was completed last shift.  |             |   |

SROU-TRNOVR

*lll*  
*85*

NTC-207

DATE: 08/31/98

**OPERATOR TRAINING PROGRAM**

NAME: \_\_\_\_\_

**JOB PERFORMANCE MEASURE**

DATE: \_\_\_\_\_

**SYSTEM:** Administrative**TASK:** Conduct a Shift Turnover as the oncoming Control Room Supervisor

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 13          | Priorities Next 12 Hours.  | Notes the priority for the next 12 hours is to reduce power for a Turbine Valve Test. |             |   |

**TERMINATING CUE:** Candidate signs sheet as Oncoming CRS.

SROU-TRNOVR

*76*

NTC-207

DATE: 08/31/98

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Conduct a Shift Turnover as the oncoming Control Room Supervisor

**OPEN REFERENCE:**

**TASK NUMBER:** 122 023 03 02

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT

SROU-TRNOVR

*87*

NTC-207

DATE: 08/31/98

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

Per current unit conditions.

**INITIATING CUE:**

You are directed to complete the Unit 1 Control Room Supervisor Turnover Checklist as the oncoming Control Room Supervisor.

- 3.10 (Salem) The information Systems department is responsible for modifying the shift turnover database (SOTOC) whenever the shift turnover forms are modified.

#### 4.0 **PROCESS DESCRIPTION**

This procedure gives detailed guidelines to be utilized by shift personnel during shift relief to ensure a complete and proper turnover of information and equipment pertaining to their operating stations. The turnover should consist of, at a minimum, appropriate log/document reviews, oral briefings, and completion of applicable checklists.

#### 5.0 **PROCEDURE**

##### 5.1 **Shift/Individual Relief and Turnover** **[CD-206C]**

- 5.1.1 Turnover is the presentation of plant-related information by the offgoing operator to the oncoming operator. The turnover can take place any time prior to relief, as long as it does not interfere with the offgoing operators' ability to perform their assigned duties. Turnover is to consist of the following as a minimum: **[CD-825B]**

- Log reviews (narratives and red-circled items)
- Oral briefing
- Special Instructions
- Assurance that critical plant parameters are within allowable limits (parameters and allowable limits shall be described on the checklist, e. g. out of spec readings on NEO and RO/PO Logs, etc.). **[CD-421Y]**
- Assurance of the availability and proper alignment of all systems essential to the prevention and mitigation of operational transients and accidents (e.g. by a check of the Main Control Boards, surveillance logs, etc.). **[CD-421Y, CD-408A]**
- Identification of systems and components that are in a degraded mode of operation permitted by the Technical Specifications. **[CD-421Y]**

- 5.1.2 The plant should be in a STABLE CONDITION before beginning the shift turnover process. **[CD-217B]**



- 5.1.3 When turnover must occur during non-stable conditions, one off-going RO/PO should maintain responsibility for monitoring the control boards while the other shift crew members turn over their watches. Once an oncoming RO/PO has completed the turnover, that oncoming RO/PO should then assume responsibility for monitoring the control boards while the last offgoing RO/PO turns over the watch.

5.2 **Offgoing Shift Personnel**

- 5.2.1 Prior to shift relief, the off-going personnel should give an oral briefing to their watch-station relief by discussing important items affecting plant operation. This should include the condition, status, and steps of any procedure or surveillance in progress.
- 5.2.2 Each off-going operator should prepare a listing highlighting planned evolutions, comments, equipment abnormalities, and other items affecting plant operations to aid in the turnover. The appropriate attachment should be used to document this information.
- 5.2.3 (Hope Creek only) At the end of each shift, the RO/PO should audit the placement of the keys for keylock control switches on Panels 10C650, 10C651, 1AC633, 1BC633, and 10C607. These keys are individually labeled according to their own unique control switch function and are normally removed from their respective keylock switches during operation. The Rx Mode Switch and the Scram Discharge Volume Hi Level Scram Bypass Switch must be inserted into their keylock switches. The 4 RPS Channel Switches must be inserted into their keylock switches. The remaining keys must be affixed to the control room panels with magnetic strips. The RO/PO should report any problems to the CRS and should make note of the completed audit on Attachment 6, Equipment Status Checklist. (Hope Creek only)  
[CD-105A, CD-239X, CD-359X, CD-379X, CD-639X]

5.3 **Oncoming Shift Personnel**

- 5.3.1 Prior to assuming the shift, the oncoming individuals should review various logs which pertain to the assigned watch stations. The review prior to watch assumption should include material generated since the last time on shift or within the past 72 hours, whichever is shorter. Except as noted below, the balance of unreviewed material generated within the previous 5 days should be reviewed after turnover is complete. Material not available in the Control Room due to previous transmittal need not be retrieved for review. Available unexpired operational Night Orders generated since the individual's last time on shift should be reviewed.

### 5.3.2 Control Board Walk-Downs

All oncoming licensed operators (except the OS as described below) should WALK-DOWN the control boards under their cognizance with the off-going operator verifying checklist items. Discussions should include, but are not limited to:

- Status of safety-related systems [CD-787D]
- Running equipment and train alignments
- Inoperable equipment and Limiting Conditions for Operations, including surveillance requirements
- Reasons for annunciator alarms
- Tagged equipment including any surveillance or equipment work in progress at time of shift relief
- Unusual occurrences during the last 24 hours

### 5.3.3 The oncoming OS should walk down the control room boards within four hours following the turnover.

- 5.3.4 A Shift Briefing should be conducted as part of the shift turnover activities.
- The CRSs should conduct and coordinate the briefing for their unit.
  - The Reactor Operator (RO) should present the overall unit operating status, including items such as operating mode and reactor power level, Tech Spec Action Statements, Tech Spec requirements and compensatory actions required due to degraded equipment or systems.
  - Each NEO should present any abnormal operation or alignment of major systems or equipment, major equipment operating in a degraded condition, compensatory actions required due to degraded equipment or systems, safety hazards and concerns.
  - The CRS should present a summary of major plant changes since the shift last had the duty, administrative information critical to shift performance, and upcoming evolutions planned for the shift, including major maintenance activities, surveillances, major lineups and tagouts, and Night Orders/Temporary Standing Orders.
  - The STA should present Operations' Department Technical Specification Action Statements which require action during the shift, and Safety System Status.
  - Chemistry and Radiation Protection personnel should be requested to present their watchstation status, including actions necessary to comply with Technical Specification compensatory measures.
  - The OS should present information significant to both units, priorities for the next 12 hours, and introduce guest speakers who wish to address the operating shift.
- 5.3.5 When the on-coming shift member is satisfied with the turnover, the off-going shift member makes a narrative log entry such as "Relieved by (name of on-coming person)", and signs the narrative log. This constitutes formal documentation that a proper turnover has been completed.
- 5.3.6 The Oncoming licensed operators should announce their assumption of responsibilities to the Control Room crew.
- 5.3.7 Completed turnover checklists are forwarded to the operations staff for short-term retention and transfer to the Central Records Facility

#### 5.4 Short Term Relief (Less than 1 hour duration)

- 5.4.1 If the watchstation relief is to be for a short duration, the individual being relieved should:
- A. Ensure the relief is briefed on watchstation operating status.
  - B. Make an entry on Attachment 27 documenting the watch relief (Salem only).
  - C. When the individual resumes responsibility for the watchstation, the individual being relieved should brief the returning watchstander on any changes which have occurred.
  - D. At the end of the shift, attach the "Short Term Relief Log" to the narrative log for the watch station affected. (Salem only)
- 5.3.2 If the individual watchstation relief is to be for a long duration, or for the remainder of the shift, a full turnover should be performed for the affected watchstation.

#### 6.0 REFERENCES

- 6.1 NUREG 0578 SECTION 2.2.1.C
- 6.2 ANS 3.2/ANSI 18.7 - 1982
- 6.3 INPO Performance Objectives And Criteria For Plant Evolutions, Part OP. 6
- 6.4 INPO Good Practice, OP-201 [CD-314B]
- 6.5 INPO Good Practice, OP-206 [CD-825B]
- 6.6 INPO SOER 86-01R05

#### 6.7 Closing Documents

CD-105A NRC BULL 80-17  
 CD-408A INPO SER 025-81  
 CD-740A SIL 068  
 CD-217B O+MR 111  
 CD-314B GP OP-201  
 CD-194C NRC CIRC 76-07  
 CD-206C NRC BULL 73-06  
 CD-382E LER 86-036  
 CD-787D INPO SER 15-85  
 CD-975E NHO ISE 87.0P 3-2  
 CD-421Y NHO HSAR F01-050H-08 (UFSAR 1.10.2.I.C.2)

CD-402E INPO SOER 86-01R05  
 CD-850G INPO FINDING CY.6-2-1988  
 CD-239X NHO HSAR F07-0033-00 (UFSAR 7.2.2.2)  
 CD-359X NHO HSAR F07-0115-00 (UFSAR 7.3.2.1.2.a)  
 CD-379X NHO HSAR F07-0139-00 (UFSAR 7.4.2.1.3)  
 CD-639X NHO HSAR F09-0161-00 (UFSAR 9.3.5.2)  
 CD-418Y NHO HSAR F01-050B-08 (UFSAR 1.10.2.I.A.1.2)

**ATTACHMENT 1a**  
**HOPE CREEK - OPERATIONS SUPERINTENDENT RELIEF CHECKLIST**

Date: \_\_\_\_\_

Oncoming Check Off (Review the following Prior to Relief):

1. CRS Narrative Log
2. Night Orders - Read and Initialed
3. Action Statement Log (AP-108)
4. INOP Instrument/Alarm Log (DL-10)
5. Turnover OS Keys

DAYS      NIGHTS

|  |  |         |
|--|--|---------|
|  |  | CD-421Y |
|  |  |         |
|  |  | CD-421Y |
|  |  | CD-975E |
|  |  |         |

After Relief Check Off (Review/Perform As Soon As Practical):DAYS      NIGHTS

1. Shift Briefing
2. Shift Chemistry Summary
3. RO/PO Narrative and Console Logs
4. Daily Planning Schedule
5. Main Control Boards (10C650, 10C651)
6. Radwaste Status (includes narrative log review)
7. "Out of Spec" Items on NEO Watch Station Logs
8. Review Installed T - Mod Status

|  |  |         |
|--|--|---------|
|  |  | CD-194C |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  |         |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  | CD-421Y |
|  |  | CD-740A |

\_\_\_\_\_  
Oncoming OS (Days)\_\_\_\_\_  
Oncoming OS (Nights)

Notes: Review information back to last time on shift or 72 hrs. If >5 days, review previous 5 days after relief. OS should walkdown the control room boards within four hours of the turnover. Review unexpired Night Orders since last time on shift.

**ATTACHMENT 12**  
**(Page 1 of 1)**

DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

SHIFT (Check one)  
☐ 0700-1900    ☐ 1900 - 0700

**SALEM - UNIT 1 CONTROL ROOM SUPERVISOR**  
**TURNOVER CHECKLIST**

Page 1 of \_\_\_\_

| <b>DOCUMENT REVIEW</b>                       | <b>Initials</b> |
|--|-----------------|
| Control Room Narrative Logs                  |                 |
| Technical Specification Action Statement Log |                 |
| Temporary Modification Log (Changes Only)    |                 |
| Temporary Standing Orders                    |                 |

| <b>OPERATING STATUS</b> |  |                     |  |
|-------------------------|--|---------------------|--|
| Mode                    |  | Radioactive Gas     |  |
| Reactor Power           |  | Release in Progress |  |
| Gross MWe               |  | Liquid Release      |  |
| RCS Boron               |  | In Progress         |  |
| Safety System Status    |  | Safety System       |  |
|                         |  | Status Basis        |  |

| <b>Initials</b>                               |  |
|---|--|
| <b>CONTROL BOARD WALKDOWN (Including OHA)</b> |  |

- 1 ABNORMAL SYSTEM OPERATIONS and/or ALIGNMENTS (From RO/PO)
- 2 MAJOR EVOLUTIONS / WORK ACTIVITIES IN PROGRESS
- 3 MAJOR EVOLUTIONS / WORK ACTIVITIES COMPLETED LAST SHIFT
- 4 PRIORITIES NEXT 12 HOURS

\_\_\_\_\_  
 Offgoing  
 Control Room Supervisor

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Oncoming  
 Control Room Supervisor

\_\_\_\_\_  
 Date

**ATTACHMENT 14**  
**(Page 1 of 1)**

DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

SHIFT (Check one)  
☐ 0700-1900    ☐ 1900 - 0700

**SALEM - UNIT 1 REACTOR / PLANT OPERATOR**  
**TURNOVER CHECKLIST**

Page 1 of \_\_\_\_

| <b>DOCUMENT REVIEW</b>  |  | <b>Initials</b> |
|---|--|-----------------|
| Control Room Narrative Logs                                     |  |                 |
| Control Room Operating Log (out of specification readings only) |  |                 |
| Aux. Alarm Summary (unexplained alarms only)                    |  |                 |
| Technical Specification Action Statement Log                    |  |                 |
| Temporary Modification Log (Changes Only)                       |  |                 |
| Shutdown Safety Assessment Checklist (Attachment 28)            |  |                 |

| <b>OPERATING STATUS</b> |  |  |  |
|-------------------------|--|--|--|
| Mode                    |  | Radioactive Gas<br>Release in Progress |  |
| Reactor Power           |  |  |  |
| Gross MWe               |  | Liquid Release<br>In Progress          |  |
| RCS Boron               |  |  |  |
| Safety System Status    |  | Safety System<br>Status Basis          |  |

| <b>CONTROL BOARD WALKDOWN</b> (Including OHA / Panels / Lamps) |  | <b>Initials</b> |
|--|--|-----------------|
|  |  |                 |

- 1 ABNORMAL SYSTEM OPERATIONS and/or ALIGNMENTS
- 2 MAJOR EVOLUTIONS / WORK ACTIVITIES IN PROGRESS (From CRS)
3. MAJOR EVOLUTIONS / WORK ACTIVITIES COMPLETED LAST SHIFT (From CRS)

\_\_\_\_\_  
Offgoing  
Reactor Operator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Oncoming  
Reactor Operator

\_\_\_\_\_  
Date

# SALEM ADMIN QUESTIONS

**SRO**

**A2.1**

**PAGE 1 OF 1**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

---

**QUESTION:**

You are the SRO assigned to the WCC. Maintenance completed a work order to repair a leaking lubricator on an air start motor for 2A Emergency Diesel Generator. There were no EDG post-maintenance testing requirements identified for that work. While reviewing the completed work order you note that the maintenance technician had also disassembled and re-assembled the air start motor because he suspected it was binding.

What action, if any, is required?

**ANSWER:** The additional work may affect the operability of 2A EDG. The Unit 2 CRS and/or the OS should be notified to enter the applicable TSAS and to perform the surveillance for determining 2A EDG operability.

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

**K/A NUMBER:** 2.2.21 2.3/3.5

**REFERENCES:** SH.OP-WM.DG-0015, Planning and Scheduling Work Control Group Desk Guide, Rev. 0, Page12-13



# SALEM ADMIN QUESTIONS

**SRO**

**A2.2**

**PAGE 1 OF 1**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

---

**QUESTION:** The following actions will be performed simultaneously in preparation for the modification and testing of Service Water Strainer Outlet Valve 12SW3:

1. Develop a Troubleshooting Plan.
2. Develop the Strainer Test Procedure.
3. Remove 12SW3 for modification and install a blank flange in place of 12SW3 to allow operation of 11 and 13 SW Pumps during the modification.
4. Install Test Gages and Test Equipment downstream of Strainer Instrument Root Valves 12SW226 and 12SW227. The equipment will remain installed for 60 Days.
5. Install Fans, Heaters and De-humidifiers in the pump area to control the environment for the test equipment.

Which, if any, of the items require preparation of a T-Mod Package prior to completing the installation?

**ANSWER:** Only Item 3: Installation of a blank flange.

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

**K/A NUMBER:** 2.2.11 2.5/3.4

**REFERENCES:** NC.NA-AP.ZZ-0013, Control of Temporary Modifications, Rev.8, Page 5-9

## SALEM ADMIN QUESTIONS

SROU

A3.1

PAGE 1 OF 2

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

## QUESTION:

A CRS, a NEO, a RP Technician and a Maintenance Supervisor are making an approved containment entry to investigate a problem. All have less than 100 mR of accumulated dose (TEDE) for the year but it is anticipated that they will encounter some elevated radiation levels. At what radiation level is the immediate evacuation of an area required?

## ANSWER:

\*[All personnel shall immediately evacuate the area if a dose rate  $\geq 10$  rem/hr. is encountered]\* unless the dose rate was anticipated and included in the pre-job brief.

## RESPONSE:

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.3.4 3.1

REFERENCES: NC.NA-AP.ZZ-0024, Rev. 9, Radiation Protection Program, Section 5.7.3, Page 18

SROU-A3

Rev. 12/08/99 11:05 AM  
Last printed 12/8/99 11:05 AM

Page 1 of 1

## SALEM ADMIN QUESTIONS

SROU

A3.1

PAGE 2 OF 2

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

## QUESTION:

Unit 2 has been at full power for 30 days, following refueling. During routine flux mapping, an in-core detector failed to fully withdraw into the shield. Based on the area radiation monitor reading, radiation protection is estimating that the dose level in the Seal Table Room could be as high as 600 R/hour. Engineering has recommended setting up a video camera inside the room to assist in evaluating possible corrective action paths. With planning and pre-staging it is estimated that one person could place the camera and exit within 30 seconds.

Under what conditions can the Seal Table Room be entered and what authorizations and/or notifications are required?

## ANSWER:

\*[The Seal Table Room is a Very High Radiation Area (VHRA) and is locked. No entry is allowed unless there is an operational or safety reason. The RPM must approve entry]. The Radiation Protection Manager (RPM) and the Operations Superintendent (OS) shall be notified prior to issuing a VHRA key.

\*[ ] required for full credit

## RESPONSE:

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.3.4 3.1

REFERENCES: NC.NA-AP.ZZ-0024, Rev. 9, Radiation Protection Program, Section 5.8 & 5.9, Page 19.

SROU-A3

Rev. 12/08/99 11:05 AM  
Last printed 12/8/99 11:05 AM

Page 2 of 2

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate and determine reportability

**TASK NUMBER:** 124 001 05 02

**JPM NUMBER:** NRC-SROU-A4

**K/A NUMBER:** 2.4.41

**APPLICABILITY:**

EO ☐ RO ☐ SRO ☒

**IMPORTANCE FACTOR:**

|    |     |
|----|-----|
|    | 4.1 |
| RO | SRO |

**EVALUATION SETTING/METHOD:** Control Room or Classroom

**REFERENCES:** S1.OP-AB.RAD-0001  
Abnormal Radiation

Event Classification Guide, Rev. 00

**TOOLS AND EQUIPMENT:** Calculator

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**

*Jill Kloyd for*  
PRINCIPAL TRAINING SUPERVISOR

*D. G. Hall*  
OPERATIONS MANAGER

**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 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:** Calculate Total Gaseous Release Rate and Classify

**TASK NUMBER:** 124 001 05 02

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:** Obtain a copy of Attachment 4 from S1.OP-AB.RAD-0001 to provide to the candidate.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate and Classify

**TASK NUMBER:** 124 001 05 02

**INITIAL CONDITIONS:**

Twenty (20) minutes ago, an off-site release began as indicated by valid RMS alarms. The source is not yet determined.

S1.OP-AB.RAD-0001, Abnormal Radiation is being implemented.

The following Radiation Monitors are NOT available:

- 1R41D
- 2R41D
- 2R16

**INITIATING CUE:**

Calculate the Total Off-site Release Rate IAW S1.OP-AB.RAD-0001, Abnormal Radiation, using Attachment 4, and make an Emergency Classification, if necessary.

**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: Calculate Total Gaseous Release Rate and Classify

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 1           | Locates S1.OP-AB.RAD-0001, Abnormal Radiation  | When procedure is located, provide the Candidate with a copy of S1.OP-AB.RAD-0001, Attachment 4, Total Release Rate Calculations. |             |   |
| *      | 2           | IF the following conditions can be met: <ul style="list-style-type: none"> <li>1R41D is operable</li> <li>Plant Vent Flow Rate instrumentation is functional</li> <li>2R41D is operable</li> </ul> | Determines 1R41D is not operable and this step is N/A.  |             |   |
| *      | 3           | IF 1R41D OR 2R41D is unavailable, THEN PERFORM Total Release Rate Calculation based on available monitors IAW applicable Section of this Attachment.   | Determines Section 5.0 is the section to be used.   |             |   |
|        | 4           | Locates and records the reading from 1R16.   | Locates 1R16 indication<br><br><i>CUE:</i> 1R16 is reading 2.35E6 cpm.  |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate and Classify

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)                        | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 5           | Locates and records the Unit 1 Plant Vent Flow Rate.                                      | Locates Unit 1 Plant Vent Flow Rate indication<br><br><i>CUE:</i> Unit 1 Plant Vent Flow Rate is 80,000 cfm. |             |   |
| *      | 6           | Locates and records the reading from 2R45B/C.   | Locates 2R45 indication<br><br><i>CUE:</i> 2R45C is reading 7.65E1 uci/cc.                                   |             |   |
| *      | 7           | Locates and records the Unit 2 Plant Vent Flow Rate.                                      | Locates Unit 2 Plant Vent Flow Rate indication<br><br><i>CUE:</i> Unit 2 Plant Vent Flow Rate is 80,000 cfm. |             |   |
| *      | 8           | Calculate the release rate for 1R16:<br><br>1R16 cpm X 1.31E-5 X Plant Vent Flow cfm =    | Determines 1R16 Release rate:<br><br>$2.35E6 \times 1.31E-5 \times 80,000 = 2.46E6 \text{ uci/sec}$          |             |   |
| *      | 9           | Calculate the release rate for 2R45B:<br><br>2R45B/C uci/cc X 472 X Plant Vent Flow cfm = | Determines 2R45B/C Release rate:<br><br>$7.65E1 \times 472 \times 80,000 = 2.89E9 \text{ uci/sec}$           |             |   |



# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Calculate Total Gaseous Release Rate and Classify

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 10          | Calculates Total Release Rate:<br><br>1R16 + 2R45B/C =             | Determines the Total Release Rate:<br><br>$2.46E6 + 2.89E9 = 2.89E9 \text{ uci/sec}$<br>*(2.79-3.0E9) |             |   |
| *      | 11          | Classify the event.  | Determines a Site Area Emergency must be declared IAW EAL 6.1.3.d.                                    |             |   |

**TERMINATING CUE:** When the Emergency Classification is declared, the JPM may be terminated.

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Calculate Total Gaseous Release Rate and Classify

**OPEN REFERENCE:**

**TASK NUMBER:** 124 001 05 02

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

Twenty (20) minutes ago, an off-site release began as indicated by valid RMS alarms. The source is not yet determined.

S1.OP-AB.RAD-0001, Abnormal Radiation is being implemented.

The following Radiation Monitors are NOT available:

- 1R41D
- 2R41D
- 2R16

**INITIATING CUE:**

Calculate the Total Off-site Release Rate IAW S1.OP-AB.RAD-0001, Abnormal Radiation, using Attachment 4, and make an Emergency Classification, if necessary.

**Facility:** Salem Units 1 & 2**Date of Examination:** 1/10/00**Examination Level (circle one):** SRO(I)**Operating Test Number:** 2

| Administrative Topic/Subject Description |                                     | Describe method of evaluation:<br>1. ONE Administrative JPM, OR<br>2. TWO Administrative Questions |  |
|--|-------------------------------------|--|--|
| A.1                                      | Night and Temporary Standing Orders | 2.1.15   | 3.0 - Ability to manage short term information such as night and standing orders<br><br>QUESTION: Determine time limits and shift turnover requirements for Night Orders and Temporary Standing Orders                     |
|  | Key Control                         | 2.1.1  | 3.8 - Knowledge of conduct of operations requirements<br><br>QUESTION: Identify key control requirements and practices   |
|  | Shutdown Margin Calculation         | 2.1.25   | 3.1 - Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data<br><br>JPM: Verify a shutdown margin calculation                                   |
| A.2                                      | Tech Spec Log                       | 2.2.23   | 3.8 - Ability to track Limiting Conditions for Operations.<br><br>JPM: Evaluate a situation and complete the TSAS log  |
| A.3                                      | Dose Limit Extensions               | 2.3.4  | 3.1 - Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized<br><br>QUESTION: Determine authorization requirements for extending facility dose limit |
|  | Mode 1 Containment Entry            | 2.3.4  | 3.1 - Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized<br><br>QUESTION: Determine requirements for containment entry during power operation    |
| A.4                                      | Emergency Classification JPM        | 2.4.41   | 4.1 - Knowledge of the emergency action level thresholds and classifications<br><br>JPM: Provided with a set of conditions, classify an event  |

# SALEM ADMIN QUESTIONS

**SRO**

**A1**

**PAGE 1 OF 1**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

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**QUESTION:**

How long are Night Order Book and Temporary Standing Orders active following initial issue?

**ANSWER:**

- NOB - Normally remain in effect for 24 - 72 hours but no more than 7 days.
- TSO - Remain in effect until the stated expiration date but no more than one calendar quarter past the issue date.

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

**K/A NUMBER:** 2.1.15 3.0

**REFERENCES:** SC.OP-DD.ZZ-0005, Night Orders and Temporary Standing Orders, Rev. 1, Page 2-4

# SALEM ADMIN QUESTIONS

**SRO**

**A1.2**

**PAGE 1 of 1**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

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**QUESTION:**

You are the Unit 2 WCC-CRS with both units at full power. Unit 2 Fuel Handling Building Ventilation System is inoperable while the breaker for the supply fan is replaced. Maintenance has a work order to do electrical circuit testing on the Unit 2 Fuel Handling Crane.

What action(s) is required relative to the maintenance testing of the crane?

**ANSWER:**

The FH Crane disconnect is locked open and the keys are maintained under the administrative control of the OS/CRS. The OS and/or Unit CRS must approve issue of the key to unlock the disconnect. The keys may be issued for testing not involving loads over the pool. The disconnect status should be updated in TRIS as "OFF-NORMAL" while the key is issued.

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.1.1 3.8

**REFERENCES:** SC.OP-DD.ZZ-0065, Key Control, Rev. 6, Page 2-3  
S2.OP-SO.FHV-0001

OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

TASK NUMBER: 1200030301

JPM NUMBER: NRC EXAM

K/A NUMBER: 2.1.25

APPLICABILITY:

EO ☐ RO ☐ SRO ☒

IMPORTANCE FACTOR: 3.1  
RO SRO

EVALUATION SETTING/METHOD: Simulator or Control Room

REFERENCES: S2.RE-ST.ZZ-0002, Rev. 13  
Shutdown Margin Calculation

TOOLS AND EQUIPMENT: NONE

VALIDATED JPM COMPLETION TIME: 15 MIN

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVED:

*[Signature]*  
PRINCIPAL TRAINING SUPERVISOR

*[Signature]*  
OPERATIONS MANAGER

**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 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:** Plant in Hot Standby

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:**

Complete S2.RE-ST.ZZ-0002 up through step 5.18 including Attachment 1.



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Verify a Shutdown Margin Surveillance

**TASK NUMBER:** 1200030301

**INITIAL CONDITIONS:**

1. All rods inserted when Unit 2 plant tripped from 100% power 68 hours ago.
2. Current boron concentration is 1375 ppm.
3. Core exposure is 9.5 GWD/MTU
4. Current RCS temperature is 547°F
5. A cooldown to 150°F will commence when the Shutdown Margin Calculation is complete.

**INITIATING CUE:**

The Unit 2 CRS has assigned you to be the Independent Verifier of the Shutdown Margin Verification With No Xenon Credit surveillance. The cooldown will begin after your verification is complete.

**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:** Verify a Shutdown Margin Surveillance

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)                                  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 1           | Ensures the Prerequisites and Precautions and Limitations are complete.                             | Ensures all Prerequisites are initialed as complete.<br><br>Ensures all Precautions and Limitations are initialed as complete.<br><br>Verifies steps 4.1 and 4.2 are N/A'd.<br><br>Verifies step 4.3 for a Mode 5 endpoint is initialed. |             |   |
|        | 2           | Review the completed Shutdown Margin Calculation by verifying the following:<br><br>• DATE AND TIME | Observes Date and Time are current.  |             |   |
|        | 3           | • RCS TEMPERATURE   | Verifies 150°F in entered.   |             |   |
|        | 4           | • CYCLE EXPOSURE (BURNUP)   | Verifies 9.5 GWD/MTU is entered.   |             |   |
|        | 5           | • CURRENT BORON CONCENTRATION   | Verifies 1375 ppm is entered.  |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
| *      | 6           | <ul style="list-style-type: none"> <li>Determines the value entered for REQUIRED BORON CONCENTRATION is NOT correct.</li> </ul> | <p>Obtains Figure 20A.</p> <p>Uses 9.5 GWD/MTU and the K=0.95 curve and determines CSD Boron = 1500 ppm.</p> <p>If the candidate indicates the procedure should be returned to the performer to be corrected, THEN:</p> <p><b>CUE:</b> Direct the candidate to correct the value and continue.</p> |             |   |
|        |             | Evaluates the ACCEPTANCE CRITERIA   |  |             |   |
| *      | 7           | IS CURRENT BORON CONCENTRATION $\geq$ REQUIRED BORON CONCENTRATION?   | <p>Determines current boron concentration is NOT <math>\geq</math> Required Boron Concentration.</p> <p>Initials UNSAT and initials the step.</p>  |             |   |
|        | 8           | If evaluation was completed for present Reactor conditions . . .  | Enters N/A for the step.   |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
 DATE: \_\_\_\_\_

SYSTEM: Administrative

TASK: Verify a Shutdown Margin Surveillance

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 9           | If the calculation was completed for desired Reactor conditions AND IF the SHUTDOWN MARGIN is UNSAT, THEN BORATE as necessary to achieve the required SHUTDOWN MARGIN PRIOR to proceeding to that condition. | Determines the Shutdown Margin is UNSAT.<br><br>Recommends boration prior to initiation of the cooldown.<br><br>Initials the step. |             |   |
|        | 10          | IF the Reactor is in Mode 3,4 or 5 with the . . .  | Enters N/A for the step.   |             |   |
| *      | 11          | IF the Shutdown Banks are inserted with RHR flow in service AND the Reactor Coolant Pumps are out of service, THEN $k_{eff}$ must be $\leq 0.95$ to avoid criticality during a postulated dilution accident. | Determines the step is applicable to the desired conditions and initials the step.   |             |   |

TERMINATING CUE: Candidate returns procedure to CRS.

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Verify a Shutdown Margin Surveillance

**OPEN REFERENCE:**

**TASK NUMBER:** 1200030301

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT

## JOB PERFORMANCE MEASURE

### INITIAL CONDITIONS:

- All rods inserted when Unit 2 plant tripped from 100% power 68 hours ago.
- Current boron concentration is 1375 ppm.
- Core exposure is 9.5 GWD/MTU
- Current RCS temperature is 547°F
- A cooldown to 150°F will commence when the Shutdown Margin Calculation is complete.

### INITIATING CUE:

The Unit 2 CRS has assigned you to be the Independent Verifier of the Shutdown Margin Verification With No Xenon Credit surveillance. The cooldown will begin after your verification is complete.

## SALEM GENERATING STATION/REACTOR ENGINEERING

S2.RE-ST.ZZ-0002(Q) - REV. 13

## SHUTDOWN MARGIN CALCULATION

USE CATEGORY: I

CONTROL COPY:

28

**REVISION SUMMARY:** Biennial Review performed Yes X No     

The following changes are identified by revision bars:

- 1 Throughout the document, replaced "SNSS/NSS" with "OS/CRS", and defined the acronym in 3.5 (identified by revision bar).
- 2 In 1.1.3, replaced the word "definite" with the word "specific".
- 3 In 1.2, added the phrase "According to Technical Specifications (T/S)" to define the acronym, T/S. Also, added the phrase "Individual Rod Position Indicator" to define the acronym, IRPI.
- 4 Steps 5.1.8 through 5.2.4.C and Attachment 7 were modified to resemble Procedures of Operations WRT Surveillance Tests and required signoffs.
- 5 Added "7.3 Commitments" to reference [C0283] & [C0284].
- 6 Added the word "Minimum" in the "IF" portion of step 4.4.6 of Attachment 6. The "THEN" portion already had the word "Minimum".

Minor changes (e.g. Capitalization, Bolding, Underlining, etc.), changes in formatting, etc., are not identified with revision bars.

**IMPLEMENTATION REQUIREMENTS**Effective Date: 4/13/98APPROVED: James D. Starchy, Jr.  
Supervisor - Reactor EngineeringDate: 1/27/98APPROVED: Eugen M. Nagy  
Manager - Salem System EngineeringDate: 1-29-98APPROVED: John Roberts  
Manager - Salem OperationsDate: 2/3/98

## SHUTDOWN MARGIN CALCULATION

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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 can be maintained while going to that condition.
  - 1.1.2 To verify that the Shutdown Margin 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 ( $k_{\text{eff}}$ ) and the amount of Shutdown Margin available while at a specific reactor temperature and rod position.
  - 1.1.4 To verify that the Shutdown Margin requirements are met in Mode 1 or 2 with inoperable control rods.
  - 1.1.5 To verify that the Shutdown Margin 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  $k_{\text{eff}}$  of 0.95 or less 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 4.1.1.1.1.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 4.1.1.1.1.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 rods assumed at the maximum insertion limit.
    - Modes 2-4 T/S 4.1.1.1.1.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 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
- ◆ During Individual Rod Position Indicator (IRPI) calibrations with Reactor Trip Breakers (RTB) closed.
  - Mode 3-5(with RTB Closed) T/S 3.1.3.2.2
- ◆ Prior to and during Refueling operations
  - Mode 6 T/S 3.9.1
- ◆ Whenever a Shutdown Margin Calculation is needed to ensure the Reactor has adequate Shutdown Margin.

## 2.0 PREREQUISITES

None

## 3.0 PRECAUTIONS AND LIMITATIONS

- H 3.1 The NAME, SIGNATURE, and INITIALS of all personnel performing steps in this procedure, and the DATE of performance, should be recorded on Attachment 7.
- H 3.2 All deficiencies and corrective actions taken during the performance of this procedure, including termination, should be documented in the Comments section of Attachment 7.
- H 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.
- H 3.4 Non-conditional steps which are evaluated as being not applicable should be marked "N/A," initialed by the Job Supervisor, and clearly explained in the Comments section of Attachment 7.
- H 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 section. Reactivity substitutions of any type should be noted on Attachment 7 and should be initialed by the Supervisor-Reactor Engineering and the Operations Superintendent/Control Room Supervisor (OS/CRS) prior to use in the Shutdown Margin calculation.
- H 3.6 Shutdown Margin shall be  $\geq 1600$  pcm in Modes 1-4 (Technical Specification 3.1.1.1).
- H 3.7 Shutdown Margin shall be  $\geq 1000$  pcm in Modes 5 (Technical Specification 3.1.1.2).

- A 3.8 Maintaining Shutdown Margin 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 The required operating data is to be obtained from recent Control Room Logs.
- A 3.10 Since Reactivity data will change with fuel exposure, use the most recent burn-up when reading Reactivity data.
- A 3.11 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 Shutdown Margin calculated by this procedure would actually be more conservative since no credit is taken for Samarium.

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 **PROCEDURE**5.1 **Shutdown Margin Calculation**

- ~~1A~~ 5.1.1 **IF** SHUTDOWN MARGIN is to be VERIFIED with no Xenon Credit, excluding times when IRPI Calibrations and/or Rod Drop Time Testing is in progress, **THEN** COMPLETE Attachment 1.
- ~~N/A~~ 5.1.2 **IF** the Reactor Coolant System will be BORATED concurrently with cooldown, **THEN** COMPLETE Attachment 2.
- ~~N/A~~ 5.1.3 **IF** a detailed SHUTDOWN MARGIN Calculation is necessary, **THEN** COMPLETE Attachment 3.
- ~~N/A~~ 5.1.4 **IF** SHUTDOWN MARGIN is to be VERIFIED in Mode 1 or Mode 2 with INOPERABLE control rod(s), **THEN** COMPLETE Attachment 4.
- ~~N/A~~ 5.1.5 **IF** a Rod Insertion Limit SHUTDOWN MARGIN Calculation Prior to Mode 1 is necessary, **THEN** COMPLETE Attachment 5.
- ~~N/A~~ 5.1.6 **IF** the Refueling Boron Concentration for Mode 6 is to be CALCULATED, **THEN** COMPLETE Attachment 6.
- ~~N/A~~ 5.1.7 **IF** SHUTDOWN MARGIN is PERFORMED during IRPI Calibration and/or Rod Drop Testing, **THEN** COMPLETE Attachment 3.
- ~~1A~~ 5.1.8 DIRECT another Qualified Individual to PERFORM as an Independent Verifier on all the appropriate ATTACHMENT(S). [C0284]

5.2 **Completion and Review**

- 5.2.1 **COMPLETE** Attachment 7, Sections 1.0, 2.0 **AND** FORWARD this procedure to OS/CRS for review **AND** approval.
- 5.2.2 CRS **PERFORM** the following:
- A. **REVIEW** this procedure with all applicable attachment(s) for completeness **AND** accuracy.
  - B. **COMPLETE** Attachment 7, Section 3.0.
  - C. **FORWARD** this procedure to the Shift Technical Advisor (STA) for review.

- \_\_\_ 5.2.3 STA **PERFORM** the following:
  - \_\_\_ A. **REVIEW** this procedure with all applicable attachment(s) for completeness AND accuracy.
  - \_\_\_ B. **COMPLETE** Attachment 7, Section 3.0.
  - \_\_\_ C. **FORWARD** this procedure to the OS/CRS for review AND approval.
- \_\_\_ 5.2.4 OS/CRS **PERFORM** the following:
  - \_\_\_ A. **REVIEW** this procedure with all applicable attachment(s) for completeness AND accuracy.
  - \_\_\_ B. **COMPLETE** Attachment 7, Section 3.0.
  - \_\_\_ C. **FORWARD** completed procedure to the Operations Staff to **RETAIN** the original completed procedure in the Operations Department files.

**END OF PROCEDURE SECTION**

6.0 **RECORDS**

Retain the following IAW NC.NA-AP.ZZ-0003(Q), Document 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 **Others**

- 7.1.1 INPO SER 15-92, Loss of Shutdown Reactivity Margin
- 7.1.2 NFU 92-155, Salem Unit 2 Administrative Shutdown Margin Requirements
- 7.1.3 NFU 92-181, Salem Unit 2 Cycle 7 Reload Safety Evaluation for Operation in all Modes and NRC Notification
- 7.1.4 NFS 93-249, Salem Unit 2 Cycle 8 Administrative Shutdown Margin Requirements
- 7.1.5 NFS 93-297, Removal of Salem Unit 2 Cycle 8 Administrative Shutdown Margin Requirements
- 7.1.6 DEF DES-91-00778
- 7.1.7 DCP 2EC-3225, Boric Acid Concentration Reduction Program

7.2 **Cross References:**

## 7.2.1 Technical Specifications:

- A. 3/4.1.1.1, Boration Control, Shutdown Margin  $T_{avg} > 200^{\circ}\text{F}$
- B. 3/4.1.1.2, Boration Control, Shutdown Margin  $T_{avg} \leq 200^{\circ}\text{F}$
- C. 3/4.1.2.2, Reactivity Control, Operating Flow Paths
- D. 3/4.1.2.4, Reactivity Control, Operating Charging Pumps
- E. 3/4.1.2.6, Reactivity Control, Operating Borated Water Sources

7.2.1 Technical Specifications:(cont.)

- F. 3/4.1.3.1, Reactivity Control, Movable Control Assemblies Group Height
- G. 3/4.1.3.2.2, Reactivity Control, Position Indication System Shutdown
- H. 3/4.1.3.5, Reactivity Control, Position Indication System Shutdown
- I. 3/4.3.1.1, Instrumentation, Reactor Trip System Instrumentation
- J. 3/4.4.10.1, Pressure/Temperature Limits, Reactor Coolant System
- K. 3/4.9.1, Refueling Operations, Boron Concentration

7.2.2 Procedures:

- A NC.NA-AP.ZZ-0000(Q), Action Request Process
- B. NC.NA-AP.ZZ-0003(Q), Document Management Program
- C. S2.RE-RA.ZZ-0012(Q), Figures
- D. S2.OP-SO.CVC-0006(Q), Boron Concentration Control
- E. S2.OP-SO.CVC-0008(Q), Rapid Boration

7.2.3 Other:

WCAP, The Nuclear Design of the Current Cycle for Salem Unit 2 Nuclear Power Plant

7.3 Commitments:

- 7.3.1 C0283, NRC VIOL 311/87-018-01
- 7.3.2 C0284, NSO LER 272/90-014-00

**ATTACHMENT 1**  
**(Page 1 of 3)**

**SHUTDOWN MARGIN VERIFICATION WITH NO XENON CREDIT**

**1.0 PURPOSE**

- 1.1 The purpose of this attachment is to determine the Reactor Coolant System Boron Concentration ( $C_B$ ) to ensure adequate Shutdown Margin.
- 1.2 This attachment applies NO credit for Xenon.
- 1.3 This attachment is used in Modes 3, 4, or 5.
- 1.4 This attachment satisfies the surveillance requirements in T/S 4.1.1.1.1.e. and T/S 4.1.1.2.b.

**2.0 PREREQUISITES**

- H 2.1 The Reactor is in Mode 3, 4, or 5.
- H 2.2 There are NO inoperable control rods.

**3.0 PRECAUTIONS AND LIMITATIONS**

- H 3.1 All figures are located in S2.RE-RA.ZZ-0012(Q), FIGURES.
- H 3.2 All changes in Boron Concentration are to be verified by chemical analysis.
- H 3.3 When Shutdown Banks are inserted with RHR flow in service AND reactor coolant pumps out of service,  $k_{eff}$  must be  $\leq 0.95$ . (This requirement is based on a postulated dilution event and was approved by SORC Meeting 80-80.)
- H 3.4 When the Reactor Trip Breakers are closed in Mode 3, 4 or 5  $k_{eff}$  must be  $\leq 0.96$  to avoid criticality during a postulated uncontrolled rod withdrawal accident. This requirement does not apply during transition from Mode 3 to Mode 2.
- H 3.5 The Boron Concentration of Figure 20A or 20B of S2.RE-RA.ZZ-0012(Q), Figures, ensures Shutdown Margin is maintained and  $k_{eff} \leq 0.99$  for times when Xenon is decayed out. Curves are given for shutdown banks withdrawn or inserted. For short shutdown periods (<2 days) with temperatures at 547 °F, borating to these concentrations may not be desirable. Use attachment 3 instead.



**ATTACHMENT 1**  
(Page 3 of 3)


N/A 4.5.4 IF the reactor is in Mode 3, 4 or 5 with the Reactor Trip Breakers closed, THEN  $k_{eff}$  must be  $\leq 0.96$  to avoid criticality during a postulated uncontrolled rod withdrawal accident. This requirement does not apply during transition from Mode 3 to Mode 2.

A 4.5.5 IF the Shutdown Banks are inserted with RHR flow in service AND the Reactor Coolant Pumps are out of service, THEN  $k_{eff}$  must be  $\leq 0.95$  to avoid criticality during a postulated dilution accident.

Completed by: \_\_\_\_\_

  
Candidate

Date: \_\_\_\_\_

  
Current

Time: \_\_\_\_\_



Verified(IV) by:  
[C0284]

CANDIDATE

Date: \_\_\_\_\_

CURRENT

Time: \_\_\_\_\_

CURRENT

FIGURE 20A

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

SALEM UNIT 2 CYCLE 11

**COLD SHUTDOWN BORON CONCENTRATION vs. CYCLE BURNUP**

**FOR NO XENON AT RCS TEMPS < 200 deg F**

**CURVES INCLUDE 100 PPM CONSERVATISM**

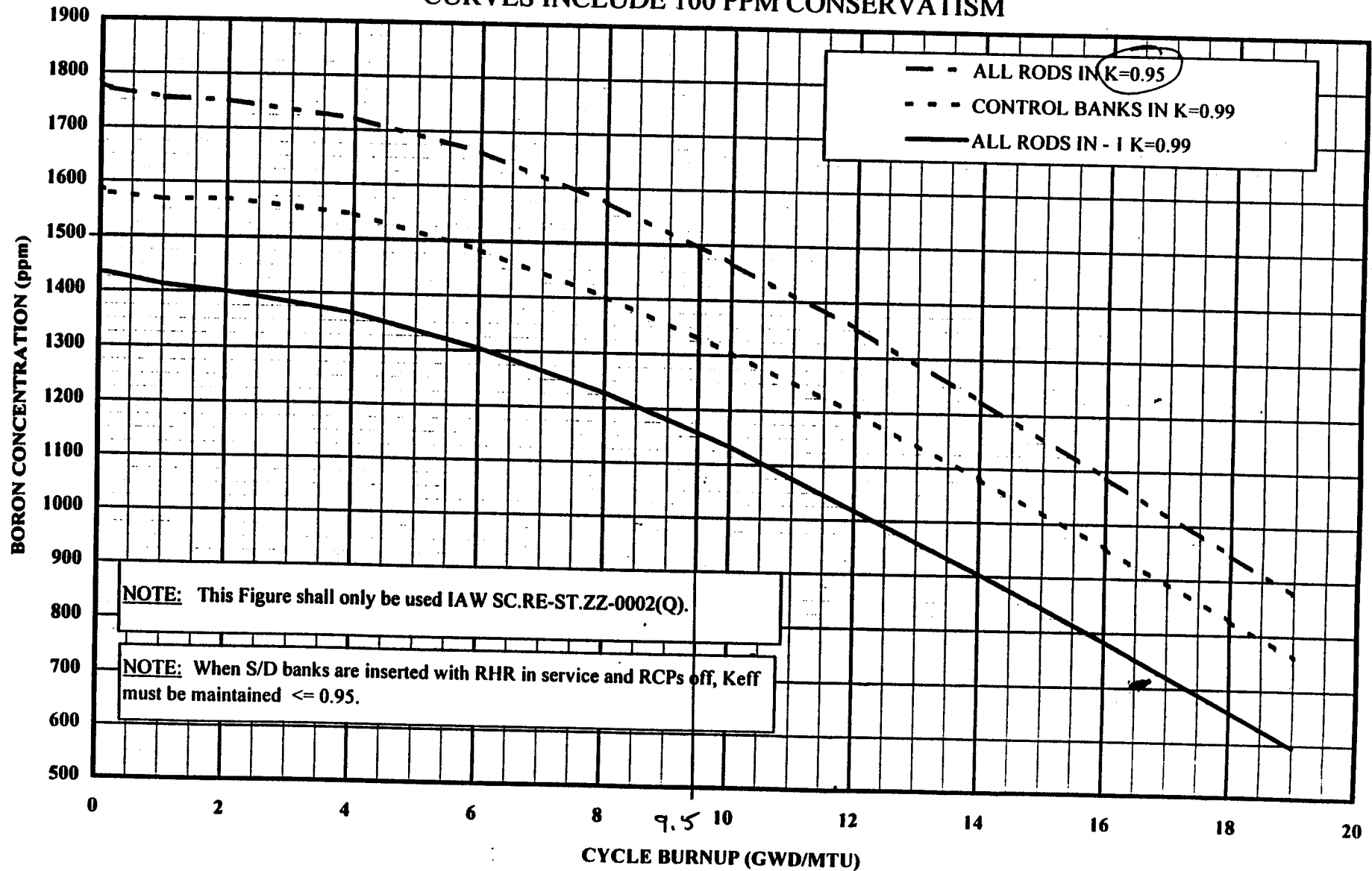


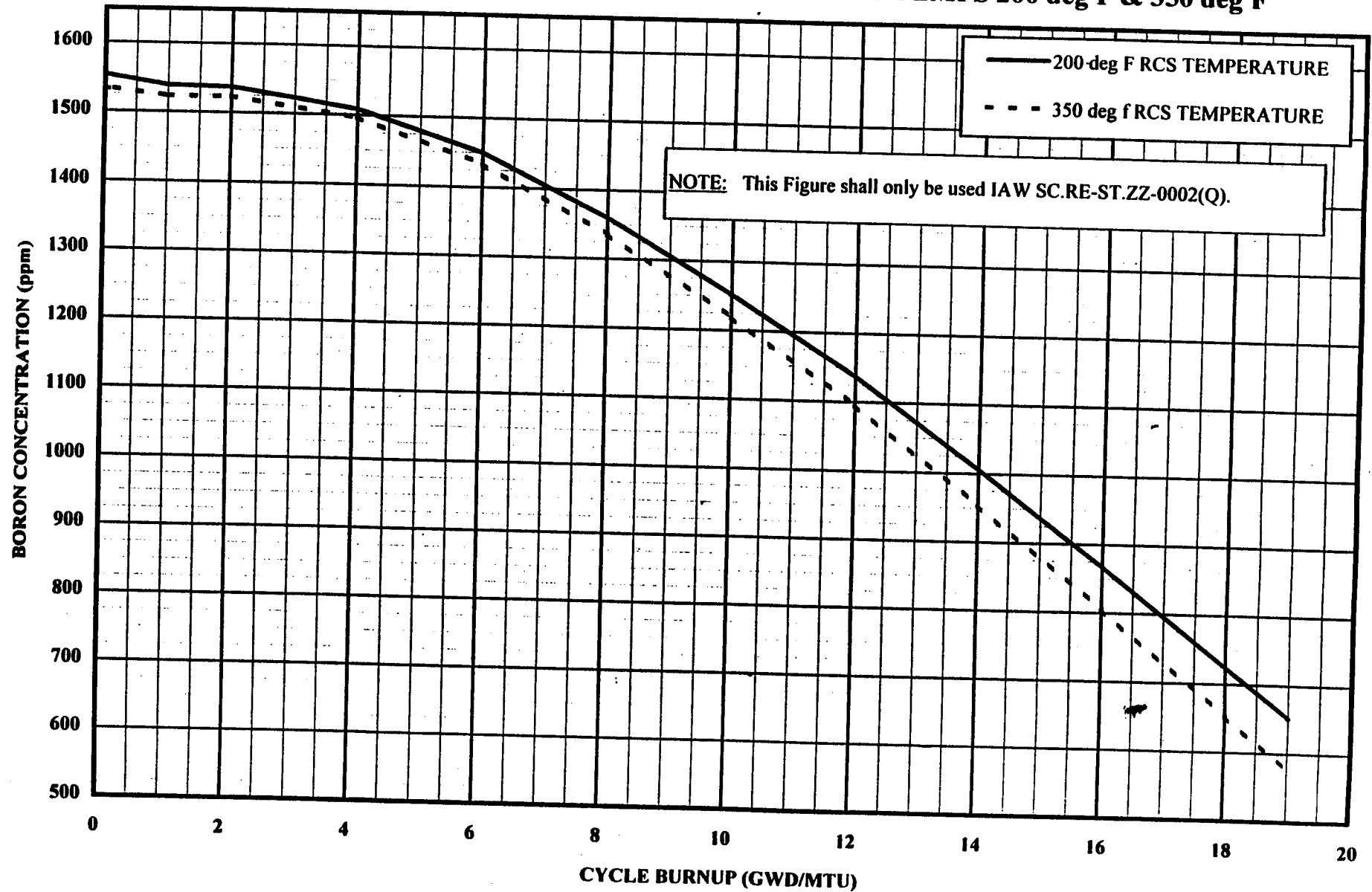


FIGURE 20B

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

SALEM UNIT 2 CYCLE 11

**HOT SHUTDOWN & HOT STANDBY BORON CONCENTRATION vs. CYCLE BURNUP**  
**ASSUMING ARI, NO Xe, PEAK Sm, & Keff = 0.96 at RCS TEMPS 200 deg F & 350 deg F**





**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Administrative

**TASK:** Perform Actions to Place Equipment in Inoperable status

**TASK NUMBER:** 123 018 03 02

**JPM NUMBER:** NRC EXAM

**APPLICABILITY:**

EO ☐ RO ☒ SRO ☒

**K/A NUMBER:** 2.2.23

|                           |     |     |
|---------------------------|-----|-----|
| <b>IMPORTANCE FACTOR:</b> | 2.6 | 3.8 |
|                           | RO  | SRO |

**EVALUATION SETTING/METHOD:** Simulator

**REFERENCES:** SC.OP-AP.ZZ-0108(Q), Rev. 9  
Removal/Return of Nuclear  
Safety Equipment

**TOOLS AND EQUIPMENT:** NONE

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**

*[Signature]*  
PRINCIPAL TRAINING SUPERVISOR

*[Signature]*  
OPERATIONS MANAGER

**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 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:** Perform Actions to Place Equipment in Inoperable status

**TASK NUMBER:** 123 018 03 02

**SIMULATOR IC:**

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:** Complete the first line of the Tech Spec Action Tracking Index for use by the Candidate.

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Perform Actions to Place Equipment in Inoperable status

**TASK NUMBER:** 123 018 03 02

**INITIAL CONDITIONS:**

- Unit 2 is operating at 100% power.
- 21 Charging Pump breaker tripped on overcurrent during the performance of S2.OP-ST.CVC-0003, In-service Testing - 21 Charging Pump.
- Investigation revealed the trip was due to a faulty breaker.
- Breaker replacement is expected to be completed within the next eight hours

**INITIATING CUE:**

You are the Unit 2 CRS. Evaluate any relevant technical specifications and complete necessary log entries.

**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:** Administration

**TASK:** Perform Actions to Place Equipment in Inoperable status

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 1           | After the candidate determines the procedure to be used, provide a copy and the Technical Specifications Log developed for this JPM. | Reviews SC.OP-AP.ZZ-0108,<br>Removal/Return of Nuclear Safety Equipment   |             |   |
| *      | 2           | Obtains a copy of Plant Technical Specifications and reviews for LCO applicability.  | Determines the following LCOs apply: <ul style="list-style-type: none"> <li>• 3.1.2.2, Flowpaths-Operating</li> <li>• 3.1.2.4, Charging Pumps-Operating</li> <li>• 3.5.2, ECCS Subsystems-Tavg <math>\geq 350^{\circ}\text{F}</math></li> </ul> |             |   |

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Administration

TASK: Perform Actions to Place Equipment in Inoperable status

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 3           | The candidate may review procedure section 4.0 and Sections 5.0 through 5.4.  | <p>Determines an Inoperable SSC entry must be made for TS 3.1.2.2 and 3.1.2.4.</p> <p>Determines an Action Statement Tracking entry must be made for 3.5.2.</p> <p>If the candidate initiates the Inoperable SSC entries first, THEN:</p> <p><b>CUE:</b> Other personnel will make the Inoperable SSC entries.</p> |             |   |
|        | 4           | Fills out the Action Statement Tracking Index.  | Refers to Section 5.5.   |             |   |
|        | 5           | Initiate an Action Statement Tracking Index entry by recording the following in their respective columns (In Attachment 4): | Locates Attachment 4.  |             |   |
| *      | 6           | INDEX Number.   | Enters "XX-018-A" in the INDEX NUMBER column.  |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

**NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**SYSTEM:** Administration

**TASK:** Perform Actions to Place Equipment in Inoperable status

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 7           | TSAS Number.   | Enters "3.5.2" in the TSAS NUMBER column.  |             |   |
|        | 8           | INOPERABLE SSC or PROCEDURE Number.                                | Enters "21 Charging Pump" and S2.OP-ST.CVC-0003 in the INOPERABLE SSC or PROCEDURE Number column.      |             |   |
| *      | 9           | The DATE and TIME the TSAS was ENTERED.                            | Enters Today's Date and time in the ENTERED (DATE/TIME) column.  |             |   |
| *      | 10          | The DATE and TIME or CONDITION for EXPIRATION of the TSAS.         | Enters the date and time 72 hours from now as the time in the EXPIRATION (DATE/TIME/CONDITION) column. |             |   |
|        | 11          | Fills out the Action Statement Tracking Sheet.                     | Refers to Section 5.6 and Attachment 5.  |             |   |
| *      | 12          | Print the Index Number in the INDEX NUMBER space.                  | Enters "XX-018-A" in the INDEX NUMBER space.   |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

SYSTEM: Administration

TASK: Perform Actions to Place Equipment in Inoperable status

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 13          | Print the TSAS number in the TSAS NUMBER space.  | Enters "3.5.2" in the TSAS NUMBER space.   |             |   |
| *      | 14          | Provide the designator and description for the inoperable SSC in the INOPERABLE TS COMPONENT(S) space.   | Enters "21 Charging Pump" in the INOPERABLE TS COMPONENT(S) space.   |             |   |
|        | 15          | Provide any additional related information in the ADDITIONAL INFORMATION space, including associated index number(s) from the Inoperable SSC Tracking Index. | May leave blank or indicate the Inoperable SSC Index number will be entered at a later time.   |             |   |
|        | 16          | Record any Compensatory Measures, including required action(s) and the time of their completion, in the section labeled COMPENSATORY MEASURES REQUIRED.      | Enters the following in the COMPENSATORY MEASURES REQUIRED section.<br><br>"With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours." |             |   |

**OPERATOR TRAINING PROGRAM**  
**JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

**SYSTEM:** Administration

**TASK:** Perform Actions to Place Equipment in Inoperable status

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 17          | Indicate if the item has a SPECIAL REPORT REQUIRED if the component is not returned to operable status within the specified time. | Circles NO.<br><br>Enters N/A in the REPORT INITIATION DUE DATE space.                     |             |   |
|        | 18          | IF A TSAS requires action to be performed by another department, the OS or CRS will ensure that:                                  | Determines that action by another department is NOT required and leaves the section blank. |             |   |
|        | 19          | The STA independently reviews . . .   | The candidate indicates the entries will be forwarded to the STA for review.               |             |   |

**TERMINATING CUE:** When the Candidate forwards the entries to the STA for review, the JPM may be terminated.

**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:** Administrative

**TASK:** Perform Actions to Place Equipment in Inoperable status

**OPEN REFERENCE:**

**TASK NUMBER:** 123 018 03 02

**QUESTION:**

**RESPONSE:**

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**RESULT:** ☐ -SAT

☐ -UNSAT

## **JOB PERFORMANCE MEASURE**

### **INITIAL CONDITIONS:**

- Unit 2 is operating at 100% power.
- 21 Charging Pump breaker tripped on overcurrent during the performance of S2.OP-ST.CVC-0003, In-service Testing - 21 Charging Pump.
- Investigation revealed the trip was due to a faulty breaker.
- Breaker replacement is expected to be complete within the next eight hours.

### **INITIATING CUE:**

You are the Unit 2 CRS. Evaluate any relevant technical specifications and necessary log entries.

KEY

ATTACHMENT 5

SC.OP-AP.ZZ-0108(Q)

(Page 1 of 1)

ACTION STATEMENT TRACKING SHEET

Index Number: XX-018-A

TSAS Number: 3.5.2

INOPERABLE

21 Charging Pump

TS

COMPONENT(S):

ADDITIONAL INFORMATION (INCLUDE ASSOCIATED INDEX NUMBERS FROM INOPERABLE SSC TRACKING INDEX):

Pump is inoperable due to a faulty breaker. (Optional)

| COMPENSATORY ACTIONS REQUIRED *  | DATE / TIME COMPLETED |
|--|-----------------------|
| <u>With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.</u> |                       |
|  |                       |
|  |                       |
|  |                       |

\* For Recurring Actions, use SC.OP-AP.ZZ-0110, "Use and Development of Operating Logs", Attachment 5.

SPECIAL REPORT REQUIRED YES ☒ NO ☐ REPORT INITIATION DUE DATE 1/4

NOTIFICATIONS FOR COMPENSATORY ACTIONS OR SURVEILLANCES \*

| NAME of DEPARTMENT and PERSON NOTIFIED | NOTIFICATION (DATE/TIME) |      | NAME of PERSON MAKING NOTIFICATION | AR# (If applicable) |
|--|--------------------------|------|------------------------------------|---------------------|
|  | ENTRY                    | EXIT |                                    |                     |
|  |                          |      |                                    |                     |
|  |                          |      |                                    |                     |
|  |                          |      |                                    |                     |
|  |                          |      |                                    |                     |

\* C0615 IF entry into an Action Statement or failure to meet an Action Statement time limitation requires submitting a special report to the NRC, THEN ENSURE the responsible department is notified of the reporting requirements AND NOTIFY the Assistant Operations Manager or other Operations Management within one Hour AND ENSURE the Licensing Department is notified of the reporting requirements AND INITIATE, as appropriate, a Level 1 or 2 ARCR.

ACTION STATEMENT TRACKING INITIATION AUTHORIZATION

CONCURRED: \_\_\_\_\_ (STA) APPROVED: \_\_\_\_\_ (OS/CRS)

DATE/TIME: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

ACTION STATEMENT TRACKING CLOSURE AUTHORIZATION

REVIEWED: \_\_\_\_\_ (STA) APPROVED: \_\_\_\_\_ (OS/CRS)

DATE/TIME: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

Update Action Statement Tracking Index and route completed Attachment 5 to Operations Staff.

Salem Common



**(Page 1 of 1)**

**ACTION STATEMENT TRACKING INDEX**  
(May be inserted in the report)

(May be implemented electronically)

[illegible]

**EXAMPLE:**

|          |         |                  |                 |                 |                 |
|----------|---------|------------------|-----------------|-----------------|-----------------|
| 97-014-A | 3.1.2.4 | 21 Charging Pump | 11/2/97<br>2100 | 11/5/97<br>2100 | 11/3/97<br>1500 |
|----------|---------|------------------|-----------------|-----------------|-----------------|

## ACTION STATEMENT TRACKING INDEX

[illegible]

**EXAMPLE:**

|          |         |                  |                 |                 |                 |
|----------|---------|------------------|-----------------|-----------------|-----------------|
| 97-014-A | 3.1.2.4 | 21 Charging Pump | 11/2/97<br>2100 | 11/5/97<br>2100 | 11/3/97<br>1500 |
|----------|---------|------------------|-----------------|-----------------|-----------------|

**(May be implemented electronically)**

[illegible]

**EXAMPLE FOR NORMAL INOPERABLE AND RETURN TO OPERABLE STATUS:**

| UNUSUAL, ABNORMAL INOPERABLE AND RETURN TO OPERABLE STATUS: |                  |            |                 |                 |
|---|------------------|------------|-----------------|-----------------|
| 97-014-E  | 21 SW Pump Motor | 21 SW Pump | 11/3/97<br>2100 | 11/5/97<br>1500 |

**EXAMPLE FOR CLOSE OUT AND TRANSFER OPERATION:**

|          |                  |            |                 |                              |
|----------|------------------|------------|-----------------|------------------------------|
| 97-014-E | 21 SW Pump Motor | 21 SW Pump | 11/3/97<br>2100 | 11/5/97 - 1500<br>X-97-015-E |
|----------|------------------|------------|-----------------|------------------------------|

KEY

SC.OP-AP.ZZ-0108(Q)

ATTACHMENT 2

(Page 1 of 1)

INOPERABLE SSC TRACKING SHEET

INDEX # XX-018-E

INITIATOR (Candidates Name) (PRINT NAME)

SYSTEM / STRUCTURE / COMPONENT (SSC): "21 Charging Pump Breaker" (or "21 Charging Pump")

RELATED TS SSC: 21 Charging Pump (May also leave blank)

DESCRIPTION OF CONDITION: Faulty Charging Pump Breaker

APPLICABLE LCO / MODE: 3.1.2.1/4,5,6 3.1.2.2/1,2,3 3.1.2.3/4,5,6 3.1.2.4/1,2,3 3.5.2/1,2,3 3.5.3/4

ACTIVITIES AFFECTING SYSTEM / COMPONENT OPERABILITY

| DOCUMENT TYPE & #<br>(WO/AR/TR/CR/<br>PROCEDURE) | DATE<br>ADDED | BRIEF DESCRIPTION OF ACTIVITY<br>(WO/AR/TR/CR/PROCEDURE) | COMPLETED BY<br>& DATE |
|--|---------------|--|------------------------|
|  |               |  |                        |
|  |               |  |                        |
|  |               |  |                        |
|  |               |  |                        |

Use Attachment 3 (Inoperable SSC Tracking Addendum Sheet) if necessary. Check here if additional sheets used: ☐

INOPERABLE SSC TRACKING SHEET INITIATION AUTHORIZATION

CONCURRED: \_\_\_\_\_ STA APPROVED: \_\_\_\_\_

DATE/TIME: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ OS/CRS

RETURN TO SERVICE (Requires SRO or STA Signature)

| ITEM                                      | DATE | SIGNATURE |
|---|------|-----------|
| ACTIVITIES AFFECTING OPERABILITY COMPLETE |      |           |
| DCP PART "A" CLOSE-OUT COMPLETED          |      |           |
| SYSTEM FILLED / VENTED                    |      |           |
| 2nd VERIFICATION COMPLETE                 |      |           |
| PMTs, RETEST, SURVEILLANCES COMPLETE      |      |           |

INOPERABLE SSC TRACKING SHEET CLOSURE AUTHORIZATION

REVIEWED: \_\_\_\_\_ APPROVED: \_\_\_\_\_ TRANSFER CHECK BOX ☐

DATE/TIME: \_\_\_\_\_ (STA) DATE/TIME: \_\_\_\_\_ (OS/CRS)

**ATTACHMENT 2**  
**(Page 1 of 1)**  
**INOPERABLE SSC TRACKING SHEET**

INDEX # \_\_\_\_\_

INITIATOR \_\_\_\_\_ (PRINT NAME)

SYSTEM / STRUCTURE / COMPONENT (SSC): \_\_\_\_\_

RELATED TS SSC: \_\_\_\_\_

DESCRIPTION OF CONDITION: \_\_\_\_\_

APPLICABLE LCO / MODE: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**ACTIVITIES AFFECTING SYSTEM / COMPONENT OPERABILITY**

| DOCUMENT TYPE & #<br>(WO/AR/TR/CR/<br>PROCEDURE) | DATE<br>ADDED | BRIEF DESCRIPTION OF ACTIVITY<br>(WO/AR/TR/CR/PROCEDURE) | COMPLETED BY<br>& DATE |
|--|---------------|--|------------------------|
|  |               |  |                        |
|  |               |  |                        |
|  |               |  |                        |
|  |               |  |                        |

Use Attachment 3 (Inoperable SSC Tracking Addendum Sheet) if necessary. Check here if additional sheets used: ☐**INOPERABLE SSC TRACKING SHEET INITIATION AUTHORIZATION**

CONCURRED: \_\_\_\_\_ STA APPROVED: \_\_\_\_\_

DATE/TIME: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ OS/CRS

**RETURN TO SERVICE (Requires SRO or STA Signature)**

| ITEM                                      | DATE | SIGNATURE |
|---|------|-----------|
| ACTIVITIES AFFECTING OPERABILITY COMPLETE |      |           |
| DCP PART "A" CLOSE-OUT COMPLETED          |      |           |
| SYSTEM FILLED / VENTED                    |      |           |
| 2nd VERIFICATION COMPLETE                 |      |           |
| PMTs, RETEST, SURVEILLANCES COMPLETE      |      |           |

**INOPERABLE SSC TRACKING SHEET CLOSURE AUTHORIZATION**TRANSFER CHECK BOX ☐

REVIEWED: \_\_\_\_\_ (STA) APPROVED: \_\_\_\_\_

DATE/TIME: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_ (OS/CRS)

**INOPERABLE SSC TRACKING INDEX**  
(May be implemented electronically)

| EXAMPLE FOR NORMAL INOPERABLE AND RETURN TO OPERABLE STATUS: |                  |            |                 |                 |
|--|------------------|------------|-----------------|-----------------|
| 97-014-E   | 21 SW Pump Motor | 21 SW Pump | 11/3/97<br>2100 | 11/5/97<br>1500 |

|          |                  |            |                 |                              |
|----------|------------------|------------|-----------------|------------------------------|
| 97-014-E | 21 SW Pump Motor | 21 SW Pump | 11/3/97<br>2100 | 11/5/97 - 1500<br>X-97-015-E |
|----------|------------------|------------|-----------------|------------------------------|

# SALEM ADMIN QUESTIONS

**SRO**

**A3.1**

**PAGE 1 OF 2**

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

---

**QUESTION:**

A pipe break has occurred on the 78' elevation of the Mechanical Penetration Area. A Site Area Emergency has been declared. The Equipment Operator that will be sent into the area to isolate the leak has a current year TEDE of 1980 mrem. The evolution is projected to take 30 minutes, in a general area dose rate of 4.6 Rem/hr. The one time Emergency Dose extension is **NOT** authorized.

Can this NEO be used to perform the task without exceeding any administrative dose limit?

**ANSWER:**

Yes. ERO personnel are automatically extended to 4500 mR at an ALERT or higher. The NEO's dose is  $1980 + 30/60(4600) = 4280 \text{ mR}$

**RESPONSE:**

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.3.4 3.1

REFERENCES: EPIP-202S

**SRO**

**A3.2**

**PAGE 2 OF 2**

## SALEM ADMIN QUESTIONS

CANDIDATE: \_\_\_\_\_ DOCKET: \_\_\_\_\_ DATE: \_\_\_\_\_

---

### QUESTION:

The plant is operating at 100% power. A containment entry will be made today. Last shift, the inner door of the El. 100' Containment Airlock failed the leak rate test and seal repairs have been added to the containment work schedule. Eighteen people are scheduled to enter containment to complete 6 different tasks.

How does the El. 100 Containment Airlock status affect the containment entry and work schedule?

### ANSWER:

A maximum of ten (10) people per operating airlock may enter Containment during Modes 1 & 2. The work will have to be split up to meet the 10 person maximum until the airlock is repaired.

### RESPONSE:

SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

K/A NUMBER: 2.3.4 3.1

**REFERENCES:** NC.NA-AP.ZZ-0024, Rev. 9, Radiation Protection Program, Attachment 3, Special Radiological Access Controls, Page 37.



**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**STATION:** SALEM

**SYSTEM:** Emergency Plan - Event Classification

**TASK:** Classify Emergency/Non-Emergency Events

**TASK NUMBER:** 1240010502

**JPM NUMBER:**

**K/A NUMBER:** 2.4.44

**APPLICABILITY:**

EO ☐ RO ☐ SRO ☒

**IMPORTANCE FACTOR:**

|        |
|--------|
| 4.1    |
| RO SRO |

**EVALUATION SETTING/METHOD:** Control Room or Classroom

**REFERENCES:** Emergency Classification Guide

**TOOLS AND EQUIPMENT:**

**VALIDATED JPM COMPLETION TIME:** 15 MIN

**TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:** N/A

**APPROVED:**

*[Signature]*  
PRINCIPAL TRAINING SUPERVISOR

*[Signature]*  
OPERATIONS MANAGER

**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 TIME:** \_\_\_\_\_

**JPM PERFORMED BY:** \_\_\_\_\_

**GRADE:** ☐ SAT ☐ UNSAT

**REASON, IF UNSATISFACTORY:**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**SETUP INSTRUCTIONS**

**SYSTEM:** Emergency Plan - Event Classification

**TASK:** Classify Emergency/Non-Emergency Events

**TASK NUMBER:** 124 001 05 02

**SIMULATOR IC:** N/A

**MALFUNCTIONS  
REQUIRED:** NONE

**OVERRIDES  
REQUIRED:** NONE

**SPECIAL  
INSTRUCTIONS:** NONE

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

**SYSTEM:** Emergency Plan - Event Classification

**TASK:** Classify Emergency/Non-Emergency Events

**TASK NUMBER:** 1240010502

**INITIAL CONDITIONS:**

Unit 1 was operating at 100% when a major electrical fault resulted in a rapid power reduction to 50% power. After the power reduction, RCS activity began to rise rapidly. Reactor Coolant samples indicated RCS activity was 320 uci/gm and the operating crew commenced a reactor shutdown. Prior to completing the shutdown, a LOCA occurred and a reactor trip/SI was manually initiated when pressurizer level could not be maintained.

The following post trip conditions exist:

1. S/G levels are being maintained using motor driven AFW Pumps.
2. All Core Exit Thermocouples are between 550°F - 600°F.
3. All CFCUs are running in Low Speed.
4. Containment Rad Monitor 2R2 is reading 1.9 R/hr. and rising.
5. Containment pressure peaked at 6.8 psig, then suddenly lowered and is now stable at 1.9 psig.
6. 2R41D is in alarm reading 5.75E6 uci/sec and rising.
7. The wind is blowing from the Northeast at 25 mph.

**INITIATING CUE:**

You are the Emergency Coordinator. Classify the event and complete the Initial Contact Message Form. The clock starts when you have reviewed the initial conditions and are ready to begin.

**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: Emergency Plan - Event Classification

TASK: Classify Emergency/Non-Emergency Events

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step) | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
|        | 1           | Locates an ECG and refers to the applicable section.               | Refers to Table 3.0, Fission Product Barriers   |             |   |
|        | 2           | Classifies the event.  | <p>Declares a General Emergency (10 pts.):</p> <ul style="list-style-type: none"> <li>3.1.2-RCS activity &gt; 300 uci/gm (4 pts.)</li> <li>3.2.4-2R2 &gt; 1 R/hr (4 pts.)</li> <li>3.3.2.c-Rapid Unexplained Containment Pressure drop. (2 pts.)</li> </ul> <p>OR</p> <p>3.3.4.c-LOCA conditions and Containment pressure or Sump level NOT rising as expected.</p> |             |   |
|        | 3           | Refers the correct ECG Attachment.                                 | Refers to ECG Attachment 4, Emergency Coordinator (EC) Log Sheet and initiates applicable actions.  |             |   |

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Emergency Plan - Event Classification

TASK: Classify Emergency/Non-Emergency Events

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
|        | 4           | Declare a General Emergency at Salem Unit _____.<br><br>EAL #(s) _____, _____, _____.<br><br>Declared at _____ hrs on _____.   | Records the following information:<br><br><ul style="list-style-type: none"> <li>Unit 1</li> <li>3.1.2, 3.2.4, 3.3.2.c or 3.3.4.c</li> <li>Current time and date.</li> </ul> |             |   |
|        | 5           | Call all communicators.  | Makes an announcement on the Plant Page.<br><br><i>CUE:</i> Page announcement has been made.   |             |   |
|        | 6           | Make a PAR by the following steps:<br><br>Refer to Predetermined PAR Flowchart on Pg. 5<br>and CHOOSE the appropriate PAR.<br><br><ul style="list-style-type: none"> <li>GE BASED ON 10 POINTS ON BARRIER TABLE?</li> <li>EVACUATE ALL SECTORS 0-5 MILES.</li> </ul> | Answers YES.<br><br><br>Evacuates all sectors 0-5 miles.   |             |   |

# OPERATOR TRAINING PROGRAM .

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Emergency Plan - Event Classification

TASK: Classify Emergency/Non-Emergency Events

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)  | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|---|--|-------------|---|
|        | 7           | <p>Refer to Recommended Protective Actions Worksheet on Pg. 6 to DETERMINE the compass designations for the downwind sectors affected.</p> <ul style="list-style-type: none"> <li>EVACUATE DOWNWIND <math>\pm</math> 1 SECTOR 5-10 MILES.</li> <li>SHELTER ALL REMAINING SECTORS 5-10 MILES.</li> </ul> | <p>Evacuates the WSW, SW &amp; SSW Sectors 5-10 miles.</p> <p>Shelters all other sectors 5-10 miles.</p> |             |   |
|        | 8           | IF a Radiologically Based PAR is IMMEDIATELY available, then COMPARE the two PARS and choose the most appropriate for inclusion on the ICMF.  | <b>CUE:</b> NO Radiologically Based PAR is available at this time.                                       |             |   |
|        | 9           | COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment.)  | Refers to the Last page of the attachment.   |             |   |
|        | 10          | THIS IS _____, COMMUNICATOR IN THE _____ AT THE Salem NGS, Unit _____.  | <p>Leaves the NAME space blank.</p> <p>Checks the CONTROL ROOM box.</p> <p>Enters "1" for the Unit.</p>  |             |   |

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Emergency Plan - Event Classification

TASK: Classify Emergency/Non-Emergency Events

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD   | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|--|-------------|---|
| *      | 11          | THIS IS NOTIFICATION OF A GE WHICH<br>WAS DECLARED AT _____ ON _____.<br><br>EAL#(S) _____, _____, _____.<br><br>DESCRIPTION OF EVENT _____.                             | Checks the IIa. box and enters current time and date.<br><br>Enters 3.1.2, 3.2.4, 3.3.2.c or 3.3.4.c<br><br>Enters a description similar to:<br><br>"Fuel Failure with a LOCA<br>and Containment failure." |             |   |
|        | 12          | THIS IS NOTIFICATION OF A PROTECTIVE<br>ACTION RECOMMENDATION UPGRADE<br>WHICH ...   | Determines this to be N/A and leaves blank.  |             |   |
| *      | 13          | III. NO RADIOLOGICAL RELEASE IS IN<br>PROGRESS<br><br>THERE IS A RADIOLOGICAL RELEASE IN<br>PROGRESS<br><br>33 FT. LEVEL WIND DIRECTION<br>FROM _____ WIND SPEED: _____. | Checks the Release in Progress box.<br><br>Enters NE and 25 mph  |             |   |

# OPERATOR TRAINING PROGRAM

## JOB PERFORMANCE MEASURE

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SYSTEM: Emergency Plan - Event Classification

TASK: Classify Emergency/Non-Emergency Events

| #<br>* | STEP<br>NO. | STEP<br>(*Denotes a Critical Step)<br>(#Denotes a Sequential Step)   | STANDARD  | EVAL<br>S/U | COMMENTS<br>(Required for UNSAT Evaluation) |
|--------|-------------|--|---|-------------|---|
| *      | 14          | IV. WE RECOMMEND EVACUATION AS<br>FOLLOWS <u>SECTORS</u> <u>Dist-Miles</u><br>_____<br><br>WE RECOMMEND SHELTERING AS<br>FOLLOWS <u>SECTORS</u> <u>Dist-Miles</u><br>_____ | <u>SECTORS</u> <u>Dist-Miles</u><br><br>Enters: ALL 0-5<br>WSW,SW,SSW 5-10<br><br>Enters ALL OTHER 5-10 |             |   |
|        | 15          | EC Initials.   | Enters own initials.  |             |   |

TERMINATING CUE: ICMF handed to communicator (Evaluator)



**JOB PERFORMANCE MEASURE  
FOLLOW-UP QUESTION DOCUMENTATION:**

**NAME:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

**SYSTEM:**           Emergency Plan - Event Classification

**TASK:**             Classify Emergency/Non-Emergency Events

**OPEN REFERENCE:**

**TASK NUMBER:**   1240010502

**QUESTION:**

**RESPONSE:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RESULT:**   ☐ -SAT                   ☐ -UNSAT

**OPERATOR TRAINING PROGRAM  
JOB PERFORMANCE MEASURE**

**INITIAL CONDITIONS:**

Unit 1 was operating at 100% when a major electrical fault resulted in a rapid power reduction to 50% power. After the power reduction, RCS activity began to rise rapidly. Reactor Coolant samples indicated RCS activity was 320 uci/gm and the operating crew commenced a reactor shutdown. Prior to completing the shutdown, a LOCA occurred and a reactor trip/SI was manually initiated when pressurizer level could not be maintained.

The following post trip conditions exist:

- S/G levels are being maintained using motor driven AFW Pumps.
- All Core Exit Thermocouples are between 550°F - 600°F.
- All CFCUs are running in Low Speed.
- Containment Rad Monitor 2R2 is reading 1.9 R/hr. and rising.
- Containment pressure peaked at 6.8 psig, then suddenly lowered and is now stable at 1.9 psig.
- 2R41D is in alarm reading 5.75E6 uci/sec and rising.
- The wind is blowing from the Northeast at 25 mph.

**INITIATING CUE:**

You are the Emergency Coordinator. Classify the event and complete the Initial Contact Message Form. The clock starts when you have reviewed the initial conditions and are ready to begin.