OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK: Perform a peer check on a completed ECP

TASK NUMBER: 1200020301

JPM NUMBER: 2002 GOLF NRC RO A1

ALTERNATE PATH: [X] **K/A NUMBER:** 2.1.25

IMPORTANCE FACTOR: RO 2.8 SRO 3.1

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

EVALUATION SETTING/METHOD: Room with applicable references

REFERENCES: SC.RE-RA.ZZ-0001, Rev. 0
S2.RE-RA.ZZ-0012, Rev. 58

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 18 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: N/A Minutes

JPM PERFORMED BY: _____ **GRADE:** [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Perform a peer check on a completed ECP

TASK NUMBER: 1200020301

INITIAL CONDITIONS:

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

Previous Critical Conditions:

- Reactor trip after 55 days at 100% power
- 600 ppm Boron
- 13000 MWD/MTU
- Bank D @ 217 steps

Intended Critical Conditions:

- 48 hours after the trip
- Bank D @ 95 steps

SIMULATOR SETUP:

N/A

INITIATING CUE:

Perform a peer check on a manual ECP.

Successful Completion Criteria:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Administrative

TASK: Perform a peer check on a completed ECP

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide Candidate with a completed SC.RE-RA.ZZ-0001			
		START TIME:			
		Reviews procedure.	Reads PREREQUISITES and PRECAUTION AND LIMITATIONS		
		Verify proper completion of Attachment 1, Estimated Critical Position Worksheet:			
	1	Review Section(s):	**CUE:** Assume the data in Sections 1.0, 2.0 and 3.0 has been properly obtained and is correct.		
		1.0 PREVIOUS CRITICAL CONDITIONS			
		2.0 SHUTDOWN CONDITIONS			
		3.0 INTENDED CRITICAL CONDITIONS			
		Review Section 4.0 – REACTIVITY WORTHS AT PREVIOUS CRITICAL CONDITIONS			
	Step 4.1	Integral Rod Worth at position in 1.4.	Using Figure 4 reads < 50 pcm.		
	Step 4.2	Power Defect at Power in 1.2 (100%) and Boron Concentration in 1.3 (600 ppm).	Using Figure 2 reads approximately 1880 pcm.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on a completed ECP**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	Step 4.3	Xenon Reactivity at Time in 1.1 (48 hours ago).	Using Figure 6 reads approximately 2525 pcm. ***CUE:*** If Candidate questions use of BOL curve, tell him to use the curve available.		
	Step 4.4	Samarium Reactivity at Time in 1.1 (48 hours ago).	Using Figure 10B reads approximately 935 pcm.		
		Review Section 5.0 – REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS			
	Step 5.1	Integral Rod Worth at Position in 3.2 (D-85).	Using Figure 4 reads approximately 700 pcm.		
	Step 5.2	Xenon Reactivity			
		• Elapsed time from 2.1 to 3.1			
		• Xenon Reactivity at Time in 5.2.1 and Power in 2.2 (100%).	Using Figure 8B, 48 hours and 100% power reads approximately 525 pcm.		
	Step 5.3	Samarium Reactivity			
		• Elapsed time from 2.1 to 3.1			
		• Xenon Reactivity at Time in 5.2.1 and Power in 2.2 (100%)	Using Figure 8B, 48 hours and 100% power reads approximately 1018 pcm.		
		Review Section 6.0 – REACTIVITY CHANGES AND SUM			
	Step 6.1	Integral Rod Worth (4.1) – (5.1)	-700 pcm, ±5%		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Perform a peer check on a completed ECP**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	Step 6.2	Power Defect (4.2)	+1850 to +1900 pcm		
*	Step 6.3	Xenon Reactivity (5.2.2) – (4.3)	Identifies error in algebraic addition. Correct number should be: +1900 to 2100 pcm		
	Step 6.4	Samarium Reactivity (5.3.2) – (4.4)	Identifies error in algebraic addition. Correct number should be: -78 to 88 pcm		
*	Step 6.5	SUM (6.1) + (6.2) + (6.3) + (6.4)	(-700) + (1880) + (2000) + (-83) = +2943 to +3251 pcm		
		Review Section 7.0 – INTENDED CRITICAL BORON CONCENTRATION DETERMINATION	TERMINATE JPM		
		STOP TIME:			

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

INITIAL CONDITIONS:

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

Previous Critical Conditions:

- Reactor trip after 55 days at 100% power
- 600 ppm Boron
- 13000 MWD/MTU
- Bank D @ 217 steps

Intended Critical Conditions:

- 48 hours after the trip
- Bank D @ 95 steps

INITIATING CUE:

Perform a peer check on a manual ECP.

PSEG Internal Use Only

MASTER

PSEG NUCLEAR L.L.C.
SALEM GENERATING STATION/REACTOR ENGINEERING
SC.RE-RA.ZZ-0001(Q) - REV. 0
ESTIMATED CRITICAL POSITION

PSE&G CONTROL COPY # 57

USE CATEGORY: I

REVISION SUMMARY: Biennial Review performed: Yes X No ___ NA ___

This revision combined procedures S1.RE-RA.ZZ-0001(Q) and S2.RE-RA.ZZ-0001(Q), therefore, all references were revised to incorporate both Salem Stations.

The requirements related to independent verification were strengthened – Steps 5.1.5 and 5.1.6 were added. Required signatures were added to: Attachment 1, page 5; and Attachment 2.

The requirements related to Supervisor – Reactor Engineering review and approval were strengthened – Step 5.1.7 was added and a required signature was added to Attachment 1, page 5.

The titles were changed from "SNSS\NSS" to "OS\CRS" throughout the procedure to reflect current terminology.

Deleted "Xenon Code," "ECP Code," and "RXCALC Program" as data sources throughout the procedure. Added preferred data sources "Power Distribution Monitoring System (PDMS)" and "Advanced Nodal Code (ANC)."

Old Steps 5.1.2 – 5.1.4 were moved to the Precautions Section (3.14 – 3.16).

Precaution 3.17 was added to provide additional clarification.

Step 3.5 – the Core Operating Limits Report was added to provide the specific location of the referenced insertion limit.

IMPLEMENTATION REQUIREMENTS Effective Date 11/2/01

APPROVED: William N Evans 11/2/01
Manager Nuclear Fuels/Reactor Engineering (or Designee) Date

Step 3.11 - the value was changed from 50 pcm to 100 pcm to allow greater flexibility.

The note prior to Step 5.1 was added to reflect preferred use of PDMS.

The old note prior to Attachment 1, Step 5.3.2, related to adding 588 pcm to the value obtained from the figure was deleted. It is no longer applicable with the development of new figures.

The note prior to step 5.1.1.C.2 was added recommending placing Control Bank D at approximately 100 steps.

"Use HFP" was added to Steps 5.1.1.D.4 and 5.1.1.E.1 for clarification.

Steps 5.1.1.D.3, 5.1.1.D.4, 5.1.1.E.2, and 5.1.1.E.3 were changed to a conditional step format.

Step 5.1.1.D.4.a – changed from "use 588 pcm" to "use Figures 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures" to incorporate the new figures.

Step 5.1.1.E.2.a – reference was changed from "Figure 8" to "Figure 8 A, B, C" to incorporate the new figures.

Step 5.1.1.E.3.a – reference was changed from "Figure 10" to "Figure 10 A, B, C" to incorporate the new figures.

Step 5.1.1.H.1 - the reference was changed from T/S "3.1.3.5 Figure 3-1-1" to "Core Operating Limits Report (COLR) Figure 1(T/S 3.1.3.5)" to reflect current T/S wording.

Steps 5.1.2 and 5.1.3 were added to require calculation of a second ECP.

Step 5.2.2 - The information related to records retention was deleted.

Step 6.1 - the reference was changed from NAP-3 to NAP-11. The cross-reference was also changed.

7.1.1.B – Cross-reference was revised to correspond to T/S wording.

Step 1.3 and item 7.1.2.D – Cross-reference was updated to SC.RE-IO.ZZ-0002(Q). Item 7.1.2.F was added.

Numerous minor editorial changes were made throughout the document to comply with the writers guide. These changes were not identified with revision bars.

ESTIMATED CRITICAL POSITION

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1.0 PURPOSE

1.1 To calculate plant conditions that will achieve criticality. The conditions ensure adequate shutdown margin in the event of a reactor trip. The estimated conditions also avoid unanticipated criticality in the event of instrument failure.

1.2 To satisfy the requirements of Technical Specification (T/S) Surveillance 4.1.1.1.1.c in Mode 2.

1.3 This procedure is to be completed prior to approach to criticality during the operating cycle. This procedure is **NOT** applicable to the initial approach to criticality following a Refueling Outage. The Estimated Critical Position following a Refueling Outage is predicted IAW SC.RE-IO.ZZ-0002(Q), Low Power Physics Testing and Power Ascension.

2.0 PREREQUISITES

2.1 The plant is in hot standby (Tave = 547° F).

3.0 PRECAUTIONS AND LIMITATIONS

3.1 The NAME, INITIALS, and SIGNATURES of all personnel performing steps in this procedure, and the DATE of performance shall be recorded on Attachment 2.

3.2 Conditional steps shall be evaluated by the user and if not applicable marked "N/A." Conditional steps include words IF, WHEN, and OR.

3.3 All deficiencies and corrective actions taken during the performance of this procedure, including Termination, shall be documented in the Comments section of Attachment 2.

3.4 Non-conditional steps which are evaluated as being not applicable shall be marked "N/A," initialed by the Reactor Engineer, and clearly explained in the Comments section of Attachment 2.

3.5 The critical control rod position shall be above the hot zero power minimum insertion limit of the Core Operating Limits Report (COLR) IAW T/S 3.1.3.5.

3.6 This procedure does not correct for temperatures other than 547°F.

3.7 Criticality must be anticipated any time there is an insertion of positive reactivity (e.g. RCCA withdrawal, Boron Dilution, etc.).

3.8 Data chosen for the previous critical conditions should be the best available data, not necessarily the most recent. Conditions that yield the best ECP results are steady state operation and previous hot zero power conditions. **[CO498]**

3.9 The actual critical configuration shall be within ± 1000 pcm of the estimated configuration.

3.10 Chemical analysis is used to verify boron concentrations.

3.11 IF the estimated time of criticality changes such that the amount of reactivity change introduced is greater than ±100 pcm, THEN a new estimated critical position shall be calculated.

3.12 Reactivity data will change with fuel exposure, fission product build up, calculational improvements, etc.

3.13 All previous critical data should be from the same point in time. This is especially pertinent for data collected during transients. **[C0498]**

3.14 The Supervisor - Reactor Engineering may substitute reactivity worths from sources not specifically mentioned in Section 5.1 at his/her discretion. Substitutions of this type shall be noted where entered on Attachment 1 and shall be initialed by the Supervisor - Reactor Engineering and the OS/CRS prior to criticality.

3.15 Each reactor startup will be guided by plotting an Inverse Count Rate Ratio Plot IAW SC.RE-RA.ZZ-0002(Q), Inverse Count Rate Ratio During Control Rod Withdrawal.

3.16 REFER to S1(2).OP-IO.ZZ-0003(Q), Hot Standby to Minimum Load, for corrective actions if any of the following occur:

- Criticality is achieved prior to the rod position in Attachment 1, Step 8.1.
- Criticality is achieved prior to the rod position in Attachment 1, Step 8.3.2.
- Criticality is not yet achieved when the rod position in Attachment 1, Step 8.8.2 is reached.

3.17 For transient xenon conditions, increased accuracy may be obtained by interpolating between Figures 12 and 13 of S1(2).RE-RA.ZZ-0012(Q), Figures.

4.0 EQUIPMENT/MATERIAL REQUIRED

Calculator

Approved Computer Code

5.0 PROCEDURE

NOTE

If available, consider using the Power Distribution Monitoring System (PDMS) IAW SC.RE-SO.NIS-0001(Q), BEACON Operation & Calculation Verification, to satisfy the requirements of this procedure.

5.1 Estimated Critical Position

5.1.1 **COMPLETE** Attachment 1, Estimated Critical Position Worksheet, Steps 1.1 – 8.8.2 as follows:

A. **DETERMINE** appropriate Previous Critical Conditions: **[C0498]**

1. **CHOOSE** the best conditions available, not necessarily the most recent.

2. **REFER** to the following for examples of previous conditions which yield the best ECP results:

   - Previous Hot Zero Power data
   - Steady state operation data

3. **AVOID** using data collected during or just following a transient power history, if possible.

4. **OBTAIN** all previous critical data from the same point in time. This is especially pertinent for data collected during transients.

5. **OBTAIN** Date, Time, Power Level, Boron Concentration, and Control Bank position data from any of the following sources:

- Control Room Logs
- Calorimetric Calculations
- Past ECPs
- Control Room Charts
- Chemistry Logs
- Power Distribution Monitoring System (PDMS)

6. **OBTAIN** Cycle Exposure data

B. **OBTAIN** Shutdown Conditions from any of the following sources:

- Control Room Logs
- Control Room Charts
- Shutdown Margin Calculations
- Power Distribution Monitoring System (PDMS)

C. **DETERMINE** Intended Critical Conditions:

1. **CHOOSE** a Date and Time that is within four hours prior to achieving criticality IAW T/S 4.1.1.1.1.c.

NOTE

It is recommended that Control Bank D be set at approximately 100 steps (consider the following recommendations: BOL 85-95 steps, MOL 90-130 steps, and EOL 125-145 steps). This ensures adequate control rod height for AFD control and should be consistently greater than 500-pcm rod height. D-95

2. **CHOOSE** a Control Bank Position that allows for the full ±500 pcm of rod motion allowed by the administrative limit.

3. **OBTAIN** Cycle Exposure data.

D. **DETERMINE** Reactivity Worths at Previous Critical Conditions:

1. **OBTAIN** Integral Rod Worth from any of the following sources:

   - Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures (use HFP)
   - Advanced Nodal Code (ANC)
   - Nuclear Design Report (NDR)

2. **OBTAIN** Power Defect from any of the following sources:

   - Figure 2 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Advanced Nodal Code (ANC)
   - Nuclear Design Report (NDR)

3. **OBTAIN** Xenon Reactivity from an applicable source:

   a. IF equilibrium xenon conditions existed at the previous critical conditions, THEN use Figure 6 of S1(2).RE-RA.ZZ-0012(Q).

   N/A b. IF equilibrium xenon conditions did **NOT** exist at the previous critical conditions, THEN use any of the following:

      - Power Distribution Monitoring System (PDMS)
      - Advanced Nodal Code (ANC)
      - Nuclear Design Report (NDR)

4. **OBTAIN** Samarium Reactivity from an applicable source:

   a. IF equilibrium samarium conditions existed at the previous critical conditions, THEN use Figure 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF equilibrium samarium conditions did **NOT** exist at the previous critical conditions, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

E. **DETERMINE** Reactivity Worths at Intended Critical Conditions:

1. **OBTAIN** Integral Rod Worth from any of the following sources:

- Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures (use HZP)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

2. **OBTAIN** Xenon Reactivity from an applicable source:

a. IF the shutdown was due to a reactor trip and equilibrium xenon conditions existed prior to the reactor trip, THEN use Figure 8 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF the shutdown was **NOT** due to a reactor trip OR equilibrium xenon conditions did **NOT** exist prior to the reactor trip, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

3. **OBTAIN** Samarium Reactivity from an applicable source:

___ a. IF equilibrium samarium conditions existed at the time of shutdown, THEN use Figure 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF the shutdown was **NOT** due to a reactor trip OR equilibrium samarium conditions did **NOT** exist prior to the reactor trip, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

F. **CALCULATE** Reactivity Changes and **SUM** as directed on Attachment 1, Steps 6.1 - 6.5.

G. **DETERMINE** Intended Critical Boron Concentration: **[C0498]**

1. **OBTAIN ~~HFP~~ ARO** Equilibrium Boron Concentrations from Figure 30 of S1(2).RE-RA.ZZ-0012(Q), Figures.

2. **CALCULATE** the Corrected Previous Boron Concentration (due to burnup differences between the previous and intended critical conditions) as directed on Attachment 1, Step 7.1.

3. **OBTAIN** Differential Boron Worths from any of the following sources:

- Figure 12 of S1(2).RE-RA.ZZ-0012(Q), Figures
- Figure 13 of S1(2).RE-RA.ZZ-0012(Q), Figures
- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

4. **CALCULATE** the First Estimate of Boron Concentration Change as directed on Attachment 1, Step 7.2.

5. **CALCULATE** the Second Estimate of Boron Concentration Change as directed on Attachment 1, Step 7.3.

6. **CALCULATE** the Intended Critical Boron Concentration as directed on Attachment 1, Step 7.4.

H. **DETERMINE** Limits on Intended Critical Control Rod Position:

1. **OBTAIN** the Rod Insertion Limit for 0% RTP from either of the following sources for Attachment 1, Step 8.1:

   - Figure 14 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Salem 1(2) Core Operating Limits Report (COLR) Figure 1 (T/S 3.1.3.5)

2. **OBTAIN** Control Bank Positions from either of the following sources for Attachment 1, Steps 8.2 through 8.8:

   - Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Nuclear Design Report (NDR)

___ 5.1.2 **USE** a different methodology to **CALCULATE** a second Estimated Critical Position IAW with Step 5.1.1.

___ 5.1.3 **ENSURE** the Estimated Critical Positions calculated in Steps 5.1.1 and 5.1.2 are within 100 pcm. **RECONCILE** any differences greater than 100 pcm.

___ 5.1.4 **COMPLETE** Attachment 2, Section 1.0 and 2.0.

___ 5.1.5 **DIRECT** a Qualified Individual to **PERFORM** an independent verification of Attachment 1, Steps 1.1 – 8.8.2 for each calculated Estimated Critical Position.

___ 5.1.6 Independent Verifier **COMPLETE** Attachment 1 and Attachment 2, Section 3.0. **FORWARD** this procedure to the Supervisor - Reactor Engineering for review and approval to this point.

___ 5.1.7 Supervisor - Reactor Engineering **REVIEW** this procedure to this point for completeness and accuracy. **COMPLETE** Attachment 1 and **FORWARD** the procedure to the OS/CRS for review to this point.

___ 5.1.8 OS/CRS **REVIEW** this procedure to this point and **COMPLETE** Attachment 1.

___ 5.1.9 WHEN Reactor Power is 10-8 amps, as indicated on the Intermediate Range NIS, THEN **COMPLETE** Attachment 1, Steps 9.1 - 9.3.3.

5.2 **Completion and Review**

___ 5.2.1 **COMPLETE** Attachment 2, Section 1.0 and 2.0, and **FORWARD** this procedure to the OS/CRS for review.

___ 5.2.2 OS/CRS **REVIEW** this procedure for completeness and **COMPLETE** Attachment 2, Section 4.0.

END OF PROCEDURE SECTION

6.0 RECORDS

___ 6.1 Retain the following IAW NC.NA-AP.ZZ-0011(Q), Records Management Program:

- Attachment 1
- Attachment 2

7.0 REFERENCES

7.1 Cross-References:

7.1.1 Technical Specifications (T/S):

A. Section 4.1.1.1.1.c, Reactivity Control Systems - Boration Control

B. Section 3.1.3.5, Reactivity Control Systems - Control Rod Insertion Limits

7.1.2 Procedures:

A. NC.NA-AP.ZZ-0011(Q), Records Management Program

B. SC.RE-RA.ZZ-0002(Q), Inverse Count Rate Ratio During Control Rod Withdrawal

C. S1(2).OP-IO.ZZ-0003(Q), Hot Standby to Minimum Load

D. SC.RE-IO.ZZ-0002(Q), Low Power Physics Testing and Power Ascension

E. S1(2).RE-RA.ZZ-0012(Q), Figures

F. SC.RE-SO.NIS-0001(Q), BEACON Operation & Calculation Verification

7.2 Commitments:

C0498, NSO INCI 93-058

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 1 of 6

NOTE

See procedure Section 5.1 for comprehensive directions for completing this attachment. The attachment itself no longer contains the applicable Figure numbers. This information is now contained in Section 5.1 of the procedure.

1.0 PREVIOUS CRITICAL CONDITIONS

1.1 Date: 48 hours ago Time Same as NOW

1.2 Power Level 100 %RTP

1.3 Boron Concentration 600 ppm

1.4 Control Bank Position Bank C 228 steps

Bank D 217 steps

1.5 Cycle Exposure 13,000 MWD/MTU

2.0 SHUTDOWN CONDITIONS

2.1 Reactor Trip Date 48 hours ago Time Same as Now

OR

Orderly Shutdown Date N/A Time N/A

Approximate Shutdown Rate N/A %/min

2.2 Power Level Prior to Shutdown 100 %RTP

3.0 INTENDED CRITICAL CONDITIONS

3.1 Date TODAY Time Same as Now

3.2 Control Bank Position Bank C 223 steps

Bank D 95 steps

3.3 Cycle Exposure 13000 MWD/MTU

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 2 of 6

4.0 REACTIVITY 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) (+) 1880 pcm

4.3 Xenon Reactivity at Time in (1.1) (-) 2525 pcm

NOTE

If previous conditions were steady state, use Figure 10 A, B, C.

4.4 Samarium Reactivity at Time in (1.1) (-) 935 pcm

5.0 REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS

5.1 Integral Rod Worth at Position in (3.2) (+) 700 pcm

5.2 Xenon Reactivity

5.2.1 Elapsed Time from (2.1) to (3.1) 48 hrs

5.2.2 Xenon Reactivity at Time in (5.2.1) and Power in (2.2) (-) 525 pcm

5.3 Samarium Reactivity

5.3.1 Elapsed Time from (2.1) to (3.1) 48 hrs

5.3.2 Samarium Reactivity at Time in (5.3.1) and Power in (2.2) (-) 1018 pcm

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 3 of 6

6.0 REACTIVITY CHANGES AND SUM

6.1	Integral Rod Worth (4.1)-(5.1) 0 − 700	−700	pcm
6.2	Power Defect (4.2)	1880	pcm
6.3	Xenon Reactivity (5.2.2)-(4.3) 525 − −2525 =	−2000	pcm
6.4	Samarium Reactivity (5.3.2)-(4.4) 1018 − 935 =	83	pcm
6.5	SUM (6.1)+(6.2)+(6.3)+(6.4)	−737	pcm

−2700
+1963
−737

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)	625	ppm
7.1.2	HFP ARO Equilibrium Poison Boron Concentration at Burnup in (3.3)	625	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) 600 − 0	600	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 Tavg=547°F	−8.0	pcm/ppm
7.2.2	Boron Concentration Change (6.5)÷(7.2.1) −737 / −8 =	+92	ppm

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 4 of 6

7.3 Second Estimate of Boron Concentration Change

7.3.1 [2 X (7.1.4) - (7.2.2)] ÷ 2 $\frac{1200-92}{2} = \frac{1108}{2}$ 554 ppm

7.3.2 Differential Boron Worth at Concentration in (7.3.1) and Burnup in (3.3) for Tavg=547°F -8.1 pcm/ppm

7.3.3 Boron Concentration Change (6.5)÷(7.3.2) $\frac{-737}{-8.1}$ 91 ppm

7.4 Intended Critical Boron Concentration (7.1.4)-(7.3.3) 600 − 91 509 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 (700) 1700 pcm

8.2.2 Control Bank Position at Worth in (8.2.1) Bank C 85 steps

Bank D 0 steps

8.3 Intended Position + 500 pcm

8.3.1 Integral Rod Worth (5.1) + 500 1200 pcm

8.3.2 Control Bank Position at Worth in (8.3.1) Bank C 160 steps

Bank D 32 steps

8.4 Intended Position + 400 pcm

8.4.1 Integral Rod Worth (5.1) + 400 1100 pcm

8.4.2 Control Bank Position at Worth in (8.4.1) Bank C 171 steps

Bank D 43 steps

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 5 of 6

8.5 Intended Position + 300 pcm

8.5.1 Integral Rod Worth (5.1) + 300 — 1000 pcm

8.5.2 Control Bank Position at Worth in (8.5.1)

Bank C 183 steps

Bank D 55 steps

8.6 Intended Position - 300 pcm

8.6.1 Integral Rod Worth (5.1) - 300 — 400 pcm

8.6.2 Control Bank Position at Worth in (8.6.1)

Bank C 228 steps

Bank D 152 steps

8.7 Intended Position - 400 pcm

8.7.1 Integral Rod Worth (5.1) - 400 — 300 pcm

8.7.2 Control Bank Position at Worth in (8.7.1)

Bank C 228 steps

Bank D 170 steps

8.8 Intended Position - 500 pcm

8.8.1 Integral Rod Worth (5.1) - 500 — 200 pcm

8.8.2 Control Bank Position at Worth in (8.8.1)

Bank D 185 steps

Completed By: J C Lloyd Date TODAY Time 30 mins. ago

Verified By: _____ Date _____ Time _____

Approved By: _____ Date _____ Time _____
Supervisor – Rx. Eng.

Reviewed By: _____ Date _____ Time _____
OS/CRS

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 6 of 6

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: _____ Date _____ Time _____
OS/CRS

ATTACHMENT 2
COMPLETION/SIGN-OFF SHEET
Page 1 of 1

1.0 COMMENTS:

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

2.0 SIGNATURES:

Name (Print)	Initials	Signature	Date
James K. Lloyd	JKL	J K Lloyd	TODAY

3.0 INDEPENDENT VERIFICATION:

Name (Print)	Initials	Signature	Date

4.0 FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 has been reviewed for completion. All deficiencies with their associated corrective actions are clearly recorded in the COMMENTS section above.

Reviewed By: _____ Date: _____
OS/CRS

PSEG NUCLEAR L.L.C.
SALEM GENERATING STATION/REACTOR ENGINEERING
SC.RE-RA.ZZ-0001(Q) - REV. 0
ESTIMATED CRITICAL POSITION

PSE&G CONTROL COPY # 11

USE CATEGORY: I

REVISION SUMMARY: Biennial Review performed: Yes_X__ No ___ NA ___

This revision combined procedures S1.RE-RA.ZZ-0001(Q) and S2.RE-RA.ZZ-0001(Q), therefore, all references were revised to incorporate both Salem Stations.

The requirements related to independent verification were strengthened – Steps 5.1.5 and 5.1.6 were added. Required signatures were added to: Attachment 1, page 5; and Attachment 2.

The requirements related to Supervisor – Reactor Engineering review and approval were strengthened – Step 5.1.7 was added and a required signature was added to Attachment 1, page 5.

The titles were changed from "SNSS\NSS" to "OS\CRS" throughout the procedure to reflect current terminology.

Deleted "Xenon Code," "ECP Code," and "RXCALC Program" as data sources throughout the procedure. Added preferred data sources "Power Distribution Monitoring System (PDMS)" and "Advanced Nodal Code (ANC)."

Old Steps 5.1.2 – 5.1.4 were moved to the Precautions Section (3.14 – 3.16).

Precaution 3.17 was added to provide additional clarification.

Step 3.5 – the Core Operating Limits Report was added to provide the specific location of the referenced insertion limit.

IMPLEMENTATION REQUIREMENTS Effective Date 11/2/01

APPROVED: William N Evans 11/2/01
Manager Nuclear Fuels/Reactor Engineering (or Designee) Date

Step 3.11 - the value was changed from 50 pcm to 100 pcm to allow greater flexibility.

The note prior to Step 5.1 was added to reflect preferred use of PDMS.

The old note prior to Attachment 1, Step 5.3.2, related to adding 588 pcm to the value obtained from the figure was deleted. It is no longer applicable with the development of new figures.

The note prior to step 5.1.1.C.2 was added recommending placing Control Bank D at approximately 100 steps.

"Use HFP" was added to Steps 5.1.1.D.4 and 5.1.1.E.1 for clarification.

Steps 5.1.1.D.3, 5.1.1.D.4, 5.1.1.E.2, and 5.1.1.E.3 were changed to a conditional step format.

Step 5.1.1.D.4.a – changed from "use 588 pcm" to "use Figures 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures" to incorporate the new figures.

Step 5.1.1.E.2.a – reference was changed from "Figure 8" to "Figure 8 A, B, C" to incorporate the new figures.

Step 5.1.1.E.3.a – reference was changed from "Figure 10" to "Figure 10 A, B, C" to incorporate the new figures.

Step 5.1.1.H.1 - the reference was changed from T/S "3.1.3.5 Figure 3-1-1" to "Core Operating Limits Report (COLR) Figure 1(T/S 3.1.3.5)" to reflect current T/S wording.

Steps 5.1.2 and 5.1.3 were added to require calculation of a second ECP.

Step 5.2.2 - The information related to records retention was deleted.

Step 6.1 - the reference was changed from NAP-3 to NAP-11. The cross-reference was also changed.

7.1.1.B – Cross-reference was revised to correspond to T/S wording.

Step 1.3 and item 7.1.2.D – Cross-reference was updated to SC.RE-IO.ZZ-0002(Q). Item 7.1.2.F was added.

Numerous minor editorial changes were made throughout the document to comply with the writers guide. These changes were not identified with revision bars.

ESTIMATED CRITICAL POSITION

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1.0 PURPOSE

1.1 To calculate plant conditions that will achieve criticality. The conditions ensure adequate shutdown margin in the event of a reactor trip. The estimated conditions also avoid unanticipated criticality in the event of instrument failure.

1.2 To satisfy the requirements of Technical Specification (T/S) Surveillance 4.1.1.1.1.c in Mode 2.

1.3 This procedure is to be completed prior to approach to criticality during the operating cycle. This procedure is **NOT** applicable to the initial approach to criticality following a Refueling Outage. The Estimated Critical Position following a Refueling Outage is predicted IAW SC.RE-IO.ZZ-0002(Q), Low Power Physics Testing and Power Ascension.

2.0 PREREQUISITES

2.1 The plant is in hot standby (Tave = 547° F).

3.0 PRECAUTIONS AND LIMITATIONS

3.1 The NAME, INITIALS, and SIGNATURES of all personnel performing steps in this procedure, and the DATE of performance shall be recorded on Attachment 2.

3.2 Conditional steps shall be evaluated by the user and if not applicable marked "N/A." Conditional steps include words IF, WHEN, and OR.

3.3 All deficiencies and corrective actions taken during the performance of this procedure, including Termination, shall be documented in the Comments section of Attachment 2.

3.4 Non-conditional steps which are evaluated as being not applicable shall be marked "N/A," initialed by the Reactor Engineer, and clearly explained in the Comments section of Attachment 2.

3.5 The critical control rod position shall be above the hot zero power minimum insertion limit of the Core Operating Limits Report (COLR) IAW T/S 3.1.3.5.

3.6 This procedure does not correct for temperatures other than 547°F.

3.7 Criticality must be anticipated any time there is an insertion of positive reactivity (e.g. RCCA withdrawal, Boron Dilution, etc.).

3.8 Data chosen for the previous critical conditions should be the best available data, not necessarily the most recent. Conditions that yield the best ECP results are steady state operation and previous hot zero power conditions. **[CO498]**

3.9 The actual critical configuration shall be within ± 1000 pcm of the estimated configuration.

3.10 Chemical analysis is used to verify boron concentrations.

3.11 IF the estimated time of criticality changes such that the amount of reactivity change introduced is greater than ±100 pcm, THEN a new estimated critical position shall be calculated.

3.12 Reactivity data will change with fuel exposure, fission product build up, calculational improvements, etc.

3.13 All previous critical data should be from the same point in time. This is especially pertinent for data collected during transients. **[C0498]**

3.14 The Supervisor - Reactor Engineering may substitute reactivity worths from sources not specifically mentioned in Section 5.1 at his/her discretion. Substitutions of this type shall be noted where entered on Attachment 1 and shall be initialed by the Supervisor - Reactor Engineering and the OS/CRS prior to criticality.

3.15 Each reactor startup will be guided by plotting an Inverse Count Rate Ratio Plot IAW SC.RE-RA.ZZ-0002(Q), Inverse Count Rate Ratio During Control Rod Withdrawal.

3.16 REFER to S1(2).OP-IO.ZZ-0003(Q), Hot Standby to Minimum Load, for corrective actions if any of the following occur:

- Criticality is achieved prior to the rod position in Attachment 1, Step 8.1.
- Criticality is achieved prior to the rod position in Attachment 1, Step 8.3.2.
- Criticality is not yet achieved when the rod position in Attachment 1, Step 8.8.2 is reached.

3.17 For transient xenon conditions, increased accuracy may be obtained by interpolating between Figures 12 and 13 of S1(2).RE-RA.ZZ-0012(Q), Figures.

4.0 EQUIPMENT/MATERIAL REQUIRED

Calculator

Approved Computer Code

5.0 PROCEDURE

NOTE

If available, consider using the Power Distribution Monitoring System (PDMS) IAW SC.RE-SO.NIS-0001(Q), BEACON Operation & Calculation Verification, to satisfy the requirements of this procedure.

5.1 Estimated Critical Position

5.1.1 **COMPLETE** Attachment 1, Estimated Critical Position Worksheet, Steps 1.1 – 8.8.2 as follows:

A. **DETERMINE** appropriate Previous Critical Conditions: **[C0498]**

1. **CHOOSE** the best conditions available, not necessarily the most recent.

2. **REFER** to the following for examples of previous conditions which yield the best ECP results:

   - Previous Hot Zero Power data
   - Steady state operation data

3. **AVOID** using data collected during or just following a transient power history, if possible.

4. **OBTAIN** all previous critical data from the same point in time. This is especially pertinent for data collected during transients.

5. **OBTAIN** Date, Time, Power Level, Boron Concentration, and Control Bank position data from any of the following sources:

- Control Room Logs
- Calorimetric Calculations
- Past ECPs
- Control Room Charts
- Chemistry Logs
- Power Distribution Monitoring System (PDMS)

6. **OBTAIN** Cycle Exposure data

B. **OBTAIN** Shutdown Conditions from any of the following sources:

- Control Room Logs
- Control Room Charts
- Shutdown Margin Calculations
- Power Distribution Monitoring System (PDMS)

C. **DETERMINE** Intended Critical Conditions:

1. **CHOOSE** a Date and Time that is within four hours prior to achieving criticality IAW T/S 4.1.1.1.1.c.

NOTE

It is recommended that Control Bank D be set at approximately 100 steps (consider the following recommendations: BOL 85-95 steps, MOL 90-130 steps, and EOL 125-145 steps). This ensures adequate control rod height for AFD control and should be consistently greater than 500-pcm rod height. D-95

2. **CHOOSE** a Control Bank Position that allows for the full ±500 pcm of rod motion allowed by the administrative limit.

3. **OBTAIN** Cycle Exposure data.

D. **DETERMINE** Reactivity Worths at Previous Critical Conditions:

1. **OBTAIN** Integral Rod Worth from any of the following sources:

   - Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures (use HFP)
   - Advanced Nodal Code (ANC)
   - Nuclear Design Report (NDR)

2. **OBTAIN** Power Defect from any of the following sources:

   - Figure 2 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Advanced Nodal Code (ANC)
   - Nuclear Design Report (NDR)

3. **OBTAIN** Xenon Reactivity from an applicable source:

   a. IF equilibrium xenon conditions existed at the previous critical conditions, THEN use Figure 6 of S1(2).RE-RA.ZZ-0012(Q).

   N/A b. IF equilibrium xenon conditions did **NOT** exist at the previous critical conditions, THEN use any of the following:

      - Power Distribution Monitoring System (PDMS)
      - Advanced Nodal Code (ANC)
      - Nuclear Design Report (NDR)

4. **OBTAIN** Samarium Reactivity from an applicable source:

   a. IF equilibrium samarium conditions existed at the previous critical conditions, THEN use Figure 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF equilibrium samarium conditions did **NOT** exist at the previous critical conditions, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

E. **DETERMINE** Reactivity Worths at Intended Critical Conditions:

1. **OBTAIN** Integral Rod Worth from any of the following sources:

- Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures (use HZP)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

2. **OBTAIN** Xenon Reactivity from an applicable source:

a. IF the shutdown was due to a reactor trip and equilibrium xenon conditions existed prior to the reactor trip, THEN use Figure 8 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF the shutdown was **NOT** due to a reactor trip OR equilibrium xenon conditions did **NOT** exist prior to the reactor trip, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

3. **OBTAIN** Samarium Reactivity from an applicable source:

___ a. IF equilibrium samarium conditions existed at the time of shutdown, THEN use Figure 10 A, B, C of S1(2).RE-RA.ZZ-0012(Q), Figures.

N/A b. IF the shutdown was **NOT** due to a reactor trip OR equilibrium samarium conditions did **NOT** exist prior to the reactor trip, THEN use any of the following:

- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

F. **CALCULATE** Reactivity Changes and **SUM** as directed on Attachment 1, Steps 6.1 - 6.5.

G. **DETERMINE** Intended Critical Boron Concentration: **[C0498]**

1. **OBTAIN ~~HFP~~ ARO** Equilibrium Boron Concentrations from Figure 30 of S1(2).RE-RA.ZZ-0012(Q), Figures.

2. **CALCULATE** the Corrected Previous Boron Concentration (due to burnup differences between the previous and intended critical conditions) as directed on Attachment 1, Step 7.1.

3. **OBTAIN** Differential Boron Worths from any of the following sources:

- Figure 12 of S1(2).RE-RA.ZZ-0012(Q), Figures
- Figure 13 of S1(2).RE-RA.ZZ-0012(Q), Figures
- Power Distribution Monitoring System (PDMS)
- Advanced Nodal Code (ANC)
- Nuclear Design Report (NDR)

4. **CALCULATE** the First Estimate of Boron Concentration Change as directed on Attachment 1, Step 7.2.

5. **CALCULATE** the Second Estimate of Boron Concentration Change as directed on Attachment 1, Step 7.3.

6. **CALCULATE** the Intended Critical Boron Concentration as directed on Attachment 1, Step 7.4.

H. **DETERMINE** Limits on Intended Critical Control Rod Position:

1. **OBTAIN** the Rod Insertion Limit for 0% RTP from either of the following sources for Attachment 1, Step 8.1:

   - Figure 14 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Salem 1(2) Core Operating Limits Report (COLR) Figure 1 (T/S 3.1.3.5)

2. **OBTAIN** Control Bank Positions from either of the following sources for Attachment 1, Steps 8.2 through 8.8:

   - Figure 4 of S1(2).RE-RA.ZZ-0012(Q), Figures
   - Nuclear Design Report (NDR)

___ 5.1.2 **USE** a different methodology to **CALCULATE** a second Estimated Critical Position IAW with Step 5.1.1.

___ 5.1.3 **ENSURE** the Estimated Critical Positions calculated in Steps 5.1.1 and 5.1.2 are within 100 pcm. **RECONCILE** any differences greater than 100 pcm.

___ 5.1.4 **COMPLETE** Attachment 2, Section 1.0 and 2.0.

___ 5.1.5 **DIRECT** a Qualified Individual to **PERFORM** an independent verification of Attachment 1, Steps 1.1 – 8.8.2 for each calculated Estimated Critical Position.

___ 5.1.6 Independent Verifier **COMPLETE** Attachment 1 and Attachment 2, Section 3.0. **FORWARD** this procedure to the Supervisor - Reactor Engineering for review and approval to this point.

___ 5.1.7 Supervisor - Reactor Engineering **REVIEW** this procedure to this point for completeness and accuracy. **COMPLETE** Attachment 1 and **FORWARD** the procedure to the OS/CRS for review to this point.

___ 5.1.8 OS/CRS **REVIEW** this procedure to this point and **COMPLETE** Attachment 1.

___ 5.1.9 WHEN Reactor Power is 10-8 amps, as indicated on the Intermediate Range NIS, THEN **COMPLETE** Attachment 1, Steps 9.1 - 9.3.3.

5.2 **Completion and Review**

___ 5.2.1 **COMPLETE** Attachment 2, Section 1.0 and 2.0, and **FORWARD** this procedure to the OS/CRS for review.

___ 5.2.2 OS/CRS **REVIEW** this procedure for completeness and **COMPLETE** Attachment 2, Section 4.0.

END OF PROCEDURE SECTION

6.0 RECORDS

___ 6.1 Retain the following IAW NC.NA-AP.ZZ-0011(Q), Records Management Program:

- Attachment 1
- Attachment 2

7.0 REFERENCES

7.1 Cross-References:

7.1.1 Technical Specifications (T/S):

A. Section 4.1.1.1.1.c, Reactivity Control Systems - Boration Control

B. Section 3.1.3.5, Reactivity Control Systems - Control Rod Insertion Limits

7.1.2 Procedures:

A. NC.NA-AP.ZZ-0011(Q), Records Management Program

B. SC.RE-RA.ZZ-0002(Q), Inverse Count Rate Ratio During Control Rod Withdrawal

C. S1(2).OP-IO.ZZ-0003(Q), Hot Standby to Minimum Load

D. SC.RE-IO.ZZ-0002(Q), Low Power Physics Testing and Power Ascension

E. S1(2).RE-RA.ZZ-0012(Q), Figures

F. SC.RE-SO.NIS-0001(Q), BEACON Operation & Calculation Verification

7.2 Commitments:

C0498, NSO INCI 93-058

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 1 of 6

NOTE

See procedure Section 5.1 for comprehensive directions for completing this attachment. The attachment itself no longer contains the applicable Figure numbers. This information is now contained in Section 5.1 of the procedure.

1.0 PREVIOUS CRITICAL CONDITIONS

1.1 Date: 48 hours ago Time Same as Now

1.2 Power Level 100 %RTP

1.3 Boron Concentration 600 ppm

1.4 Control Bank Position Bank C 228 steps

Bank D 217 steps

1.5 Cycle Exposure 13,000 MWD/MTU

2.0 SHUTDOWN CONDITIONS

2.1 Reactor Trip Date 48 hours ago Time Same as Now

OR

Orderly Shutdown Date N/A Time N/A

Approximate Shutdown Rate N/A %/min

2.2 Power Level Prior to Shutdown 100 %RTP

3.0 INTENDED CRITICAL CONDITIONS

3.1 Date TODAY Time Same as Now

3.2 Control Bank Position Bank C 223 steps

Bank D 95 steps

3.3 Cycle Exposure 13000 MWD/MTU

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 2 of 6

4.0 REACTIVITY 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)	(+) 1880 pcm
4.3	Xenon Reactivity at Time in (1.1)	(-) 2525 pcm

NOTE

If previous conditions were steady state, use Figure 10 A, B, C.

4.4	Samarium Reactivity at Time in (1.1)	(-) 935 pcm

5.0 REACTIVITY WORTHS AT INTENDED CRITICAL CONDITIONS

5.1	Integral Rod Worth at Position in (3.2)	(+) 700 pcm
5.2	Xenon Reactivity	
5.2.1	Elapsed Time from (2.1) to (3.1)	48 hrs
5.2.2	Xenon Reactivity at Time in (5.2.1) and Power in (2.2)	(-) 525 pcm
5.3	Samarium Reactivity	
5.3.1	Elapsed Time from (2.1) to (3.1)	48 hrs
5.3.2	Samarium Reactivity at Time in (5.3.1) and Power in (2.2)	(-) 1018 pcm

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 3 of 6

6.0 REACTIVITY CHANGES AND SUM

6.1	Integral Rod Worth (4.1)-(5.1) 0 − 700	−700	pcm
6.2	Power Defect (4.2)	1880	pcm
6.3	Xenon Reactivity (5.2.2)-(4.3) 525 − 2525 =	−2000	pcm
6.4	Samarium Reactivity (5.3.2)-(4.4) 1018 − 935 =	83	pcm
6.5	SUM (6.1)+(6.2)+(6.3)+(6.4)	−737	pcm

−2700
+1963
−737

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)	625	ppm
7.1.2	HFP ARO Equilibrium Poison Boron Concentration at Burnup in (3.3)	625	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) 600 − 0	600	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 Tavg=547°F	−8.0	pcm/ppm
7.2.2	Boron Concentration Change (6.5)÷(7.2.1) $\frac{-737}{-8}$ =	+92	ppm

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 4 of 6

7.3 Second Estimate of Boron Concentration Change

7.3.1 [2 X (7.1.4) - (7.2.2)] ÷ 2 $\frac{1200-92}{2} = \frac{1108}{2}$ 554 ppm

7.3.2 Differential Boron Worth at Concentration in (7.3.1) and Burnup in (3.3) for Tavg=547°F -8.1 pcm/ppm

7.3.3 Boron Concentration Change (6.5)÷(7.3.2) $\frac{-737}{-8.1}$ 91 ppm

7.4 Intended Critical Boron Concentration (7.1.4)-(7.3.3) 600 − 91 509 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 1700 pcm

8.2.2 Control Bank Position at Worth in (8.2.1)

Bank C 85 steps

Bank D 0 steps

8.3 Intended Position + 500 pcm

8.3.1 Integral Rod Worth (5.1) + 500 1200 pcm

8.3.2 Control Bank Position at Worth in (8.3.1)

Bank C 160 steps

Bank D 32 steps

8.4 Intended Position + 400 pcm

8.4.1 Integral Rod Worth (5.1) + 400 1100 pcm

8.4.2 Control Bank Position at Worth in (8.4.1)

Bank C 171 steps

Bank D 43 steps

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 5 of 6

8.5 Intended Position + 300 pcm

8.5.1 Integral Rod Worth (5.1) + 300 — 1000 pcm

8.5.2 Control Bank Position at Worth in (8.5.1) — Bank C 153 steps; Bank D 55 steps

8.6 Intended Position - 300 pcm

8.6.1 Integral Rod Worth (5.1) - 300 — 400 pcm

8.6.2 Control Bank Position at Worth in (8.6.1) — Bank C 228 steps; Bank D 152 steps

8.7 Intended Position - 400 pcm

8.7.1 Integral Rod Worth (5.1) - 400 — 300 pcm

8.7.2 Control Bank Position at Worth in (8.7.1) — Bank C 228 steps; Bank D 170 steps

8.8 Intended Position - 500 pcm

8.8.1 Integral Rod Worth (5.1) - 500 — 200 pcm

8.8.2 Control Bank Position at Worth in (8.8.1) — Bank D 185 steps

Completed By: JC Lloyd Date TODAY Time 30 mins. ago

Verified By: _____ Date _____ Time _____

Approved By: _____ Date _____ Time _____
Supervisor – Rx. Eng.

Reviewed By: _____ Date _____ Time _____
OS/CRS

ATTACHMENT 1
ESTIMATED CRITICAL POSITION WORKSHEET
Page 6 of 6

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: _____ Date _____ Time _____
OS/CRS

ATTACHMENT 2
COMPLETION/SIGN-OFF SHEET
Page 1 of 1

1.0 COMMENTS:

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

2.0 SIGNATURES:

Name (Print)	Initials	Signature	Date
James K. Lloyd	JKL	JKLloyd	TODAY

3.0 INDEPENDENT VERIFICATION:

Name (Print)	Initials	Signature	Date

4.0 FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 has been reviewed for completion. All deficiencies with their associated corrective actions are clearly recorded in the COMMENTS section above.

Reviewed By: _____ Date: _____
OS/CRS

INTEGRAL ROD WORTH vs. ROD POSITION IN OVERLAP

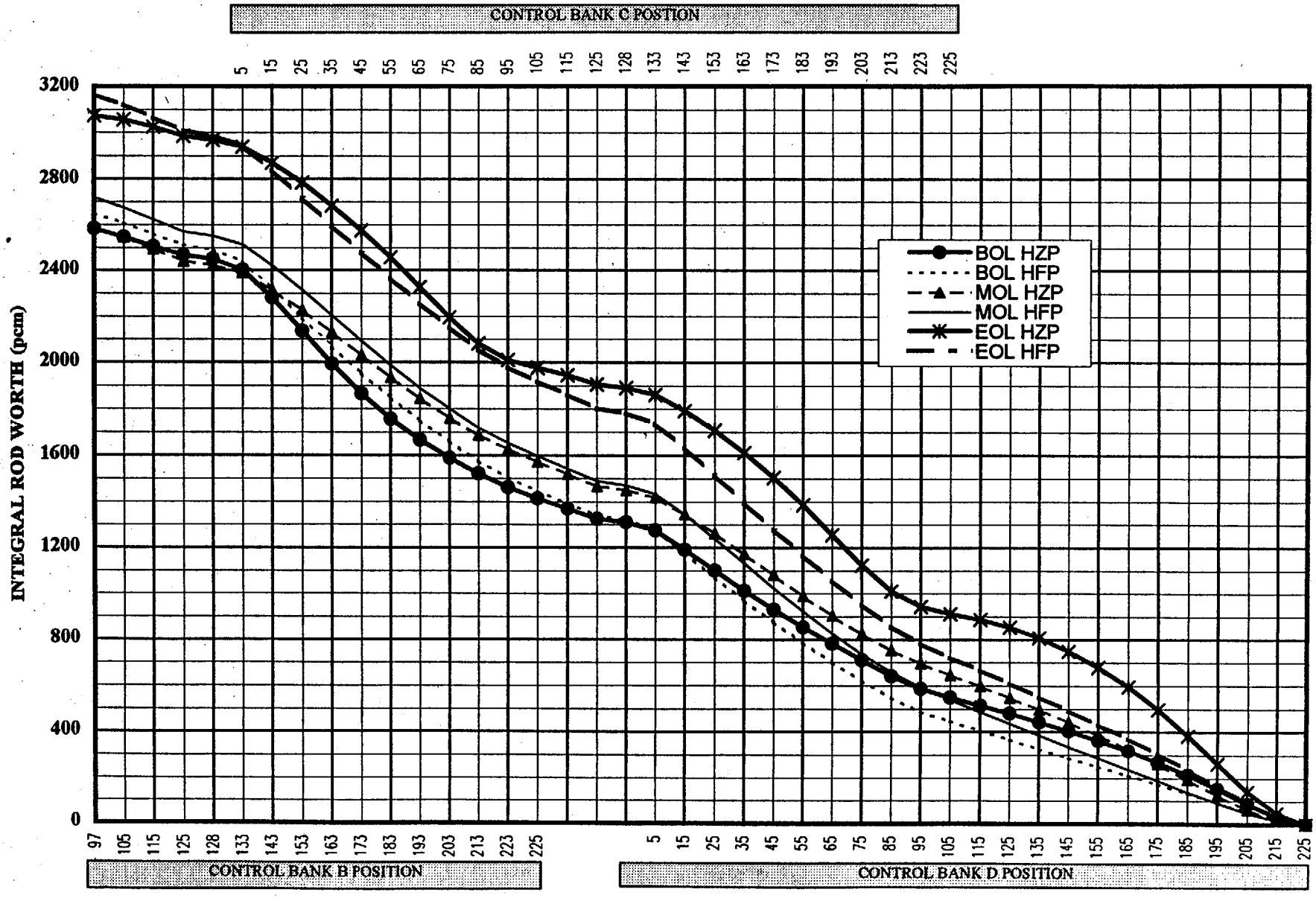


FIGURE 2
SALEM UNIT 2 CYCLE 13

POWER DEFECT VERSUS REACTOR POWER

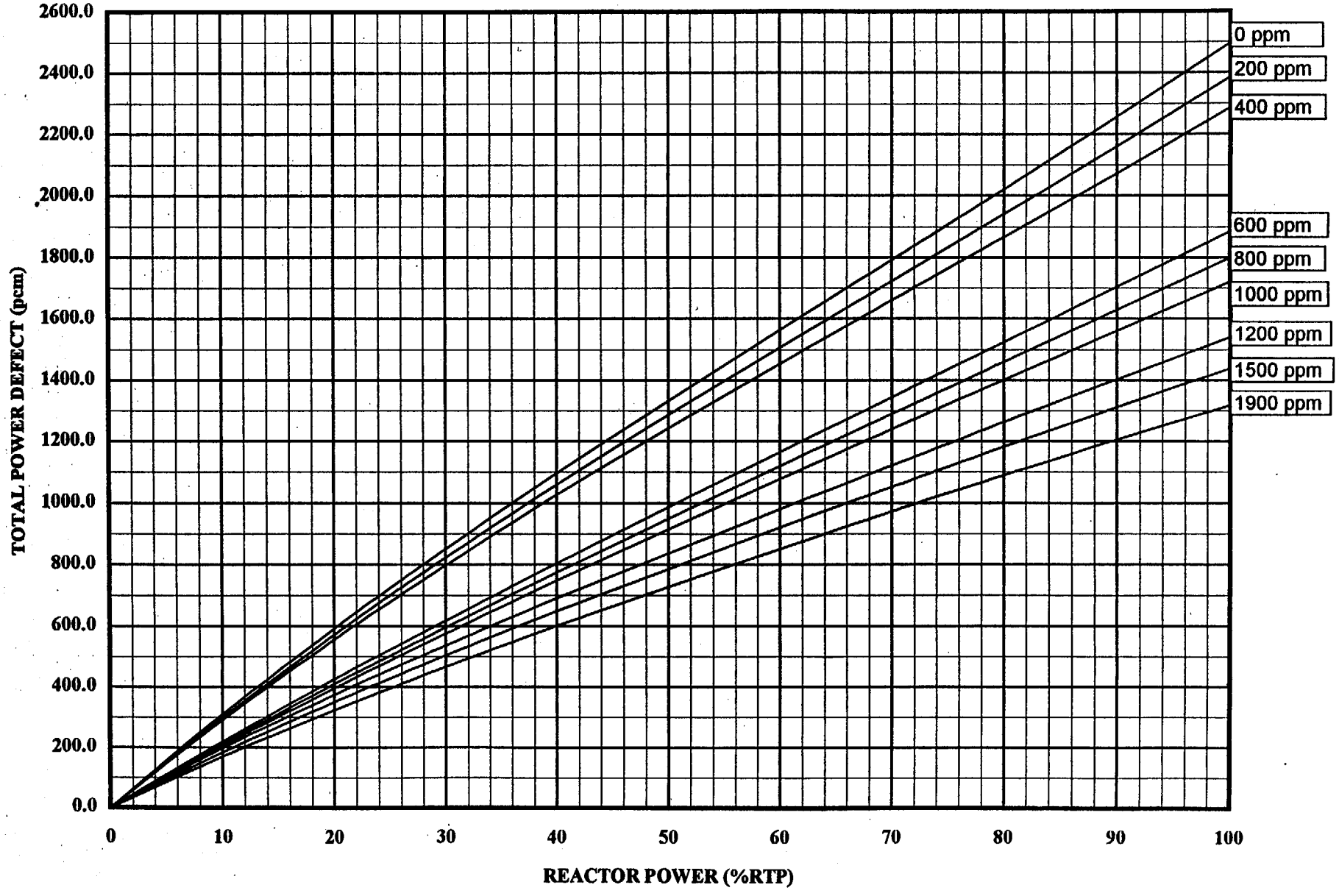


FIGURE 6

SALEM UNIT 2 CYCLE 13

EQUIBRIUM XENON WORTH vs. PERCENT POWER

FOLLOWING PLANT STARTUP AT BOL

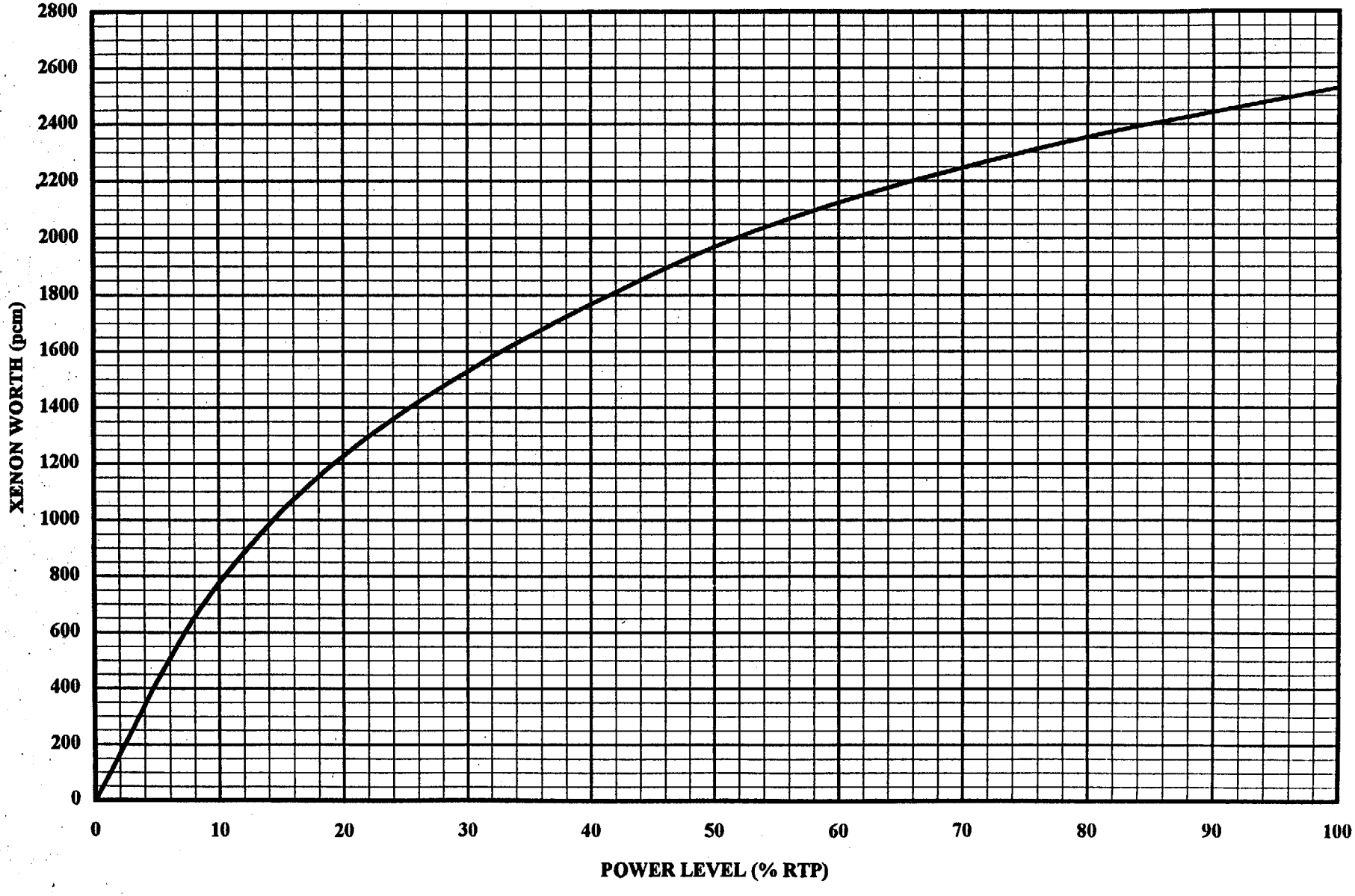


FIGURE 8B
SALEM UNIT 2 CYCLE 13

XENON WORTH vs. TIME AFTER TRIP FROM EQULIBRIUM CONDITIONS FOR 25 %, 50 %, 75 % AND 100 % POWER AT MOL

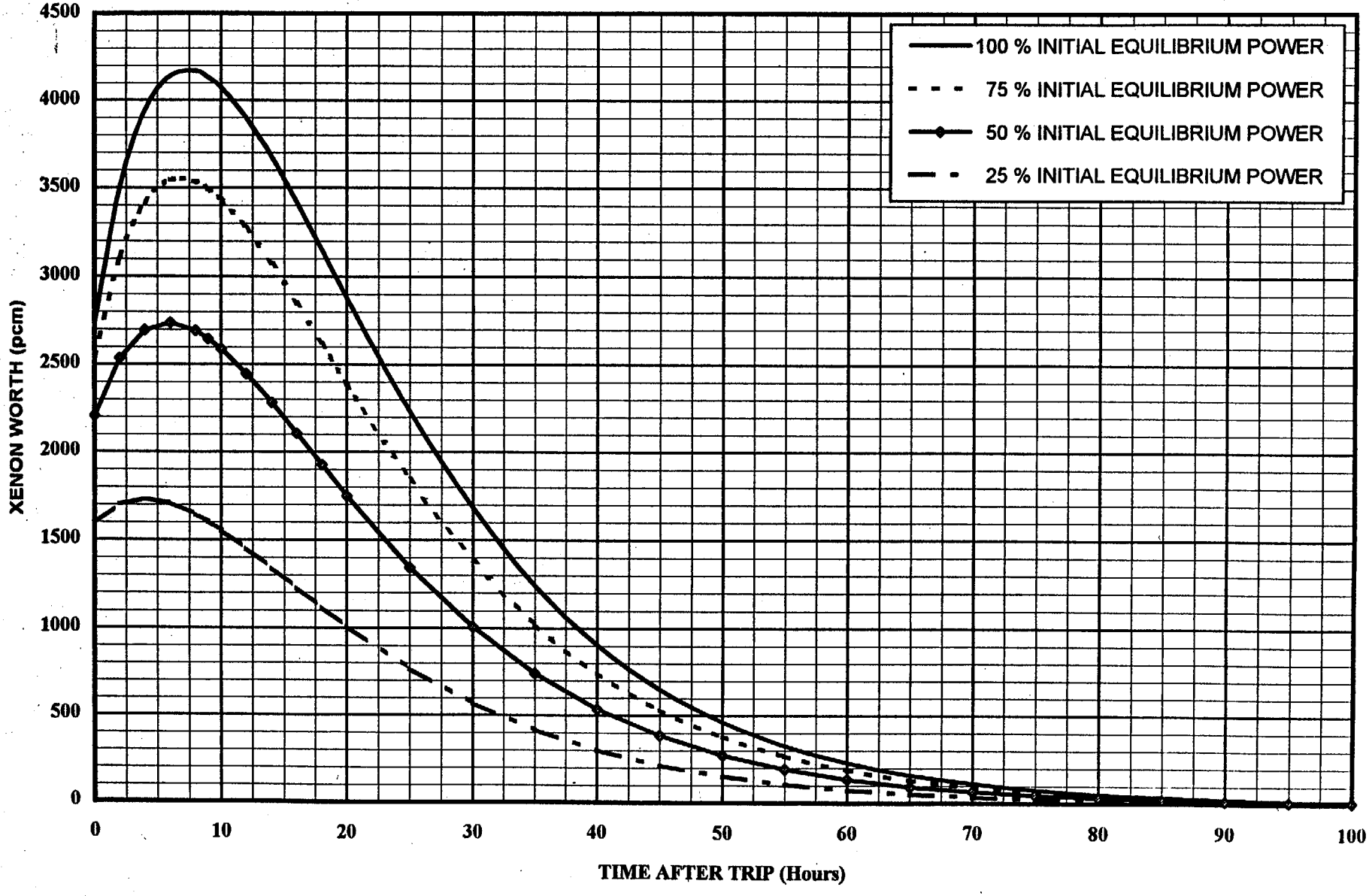


FIGURE 10B
SALEM UNIT 2 CYCLE 13

SAMARIUM WORTH vs. TIME AFTER TRIP FROM EQULIBRIUM CONDITIONS FOR 25 %, 50 %, 75 % AND 100 % POWER AT MOL

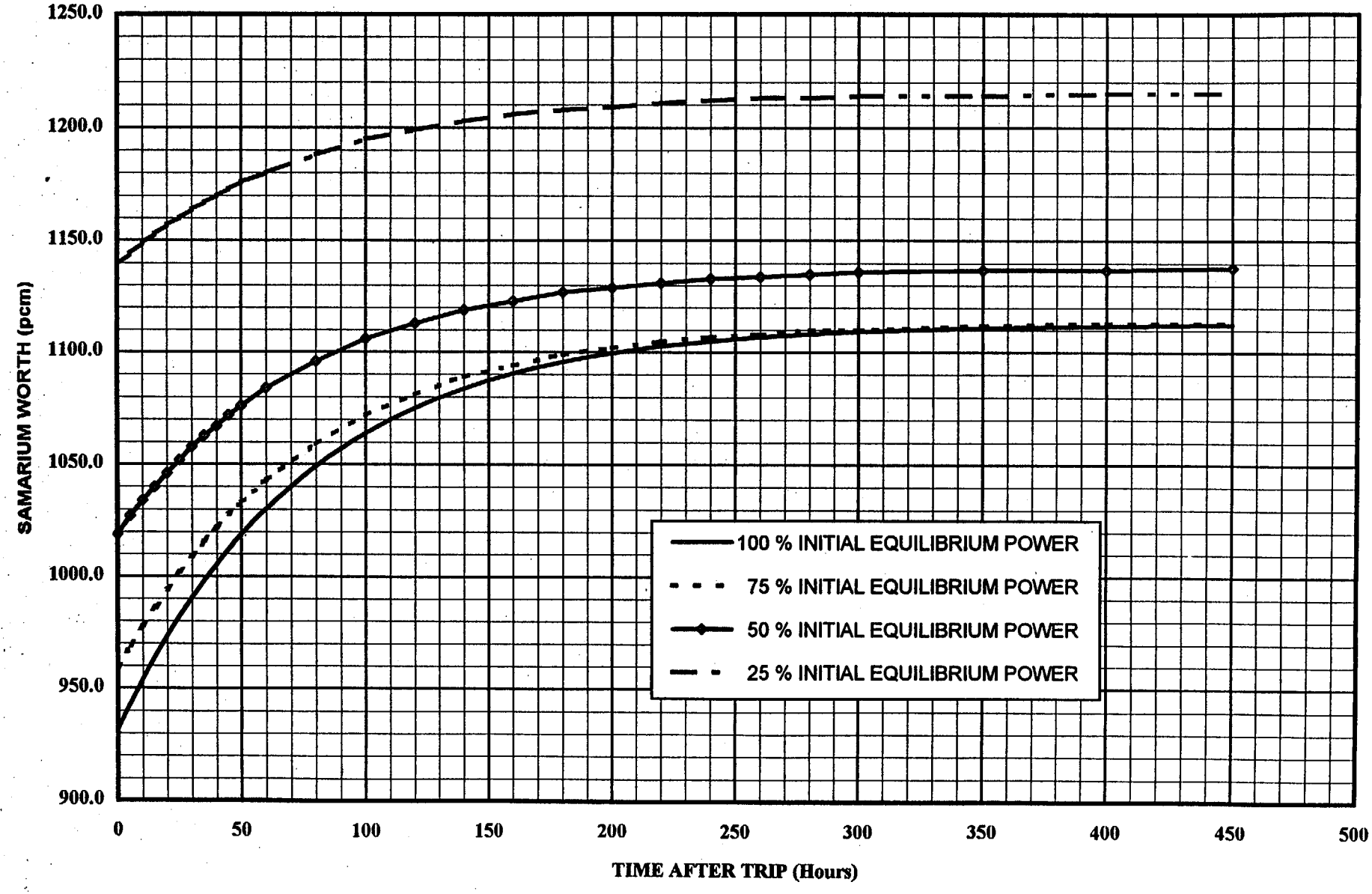


FIGURE 12
SALEM UNIT 2 CYCLE 13

DIFFERENTIAL BORON WORTH vs. BORON CONCENTRATION
CALCULATED AT 547 deg F

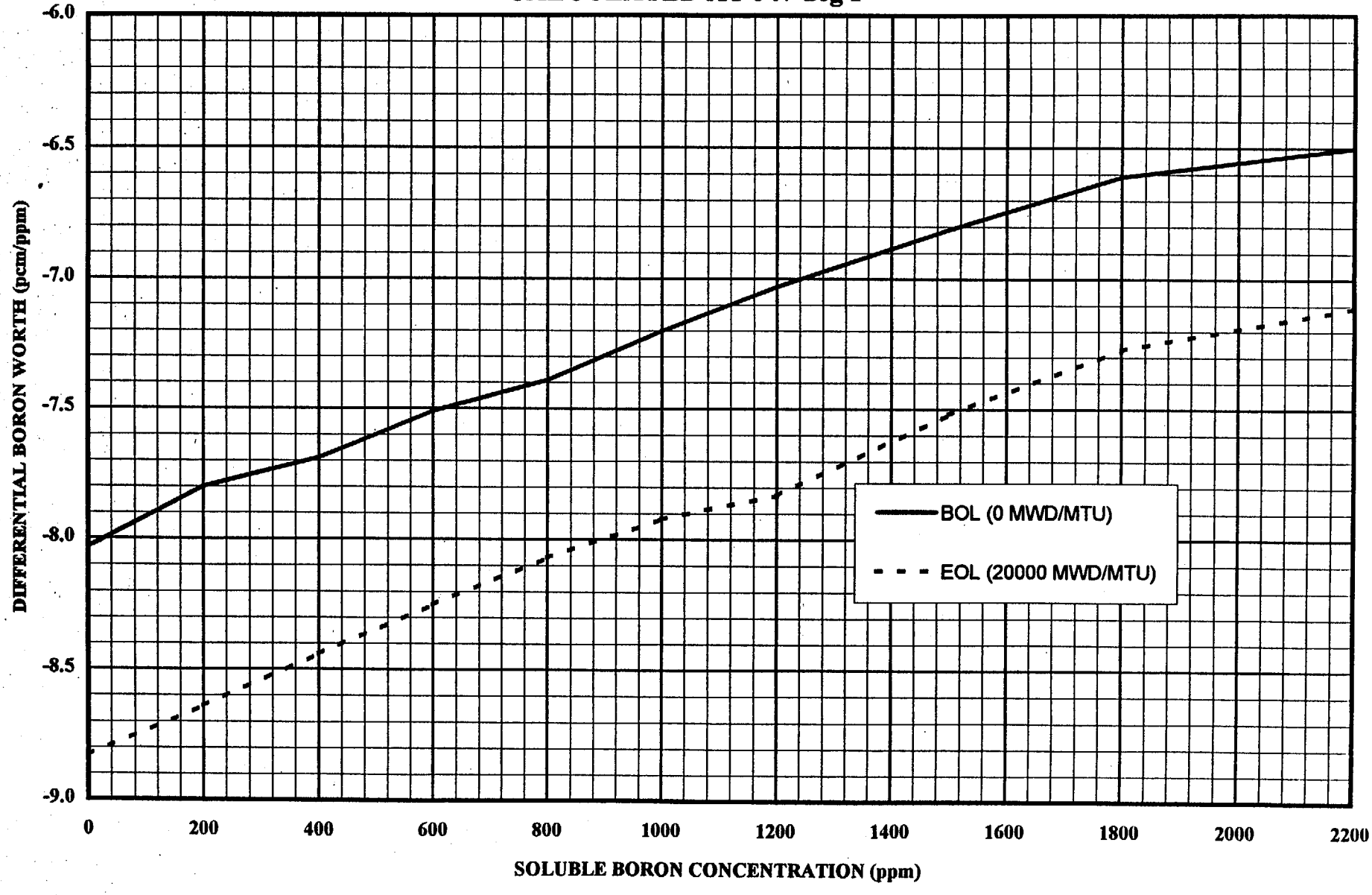


FIGURE 14
SALEM UNIT 2 CYCLE 13

CONTROL BANK ROD INSERTION LIMITS vs. REACTOR POWER FOR BANK "B", BANK "C" AND BANK "D"

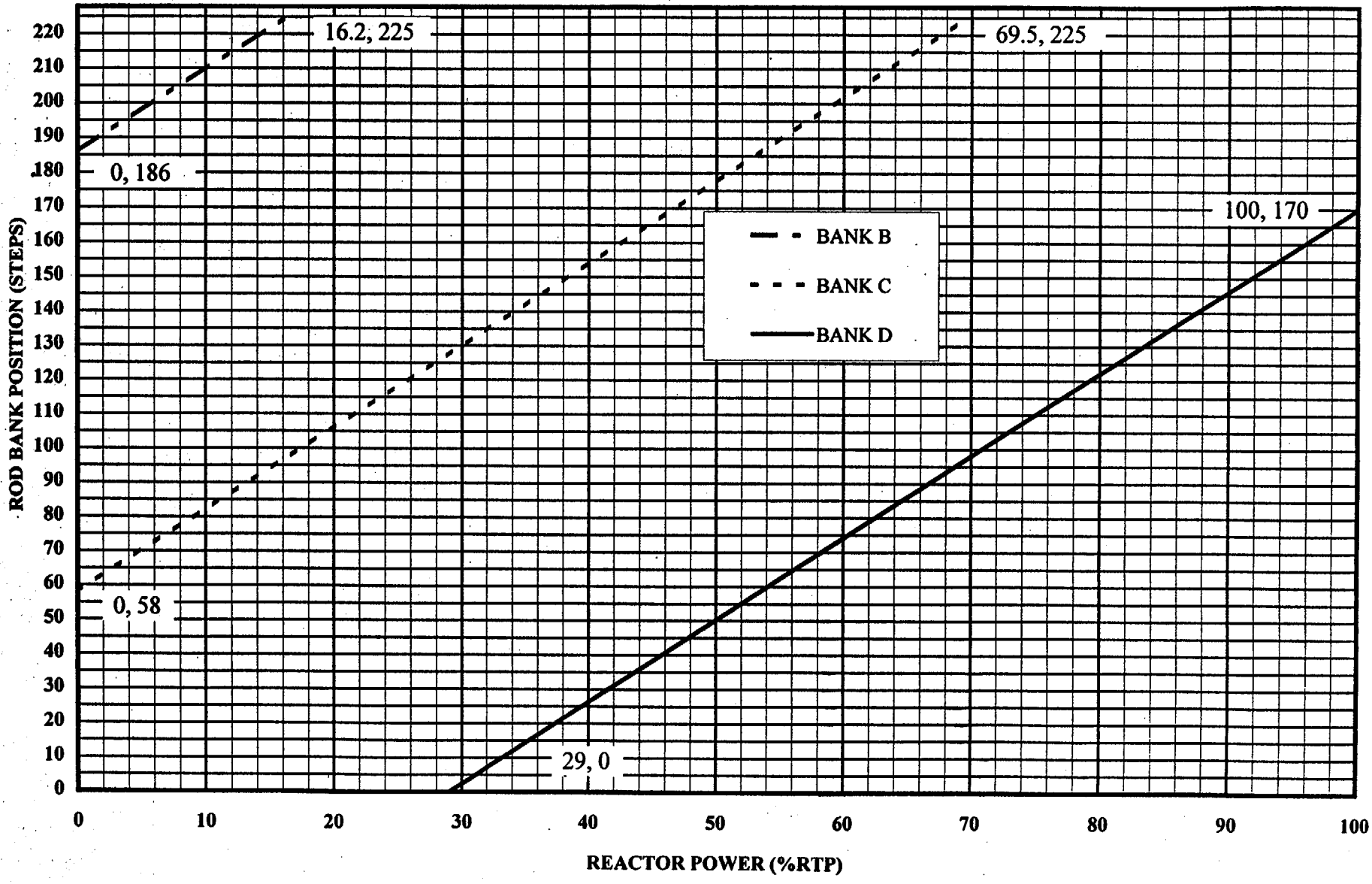
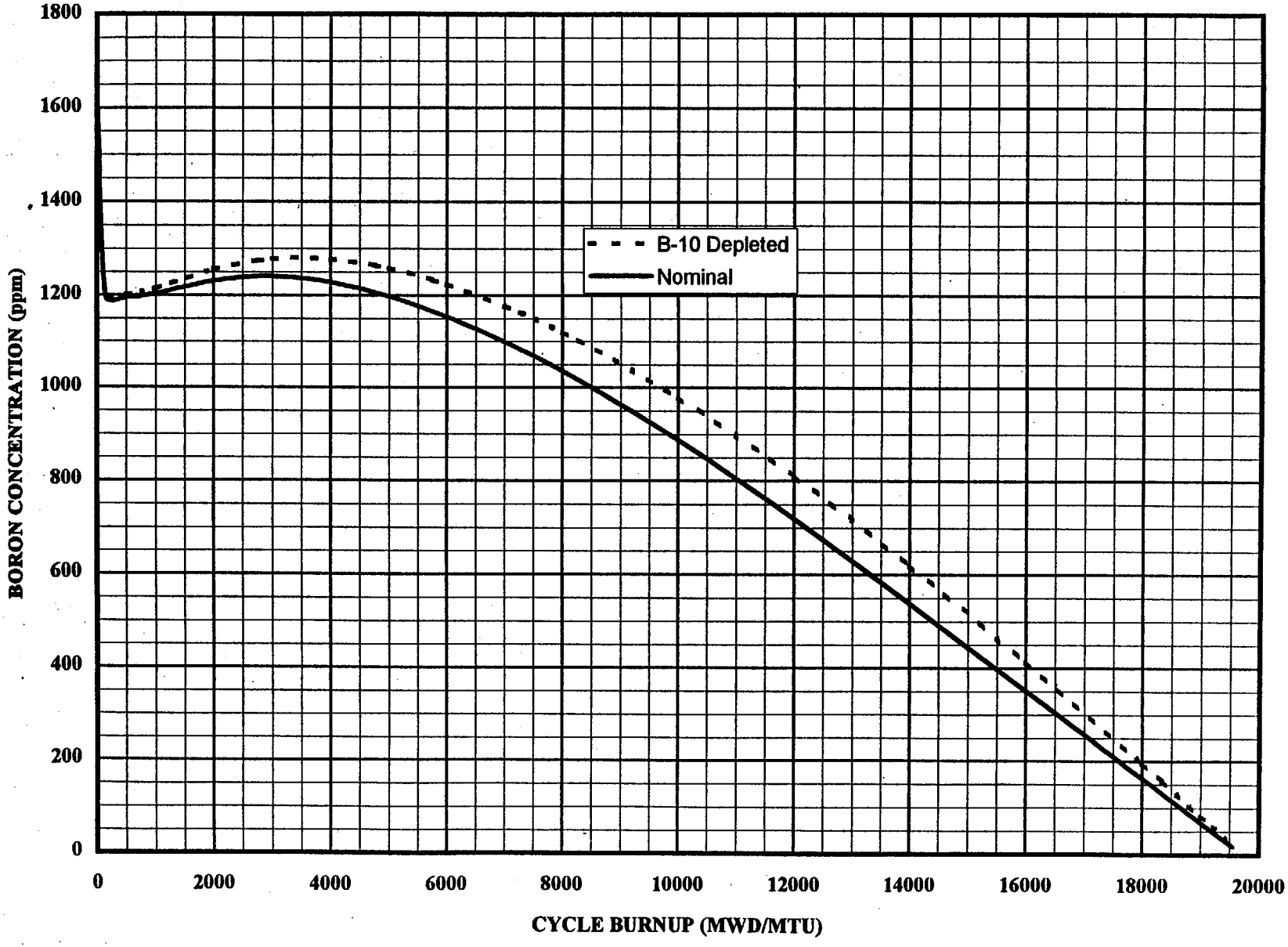


FIGURE 30
SALEM UNIT 2 CYCLE 13

100 %, ARO EQUILIBRIUM POISON BORON CONCENTRATION



OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK:

TASK NUMBER:

NUMBER: 2002 GOLF NRC RO A1 Questions

ALTERNATE PATH: ☐ **K/A NUMBER:** See Questions

IMPORTANCE FACTOR: RO _____ SRO _____

APPLICABILITY:
EO ☐ RO ☒ STA ☐ SRO ☐

EVALUATION SETTING/METHOD: Room with references

REFERENCES: See Questions

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: N/A

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: _____ Minutes

JPM PERFORMED BY: _____ **GRADE:** ☐ **SAT** ☐ **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 – KEY

REACTOR OPERATOR: _____

QUESTION #2 (2.1.1)

QUESTION:

You were on loan to the procedures group and stood no watches from June 15 through October 10. Tonight is your first night back with your regular shift.

What requirements must be met before you can assume licensed duties?

ANSWER:

Stand minimum of 40 hours of shift functions under the direction of an Operator; including guided plant tours and supervised shift turnover, all documented on Form SH.OP-DD.ZZ-0067-5.* In addition, supervision must complete Form SH.OP-DD.ZZ-0067-7.

General compliance with Underline* required for SAT

RESPONSE:

REFERENCE:

SH.OP-DD.ZZ-0067, Personnel Qualification and Training, Rev. 1, Page 16 of 31, B. and F.

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 – CANDIDATE COPY

REACTOR OPERATOR: _____

QUESTION:

You were on loan to the procedures group and stood no watches from June 15 through October 10. Tonight is your first night back with your regular shift.

What requirements must be met before you can assume licensed duties?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 – CANDIDATE COPY

REACTOR OPERATOR:_____

QUESTION:

Unit 1 is at 100% power. You are returning to work after being on vacation for two weeks (a total of 14 days off) and will be assuming the 0700-1900 Unit 1 PO watch.

What are your pre-turnover, turnover, and post-turnover log review requirements?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 – KEY

REACTOR OPERATOR: _____

QUESTION #1 (2.1.3)

QUESTION:

Unit 1 is at 100% power. You are returning to work after being on vacation for two weeks (a total of 14 days off) and will be assuming the 0700-1900 Unit 1 PO watch.

What are your pre-turnover, turnover, and post-turnover log review requirements?

ANSWER:

- Pre-turnover – prior 72 hours*
- Turnover – Control Room Narrative*, red-circled readings*, TSAS Log, Tmod Log (changes only)
- Post-turnover – prior 5 days* (unless already transmitted for archiving)

Underline * required for SAT

RESPONSE:

REFERENCE:

SH.OP-AP.ZZ-0107, Shift Turnover Responsibilities, Rev.2, Step 5.3.1 and Attachment 14

3.9 The Operations Superintendent, until properly relieved, shall remain in the control room at all times during accident situations to direct the activities of the control room operators. **[CD-418Y, CD-147Y]**

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 off-going operator to the oncoming operator. The turnover can take place any time prior to relief, as long as it does not interfere with the off-going 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 off-going RO/PO turns over the watch.

5.2 **Off-going 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.

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 27)	

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

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

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)

Off-going Reactor Operator	Date	Oncoming Reactor Operator	Date

Golf NCC ROA1 QZ

FORM SH.OP-DD.ZZ-0067-5

LICENSED OPERATOR / SHIFT TECHNICAL ADVISOR / NUCLEAR EQUIPMENT OPERATOR WATCH STANDING DOCUMENTATION

I certify that: _____ (Name) _____ (Employee #) has satisfactorily

(☐ assumed) (☐ assumed under direction) and performed the duties of:

☐ OPERATIONS SUPERINTENDENT ☐ NUCLEAR CONTROL OPERATOR

☐ CONTROL ROOM SUPERVISOR ☐ NUCLEAR EQUIPMENT OPERATOR

☐ SHIFT TECHNICAL ADVISOR

on the _____ shift, this date of _____ at the

☐ Hope Creek Generating Station ☐ Salem Generating Station ☐ Unit 1 ☐ Unit 2

If duties were "assumed under the direction" of a licensed Reactor or Senior Reactor Operator, the following must also be done (indicate as appropriate):

(1) *A complete tour of the plant? ☐ YES ☐ NO

(2) All required shift turnover procedures completed? ☐ YES ☐ NO

For NEOs, indicate watch:

HOPE CREEK		SALEM	
☐ Reactor	☐ Turbine	☐ Primary	☐ Secondary
☐ Auxiliary	☐ Yard	☐ Circ/Service Water	

_____

CONTROL ROOM SUPERVISOR / OPERATIONS SUPERINTENDENT

PLEASE FORWARD THIS COMPLETED FORM TO THE OPERATIONS MANAGER'S SECRETARY. THE SECRETARY WILL FORWARD THIS FORM TO THE OPERATIONS TRAINING MANAGER AT THE NUCLEAR TRAINING CENTER.

* At least one reactivation watch shall include a complete tour of the plant. (Not applicable to LSRO.)

B. Actively performing the function of a Reactor Operator (NCO) or Senior Reactor Operator (SRO), means that an individual carries out and is responsible for the duties of a position on the shift that requires a license as identified in the Technical Specifications. For an SRO, this is accomplished in the OS or Unit CRS positions. For an NCO, this is accomplished in one of the two NCO positions. To satisfy the performance requirements, completion of a minimum five 12-hour shifts per calendar quarter is necessary. Those licensed operators not assigned to a shift crew but are actively performing license functions, should document their watch standing using FORM SH.OP-DD.ZZ-0067-5, Licensed Operator/Shift Technical Advisor/Nuclear Equipment Operator Watch Standing Documentation. Watch standing requirements shall be met beginning the calendar quarter after the quarter in which the license was issued.

C. Only active SRO's can supervise refueling activities. If they are not active, they must stand one 12-hour shift under direction from an active licensed SRO before performing SRO duties limited to fuel handling. The SRO should document this using FORM SH.OP-DD.ZZ-0067-5.

D. If a licensee has not been actively performing the function of an NCO or SRO, (as defined in Section 5.6.1.B), then his/her license is considered inactive. The licensee shall not replace any Technical Specification minimum RO or SRO position of the on-duty operating crew until the provisions of Section 5.6.1 and 5.7 are met.

E. If an SRO licensed individual does not perform the function of an SRO but does perform the function of a RO during a calendar quarter such that the requirements of 5.6.2 are met only for Operator functions, then the license should be considered active for RO functions but inactive for SRO functions. This status is based on the current operations shift assignments and Operations Department logs. The actions of Section 5.7 shall be performed when necessary to reactivate the SRO function. The operator shall be trained and examined as a SRO.

F. To reactivate an inactive license, an individual must stand a minimum of 40 hours of shift functions under the direction of an Operator or Senior Operator, as appropriate for the individual's license, within the same calendar quarter. This time must include guided plant tours and supervised shift turnover. It shall be documented using FORM SH.OP-DD.ZZ-0067-5 and SH.OP-DD.ZZ-0067-7, Reactivation Checklist of Previously Inactive Licensed Operators.

G. The Operations Manager may determine that a training program in conjunction with watch standing is to be used to return the operator to active watch standing status. Such a program should be performance-based and individualized to maximize its effectiveness. Tasks that are not normally selected for requalification training because of a high frequency of performance by active watch standers should be considered for inclusion in this training. Additionally, Operations line management may decide to assess the performance of an inactive watch stander in either the simulator, the plant, or both before allowing the individual to perform active watch standing duties in other than a training status.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK: Clear and tag an MOV using Manual Tagging

TASK NUMBER: 1145370104

JPM NUMBER: 2002 GOLF NRC RO A2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.2.13

IMPORTANCE FACTOR: 3.6 (RO) 3.8 (SRO)

APPLICABILITY:

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

EVALUATION SETTING/METHOD:

REFERENCES: NC.NA-AP.ZZ-0005, Rev. 11
SH.OP-AP.ZZ-0015, Rev. 11

TOOLS AND EQUIPMENT:

VALIDATED JPM COMPLETION TIME: 18 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: _____ Minutes

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Select the blocking points for tagging MOV 2SJ1 with SAP out of service.

TASK NUMBER: 1145370104

INITIAL CONDITIONS:

1. Unit 2 is in Mode 1.
2. SAP/WCM is out of service
3. 2SJ1 failed to close after it was inadvertently opened.
4. The Operations Manager has authorized Manual Tagging for the 2SJ1.

NOTE: Need an "Examination Tagging Package" for this JPM

INITIATING CUE:

Prepare a blocking point list for valve repairs using Manual Tagging IAW SH.OP-NA.ZZ-0015. Work is to be performed on 2SJ1 valve motor operator only.

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.**

4.0 PROCESS DESCRIPTION

4.1 The generation, processing, and implementation of the Safety Tagging Program utilize the SAP Work Clearance Module (SAP/WCM) as directed by SH.OP-AP.ZZ-0015(Q), SAP/WCM Tagging Operations.

NOTE

Refer to Attachment 1, Safety Tagging Logic Diagram.

4.2 Equipment requiring Safety Tagging is identified based upon work to be performed, equipment operational restrictions, or procedural requirements.

4.3 A WCD is initiated and identifies the required blocking points, tag types, and position of the blocking points.

4.4 The WCD is:

A. Reviewed

B. Approved

C. Authorized

D. Implemented.

4.5 Clearing Agents review and verify the adequacy of the WCD for the work to be performed. Affected Employees prepare for and execute work under the protection of the WCD.

4.6 At various points in work progression, if required by any Clearing Agent and agreed to by the remaining Clearing Agents, components may be partially or temporarily released to reduce tagging boundaries. A temporary release can be cancelled, and the tags reapplied, at the request of any individual. Tags may be swapped to support work activities, or added to expand the tagging boundary. Finally, work scope may be expanded or deleted; all with the concurrence of Clearing Agents working under the protection of the WCD.

4.7 When all work activities assigned to the WCD are confirmed or appropriately dispositioned, and all Clearing Agents authorize the release of the WCD, then the safety tags can be released.

5.8 MANUAL TAGGING

5.8.1
Prepare for/ Recover from Manual Tagging
(WCCS)

NOTE

Implementation of Manual Tagging requires approval of the Operations Manager or designee and should be kept to a minimum.
In an emergency the on-duty OS may authorize manual tagging required to move the plant to a safer condition without the approval of the Operations Manager.

1. IF the WCM becomes unavailable,
   THEN perform the following:
   - Notify all Clearing Agents to report to the WCC to manually sign on all active WCDs under which they are performing work.
   - Establish a Manual Tagging File in the WCC.
   - Maintain all existing WCDs that are being modified in any way AND all manually created WCDs in the Manual Tagging File until WCM is available and updated.
   - Initiate a new Manual Tagging Index, Form 6, for the Manual Tagging File, sequentially number new manually created WCDs beginning with the WCD number 'M001'.
   - Refer to the Manual Tagging file AND the last generated Off-Normal Position Reports for configuration control information.
   - Perform tagging operations as directed in the appropriate sections of this procedure.
2. WHEN the WCM becomes available,
   THEN, perform the following:
   - Enter all outstanding transactions into the WCM.
   - Replace the manual created WCDs with electronically generated WCDs.
   - Generate a new Off-Normal Position Report AND compare to the last generated report; resolve all discrepancies.
   - Retain all manually generated tagging paperwork with electronically generated WCD packages.

5.8.2
Create Manual Tags
(WCC)

- IF the WCM is unavailable,
  THEN hand write blocking tag information on a blank tag sticker in the following format:

Unit____ WCD # _____

Blocking Point _____

Description _____

Position _____

Tagged For _____

5.0 PROCEDURE

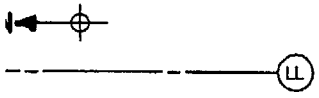
- Reference to (Note) throughout this procedure indicates that detailed instructions and SAP manipulations are available in the SH.WM-DG.ZZ-0015, Work Clearance Management Desk Guide

5.1 WCD INITIATION

5.1.1 Evaluate for Required Tagging (Initiator)	♦ Perform the following: 1. Evaluate Order, Notification, Equipment Restriction, or Procedure Requirement for Required Tagging using Attachment 1. 2. IF Tagging is NOT required, THEN **EXIT** this procedure. 3. Apply the following for tagging evolutions on non-station equipment located outside the protected areas of Salem and Hope Creek: • These tagging evolutions are conducted using the Manual Tagging method when WCM identifiers and station labeling do not support the use of WCM for tag preparation. • The Hope Creek WCC will maintain a non-station tagging file (containing both WCM and Manual tagouts) and an index for non-station tagging done using the Manual Tagging method. Manual tagout numbers will be issued in the YY-XXX format with YY being the year (2001=01) and XXX being a sequential number. • Fire Protection shall prepare the tagout for Manual non-station tags, or obtain assistance from the WCC for non-station tagging that can be accomplished using WCM. • Fire Protection supervisor shall be the approving and authorizing supervisor for non-station tagging. • Non-station tagouts shall be logged at the WCC prior to implementation, filed at the WCC during use, and logged off at the WCC upon release. • Fire Protection Operators are Qualified Operators for all non-station tagging. • All blocking points used for non-station tagging shall be evaluated by the Fire Protection supervisor and the WCC supervisor for labeling and inclusion in the WCM.

5.1.2 Determine BlockingPoints and Tag Types (Initiator)	1. Review the following: □ Scheduled activities for the system or component to be tagged. □ Work to be performed from SAP Orders (Note) □ Notifications (must be converted to a SAP order IAW NC.WM-AP.ZZ-0001(Q)). □ Procedure Requirements □ Controlled Documents and Drawings from the TDR or DCRMS (Note) □ Main Control Room Drawings for any outstanding Drawing Changes □ Uncontrolled Documents and Drawings that have received an independent field verification □ Historical, Standard, or Template WCDs for system or component to be tagged (Note)
NOTE Detailed instructions and SAP manipulations are available in SH.WM-DG.ZZ-0015, Work Clearance Management Desk Guide.	2. Perform the following: □ For ESO switching orders, translate switching order designators to the corresponding WCM blocking point designators. □ Resolve Technical and Work Scope problems with: • Scheduler • Planner • Implementing Shops • WCCSs □ IF any of the following components will be used as blocking points, OR will be worked on inside the tagging boundary, THEN Refer to Attachment 2 for rules: • Vents and Drains • Grinnell-Saunders Diaphragm Valves • Repacking Valves on the Backseat • Motor Operated Valves • Air Operated Valves and Dampers • Blank Flanges • Freeze Seals • Electrical Disconnects, Grounds, Equipment w/ YPTs, Breakers, Cubicles, Handswitches, Control Circuits • Fuses • Bailey Fuses • Bezels and Control Room/Remote Shutdown Panel Controls □ Refer to Attachment 3 for rules on tag types. □ Select blocking points and tag types. □ Ensure selected blocking points will not adversely impact other systems or components. (i.e., air isolations) □ Ensure equipment within the tagging boundary is protected from damage due to inadvertent operation.

5.1.3 **Create Tagging Package** (Initiator)	1. Perform the following: ☐ Mark-up Drawings and Documents: (Note) • Show blocking points, vent paths, and section of the system within the WCD boundary • For system outages, identify order numbers for components to be worked on the drawings ☐ Initiate the WCD in SAP ((Note), use Forms 1 & 4 if the WCM is unavailable): • Refer to Attachment 4 for rules/guidance on the following: ➢ Temporary Blocking Points ➢ Long Text and Special Instructions ➢ Sequencing blocking points ➢ For ESO WCDs, include the ESO switching order number in the WCD header text • Identify required Discipline Reviews for the following ((Note), list on Form 1 if the WCM is unavailable): ➢ Logic circuits, control circuits, or complex electrical blocking points less than 480V ➢ Bailey blocking points ➢ Blocking points under the jurisdiction of another Department (i.e., fire protection, chemistry, Radwaste) ➢ Blocking points with the potential to cause a valid ESF initiation/actuation ☐ Permit WCD to the orders ((Note), list on Form 5 if the WCM is unavailable). ☐ Perform final verification that the WCD provides adequate isolation for the given job. ☐ Assemble the Tagging Package (drawings, documents, list of orders, WCD header page, and tagging list, ESO switching orders). ☐ Forward the tagging package or WCD information for the following: • Qualified Operator field verification • Discipline Reviews • Review and pre-approval by an Approving Supervisor
NOTE Detailed instructions and SAP manipulations are available in SH.WM-DG.ZZ-0015, Work Clearance Management Desk Guide.	



RONT

4	3	2	1

ATION PLAN
NO. 2 UNIT AUX. BLDG.

ABBREVIATIONS

SET. - SETTING
FV - FULL VOLTAGE
NR - NON-REVERSING
R - REVERSING
SS - SINGLE SPEED
TS -TWO SPEED
SW - SINGLE WINDING
TW - TWO WINDING

SYMBOLS

G - GROUND LUG

LEGEND

⬭ - INDICATES NODE NUMBERS FOR LOAD MANAGEMENT STUDY

REFERENCE DRAWINGS:

2A WEST VALVES & MISC. 230V. VITAL CONTROL CENTER ..... DWG. #222483-A-1778
2B WEST VALVES & MISC. 230V. VITAL CONTROL CENTER ..... DWG. #222484-A-1779
2C WEST VALVES & MISC. 230V. VITAL CONTROL CENTER WIRING DIAG. ..... DWG. #203712-A-8853
CONTACTOR PLUG-IN UNITS WIRING DIAGRAM ..... DWG. #220802-A-1404
ONE-LINE DIAGRAM SYMBOL LIST ..... DWG. #601658-B-9555
SELECTION OF TOL HTR. ELEMENTS FOR SAFETY RELATED MOV'S ..... CALC. ES-18.006

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

SALEM NUCLEAR GENERATING STATION
NO. 2 UNIT-AUXILIARY BUILDING
2C WEST VALVES & MISC. 230V. VITAL CONTR. CTR. ONE-LINE DIAGRAM MK. NO. I-2110 ELECTRICAL

PSEG NUCLEAR, L.L.C.

DRAWN K. R. LEWIS CHECKED R. C. HSU SCALE NONE
DATE 12-08-86 EXAMINED A. THOMSON
AUTH N1000 APPROVED R. T. STANLEY

222485 A 1779 -47

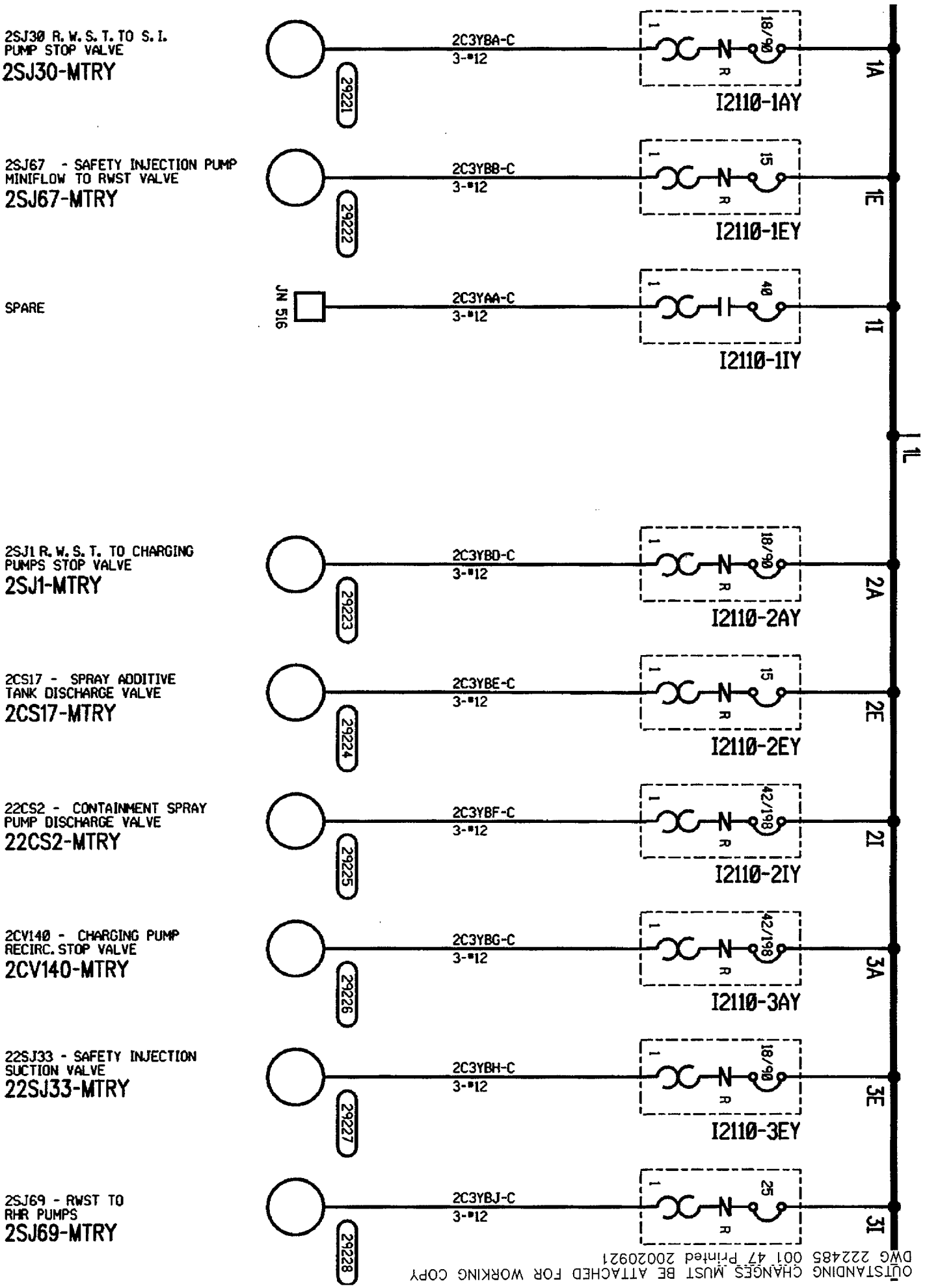
GENERAL NOTES
USE PRINTS OF LATEST REVISION ONLY.
DO NOT SCALE - USE DIMENSIONS ONLY.
FOR LIST OF REFERENCE DRAWINGS SEE DRAWING NO THIS DRAWING
THIS DRAWING SUPERSEDES 222485-B-9551-18

8 9 10 11

B
A

CIVIL | MECH. | ELEC. | CONT.

222485 A 1779


2SJ30 R.W.S.T. TO S.I. PUMP STOP VALVE
2SJ30-MTRY
29221
2C3YBA-C
3-#12
I2110-1AY
1A
2SJ67 - SAFETY INJECTION PUMP MINIFLOW TO RWST VALVE
2SJ67-MTRY
29222
2C3YBB-C
3-#12
I2110-1EY
1E
SPARE
JN 516
2C3YAA-C
3-#12
I2110-1IY
1I
1L
2SJ1 R.W.S.T. TO CHARGING PUMPS STOP VALVE
2SJ1-MTRY
29223
2C3YBD-C
3-#12
I2110-2AY
2A
2CS17 - SPRAY ADDITIVE TANK DISCHARGE VALVE
2CS17-MTRY
29224
2C3YBE-C
3-#12
I2110-2EY
2E
22CS2 - CONTAINMENT SPRAY PUMP DISCHARGE VALVE
22CS2-MTRY
29225
2C3YBF-C
3-#12
I2110-2IY
2I
2CV140 - CHARGING PUMP RECIRC. STOP VALVE
2CV140-MTRY
29226
2C3YBG-C
3-#12
I2110-3AY
3A
22SJ33 - SAFETY INJECTION SUCTION VALVE
22SJ33-MTRY
29227
2C3YBH-C
3-#12
I2110-3EY
3E
2SJ69 - RWST TO RHR PUMPS
2SJ69-MTRY
29228
2C3YBJ-C
3-#12
3I
OUTSTANDING CHANGES MUST BE ATTACHED FOR WORKING COPY
DWG 222485 001 47 Printed 20020921

ATTACHMENT 2
COMPONENT TAGGING RULES
(Page 2 of 13)

MOTOR OPERATED VALVES (MOV)	• WHEN an MOV is used as a mechanical blocking point, THEN a RBT shall be placed on both the associated MOV breaker and on the MOV manual handwheel. • Restrictive ALARA conditions may prohibit the tagging of MOV handwheels. Determination of these conditions shall be made jointly by the OS/CRS, Clearing Agent, Job Technician, and the on-duty Radiation Protection Technician. • IF ALARA conditions prohibit the tagging of MOV handwheels, THEN a RBT shall be placed on the remote operator and breaker for the MOV that denotes the required position for the WCD. MOVs shall be verified in the proper position per the WCD prior to tagging. • WHEN an MOV is manually seated or backseated, THEN administrative controls shall be used to ensure the valve is manually unseated prior to stroking the valve electrically. (refer to NC.NA-AP.ZZ-0005(Q) for additional guidance) • Prior to working on the motor operator of an MOV, that has a RBT on the handwheel, an Engineer or Clearing Agent (trained on MOVs) must evaluate the work to ensure the valve position will not change from the tagged position. The following rules apply: ➢ Engineer or Clearing Agent doing the work will review valve design. ➢ IF there is any chance the MOV will change position, AND the work must be completed, THEN an alternate means of maintaining the valve in the closed position will be installed and tagged. ➢ The Clearing Agent doing the work, the Engineer and the Tagging Authority, will agree upon the method of maintaining valve position. ➢ The clutch shall not be operated. ➢ The Engineer and/or Clearing Agent will enter all relevant information including engineer's name in the long text of the associated WCD. ➢ The Clearing Agent will document a discipline review of the associated WCD.

ATTACHMENT 2
COMPONENT TAGGING RULES
(Page 13 of 13)

BEZELS AND CONTROL ROOM/REMOTE SHUTDOWN PANEL CONTROLS (970103114) **NOTE** A bezel RBT shall not be used as the sole isolation if a personnel or equipment hazard can exist due to energized sources.	• Control Room and Remote Shutdown Panel controls shall be considered remote operators and shall be tagged with the appropriate 'safety tag' (RBT, WBT, YPT, or WCT) whenever that control station will remain operational or become operational while the field tags relating to that component are in place. • IF ALARA conditions prohibit the tagging of MOV handwheels, THEN a RBT should be placed on the remote operator for the MOV that denotes the required position for the WCD. • WHEN equipment is tagged and the associated Control Room or Remote Shutdown Panel control is not, and will not become operational (application of 'safety tag' not required per the above rule), THEN the NCO shall install a bezel block and annotate the WCD 'Untagging Text' to ensure removal upon release of the WCD. An "INF" type tag may be used to track application of the bezel block. • Bezel Stations that are tagged may be removed from the Control Console for the purpose of checking proper indication/bulbs (with OS/CRS permission), provided the tagged position is verified when the bezel station is reinstalled. • Bezel and Control Room/Remote Shutdown Panel Control RBTs may be used as the sole isolation point when establishing a TEST BOUNDARY. • IF a bezel block is used, THEN it will be attached in such a manner as not to obstruct the view of other components on the bezel.

ATTACHMENT 3
TAGGING RULES
(Page 1 of 5)

RED BLOCKING TAG (RBT)	• A RBT shall be applied to an energy isolation device for the protection of personnel or plant equipment. • RBT stickers vice tags may be used when the blocking point is a switch/bezel so as to not obstruct the view of other remote switches in the area. • OS/CRS/WCCS shall only authorize the manipulation of a blocking point with a RBT affixed **in the tagged direction** for position verification or in an attempt to limit leakage. • In an emergency, the OS can authorize the repositioning of a RBT component if it presents an immediate challenge to the safety of personnel or plant equipment. ➢ Prior to component operation, all personnel shall be verified clear of affected equipment, and, following component manipulation, all personnel signed on the WCD will be notified.
SPECIAL INSTRUCTIONS (SPI)	• Used to allow instructions to be sequenced into a WCD. This allows clarification or additional guidance in the body of the WCD. SPI(s) do not transfer to the Tagging Release and must be entered into the Full Tagging Release.
INFORMATION TAG (INF)	• INF tags shall not be used as a safety tag to block use of a component or for configuration control. • INF tags can be used in the Control Room and in the field to alert the operators that a component is tagged. • IF a WCD will affect remote operation or indication, THEN an INF tag or bezel cover shall be placed on the console device to alert operators of the abnormal condition. • INF bezel covers not listed on the blocking point page shall be annotated in both the WCD tagging and untagging text to ensure the bezel cover is removed when the WCD is released. • Independent verification for hanging or releasing INFs is not required. • Addition of an INF tag to a WCD is not required to go through a review process and may be added, approved, and issued at any time.

FORM 1 WORK CLEARANCE DOCUMENT: ESO NUMBER: M001
EQUIPMENT UNAVAILABLE/Reference object: 2SJ1
COMMENTS:
SPECIAL INSTRUCTIONS FOR TAGGING:
VALVE MUST BE MANUALLY CLOSED
INITIATED BY: **DATE:**
PRE-APPROVED BY:
WCD AUTHORIZED BY: (ON-DUTY OS/CRS/WCCS) **DATE:**
SPECIAL INSTRUCTIONS FOR RELEASE:
WCD RELEASE APPROVED BY: **DATE:**
RELEASED CONFIRMED (IF WCM WAS UNAVAILABLE UPON REQUEST)

FORM 4
TAGGING/UNTAGGING WORK LIST

☑ REQUEST
☐ RELEASE TYPE (circle one) FULL PARTIAL TEMPORARY

DISCIPLINE REVIEWS: NONE

WORK CLEARANCE DOCUMENT NUMBER: M0081 This Worksheet: Page 1 of ___

Seq.	WCM Identifier	Tagging Point Description	Tag Type	Current Position	Desired Position	Apply/Release Date/Time	QO Initials	Verified Date/Time	QO Initials
1	2SJ1-MTR/	230 V BRKR FOR 2SJ1	RBT	X	O				
2	2SJ1-HAND WHEEL	2SJ1 HANDWHEEL	RBT	O	X				
3	2SJ1 BZL	CONTROL ROOM BEBEL CONTROL FOR 2SJ1	RBT	X	X				

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Clear, tag and manually close an MOV**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME:			
	1	Candidate reviews NC.NA-AP.ZZ-0015. and/or SH.OP-AP.ZZ-0015 for manual tagging instructions.	Locates and reviews Section 5.8, MANUAL TAGGING, of SH.OP-AP.ZZ-0015.		
	5.8.1, Step 1	Notifies all Clearing Agents to report to WCC	**CUE:** All Clearing Agents have reported to WCC..		
*		Establishes a Manual Tagging File in WCC	**CUE:** Manual Tagging File has been established.		
*		Maintains all existing WCD's and Manual WCD's in the Manual Tagging File.	**CUE:** All WCD's are being maintained.		
		Initiates new Manual Tagging Index, Form 6 and sequentially numbers new manually created WCD's beginning with number 'M001'.	Locates Form 6 in procedure. Give Candidate blank Form 6. Enters 'M001' in WCD/Manual Number column.		
		Refers to Manual Tagging file AND last generated Off-normal Position Reports.	**CUE:** Off-normal Position Reports have been generated and reviewed. No information impacts this WCD.		
		Performs tagging operations as directed in appropriate sections of procedure.	Locates and reviews Section 5.1, WCD INITIATION, of the procedure.		
	5.1.1 Step 1	Evaluates Order, Notification, Equipment Restriction or Procedure Requirement for Required Tagging	**CUE:** Tagging is required.		
	5.1.1 Step 2	If Tagging is not required exit procedure	Does not exit procedure.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Clear, tag and manually close an MOV**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.1 Step 3	Apply the following for non-station tagging evolutions,.....	Tagging is on station equipment, does not apply Step 5.3		
	5.1.2	Determine Blocking Points and Tag Types	Reviews section 5.1.2		
	5.1.2 Step 1	Review the following	Reviews items in Step 1		
		Scheduled activities for system or component to be tagged	**CUE:** 2SJ1 Motor Operator is to be repaired.		
		Work performed from SAP Orders	Determines SAP is not in service		
		Notifications	Determines SAP is not in service		
		Procedure requirements.	Determines there are no Procedure Requirements		
		Controlled Documents and Drawings from TDR or DCRMS.	**CUE:** Use Controlled Documents and Drawings in the room		
		Locates Drawing in classroom	Locates Drawing 222485, 2C WEST VALVES & MISC. 230V. VITAL CONTR. CTR. ONE LINE Provide Candidate with copy of drawing.		
		Main Control Room Drawings for changes	**CUE:** There are no changes on drawings		
		Uncontrolled Documents and Drawings	**CUE:** No uncontrolled Documents and Drawings are to be used		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Clear, tag and manually close an MOV**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Historical, Standard or Template WCD's	Determines SAP is not in service		
	5.1.2 Step 2	Performs the following	Performs items in Step 2		
		For ESO switching orders,.....	Determines there are no ESO switching orders		
		Resolve Technical and Work Scope problems	**CUE:** There are no problems		
		If any of the following components will be used as blocking points.....	Determines a Motor Operated Valve is to be worked and locates MOV rules on page 2 of Attachment 2 Also determines a Bezel and Control Room Control is affected and locates bezel rules on page 13 of Attachment 2		
		Refer to Attachment 3 for rules on tag types	Determines Red Blocking Tags are required for WCD on Page1 of Attachment 3		
*		Select blocking points and tag types	Determines that breaker 2SJ1-MTRY (from Drawing 222485),valve handwheel, and 2SJ1 bezel control need Red Blocking Tags applied. NOTE: Candidate may elect to use "TRIS" identifier 2CY2AX2A for breaker, this information is in a table on the drawing		**NOTE:** After Candidate locates drawing, Examiner will provide a copy for student to mark up.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Clear, tag and manually close an MOV**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Ensure blocking points will not adversely impact other systems or components. (i.e., air isolations)	Determines there are no air isolations		
		Ensure equipment within the tagging boundary is protected from damage due to inadvertent operation.	Determines blocking points will adequately afford protection		
	5.1.3	Create Tagging Package	Reviews Section 5.1.3		
	5.1.3 Step 1	Perform the following	Performs steps		
		Mark up Drawings and Documents, showing blocking points within the WCD boundary	Marks up drawing circling the breaker for valve 2SJ1.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

TASK: **Clear, tag and manually close an MOV**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*		Initiate the WCD in SAP, use Forms 1&4 if the WCM is unavailable.	Determines WCM is unavailable, locates forms EVALUATOR- Provide forms after Candidate locates them in procedure Candidate fills out appropriate sections of Forms 1 Candidate fills out Form 4 identifying • *230V Brkr for 2SJ1 and RBT • *2SJ1 Handwheel and RBT • *2SJ1 Bezel Control and RBT		
		STOP TIME:			

Terminating Cue: Review the completed Form 4 and then state "This JPM is complete".

INITIAL CONDITIONS:

1. Unit 2 is in Mode 1.
2. SAP/WCM is out of service.
3. 2SJ1 failed to close after it was inadvertently opened.
4. The Operations Manager has authorized Manual Tagging for the 2SJ1.

INITIATING CUE:

Prepare a blocking point list for valve repairs using Manual Tagging IAW SH.OP-NA.ZZ-0015. Work is to be performed on 2SJ1 valve motor operator only.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK: Perform control room actions for a fuel handling incident in the Fuel Handling Building (FHB)

TASK NUMBER: 1140170401

JPM NUMBER: 2002 GOLF NRC RO A3

ALTERNATE PATH: [ ]

K/A NUMBER: 2.3.10

IMPORTANCE FACTOR: 2.9 (RO) 3.3 (SRO)

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Simulator/Perform or Control Room/Simulate

REFERENCES: S2.OP-AB.FUEL-0001, Rev. 3

TOOLS AND EQUIPMENT: NONE

VALIDATED JPM COMPLETION TIME: 15 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: 15 Minutes

ACTUAL TIME CRITICAL COMPLETION: N/A

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Fuel Handling Incidents (APE 036)

TASK: Perform control room Actions for a fuel handling incident in the Fuel Handling Building (FHB)

TASK NUMBER: 1140170401

INITIAL CONDITIONS:

1. Core re-load is in progress on Unit 2.
2. The transfer canal gate valve is open.
3. The transfer cart is in the Fuel Handling Building (FHB).
4. There are 8 people in the FHB.

SIMULATOR SETUP:

Any IC with RCS de-pressurized and appropriate equipment running or simulate performance in the Simulator.

INITIATING CUE:

You are the Control Board Operator. A refueling Crew member in the FHB reports that a fuel assembly has been dropped in the transfer canal. Assume that radiation levels are rising in the FHB but are <1R/hr and no one has been injured. Implement S2.OP-AB.FUEL-0001, Fuel Handling Incident.

Successful Completion Criteria:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Fuel Handling (034)**

TASK: **Perform Control Room actions for a fuel handling incident in the Fuel Handling Building (FHB)**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME:			
		Evaluator provides a copy of S2.OP-AB.FUEL-0001.			
	3.1	Initiate Attachment 1, Continuous Action Summary			
		a. If at any time radiation levels in the FHB or CNMT reach 1 R/hr then evacuate all personnel from the affected area.	Radiation levels < 1 R/hr as noted in Initial Conditions		
		b. If at any time radiation protection airborne sample results indicate iodine activity in CNMT then operate Iodine removal Units as follows - - -	**CUE:** No sample results available yet.		
	3.2	Notify personnel at the scene of the incident to:			
		• Stop all fuel transfers in process.			
		• Evacuate all non-essential personnel from the scene.	Pages or otherwise contacts FHB and provides specified direction.		
			CUE: Acknowledge order.		
	3.3	Has the incident occurred in the FHB?	Answers YES.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Fuel Handling (034)**

TASK: **Perform Control Room actions for a fuel handling incident in the Fuel Handling Building (FHB)**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.4	Notify personnel in the FHB to place any fuel assembly being handled into the emergency rack X-3 or designated location, whichever takes less time.	Pages or otherwise contacts FHB and provides specified direction.		
			CUE: Acknowledge order.		
			CUE: The assembly being handled was the one that dropped.		
*	3.5	PRESS FHB VENTILATION, EXH FLTR TRAINS, HEPA 22 PLUS CHAR pushbutton.	Depresses FHB VENTILATION, EXH FLTR TRAINS, HEPA 22 PLUS CHAR pushbutton* and verifies change in status or verifies already running.		
	3.6	Ensure the following:	Verifies:		
		• All available FH Exhaust Fans are running.	• 21 and 22 FHB Exhaust Fans I/S		
		• HEPA 22 PLUS CHAR and SEQUENCE COMPLETE lights illuminate.	• HEPA 22 PLUS CHAR and SEQUENCE COMPLETE lights illuminated.		
		• HEPA 21 ONLY and SEQUENCE COMPLETE lights extinguish.	• HEPA 21 ONLY and SEQUENCE COMPLETE lights extinguished.		
		• Record time I/S in SC.OP-AP.ZZ-0004(Q), Cyclic Data Monitoring Program.	**CUE:** Mark the time to log the information later and continue with the procedure.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Fuel Handling (034)**

TASK: **Perform Control Room actions for a fuel handling incident in the Fuel Handling Building (FHB)**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	3.12	Notify Radiation Protection of the following:	Contracts RP to provide as much information as is available and directs a survey and sample of the FHB.		
		• Location of the incident			
		• Details of the incident			
		• Affected personnel, if any			
		• Survey the area to determine radiological conditions			
		• Sample the area for airborne activity and contamination	**CUE:** Acknowledge order.		
*	3.13	If fuel transfer cart is in the FHB or Fuel Transfer Canal, then return the fuel transfer cart to CNMT.	May contact both FHB and CNMT and [direct return of the Fuel Transfer Cart to the CNMT}*.		
			CUE: Acknowledge order.		
			CUE: Fuel Transfer Cart has been moved to the CNMT.		
*	3.14	If the fuel transfer canal gate valve is open, then close the valve to isolate the Spent Fuel Pool from CNMT.	Contacts FHB and directs NEO to close gate valve.		
			CUE: Acknowledge order.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Fuel Handling (034)**

TASK: **Perform Control Room actions for a fuel handling incident in the Fuel Handling Building (FHB)**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	3.15	Notify all personnel at the scene of the incident to perform the following:	Pages or otherwise contacts FHB and provides specified directions.		
		• Evacuate the affected area	**CUE:** Acknowledge order. The NEO will evacuate as soon as the gate valve is closed.		
		• Close all doors upon exiting			
		• Report to the Control Point			
		Terminate JPM			
		STOP TIME: _____			

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

INITIAL CONDITIONS:

1. Core re-load is in progress on Unit 2.
2. The transfer canal gate valve is open.
3. The transfer cart is in the Fuel Handling Building (FHB).
4. There are 8 people in the FHB.

INITIATING CUE:

You are the Control Board Operator. A refueling Crew member in the FHB reports that a fuel assembly has been dropped in the transfer canal. Assume that radiation levels are rising in the FHB but are <1R/hr and no one has been injured. Implement S2.OP-AB.FUEL-0001, Fuel Handling Incident.

G NRC RO A3

SALEM/OPERATIONS
S2.OP-AB.FUEL-0001(Q) - REV. 3

FUEL HANDLING INCIDENT

REVISION SUMMARY

Biennial Review performed Yes ____ No ✓

- The following changes to this procedure contain only editorial enhancements as described in NC.NA-AP.ZZ-0001(Q):
  - Deleted the following Radiation Monitors IAW DCP 80004831, Deletion of RMS Channels 2R24A & B, 2R25, 2R28, 2R29, 2R30, and 2R33 (CD519, dated 08/23/00) from the TBD: **[RR2241]**
    - 2R28, Spent Fuel Pool Filter
    - 2R29, Spent Fuel Pool Skimmer Filter
  - Upgraded to latest administrative standards (revision bars not used).
  - Changed SC.OP-DL.ZZ-0001(Q), Control Room Operator/Supervisor Logs to SC.OP-AP.ZZ-0004(Q), Cyclic Data Monitoring Program.

PSE&G
CONTROL
COPY # 27

IMPLEMENTATION REQUIREMENTS

Effective Date 09/13/00

- None

APPROVED: John P Roberts **Operations Manager** 9/7/00 **Date**

3
9/5/00

FUEL HANDLING INCIDENT

1.0 **ENTRY CONDITIONS** DATE:_____ TIME:____

1.1 Any incident involving nuclear fuel with indication of damage to fuel assembly or a radiological release.

2.0 **IMMEDIATE ACTIONS**

2.1 None

3.0 **SUBSEQUENT ACTIONS**

___ 3.1 **INITIATE** Attachment 1, Continuous Action Summary.

___ 3.2 **NOTIFY** personnel at the scene of the incident to:

___ A. **STOP** all fuel transfers in progress.

___ B. **EVACUATE** all non-essential personnel from the scene.

3.3 Has the incident occurred in the Fuel Handling Building?

___ YES ___ NO ——> **GO TO** Step 3.8

|
V

_____
Time

NOTE

Emergency actions are dependent upon the location of the fuel assembly. The quickest path should be taken to place the fuel assembly in a safe condition.

___ 3.4 **NOTIFY** personnel in the Fuel Handling Building to place any fuel assembly being handled into the emergency rack X-3, or designated location, whichever takes less time.

___ 3.5 **PRESS** FUEL HANDLING BUILDING VENTILATION, EXH FLTR TRAINS, HEPA 22 PLUS CHAR pushbutton.

___ 3.6 **ENSURE** the following:

___ A. All available Fuel Handling Building Exhaust Fans are running.

___ B. HEPA 22 PLUS CHAR and SEQUENCE COMPLETE lights illuminate.

___ C. HEPA 21 ONLY and SEQUENCE COMPLETE lights extinguish.

___ D. **RECORD** Time I/S in SC.OP-AP.ZZ-0004(Q), Cyclic Data Monitoring Program.

___ 3.7 **GO TO** Step 3.12

_____
Time

3.8 Has the incident occurred in Containment?

___ NO ___ YES ——> **GO TO** Step 3.10

_____
Time

V

___ 3.9 **RETURN** to Step 3.1 for symptom rediagnosis or as directed by the CRS.

NOTE

Emergency actions are dependent upon the location of the fuel assembly. The quickest path should be taken to place the fuel assembly in a safe condition.

___ 3.10 **NOTIFY** personnel at the scene of the incident to perform one of the following:

___ A. IF the mast tube is indexed over the upender,
THEN **INSERT** the fuel assembly in the upender
AND **LOWER** the upender to the horizontal position.

___ B. IF the mast tube is NOT indexed over the upender,
THEN **PLACE** the fuel assembly into the core in its designated location,
OR the emergency location P-10 whichever takes less time.

___ C. IF the P-10 is NOT available (i.e. refueling is at the core peripheral area),
THEN **PLACE** the fuel assembly in the upender and lower the upender to the horizontal position.

___ 3.11 **ISOLATE** Containment as follows:

___ A. **INITIATE** S2.OP-AB.CONT-0001(Q), Containment Closure.

___ B. **ISOLATE** Containment Ventilation by closing the following Valves:

- ◆ 2VC1, CONTAINMENT PURGE, SUPPLY VALVE
- ◆ 2VC2, CONTAINMENT PURGE, SUPPLY VALVE
- ◆ 2VC3, CONTAINMENT PURGE, EXHAUST VALVE
- ◆ 2VC4, CONTAINMENT PURGE, EXHAUST VALVE
- ◆ 2VC5, PRESSURE & VACUUM RELIEF ISOL VLV
- ◆ 2VC6, PRESSURE & VACUUM RELIEF ISOL VLV

___ 3.12 **NOTIFY** Radiation Protection of the following:

- ◆ Location of incident
- ◆ Details of incident
- ◆ Affected personnel, if any
- ◆ **SURVEY** the area to determine radiological conditions
- ◆ **SAMPLE** the area for airborne activity and contamination

___ 3.13 IF fuel transfer cart is in the Fuel Handling Building or Fuel Transfer Canal, THEN **RETURN** the fuel transfer cart to the Containment.

___ 3.14 IF the fuel transfer canal gate valve is open, THEN **CLOSE** the valve to isolate Spent Fuel Pool from Containment.

___ 3.15 **NOTIFY** all personnel at the scene of the incident to perform the following:

- ◆ **EVACUATE** the affected area.
- ◆ **CLOSE** all doors upon exiting.
- ◆ **REPORT** to the Control Point.

___ 3.16 **NOTIFY** Reactor Engineering of the incident and request assistance.

___ 3.17 **NOTIFY** the OS/CRS to refer to the Event Classification Guide and Technical Specifications.

___ 3.18 When the cause of the incident is corrected and Radiation Protection concurs:

- **RETURN** Fuel Handling Building ventilation to normal IAW S2.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation.
- **RETURN** Containment Ventilation Systems to normal IAW S2.OP-SO.CBV-0001(Q), Containment Ventilation Operation.
- **RESTORE** access to Containment.

4.0 COMPLETION AND REVIEW

___ 4.1 **CIRCLE** Entry Condition number in Section 1.0,
OR **EXPLAIN** Entry Condition in Comments Section of Attachment 2.

___ 4.2 **COMPLETE** Attachment 2, Sections 1.0 and 2.0,
AND **FORWARD** this procedure to OS/CRS for review and approval.

___ 4.3 OS/CRS **PERFORM**:

___ A. **REVIEW** this procedure with Attachments 1 and 2 for completeness and accuracy.

___ B. **COMPLETE** Attachment 2, Section 2, 3.0.

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

END OF PROCEDURE

ATTACHMENT 1
(Page 1 of 1)

CONTINUOUS ACTION SUMMARY

___ 1.0 IF AT ANY TIME radiation levels in the Fuel Handling Building or Containment reach or exceed 1 R/hr,
THEN **EVACUATE** ALL personnel from the affected area.

___ 2.0 IF AT ANY TIME Radiation Protection airborne sample results indicate Iodine activity in Containment,
THEN **OPERATE** Iodine Removal Units as follows:

NOTE

IRUs should be run only if iodine is present in Containment or when requested by Radiation Protection.

___ A. **PRESS** Iodine Removal Unit 21 OR 22 START bezel.

___ B. **ENSURE** SEQUENCE COMPLETE bezel illuminated for Unit(s) started.

___ C. **ENSURE** AIR FLOW LO bezel alarms NOT illuminated.

___ D. **RECORD** Charcoal Filter Time I/S in SC.OP-AP.ZZ-0004(Q), Cyclic Data Monitoring Program.

ATTACHMENT 2
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 COMMENTS:

(Include procedure deficiencies and corrective actions. Attach additional pages as necessary.)

ATTACHMENT 2
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

COMMENTS: (continued)

_____

_____

_____

_____

_____

2.0 SIGNATURES:

Print	Initials	Signature	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

3.0 OS/CRS FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1 and 2 is reviewed for completeness and accuracy. Entry conditions and all deficiencies, including corrective actions, are clearly recorded in COMMENTS Section above.

Signature: _____ Date: _____
OS/CRS

FUEL HANDLING INCIDENT
TECHNICAL BASES DOCUMENT

1.0 REFERENCES

1.1 Technical Documents

A. Salem Generating Station Updated Final Safety Analysis Report:

1. Section 9.1, Fuel Storage and Handling
2. Section 11, Radioactive Waste Management
3. Section 15.4, Condition IV Faults, Fuel Handling Accident

B. Salem Generating Station Technical Specifications Unit 2:

1. Table 3.3-6, Radiation Monitoring Instrumentation
2. Table 3.6-1, Containment Isolation Valves
3. 3.6.3, Containment Isolation Valves
4. 3.7.7, Auxiliary Building Exhaust Air Filtration System
5. 3.9.9, Containment Purge and Pressure-Vacuum Relief Isolation System
6. 3.9.12, Fuel Handling Area Ventilation System

C. Configuration Baseline Documentation:

1. DE-CB.FHV-0021(Q), Fuel Handling Area Ventilation System, Section 7, Accident Analysis

D. Technical/Engineering Letters:

1. S-1-N300-MSE-0012, Accident Analysis, Fuel Handling Accident No. 1 Unit, Salem Nuclear Generating Station

1.2 Procedures

A. S2.OP-SO.CBV-0001(Q), Containment Ventilation Operation
B. S2.OP-SO.ABV-0001(Q), Auxiliary Building Ventilation Operation
C. S2.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation
D. S2.OP-ST.CAN-0006(Q), Refueling Operations - Containment Isolation
E. S2.OP-ST.FHV-0001(Q), Refueling Operations - Fuel Handling Building Ventilation
F. S2.OP-AB.RAD-0001(Q), Abnormal Radiation
G. S2.OP-AB.CONT-0001(Q), Containment Closure
H. SC.OP-AP.ZZ-0004(Q), Cyclic Data Monitoring Program
I. SC.RE-FR.ZZ-0010(Q), Unanticipated Water Level Decrease Procedure

1.3 Drawings

A. 203566, No. 1 & 2 Units Fuel Handling Area Vent. No. 11, 12, 21 & 22 Exhaust Filter Units
B. 205338, Unit No. 2 Containment Ventilation
C. 205322, Unit No. 2 Diesel Area and Fuel Handling Building
D. 239989, No. 1 & 2 Units Fuel Handling Area Vent. No. 1 & 2 Supply Units & No. 11, 21, 12 & 22 Exhaust Filter Units

1.4 Conformance Documents - None

1.5 Industry Concerns

A. INPO SER 82-43, Fractured Fuel Assembly Guide Tubes
B. INPO SER 86-21, Dropped Fuel Assembly at a PWR
C. NRC INFO 83-29, Fuel Binding Caused By Fuel Rack Deformation
D. NRC INFO 85-12, Recent Fuel Handling Events
E. NRC INFO 86-58, Dropped Fuel Assembly at Haddam Neck Plant

1.6 Other

A. DCP 2EC-3559, Fuel Handling Area Ventilation Exhaust Fan Interlock with Radiation Monitors.
B. DCP 80004831, Deletion of RMS Channels 2R24A & B, 2R25, 2R28, 2R29, 2R30, and 2R33

2.0 DISCUSSION

This procedure provides the instructions to follow during a Fuel Handling Incident. It is the intent of this discussion to provide the reasoning behind the logic and flowpath of the procedure. It is not intended to provide additional direction to the procedure.

2.1 Entry Conditions - Entry conditions are based upon Refueling personnel recognizing a Fuel Handling Incident and reporting same to the Control Room. The symptoms available to personnel involved are as follows:

- Actual observation of a Fuel Handling Incident
- Gas bubbles or discoloration of water in the vicinity of a fuel assembly
- Increasing activity or alarm on Radiation Monitors:
  - 2R11A, Containment Sampling Particulate
  - 2R12A, Containment Sampling Noble Gas
  - 2R12B, Containment Sampling Iodine
  - 2R2, Containment - 130' elevation
  - 2R5, Fuel Handling Building
  - 2R9, Fuel Storage Area
  - 2R32A, Fuel Handling Crane
  - 2R44B, Stairway to Reactor Sump - 96' elevation

2.2 Immediate Actions - None

2.3 Subsequent Actions - When it is determined that a Fuel Handling Incident has occurred, all fuel transfers in progress are stopped. It is then determined where the incident has occurred and fuel in transit is placed in the nearest available safe location.

In the event the incident occurs in the Fuel Handling Building, any assembly in transit is placed in the emergency rack X-3, or designated location, whichever takes less time.

If the incident occurs in the Containment, the refueling team is given the option of placing any fuel assembly in transit: in the upender when the mast tube is indexed over it, in the core in its designated location, or P-10 the emergency location whichever takes less time. When the assembly is placed in the Upender, the frame is lowered to the horizontal position.

Containment Closure is established, if applicable, and the affected area ventilation system is aligned to provide protection of personnel and the general public from possible airborne activity. Radiation Protection is notified to determine the Radiological conditions resulting from the incident.

Steps 3.13 and 3.14 then direct isolation of the Spent Fuel Pool from the Containment by first clearing the Fuel Transfer Tube of the Fuel Transfer Cart, and then closing the Fuel Transfer Tube Gate Valve.

Once all required fuel local protective actions are completed, the affected area is evacuated in Step 3.15. Reactor Engineering is contacted for assistance in determining further actions to be taken for any actual fuel damage. The Event Classification Guide is referenced to ensure compliance with the Emergency Plan and to satisfy any reporting requirements. Applicable Technical Specifications are referenced to ensure License compliance.

High Iodine activity levels in the Containment are reduced using the installed Iodine Removal Units. Once the cause of the incident is determined and required restoration actions performed, the procedure is exited and normal operations resumed.

END OF DOCUMENT

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK:

TASK NUMBER:

JPM NUMBER: 2002 GOLF NRC RO A4 Questions

ALTERNATE PATH: [ ]

K/A NUMBER: See Questions

IMPORTANCE FACTOR: RO _____ SRO _____

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

EVALUATION SETTING/METHOD: Room with references

REFERENCES: See questions

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: N/A

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: _____ Minutes

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.4 – CANDIDATE COPY

REACTOR OPERATOR:_____

QUESTION:

Unit 2 is at 100% power. The Emergency Coordinator declared an UNUSUAL EVENT (UE) at 0645 then upgraded to an ALERT at 0710 due to a problem with the Overhead Annunciator System.

What is the latest clock time by which ERDS is required to be activated?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.4 – KEY

REACTOR OPERATOR: _____

QUESTION #1 (2.4.33)

QUESTION:

Unit 2 is at 100% power. The Emergency Coordinator declared an UNUSUAL EVENT (UE) at 0645 then upgraded to an ALERT at 0710 due to a problem with the Overhead Annunciator System.

What is the latest clock time by which ERDS is required to be activated?

ANSWER:

0810 – ERDS must be activated within 60 minutes after declaration of an ALERT.

RESPONSE:

REFERENCE:

SALEM ECG, Attachment 8, Secondary Communicator Log, Rev. 7, Step A.3.b

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.4 – CANDIDATE COPY

REACTOR OPERATOR: _____

QUESTION:

A SGTR caused a reactor trip and safety injection on Unit 2. The Emergency Coordinator declared a Site Area Emergency. Several minutes ago, Unit 2 SPDS failed.

What is the data transmission requirement with SPDS failed?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.4 – KEY

REACTOR OPERATOR: _____

QUESTION #2 (2.4.33)

QUESTION:

A SGTR caused a reactor trip and safety injection on Unit 2. The Emergency Coordinator declared a Site Area Emergency. Several minutes ago, Unit 2 SPDS failed.

What is the data transmission requirement with SPDS failed?

ANSWER:

Complete and transmit the Operational Status Board Form every 15 minutes.

RESPONSE:

REFERENCE:

SALEM ECG, Attachment 8, Secondary Communicator Log, Rev. 7, Step B.2 (from B.3.b)

ATTACHMENT 8

SECONDARY COMMUNICATOR LOG

Table of Contents

Pages
1 - 2 Notifications & Data Collection/Transmission
3 - 4 Incoming Calls (BNE, DEMA, OEM, AAAG, etc.)
5 Major Equipment & Electrical Status (MEES) form
6 Operational Status Board (OSB) form
7 - 8 Station Status Checklist (SSCL) form
9 Common Site UNUSUAL EVENT – Station Status Checklist form

COPY # 0021

Emergency Classification: (circle) UE ALERT SAE GE
Name: _____ Position: CM2 /TSC2/ EOF2
(Print) (circle)

A. NOTIFICATIONS

NOTE

A new Attachment 8 is required to be implemented if the classification or protective action recommendation (PAR) changes.

Initials

1. OBTAIN a copy of Attachment 6 and ASSIST Primary Communicator with 15-minute notifications, as necessary. _____ CM2/TSC2/EOF2

2. DIRECT the Shift Rad Pro Tech (SRPT) (x2644) to implement **SC.EP-EP.ZZ-0301(Q)**, Shift Radiation Protection Technician Response. (N/A for Common Site).

   Name: _____ Time: _____ _____ CM2

3. For an ALERT or higher emergency:

( ) a. CALLOUT an additional SRO and have him/her report to the OSC.

   Name: _____ Time: _____ _____ CM2

   b. ACTIVATE **ERDS** within 60 minutes from the Affected Unit's SPDS terminal:

      1) PRESS **<UNIT MASTER MENU>** key.
      2) PRESS **<ERDS>** key.
      3) FOLLOW screen prompts.

      _____ CM2

Initials

A. NOTIFICATIONS (cont'd)

4. OBTAIN a copy of the **ICMF** and FAX the ICMF to Group A.

CM2/TSC2/EOF2

5. COMPLETE a **Station Status Checklist (SSCL)** Form, Pg. 7 or Common Site UNUSUAL EVENT **Station Status Checklist (SSCL)** Form, Pg. 9;
   - ( ) a. OBTAIN OS (TSS/SSM) assistance, as needed for SSCL Pg.1.
   - ( ) b. OBTAIN SRPT (RAC/RSM) assistance, as needed for SSCL Pg.2. (N/A for Common Site)
   - ( ) c. FAX to Group B.
   - ( ) d. IF fax transmission of the SSCL is incomplete, THEN CONTACT the State Agencies listed below, READ the data, AND DOCUMENT on SSCL, Pg. 2.

DEMA	Delaware Emergency Management Agency	302-659-2290
BNE	NJ Bureau of Nuclear Engineering	609-984-7700

CM2/TSC2/EOF2

6. OBTAIN completed **NRC Data Sheet** from the CM-1, and FAX form to Group B.

CM2/TSC2/EOF2

7. REPEAT Step 5 approximately every half hour OR IMMEDIATELY for significant changes in Station status, until either Turnover or relief.

CM2/TSC2/EOF2

8. TURNOVER responsibility for offsite notifications and offsite data updates (SSCLs) to the oncoming facility (TSC or EOF):
   - ( ) a. GIVE names and phone numbers of contacts already made with any Offsite Agencies.
   - ( ) b. GIVE time for next SSCL.

CM2/TSC2

9. IF available for other duties AND TSC turnover is complete, THEN obtain headset, MAN the Ops Data line and CONTACT the TSC ops advisor and establish an open line of communication from the control room to the TSC.

CM-2

B. DATA COLLECTION/TRANSMISSION

1. WHEN in an ALERT or higher emergency OR AFTER significant changes in plant status; THEN COMPLETE the **Major Equipment and Electrical Status (MEES)** Form.
   - ( ) a. OBTAIN Licensed Operator review
   - ( ) b. GIVE a copy to the OSC Coordinator
   - ( ) c. FAX to Group C.

CM2

Initials

B. DATA COLLECTION/TRANSMISSION (cont'd)

2. IF requested by the TSC,
   THEN COMPLETE the **Operational Status Board (OSB)** Form every 15 minutes.
   (TSS may modify the frequency or data list as appropriate)

( ) a. OBTAIN Licensed Operator review.
( ) b. FAX to Group C.

CM2

3. ENSURE the Facility OSB and MEES Status Boards are updated as follows:

( ) a. OBTAIN OSB Data from **SPDS** "Unit Master Menu."
( ) b. IF SPDS is Out of Service,
THEN REQUEST CM2 to perform step B.2, above. (data set and frequency of updates may be revised by the TSS based on event circumstances)
( ) c. WHEN significant changes in plant status occur,
THEN REQUEST CM2 to perform step B.1, above.

TSC2/EOF2

4. WHEN the emergency is terminated,
THEN FORWARD this document and all completed Forms to the OS (TSS/SSM).

CM2/TSC2/EOF2

C. INCOMING CALLS

STATE OFFICIALS

1. IF Notifications authority has transferred,
THEN DIRECT the caller to contact the TSC (or EOF if activated).

CM2/TSC2

2. WHEN contacted by any State Agency Officials (listed here),

DEMA - Delaware Emergency Management Agency
AAAG - Delaware Accident Assessment Advisory Group
BNE - NJ Bureau of Nuclear Engineering
DEP - NJ Department of Environmental Protection
OEM - NJ Office of Emergency Management

PERFORM the following:
( ) a. OBTAIN and RECORD:

Agency	Caller's Name	Phone #

( ) b. READ the latest EC approved SSCL.

Initials

C. INCOMING CALLS (cont'd)

STATE OFFICIALS

( ) c. IF caller is **NJ-BNE, DEMA**, or **AAAG**, THEN also READ the approved NRC Data Sheet Event Description.

CM2/TSC2/EOF2

NEWS MEDIA

CAUTION

Communicators are NOT authorized to release any information to the News Media.

3. WHEN contacted by any News Media representative, READ the appropriate message below:

( ) a. IF the ENC is not activated (Unusual Event), say;

"You are requested to contact the Nuclear Communications Office at the following number: 856-339-1186."

( ) b. IF the ENC is activated (ALERT or higher), say;

"You are requested to contact the Media Information Operator at any of the following numbers: 856-273-0188, -0282, -0479, or -0586."

CM2/TSC2/EOF2

NRC OPERATIONS CENTER

4. WHEN directed by the NRC to TERMINATE ERDS transmission, THEN GO TO any SPDS terminal of the affected Unit AND PROCEED as follows:

a. PRESS **<UNIT MASTER MENU>** key.
b. PRESS **<ERDS>** key.
c. FOLLOW screen prompts.
d. WHEN completed, NOTIFY the OS.

CM2

SALEM UNIT _____

MAJOR EQUIPMENT AND ELECTRICAL STATUS

DATE: _____
UPDATE TIME: _____

NOTE: Y = IN SERVICE
N = OUT OF SERVICE
(CIRCLE ANY UNAVAILABLE EQUIPMENT)

COOLING SYSTEMS		ELECT. FEED	Y/N
AUX FD PUMPS	1	A1D	
	2	B1D	
	3	STM.	
SERVICE WATER PUMPS	1	3D	
	2	8D	
	3	B3D	
	4	B8D	
	5	3D	
	6	8D	
COMP. COOLING PUMPS	1	A10D	
	2	B10D	
	3	C10D	
REACTOR COOLANT PUMPS	1	H4D	
	2	E4D	
	3	F4D	
	4	G4D	
CONDENSATE PUMPS	1	H1D	
	2	E1D	
	3	F1D	
CIRC WATER PUMPS	1A	U1 / U2	
	1B	2AD/2AD	
	2A	7BD/7BD	
	2B	3AD/3AD	
	3A	6BD/6BD	
	3B	4AD/4AD	
		5BD/5BD	

ECCS SYSTEMS		ELECT. FEED	Y/N
CHARGING PUMPS	1	B9D	
	2	C9D	
	3	A7X	
SAFETY INJ PUMPS	1	A5D	
	2	C5D	
RHR PUMPS	1	A7D	
	2	B7D	

ELECTRICAL STATUS			Y/N
OFFSITE AC POWER AVAILABLE			
EMERGENCY DIESELS		RUN	LOADED
EDG	A		
	B		
	C		
#3 GAS TURBINE			

ELEC DISTRIBUTION AVAILABLE?		Y/N
VITAL BUS	A	
	B	
	C	
GROUP BUS	E	
	F	
	G	
	H	

CONTAINMENT CONTROL		ELECT. FEED	Y/N
CONT. SPRAY PUMPS	1	A2D	
	2	C2D	

CFCU		HI		LOW
1	A3X A4X		A2X	
2	B3X B4X		B2X	
3	C3X C4X		C2X	
4	B7X B8X		B6X	
5	C7X C8X		C6X	

		ELECT. FEED	Y/N
IODINE REMOVAL	1	G7X	
	2	E7X	
H^2 RECOM	1	A15X	
	2	B15X	

MISC. EQUIPMENT		Y/N
FIRE PUMPS (DIESEL)	1	
	2	

STATION AIR COMP.		ELECT. FEED	Y/N
	1	1H6D	
	2	2G1D	
	3	1G1D	

EMERGENCY AIR COMP.		ELECT. FEED	Y/N
	1	1C14X	
	2	2C14X	

COMMENTS:

LICENSED OPERATOR REVIEW: _____
INITIALS

Operational Status Board – Salem

UPDATE: _____ (TIME) _____ (DATE) UNIT # _____

I. EMERGENCY CORE COOLING SYSTEM

Cent. Charg. Pump Flow (BIT flow)		GPM
SI P flow # __1		GPM
SI P flow # __2		
RHR P flow # __1		GPM
RHR P flow # __2		GPM
RWST LEVEL		FT

II. CONTAINMENT

Cont Pressure		PSIG
Cont. Temperature (AVG)		F
Cont. H_2 Concen.		%
Cont. Sump level		%
Cont Rad (hi range) __R44A		R/hr
Cont. Rad (hi range) __R44B		R/hr

III. REACTOR COOLANT SYSTEM

# of RCPs Running		
RVLIS (full range)		%
Core Exit Thermocouple (hottest)		F
# of Thermocouples > 1200 °F		
Tc Loop __1		F
Tc Loop __2		F
Tc Loop __3		F
Tc Loop __4		F
*Tave (Autioneered) *If no RCPs running, Tave on		F
PZR/RCS Pressure the Control Console is invalid.		PSIG
PZR Level (hot)		%
Th Loop __1		F
Th Loop __2		F
Th Loop __3		F
Th Loop __4		F
Reactor Power/Neutron flux		%/amps/CPS
Subcooling Margin		F

IV. C.V.C.S

Letdown flow		GPM
Charging flow		GPM

V. SECONDARY COOLANT SYSTEM

NO. __1 SG level		% (NR or WR)
NO. __2 SG level		% (NR or WR)
NO. __3 SG level		% (NR or WR)
NO. __4 SG level		% (NR or WR)
NO. __1 SG pressure		PSIG
NO. __2 SG pressure		PSIG
NO. __3 SG pressure		PSIG
NO. __4 SG pressure		PSIG
NO. __1 SG feedflow		% or LBS/HR
NO. __2 SG feedflow		% or LBS/HR
NO. __3 SG feedflow		% or LBS/HR
NO. __4 SG feedflow		% or LBS/HR
AFST level		%

VI. MISC. TANKS LEVEL

Waste Hold-Up Tank #__1		%
Waste Hold-Up Tank #__2		%
Waste Monitor HUT		%

VII. SSCL INFORMATION

	YES	NO
Offsite power available?		
Two or more diesels available?		
Did ECCS actuate?		
Is the containment barrier failed?		

VIII. SIGNIFICANT PLANT EVENTS

Licensed Operator Review _____ Initials

STATION STATUS CHECKLIST

Operational Information

SALEM GENERATING STATION Unit No.____ Message Date _____ Time _____

Transmitted By: Name _____ Position _____
(CR/TSC/EOF)

1. Date and Time Event Declared: Date _____ Time _____ (24 hr clock)

2. Event Classification: ☐ Unusual Event ☐ Site Area Emergency ☐ Alert ☐ General Emergency

3. Cause of Event: Primary Initiating Condition used for declaration

EAL #(s) _____

Description of the event _____

_____

_____

_____

4. Status of Reactor: ☐ Tripped/Time _____ ☐ At Power ☐ Startup ☐ Hot Standby ☐ Hot Shutdown ☐ Cold Shutdown ☐ Refuel

5. RZR/RCS Pressure _____ psig Core Exit TC _____ °F

6. Is offsite power available? ☐ YES ☐ NO

7. Are two or more diesel generators available? ☐ YES ☐ NO

8. Did any Emergency Core Cooling Systems actuate? ☐ YES ☐ NO

9. Is the Containment barrier failed? (Loss per EAL section 3.3) ☐ YES ☐ NO

10. Other pertinent information _____

_____

_____

_____

Approved: _____
EC or TSS or SSM

STATION STATUS CHECKLIST
(PAGE 2 OF 2)
RADIOLOGICAL INFORMATION

SALEM GENERATING STATION UNIT NUMBER: ___ CALCULATION TIME: _____ DATE: _____

1. GASEOUS RELEASE>TECH SPEC (T/S) LIMITS:
(T/S LIMITS: 2.42 E+05 µCi/sec NG or 2.1E+01 µCi/sec IODINE)
YES: [ ] RELEASE START TIME: _____ DATE: _____
NO: [ ]

A. RELEASE TERMINATED: YES [ ]NO [ ] N/A [ ]
B. ANTICIPATED OR KNOWN DURATION OF RELEASE: _____ HOURS
C. TYPE OF RELEASE: GROUND [ ] ELEVATED: [ ]N/A [ ]
D. ADJUSTED WIND SPEED: _____(mph) _____(m/sec) WIND DIR (deg from) _____
E. STABILITY CLASS: _____ (A-G) DELTA T: _____(deg C)
F. VENT PATH OF RELEASE: R41 [ ] R45 [ ] R44 [ ] R46 [ ]
G. NG RELEASE RATE: R41_____ R45___ _____ R44_____
R46_____(µCi/sec)
H. I-131 RELEASE RATE: R41_____ R45 _____ R44_____
R46_____ DEFAULT (µCi/sec) (circle if default)
I. TOTAL RELEASE RATE NOBLE GAS: _____(µCi/sec)
J. TOTAL RELEASE RATE IODINE-131: _____(µCi/sec)

2. PROJECTED OFFSITE DOSE RATE CALCULATIONS:

DISTANCE FROM VENT (IN MILES)	XU/Q (1/M2)	TEDE RATE (MREM/HR)	TEDE DOSE (4 DAY) (MREM)	THYROID-CDE RATE (MREM/HR)	THYROID-CDE DOSE (MREM)	TIME FOR PLUME TO TRAVEL (MIN)
MEA 0.79						
2.00						
LPZ 5.00						
EPZ 10.00						

3. OTHER PERTINENT INFORMATION: _____

_____

_____

_____

4. UPDATE TO STATES (IF VERBALLY TRASMITTED)

	NAME	TIME	INITALS
STATE OF NEW JERSEY			
STATE OF DELAWARE			
AGENCY			

APPROVED: _____
EC or RAC or RSM

Common Site **Unusual Event**
STATION STATUS CHECKLIST

Operational Information Message Date _____ Time _____

Transmitted by: Name _____ Position _____

1. Date and Time Event Declared: Date _____ Time: _____

2. Cause of event: Primary Initiating Condition used for declaration

EAL# _____

Description of the event:

_____

_____

33FT. LEVEL WIND DIRECTION (From): _____ WIND SPEED _____
(From MET Computer) (DEGREES) (MPH)

3. Status of the Reactors	Mode: (Power, Startup, Hot Standby, Hot S/D, Cold S/D, Refuel)	Rx Pressure	Hottest Core Exit TC / Rx Temp	Rx Water Level
Salem 1		psig	°F	covered
Salem 2		psig	°F	covered
Hope Creek		psig	°F	in.

	Salem 1		Salem 2		Hope Creek	
	YES	NO	YES	NO	YES	NO
4. Is offsite power available?						
5. Are two or more diesel generators operable?						
6. Did any Emergency Core Cooling Systems actuate?						
7. Is any Containment Barrier failed? (Loss per EAL section 3.3)						
8. Radiological release (> Tech Spec Limit) in progress		X		X		X

9. Other pertinent information _____

_____

_____

_____
EC Initials
(Approval to Transmit ICMF)

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative

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

TASK NUMBER: 1210020302

JPM NUMBER: GOLF NRC – SRO A.1

ALTERNATE PATH: [ ]

K/A NUMBER: 2.1.4

IMPORTANCE FACTOR: 2.3 (RO) 3.4 (SRO)

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

EVALUATION SETTING/METHOD: Room with references

REFERENCES: NC.NA-AP.ZZ-0005

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 12 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: N/A

JPM PERFORMED BY: _____ **GRADE:** [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Administrative

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

TASK NUMBER: 1210020302

INITIAL CONDITIONS:

1. Both units are at 100% power
2. It is 1500 on Christmas Day
3. You are the Unit 1 CRS
4. The Unit 2 CRS has become ill and must be relieved as soon as possible
5. Other than the watch crew, there is no one on site with an active SRO license
6. The only available, qualified person is the 1900-0700 Unit 1 CRS, Ed Gallagher. Ed has worked five consecutive 12 hour night shifts. However, he will "stand by", waiting for a call to relieve early.

SIMULATOR SETUP: N/A

INITIATING CUE:

Complete the actions required to provide a relief for the Unit 1 CRS.

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME:			
	1	Locates and reviews "Working Hour Guidelines" in NC.NA-AP.ZZ-0005 (Section 5.10) 2and/or Technical Specifications	Determines that only available relief will exceed 24 working hours in a 48 hours period and 72 hours in a seven day period		
	2	Locates NC.NA-AP.ZZ-0005 Form-1, WORKING HOUR GUIDELINE DEVIATION/AUTHORIZATION	***CUE:*** Provide a copy of Form-1 after it is located in NC.NA-AP.ZZ-0005		
		Completes Form-1:			
*	3	Enter NAME of relief	Enters Ed Gallagher		
*	4	Enter CODE	Enters Guideline Code 3 and 4 per the Working Hour Guideline Deviation/Authorization Code Table		
*	5	Enter JUSTIFICATION	Illness of Unit 1 CRS and unavailability of any other qualified watch relief		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	6	Enter LAST SCHEDULED DAY OFF	***CUE:*** Ed's last scheduled day off was 12/19 Enters 12/19		
	7	Enter NEXT SCHEDULED DAY OFF	***CUE:*** Ed's next scheduled day off is 12/27 Enters 12/27		
*	8	Sign, date and print name as REQUESTING SUPERVISOR	Candidate signs, dates and prints his/her own name		
*	9	Obtain signature or TELECON approval from DEPARTMENT MANAGER	Locates number and calls or beeps Department Manager ***CUE:*** Role play the conversation and grant approval via phone call Signs, dates and prints name of Department Manager and notes date and time of the call		
	10	Obtain signature or TELECON approval from DIRECTOR-OPERATIONS	Locates number and calls or beeps Director-Operations ***CUE:*** There is no answer		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **Administrative**

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	11	Obtain signature or TELECON approval from DIRECTOR-OPERATIONS	Locates number and calls or beeps Vice President-Operations ***CUE:*** Role play the conversation and grant approval via phone call Signs, dates and prints name of Vice President-Operations and notes date and time of the call		
*	12	Candidate indicates he/she would now call Ed Gallagher with approval for exceeding the "Working Hours Guideline"	***TERMINATE JPM***		
		STOP TIME:			

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

INITIAL CONDITIONS:

1. Both units are at 100% power
2. It is 1500 on Christmas Day
3. You are the Unit 1 CRS
4. The Unit 2 CRS has become ill and must be relieved as soon as possible
5. Other than the watch crew, there is no one on site with an active SRO license
6. The only available, qualified person is the 1900-0700 Unit 1 CRS, Ed Gallagher. Ed has worked five consecutive 12 hour night shifts. However, he will "stand by", waiting for a call to relieve early.

INITIATING CUE:

Complete the actions required to provide a relief for the Unit 1 CRS.

5.9 **Operating Plant Status**
[CD-174A, CD-515A, CD-483F, CD-883X, CD-424Y, CD-418Y]

5.9.1 The Control Room Operator and the OS/CRS shall be aware of all activities affecting plant equipment.

5.9.2 The Control Room Operator and the OS/CRS should be notified of changes in plant status, abnormalities or difficulties encountered in performing assigned tasks that may affect safe operations.

5.9.3 Supervisors are responsible for the performance of all personnel assigned to them who could affect plant safety.

NOTE 5.10

The guidelines established within this section are in place to limit the working hours of those personnel who perform safety related functions (e.g., Licensed Senior Reactor Operators, Licensed Reactor Operators, Radiation Protection Technicians, Equipment Operators, Chemistry Technicians, and Key Maintenance Personnel (See Definition 7.3). **[HC/SA T/S - 6.2.2]**

The objective of the Working Hour Guidelines are to prevent situations where fatigue could reduce an individual's mental awareness and decision making ability, thereby jeopardizing reactor safety. **[CD-419Y, CD-128D]**

5.10 **Working Hour Guidelines**
[CD-093D, HC/SA T/S - 6.2.2]

5.10.1 Adequate shift coverage shall be maintained without the routine heavy use of overtime.

5.10.2 The expectation is that all personnel will work nominal 40 hour work weeks while the units are operating.

Continued on next page

5.10, (Continued)

5.10.3 PRIOR TO performance of overtime in excess of the guidelines listed in step 5.10.4, authorization shall be obtained from the Department Manager and the Director - Operations (In the event that the Director - Operations is unavailable to provide this approval the "Director - Operations" approval should only be delegated upward to a VP level position.

Authorization shall be documented on Form - 1, Working Hour Guideline Deviation / Authorization.

Approvals may be obtained by telecon as follows:

- Sign for the approval authority
- Document the statement "per telecon"
- Record the name of the individual granting approval
- Record the time and date the approval was received

Completed forms should be retained by the initiating department (Time Administrator) and made available for NRC review for a full operating cycle.

5.10.4 In the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major unit modifications, on a temporary basis the following guidelines shall be followed by - Licensed Senior Reactor Operators, Licensed Reactor Operators, Radiation Protection Technicians, Equipment Operators, Chemistry Technicians, and Key Maintenance Personnel (See Definition 7.3):

- An individual should not be permitted to work more than 16 hours straight (excluding shift turnover time).

- An individual should not be permitted to work more than 16 hours in any 24 hour period, nor more than 24 hours in any 48 hour period, nor more than 72 hours in any seven day period (all excluding shift turnover time).

- A break of at least eight hours should be allowed between work periods (including shift turnover time).

- Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on shift.

5.10.5 The Director - Operations or designee shall review individual overtime monthly to ensure that excessive hours have not been assigned. **[CD-419Y]**

KEY

FORM - 1
WORKING HOUR GUIDELINE DEVIATION / AUTHORIZATION

Working Hour Guideline Deviation / Authorization Code Table

Guideline Code	Description
1	More than 16 hours in a work period
2	More than 16 hours in a 24 hour period
3	More than 24 hours in a 48 hour period
4	More than 72 hours in any seven day period
5	Less than 8 hours off between work periods

NAME	Code	Justification	Last Scheduled Day Off	Next Scheduled Day Off
ED GALLAGHER	3, 4	UNIT 1 CRS CURRENTLY ON DUTY IS ILL. NO OTHER QUALIFIED RELIEF AVAIL.	12-19-02	12-27-02

CANDIDATE'S SIGNATURE — Requesting Supervisor (sign)

TODAY'S DATE — Date

CANDIDATE'S NAME — Requesting Supervisor (print)

CANDIDATE SIGNS AND INITIALS FOR CARL FRICKER — Department Manager (sign)

TODAY'S DATE — Date

CARL FRICKER — Department Manager (print)

CANDIDATE SIGNS AND INITIALS FOR DAVE GARCHOW (VP) — Director - Operations (sign)

TODAY'S DATE — Date

DAVE GARCHOW — Director - Operations (print)

NOTE In the event that the Director - Operations is unavailable to provide this approval the "Director - Operations" approval should only be delegated upward to a VP level position.

ATTACHMENT 10
SALEM SHIFT COMPLEMENT
(Page 1 of 2)

[CD-419Y, T/S-6.2.2]

	Salem Unit 1 Mode	1-4	1-4	5-6, D	5-6, D
	Salem Unit 2 Mode	1-4	5-6, D	1-4	5-6, D
	OS	1	1	1	1
	CRS	2	2	2	1
	STA	1	1	1	1&
	OSCC	1	1	1	1
	RO/PO	5*	4	4	3
	NEO	6#	5	5	5
	Communicator	2	2	2	2
CD-252X	Shift Electrician	1	1	1	1
CD-252X	Shift I&C Technician	1	1	1	1
CD-252X	RP Technician	2	2	2	2
CD-252X	Chemistry Technician	1	1	1	1
	Fire Brigade	IAW ND.FP-AP.ZZ-0001			

This attachment combines the minimum shift manning requirements of the Technical Specifications, Emergency Planning and Appendix R Simultaneous Alternate Shutdown. Clarifying statements pertaining to Technical Specification, Emergency Plan (EP), and Appendix R Simultaneous Alternate Shutdown manning are identified separately below.

NOTES FOR TECHNICAL SPECIFICATION MINIMUMS

- Except for the OS, the Shift Crew Composition may be one less than the minimum requirements for a period not to exceed 2 hours to accommodate the unexpected absence of on duty shift crew members provided that immediate action is taken to restore the Shift Crew Composition to within the minimum requirements of the tables. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewperson's being late or absent.
- During any absence of the OS from the Control Room area while the unit is in any MODE, an individual with a valid SRO License shall be designated to assume the Control Room Command Function.
- At least one licensed Operator shall be in the Control Room of each unit when fuel is in the reactor. In addition, at least one licensed SRO shall be in the Control Room area at all times.
- OS may fill the same position on Unit 1 and 2.
- All CORE ALTERATIONS shall be observed and directly supervised by a licensed SRO who has no other concurrent responsibilities during this operation.

Continued on next page

ATTACHMENT 10
(Page 2 of 2)

- Regarding RO minimums with both units in Modes 5-6, one of the two required individuals may fill the position on the other unit such that there are a total of three ROs for both units.
- Regarding NEO minimums with both units in Modes 1-4, one of the three required individuals may fill the same position of Unit 1 and 2, such that there are a total of five NEOs for both units.
- A site Fire Brigade of at least 5 members shall be maintained onsite at all times. The Fire Brigade shall not include 4 members of the minimum shift crew per unit necessary for safe shutdown of the unit or any personnel required for other essential functions during a fire emergency.

EMERGENCY PLAN MINIMUMS

& Individual who fulfills the STA requirement may fill the same position on Unit 1 and 2. The CRS, if STA qualified, may fulfill the STA function when both units are in Mode 5, 6 or Defueled.

* Indicates increase above the current EP requirement of four due to Tech Spec requirement to initiate callout for another RO to replace the RO from the unaffected unit.

\# Indicates increase above the EP requirements due to the provisions of having the NEO at each duty station including the CW/SW operator and radwaste operator.

- NEOs may fill the Primary Communicator duty and ROs or NEOs may fill the Secondary Communicator duty. The Secondary Communicator position is manned by an RO from the unaffected unit when the EP is implemented, then at that time, Salem shall initiate callout procedures to replace the RO from the unaffected unit in accordance with the administration section of the Salem Unit's Tech Specs. The communicator duties may also be filled by qualified staff personnel. **[CD-162F]**
- For each unaffected nuclear unit in operation, maintain at least one SRO, one Reactor Operator and one Nuclear Equipment Operator.
- If needed, the Radiation Protection and Chemistry Technicians will be supplied by unaffected station on shift Radiation Protection and Chemistry Staff.
- Positions associated with EP response will normally not be permitted to go below the minimum manning level. If due to illness or injury manning is below the minimum, the appropriate department management shall be contacted for corrective action. The preferred action is to hold over the existing shift personnel until replacements are available. **[CD-252X]**

SIMULTANEOUS ALTERNATE SHUTDOWN [CR 970509099]

The manning required to perform Simultaneous Alternate Shutdown in the event of a fire is 1 - OS, 2 - CRS, 1 - STA, 4 - RO, 6 - NEO, 1 - Shift Electrician, and 1 - Shift I&C Technician.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Administrative Section Examination

TASK:

TASK NUMBER:

NUMBER: 2002 GOLF NRC SRO A1 Questions

ALTERNATE PATH: [ ]

K/A NUMBER: See Questions

IMPORTANCE FACTOR: RO ____ SRO ____

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Room with references

REFERENCES: See Questions

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: N/A

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: ____ Minutes

ACTUAL TIME CRITICAL COMPLETION: ____ Minutes

JPM PERFORMED BY: ____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: ____ **DATE:** ____

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 – CANDIDATE COPY

SENIOR REACTOR OPERATOR: _____

QUESTION:

Both units are at 100% power when 1R1B-1, Control Room Air Intake Radiation Monitor, fails high. The following Control Area Ventilation (CAV) alignment is noted:

- 11 and 21 EACS Fans are operating
- The Outside Air Intake Dampers on Unit 1 and Unit 2 are closed

What Technical Specification Action Statement(s) must be entered?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 - KEY

SENIOR REACTOR OPERATOR: _____

QUESTION #1 (2.1.12)

QUESTION:

Both units are at 100% power when 1R1B-1, Control Room Air Intake Radiation Monitor, fails high. The following Control Area Ventilation (CAV) alignment is noted:

- 11 and 21 EACS Fans are operating
- The Outside Air Intake Dampers on Unit 1 and Unit 2 are closed

What Technical Specification Action Statement(s) must be entered?

ANSWER:

Enter the TSAS for the failed radiation monitor on each unit and the TSAS for the failed damper/interlock on Unit 2. The Unit 2 Outside Air Intake Damper should not close on failure of 1R1B-1.

- Unit 1 RMS – 3.3.3.1 Action b, Instrument 3, Action 24
- Unit 2 RMS – 3.3.3.1 Action b, Instrument 3, Action 27
- Unit 2 CAV – 3.7.6.b, Action e

RESPONSE:

REFERENCE:

S1 and S2.OP-SO.CAV-0001, Precautions and Limitations step 3.12
Unit 1 and Unit 2 Technical Specifications

___ 3.10 On an automatic start signal, the EACS fan in LEAD will start. If the LEAD fan fails to start, the STANDBY fan will start 30 seconds later due to low flow.

- ♦ When only one train actuates ACCIDENT PRESSURIZED mode, only one EACS fan receives a start signal. If the fan receiving the start signal is the STANDBY fan, it will not start until the 30 second timer has timed out while sensing low flow indicating the LEAD fan did not start.

___ 3.11 To reset a high radiation or SI actuation which shifts Control Room Ventilation into ACCIDENT PRESSURIZED mode, the CAV train in the unit which initiated the signal must be reset before the opposite Unit's CAV train can be reset.

___ 3.12 1R1B and 2R1B with all four radiation monitoring detector channels (1R1B-1 and 2R1B-2 are located in Unit 1 Control Room Intake Duct. 2R1B-1 and 1R1B-2 are located in Unit 2 Control Room Intake Duct) are required for Control Room Envelope operability. If either monitor or any channel is blocked or otherwise inoperable, then entry into the applicable TSAS for both Units is required IAW Technical Specification Table 3.3-6.

___ 3.13 The Control Room ventilation radiation duct monitor block switches located on 2RP1 Panel block the high radiation alarm detected from 2R1B-1 (2RA17967) and 1R1B-2 (1RA17968), Radiation Detectors, located in the Unit 2 intake.

___ 3.14 With the exception of alarms indicating radiation monitor BLOCKED, Unit 2 Control Room radiation alarms associated with the Control Room Ventilation System are for radiation monitor 2R1B-1 (located in Unit 2 Control Room Intake Duct) and 2R1B-2 (located in Unit 1 Control Room Intake Duct).

___ 3.15 Radiation monitoring detectors in the Control Room Intake Ducts are located between the CAA40 and CAA43 inlet dampers. When either Control Room Intake Duct inlet damper is isolated (i.e. ACCIDENT PRESSURIZED mode, FIRE OUTSIDE CONTROL AREA mode, or manually) the detectors are considered inoperable because they are sensing only the air trapped between the dampers (Tech Spec Table 3.3-6, Action 28 is applicable).

___ 3.16 When restoring Control Room Intake Duct inlet dampers, Technical Specification 3.0.6 is applicable for demonstrating OPERABILITY of radiation monitoring detectors.

___ 3.17 Placing Control Room Ventilation System in FIRE INSIDE CONTROL AREA mode or FIRE OUTSIDE CONTROL AREA mode in one unit does NOT align the opposite unit. The opposite unit should also be manually placed in FIRE INSIDE CONTROL AREA or FIRE OUTSIDE CONTROL AREA mode.

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6 (Continued)
RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
2. PROCESS MONITORS					
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (Plant Vent)	1	1, 2, 3&4 (Alarm only)	$\leq 3.0 \times 10^{-2}$ µCi/cm^3	10^{-3}-10^{1} µCi/cm^3	23
2) High Range Auxiliary Building Exhaust System (Plant Vent)	1	1, 2, 3&4 (Alarm only)	$\leq 1.0 \times 10^{2}$ µCi/cm^3	10^{-1}-10^{5} µCi/cm^3	23
3) Main Steamline Discharge (Safety Valves and Atmospheric Steam Dumps)	1/ MS Line	1, 2, 3&4	≤10 mR/hr (Alarm only)	1-10^{4} mR/hr	23
4) Condenser Exhaust System	1	1, 2, 3&4	$\leq 1.27 \times 10^{4}$ cpm (Alarm only)	1-10^{6} cpm	23
3. CONTROL ROOM					
a. Air Intake - Radiation Level	2/Intake##	**	$\leq 2.48 \times 10^{3}$ cpm	10^{1}-10^{7} cpm	24, 25

Control Room air intakes shared between Unit 1 and 2.

** ALL MODES and during movement of irradiated fuel assemblies and during CORE ALTERATIONS.

TABLE 3.3-6 (Continued)

TABLE NOTATION

ACTION 19 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

ACTION 23 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours, and:

1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

ACTION 24 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel(s) to OPERABLE status within 7 days or initiate and maintain operation of the Control Room Emergency Air Conditioning System (CREACS) in the pressurization or recirculation mode of operation. CORE ALTERATIONS and movement of irradiated fuel assemblies will be suspended during operation in the recirculation mode.

ACTION 25 - With no channels OPERABLE in a Control Room air intake, immediately initiate and maintain operation of the CREACS in the pressurization or recirculation mode of operation. CORE ALTERATIONS and movement of irradiated fuel assemblies will be suspended during operation in the recirculation mode.

3/4.7.6 CONTROL ROOM EMERGENCY AIR CONDITIONING SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 The common control room emergency air conditioning system (CREACS)* shall be OPERABLE with:

a. Two independent air conditioning filtration trains (one from each unit) consisting of:

1. Two fans and associated outlet dampers,
2. One cooling coil,
3. One charcoal adsorber and HEPA filter array,
4. Return air isolation damper.

b. All other automatic dampers required for operation in the pressurization or recirculation modes.

c. The control room envelope intact.

APPLICABILITY: ALL MODES and during movement of irradiated fuel assemblies and during CORE ALTERATIONS.

ACTION: MODES 1, 2, 3, and 4

a. With one filtration train inoperable, align CREACS for single filtration train operation within 4 hours, and restore the inoperable filtration train to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With CREACS aligned for single filtration train operation and with one of the two remaining fans or associated outlet damper inoperable, restore the inoperable fan or damper to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With the Control Room Envelope inoperable, restore the Control Room Envelope to OPERABLE status within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With one or both series isolation damper(s) on a normal Control Area Air Conditioning System (CAACS) outside air intake or exhaust duct inoperable, close the affected duct within 4 hours by use of at least one isolation damper secured in the closed position or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (Refer to ACTION 27 of Table 3.3-6.)

*The CREACS is a shared system with Salem Unit 1

LIMITING CONDITION FOR OPERATION (Continued)

e. With one or both isolation damper(s) on an outside emergency air conditioning air intake duct inoperable, close the affected duct within 4 hours by use of at least one isolation damper secured in the closed position and restore the damper(s) to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

f. With any isolation damper between the normal CAACS and the CREACS inoperable, secure the damper in the closed position within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6 or during movement of irradiated fuel assemblies and during CORE ALTERATIONS.

a. With one filtration train inoperable, align CREACS for single filtration train operation within 4 hours, or suspend CORE ALTERATIONS and movement of irradiated fuel assemblies.

b. With CREACS aligned for single filtration train operation with one of the two remaining fans or associated outlet damper inoperable, restore the fan or damper to OPERABLE status within 72 hours, or suspend CORE ALTERATIONS and movement of irradiated fuel assemblies.

c. With two filtration trains inoperable, immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies.

d. With the Control Room Envelope inoperable, immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies.

e. With one or both series isolation damper(s) on a normal CAACS outside air intake or exhaust duct inoperable, immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies until the affected duct is closed by use of at least one isolation damper secured in the closed position. (Refer to ACTION 27 of Table 3.3-6.)

f. With one or both series isolation damper(s) on an outside emergency air conditioning air intake duct inoperable, immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies until the affected duct is closed by use of at least one isolation damper secured in the closed position. To resume CORE ALTERATIONS or movement of irradiated fuel assemblies, at least one emergency air intake duct must be operable on each unit.

g. With any isolation damper between the CAACS and the CREACS inoperable, immediately suspend CORE ALTERATIONS and movement of irradiated fuel assemblies until the damper is closed and secured in the closed position.

INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6 (Continued)
RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
2. PROCESS MONITORS					
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (Plant Vent)	1	1,2,3&4	$\leq 3.0 \times 10^{-2}$ µCi/cm^3 (Alarm only)	10^{-3}-10^{1} µCi/cm^3	26
2) High Range Auxiliary Building Exhaust System (Plant Vent)	1	1,2,3&4	$\leq 1.0 \times 10^{2}$ µCi/cm^3 (Alarm only)	10^{-1}-10^{5} µCi/cm^3	26
3) Main Steamline Discharge (Safety Valves and Atmospheric Steam Dumps)	1/ MS Line	1,2,3&4	10 mR/hr (Alarm only)	1-10^{4} mR/hr	26
4) Condenser Exhaust System	1	1,2,3&4	$\leq 7.12 \times 10^{4}$ cpm (Alarm only)	1-10^{6} cpm	26
3. CONTROL ROOM					
a. Air Intake - Radiation Level	2/Intake##	**	$\leq 2.48 \times 10^{3}$ cpm	10^{1}-10^{7} cpm	27, 28

Control Room air intakes shared between Unit 1 and 2.

** ALL MODES and during movement of irradiated fuel assemblies and during CORE ALTERATIONS.

TABLE 3.3-6 (Continued)

TABLE NOTATION

ACTION 23 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

ACTION 24 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.7.1.

ACTION 25 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

ACTION 26 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours, and:

1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

ACTION 27 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel(s) to OPERABLE status within 7 days or initiate and maintain operation of the Control Room Emergency Air Conditioning System (CREACS) in the pressurization or recirculation mode of operation. CORE ALTERATIONS and movement of irradiated fuel assemblies will be suspended during operation in the recirculation mode.

ACTION 28 - With no channels OPERABLE in a Control Room air intake, immediately initiate and maintain operation of the CREACS in the pressurization or recirculation mode of operation. CORE ALTERATIONS and movement of irradiated fuel assemblies will be suspended during operation in the recirculation mode.

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 - **CANDIDATE COPY**

SENIOR REACTOR OPERATOR: _____

QUESTION:

You are the Unit 2 CRS for a rod withdrawal reactor startup at MOL. The Estimated Critical Position (ECP) is Control Bank D-135 steps. The ICRR has been predicting an earlier criticality. With rod motion stopped and an ICRR of .125, the Reactor Engineer on-duty informs you that the plot predicts criticality at Control Bank D-60 steps.

What action is required?

GOLF GROUP NRC EXAMINATION

ADMINISTRATIVE SECTION A.1 - KEY

SENIOR REACTOR OPERATOR: _____

QUESTION #2 (2.1.23)

You are the Unit 2 CRS for a rod withdrawal reactor startup at MOL. The Estimated Critical Position (ECP) is Control Bank D-135 steps. The ICRR has been predicting an earlier criticality. With rod motion stopped and an ICRR of .125, the Reactor Engineer on-duty informs you that the plot predicts criticality at Control Bank D-60 steps.

What action is required?

ANSWER:

Permission to continue the startup must be obtained from the Reactor Engineer and the Operations Manager. With D@60 steps, the Predicted Critical Rod Position differs from the ECP by >400 pcm but <500 pcm.

Underlined required for SAT

RESPONSE:

REFERENCE:

S2.OP-IO.ZZ-0003, Rev. 16, Step 5.3.15.H.3

FVK $ 5.3.12 **COMPLETE** Attachment 3, Section 2.0, Technical Specification Surveillance Requirement 4.1.1.1.1.c, SDM - Minimum Rod Height.

FVK $ 5.3.13 **INITIATE** Attachment 3, Section 3.0, Technical Specification Surveillance Requirement 4.1.1.4.a, Minimum Temperature for Criticality, at 15 minute intervals.

FVK 5.3.14 IF criticality approach is interrupted for ≥4 hours,
THEN **INSERT** all Control Rod Banks
AND **PERFORM** Attachment 5, Section 2.0.

FVK 5.3.15 **INITIATE** withdrawal of Control Banks with the following guidance:

FVK A. **SELECT** Manual using Rod Bank Selector Switch for normal withdrawal sequence (overlap).

FVK B. Continuously **MONITOR** Nuclear Instrumentation during all withdrawals.

FVK C. **MONITOR** IRPI for each rod for indication of rod withdrawal and rod bottom lights extinguish as rods are withdrawn.

FVK D. **MONITOR** Group Step Counters for proper rod alignment and overlap.

FVK E. **INITIATE** Attachment 3, Section 1.0 ≤15 minutes prior to initiating withdrawal of Control Banks by recording the date and time Shutdown Rods are verified fully withdrawn.

FVK $ F. Within 15 minutes of initiating Control Bank "A" withdrawal, **COMPLETE** Attachment 3, Section 1.0 by recording:

- FVK ♦ Date/Time any Control Bank rod is withdrawn
- FVK ♦ Surveillance Results IAW stated Acceptance Criteria
- FVK ♦ **RECORD** time of Mode 2 entry in the Control Room Narrative Log.
- FVK ♦ **UPDATE** WCM to Mode 2.

(step continued on next page)

5.3.15 (continued)

NOTE

The 8-Fold Rod Position occurs at the condition when the highest reading source range channel has increased by three doublings OR eight times the initial count rate prior to control bank withdrawal. This position is equivalent to an ICRR value of 0.125.

G. **WITHDRAW** Control Banks A, B and C STOPPING at the following hold points to obtain ICRR data:

- CBA Fully Withdrawn
- RIL Position
- CBB Fully Withdrawn
- 8-Fold Rod Position

___ H. When the ICRR value reaches 0.125, **DETERMINE** the deviation between the Estimated Critical Rod Position (ECP) and Predicted Critical Rod Position (from the ICRR), and take appropriate action:

___ 1. IF the ICRR plot indicates Predicted Critical Rod Position is below the Zero Power Rod Insertion Limit (RIL), THEN **INITIATE** Rapid Boration, **INSERT** Control Rod Banks AND **RECALCULATE** the ECP.

___ 2. IF the ICRR plot indicates Predicted Critical Rod Position differs from the ECP by >300 pcm but <400 pcm, THEN **CONTINUE** the Reactor Startup, AND **EVALUATE** the post startup data for trend.

___ 3. IF the ICRR plot indicates Predicted Critical Rod Position differs from the ECP by >400 pcm but <500 pcm, THEN **OBTAIN** permission from the Reactor Engineer and the Operations Manager prior to continuing with the Startup.

(step continued on next page)

5.3.15 (continued)

___ 4. IF the ICRR plot indicates Predicted Critical Rod Position differs from the ECP by >500 pcm but <1000 pcm, THEN:

___ a. **INSERT** the Control Rod Banks, AND **RECALCULATE** the ECP prior to withdrawing Control Rods.

___ b. IF the ICRR plot still indicates Predicted Critical Rod Position differs from the ECP by >500 pcm but <1000 pcm on the second attempt, THEN **OBTAIN** permission from the Reactor Engineering Supervisor and the Operations Manager prior to continuing with the Startup.

___ 5. IF the ICRR plot indicates Predicted Critical Rod Position differs from the ECP by >1000 pcm, THEN **INSERT** the Control Rod Banks. The reactor shall NOT be made critical.

___ I. **WITHDRAW** Control Bank D STOPPING at the following hold points to obtain ICRR data:

- ≤50 step increments
- 8-Fold Rod Position

___ J. IF P-6 (Source Range Permissive) green light energizes, as indicated on 2RP4 1/2 IR channels at 10^{-10} amps, prior to criticality, THEN:

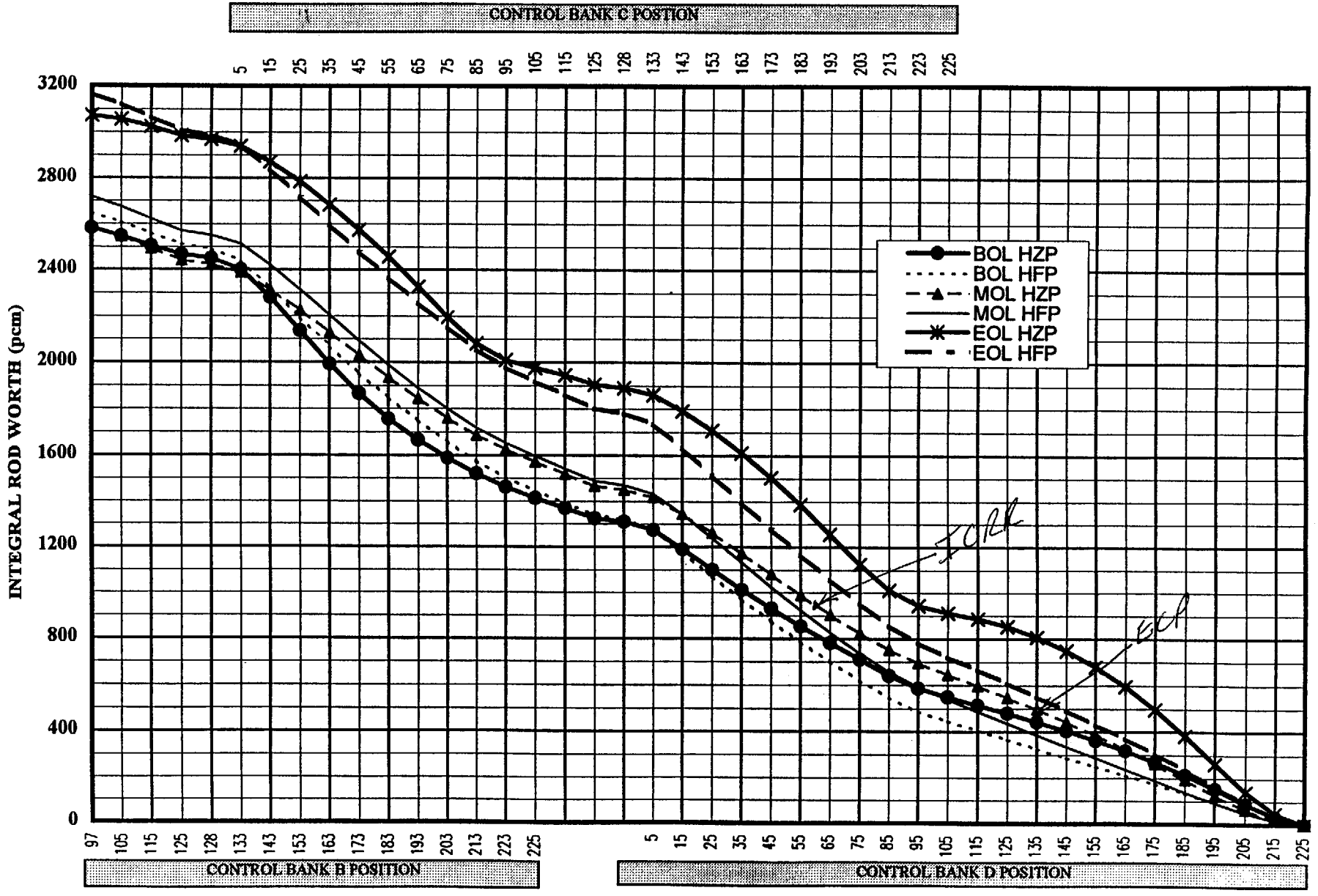
___ 1. **SELECT** one pen of NR-45 to an Intermediate Range channel and the other pen to a Power Range channel.

___ 2. **BLOCK** Source Range High Flux Trip by depressing both "BLOCK SOURCE RANGE A" AND "BLOCK SOURCE RANGE B" pushbuttons on console.

___ 3. **ENSURE** Source Range Trains A&B TRIP BLOCKED blue light is illuminated on 2RP4 AND OHA E-5, SR DET VOLT TRBL alarms.

FIGURE 4
SALEM UNIT 2 CYCLE 13

INTEGRAL ROD WORTH vs. ROD POSITION IN OVERLAP



OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ADMINISTRATIVE

TASK: Review a completed surveillance procedure for a MDAFW Pump

TASK NUMBER: 1230300302

JPM NUMBER: GOLF NRC – SRO A2

ALTERNATE PATH: [ ]

K/A NUMBER: 2.2.12

IMPORTANCE FACTOR: 3.0 RO / 3.4 SRO

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

EVALUATION SETTING/METHOD: Room with references

REFERENCES: S2.OP-ST.AF-0001, Rev. 14
S2.RA-ST.AF-0001, Rev. 5

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 12 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: N/A

JPM PERFORMED BY: _____ **GRADE:** [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE

TASK: Review a completed surveillance procedure for a MDAFW Pump

TASK NUMBER: 1230300302

INITIAL CONDITIONS:

1. Unit 2 is sub-critical at 547°F, 2235 PSIG. All shutdown bank control rods are fully withdrawn.
2. S2.OP-ST.AF-0001(Q), INSERVICE TESTING-21 AUXILIARY FEEDWATER PUMP was completed at the end of the previous shift. The procedure has just been submitted to the control room.
3. 21 AFW Pump has been left in service to provide feed while preparations are in progress for performing S2.OP-ST.AF-0002.

SIMULATOR SETUP: N/A

INITIATING CUE:

You are the Unit 2 CRS. Review S2.OP-ST.AF-0001(Q), INSERVICE TESTING-21 AUXILIARY FEEDWATER 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.**

INITIAL CONDITIONS:

1. Unit 2 is sub-critical at 547°F, 2235 PSIG. All shutdown bank control rods are fully withdrawn.
2. S2.OP-ST.AF-0001(Q), INSERVICE TESTING-21 AUXILIARY FEEDWATER PUMP was completed at the end of the previous shift. The procedure has just been submitted to the control room.
3. 21 AFW Pump has been left in service to provide feed while preparations are in progress for performing S2.OP-ST.AF-0002.

INITIATING CUE:

You are the Unit 2 CRS. Review the completed S2.OP-ST.AF-0001(Q), INSERVICE TESTING-21 AUXILIARY FEEDWATER PUMP.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **ADMINISTRATIVE**

TASK: **Review a completed surveillance procedure for a MDAFW Pump**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Evaluator provides a marked up S2.OP-ST.AF-0001 and a copy of the current revision of S2.RA-ST.AF-0001 START TIME:			
	1	Verifies current revision of the procedure was used for the ST	Verifies revision at Examiner's discretion		
	2	Step 5.3.2 CRS PERFORM the following: A. Review this procedure with Attachments 1-4 for completeness and accuracy.			
	3	Checks all PREREQUISITES (2.0) and PRECAUTIONS AND LIMITATIONS (3.0) initialed	No errors		
*	4	Checks all PROCEDURE steps (5.0) initialed or properly N/A'd	Recognizes that Step 5.1.5.should NOT be N/A. The Unit is in Mode 3 – TSAS 3.7.1.2 should have been entered. Specifies that a NOTE should be written. **CUE:** Assume the NOTF has been written. Continue reviewing the procedure.		
	5	Reviews Attachment 1	Verifies all blocks completed, instrument calibration dates are current		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **ADMINISTRATIVE**

TASK: **Review a completed surveillance procedure for a MDAFW Pump**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	6	Reviews Attachment 2	• Verifies all blocks completed • Compares collected data to S2.RA-ST.AF-0001 acceptance criteria • Determines Vibration Position 3V is in Alert Range*		
	7	Reviews Attachment 3	Notes 23 and 24AF21 are throttled, supplying feed to the SG's		
	8	Reviews Attachment 4	Reviews Section 1.0 for COMMENTS and 2.0 for SIGNATURES		
*	9	Completes Section 5.3.2	Specifies that 5.3.2.C applies: • Pump is operable • Initiate a change to increase test frequency IAW NC.WM-AP.ZZ-0003 **NOTE:** Evaluator has the option to terminate the JPM after this step		
	10	Complete Attachment 4, Section 3.0	Signs and dates		
	11	Forwards procedure to STA	***TERMINATE JPM***		
		STOP TIME:			

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

PSEG Internal Use Only

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

S2.OP-ST.AF-0001(Q) - REV. 14

INSERVICE TESTING - 21 AUXILIARY FEEDWATER PUMP

USE CATEGORY : I

REVISION SUMMARY: Biennial Review Performed: Yes ___ No _√_ NA ___

Attachment 2 - Moved vibration point 3A from Technical Specification Acceptance Criteria to Non-Technical Specification Acceptance Criteria. The ASME O&M 10 code, to which we are committed, does not require monitoring of Axial Vibrations on the line bearings of pumps in the IST program. **(80024023)**

The following changes deal with the removal and replacement of the Panametric Ultra Sonic Flow Monitor with the Controlotron. All references to the Panametrics Ultra Sonic Flow montior have been deleted. These changes are editorial in nature as previously approved in S1.OP-ST.AF-0001(Q). **(80019923)**

- 2.6 - changed procedure from Panametrics to Controlotron.
- 5.1.3 - added step for the Maintenance Technician to perform a zero flow adjustment for Controlotron.
- 5.1.17 - added step to turn Controlotron power off.
- 7.5.2.F - replaced Panametrics procedure with Controlotron procedure.
- Attachment 1, 4.0 - added recording of Controlotron Data following zero adjustment.
- Attachment 2, 2.0 - replaced Panametrics with Controlotron.
- Attachment 2, 3.0 - replaced Panametrics with Controlotron.

IMPLEMENTATION REQUIREMENTS Effective Date April 4 01

None

APPROVED: For Operations Manager - Salem 4/2/01 Date

3 4/2/01

INSERVICE TESTING - 21 AUXILIARY FEED PUMP

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ATTACHMENTS

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Attachment 4	Completion Sign-Off Sheet	19

1.0 PURPOSE

1.1 Provides instructions necessary to perform Inservice Inspection and Testing IAW Technical Specification 4.0.5 for the following components: **[C0265]**

- ♦ 21 Auxiliary Feed Pump
- ♦ 21AF4 Check Valve (Partial Open)

This requirement is applicable in Modes 1-3.

1.2 Perform Technical Specification Surveillance 4.7.1.2.b.1 (Developed Head). This requirement is applicable in Modes 1-3. **[C0265]**

1.3 Performance of this procedure is required at least once per 92 days in Modes 1-3 on a STAGGERED TEST BASIS, prior to entry into Mode 3 if NOT previously performed in the last 92 days, or as otherwise specified in post-maintenance operational retest requirements.

2.0 PREREQUISITES

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

RVL 2.2 **REVIEW** components "Off Normal and Off-Normal Tagged" List(s) for system and support system(s) associated with evolution to be performed in this procedure.

RVL 2.3 **ENSURE** the applicable SAP Order number(s) and Reason for Test are recorded on Attachment 1, Section 1.0.

RVL 2.4 IF this surveillance is being performed to verify post-maintenance operability of 21 Auxiliary Feedwater Pump OR to establish new baseline data, THEN **NOTIFY** the IST Implementation Engineer. **[C0583]**

RVL 2.5 **ATTACH** a copy of S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria.

2.6 **ENSURE** Maintenance Technician is available to perform the following:

- Vibration Data Collection of 21 Auxiliary Feedwater Pump utilizing a DLI Watchman DC-7 Data Collector.
- SC.IC-DC.ZZ-0003(Q), Controlotron Model 960 and 990 Flow Computer Zero Adjustment.

2.7 Direct Maintenance Technician to **PERFORM** the following:

- **PROGRAM** the DLI Watchman DC-7 Data Collector to record 21 Auxiliary Feedwater Pump vibration. **[C0600]**
- **RECORD** calibration data for the M&TE and Vibration Data Collection Equipment listed in Attachment 1, Section 2.0 and 3.0. **[C0289]**
- **INSTALL** Temporary Test Equipment as specified in Attachment 1, Section 3.0

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Procedure Use and adherence policy as found in NC.NA-AP.ZZ-0001(Q), Nuclear Procedure System, is applicable to this procedure.

3.2 Steps identified with a dollar sign ($) are those items required to meet Technical Specification acceptance criteria. Such steps, if not satisfactorily completed, may have reportability requirements and should be brought to immediate attention of the OS/CRS.

3.3 22 AND 23 AF Pumps are NOT in operation.

3.4 Do NOT operate 21 AF Pump if suction pressure is <8.2 psig.

3.5 21 AF Pump is to be stopped should the motor winding temperature exceed 266°F.

3.6 21 AF Pump oil levels are to be maintained at 1/2 to 3/4 full.

N/A 3.7 IF in Modes 1-3 and Auxiliary Feedwater System is NOT required, THEN S2.OP-PT.AF-0002(Q), Auxiliary Feedwater Backleakage is to be performed 30 to 60 minutes following pump shutdown. **[C0270]**

N/A 3.8 IF substitution of Measuring and Test Equipment (M&TE) is required, THEN the IST Implementation Engineer has specified range, accuracy and documented substitution in the Comments Section of Attachment 4.
IST

3.9 IF the indicating needle of a test gauge used for obtaining pump performance data is operating erratically due to hydraulic (i.e., flow or pressure) fluctuations, THEN gauge indication may be dampened by throttling the instrument root valve to reduce indicated fluctuations. When this dampening technique is utilized, the operator shall alternately open and close the instrument root valve several times to verify unobstructed pressure communication while observing the instrument reading.

3.10 Pump flow is required to be established at the reference value indicated in S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria (as close as reasonably achievable) prior to acquisition of pump performance data. The indicated allowable band (±2% of Reference Value) was specifically incorporated to allow for instrument fluctuations about the Reference Value, and is NOT intended to be utilized as an allowable flow adjustment band.

4.0 EQUIPMENT/MATERIAL REQUIRED

4.1 M&TE:

- DLI Watchman DC-7 Data Collector
- DLI Triaxial Accelerometer
- One (1) Heise Gauge or equivalent, range 0-60 psig, accuracy ±0.1% of full scale and total uncertainty of ±0.06 psig or better.
- One (1) Heise Gauge or equivalent, range 0-3000 psig, accuracy ±0.1% of full scale and total uncertainty of ±3.0 psig or better.

4.2 Additional Tools and Equipment:

- JA Master Key

4.3 Procedure(s):

- Copy of S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feed Pump Acceptance Criteria

5.0 PROCEDURE

5.1 IST of 21 AF Pump

FVK 5.1.1 **PLACE** No. 2 Aux Feed Tank Heater Pump in STOP.

FVK 5.1.2 IF 21 AF Pump is in service,
THEN:

FVK A. **ENSURE** 23 and 24 Steam Generators have sufficient level to stop auxiliary feed supply for duration of this test.

FVK B. **STOP** 21 AF Pump.

FVK 5.1.3 Direct Maintenance Technician to:

FVK A. **PERFORM** Controlotron Zero Flow Adjustment IAW SC.IC-DC.ZZ-0003(Q), Controlotron Model 960 and 990 Flow Computer Zero Adjustment.

FVK B. **RECORD** Controlotron calibration data AND completion data in Attachment 1, Section 4.0.

FVK 5.1.4 **ENSURE** the following valves are OPEN:

FVK A. 21AF101, AF PUMP RECIRC ISOL

FVK B. 21AF40, AF PMP RECIRC V

N/A 5.1.5 IF in Modes 1-3,
THEN **ENTER** T/S 3.7.1.2 for 21 Auxiliary Feedwater Pump.

FVK 5.1.6 **DECREASE** the following valve demands to 0%:

- 23AF21, STEAM GENERATOR INLET VALVE
- 24AF21, STEAM GENERATOR INLET VALVE

CAUTION

When starting 21 AF Pump, the "21 START" pushbutton must be pressed for at least five (5) seconds to preclude an inadvertant S/G Blowdown and Sample isolation.

FVK 5.1.7 **START** 21 AF Pump.

FVK 5.1.8 **ENSURE** 21AF40, AF PMP RECIRC V, modulating valve is OPEN.

FVK 5.1.9 **CLOSE** 21AF40-A/S, AIR SUPPLY TO 21AF40 (2SV537), AND **VENT** air supply at regulator petcock.

FTK 5.1.10 **UNLATCH** 21AF40 handwheel AND **THROTTLE** 21AF40 to obtain the reference value for flow identified in S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria as indicated on the Controlotron.

NOTE

After pump conditions are as stable as the system permits, 21 AF Pump is required to be operated for at least 2 minutes prior to acquiring "Vibration Readings" and "Pump Performance Data".

FTK 5.1.11 When 21 Auxiliary Feed Water Pump has operated for >2 minutes at stable conditions, **PERFORM** the following:

FTK ◆ Direct Maintenance Technician to **OBTAIN** "Vibration Readings" on 21 Auxiliary Feedwater Pump utilizing the DLI Watchman DC-7 Data Collector.

FTK ◆ **RECORD** "Pump Performance Data" on Attachment 2, Section 2.0.

FTK 5.1.12 Direct Maintenance Technician to **PERFORM** the following:

FTK A. **DOWNLOAD** the DLI Watchman DC-7 Data Collector to the ALERT Computer.

N/A B. IF a DLI Printer is available, THEN:

N/A 1. **PRINT** 21 Auxiliary Feedwater Pump vibration results.

N/A 2. **ATTACH** a copy of the 21 Auxiliary Feedwater Pump vibration results to this procedure.

FTK C. IF a DLI Printer is NOT available, THEN **RECORD** 21 Auxiliary Feedwater Pump vibration readings from the DLI Computer on Attachment 2, Section 1.0.

FTK D. **REMOVE** Temporary Test Equipment specified in Attachment 1, Section 3.0.

N/A E. IF Electronic Pressure Modules (digital) were NOT used, THEN **COMPLETE** Attachment 1, Section 4.0, Post Test Calibrations.

5.1.13 **POSITION** 21AF40 handwheel to NEUTRAL AND **LATCH** handwheel.

5.1.14 **CLOSE** 21AF40 air supply regulator petcock AND **OPEN** 21AF40-A/S.

5.1.15 **RECORD** 21AF4 PARTIAL OPEN "Test Results" by initialing SAT or UNSAT column using Acceptance Criteria in Attachment 2, Section 3.0.

5.1.16 IF 21 AF Pump is NOT required to maintain Steam Generator levels, THEN:

A. **STOP** 21 AF Pump.

B. **RAISE** demand to 98% for following valves:

- 23AF21, STEAM GENERATOR INLET VALVE
- 24AF21, STEAM GENERATOR INLET VALVE

C. IF in Modes 1-3,
THEN **PERFORM** S2.OP-PT.AF-0002(Q), Auxiliary Feedwater Backleakage, 30 to 60 minutes following pump shutdown. **[C0270]**

5.1.17 **PLACE** Controlotron Power Supply Switch to OFF position.

5.1.18 IF 21 AF Pump is required to maintain steam generator water level, THEN **ADJUST** the valve demands to the following valves, as required:

- 23AF21, STEAM GENERATOR INLET VALVE
- 24AF21, STEAM GENERATOR INLET VALVE

5.1.19 **PLACE** No. 2 Aux Feed Tank Heater Pump in AUTO.

5.1.20 IF in Modes 1-3,
THEN **EVALUATE** T/S 3.7.1.2 for continued applicability.

5.1.21 Direct a second Operator to **PERFORM** Independent Verification of the following:

- Calculations performed in Attachment 2. **[C0284]**
- Valve positions in Attachment 3. **[C0290]**

RK
$

5.1.22 IF this surveillance is being performed as a regular scheduled surveillance OR to verify post-maintenance operability,
THEN **RECORD** "Test Results" by initialing SAT or UNSAT column using Acceptance Criteria in Attachment 2, Sections 1.0, 2.0 and 3.0.

N/A
$

5.1.23 IF this surveillance is being performed to establish new baseline data,
THEN IST Implementation Engineer **PERFORM** the following:

N/A
IST

A. **EVALUATE** the data AND **DETERMINE** if the specified components meet minimum design requirements.

N/A
$ IST

B. **RECORD** "Test Results" by initialing SAT or UNSAT column using the Acceptance Criteria in Attachment 2, Sections 1.0, 2.0 and 3.0.

5.2 Acceptance Criteria

KJK $ 5.2.1 This surveillance is satisfactory when Attachment 2 is completed with equipment listed meeting the Technical Specification Acceptance Criteria (ASME) stated in the attachment.

OR

N/A 5.2.2 This surveillance is unsatisfactory.

N/A A. **INITIATE** NOTF(s) to correct unsatisfactory condition(s).

N/A B. **RECORD** NOTF number(s), and reason for unsatisfactory completion on Attachment 4 in the Comments Section.

5.3 Completion and Review

CANDIDATE 5.3.1 **COMPLETE** Attachment 4, Sections 1.0 and 2.0, AND **FORWARD** this procedure to the CRS for review.

CANDIDATE 5.3.2 CRS **PERFORM** the following:

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

CANDIDATE N/A's B. IF all pump Technical Specification Acceptance Criteria (ASME) parameters are SAT AND in the ACCEPTABLE RANGE, THEN:

N/A ◆ **DECLARE** Pump OPERABLE.

N/A ◆ IF pump is currently on an increased test frequency, THEN **EVALUATE** conditions required to return the pump to normal test frequency IAW NC.WM-AP.ZZ-0003(Q), Regular Maintenance Process and NC.NA-AP.ZZ-0070(Q), Inservice Testing Program.

CANDIDATE $ C. IF ANY pump Technical Specification Acceptance Criteria (ASME) parameter is SAT AND in the ALERT RANGE, AND NO pump Technical Specification Acceptance Criteria (ASME) parameter is UNSAT OR in the REQUIRED ACTION RANGE, THEN:

CANDIDATE ◆ **DECLARE** pump OPERABLE.

CANDIDATE ◆ IF pump is currently on a normal test frequency, THEN **INITIATE** a change to place pump on increased test frequency IAW NC.WM-AP.ZZ-0003(Q), Regular Maintenance Process and NC.NA-AP.ZZ-0070(Q), Inservice Testing Program.

(step continued on next page)

5.3.2 (continued)

___ D. IF ANY pump Technical Specification Acceptance Criteria (ASME) parameter is UNSAT, in the REQUIRED ACTION RANGE, THEN:

- ___ ◆ **DECLARE** pump inoperable.
- ___ ◆ **EVALUATE** Technical Specifications for system operability.
- ___ ◆ **INITIATE** a NOTF IAW NC.WM-AP.ZZ-0000(Q), Notification Process.
- ___ ◆ **RECORD** NOTF number(s) on Attachment 4 in the Comments Section.

___ E. IF ANY pump Non-Technical Specification Acceptance Criteria (Non-ASME) parameter is SAT AND in the ALERT RANGE, THEN:

- ___ ◆ **INITIATE** a NOTF IAW NC.WM-AP.ZZ-0000(Q), Notification Process.
- ___ ◆ **RECORD** NOTF number(s) on Attachment 4 in the Comments Section.
- ___ ◆ **NOTIFY** the Vibration Program Manager.
- ___ ◆ **NOTIFY** the IST Implementation Engineer.

___ F. IF ANY pump Non-Technical Specification Acceptance Criteria (Non-ASME) parameter is UNSAT, in REQUIRED ACTION RANGE, THEN:

- ___ ◆ **INITIATE** a NOTF IAW NC.WM-AP.ZZ-0000(Q), Notification Process.
- ___ ◆ **RECORD** NOTF number(s) on Attachment 4 in the Comments Section.
- ___ ◆ **NOTIFY** the Vibration Program Manager to promptly evaluate the test data.
- ___ ◆ **NOTIFY** the IST Implementation Engineer.

(step continued on next page)

5.3.2 (continued)

___ G. IF Technical Specification Acceptance Criteria (ASME) for ANY Check Valve is UNSAT,
THEN:

___ ♦ **DECLARE** the Check Valve inoperable.

___ ♦ **EVALUATE** Technical Specifications for system operability.

___ ♦ **INITIATE** a NOTF IAW NC.WM-AP.ZZ-0000(Q), Notification Process.

___ ♦ **RECORD** NOTF number(s) on Attachment 4 in the Comments Section.

___ H. **COMPLETE** Attachment 4, Section 3.0.

___ I. **FORWARD** this procedure to the STA for review.

___ 5.3.3 STA **PERFORM** the following:

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

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

___ C. **FORWARD** this procedure to the OS/CRS for review and approval.

___ 5.3.4 OS/CRS **PERFORM** the following:

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

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

___ C. **PLACE** this procedure in the IST IMPLEMENTATION ENGINEER REVIEW REQUIRED mail slot.

END OF PROCEDURE SECTION

6.0 RECORDS

6.1 Retain the following IAW NC.NA-AP.ZZ-0011(Q), Records Management Program:

- Attachment 1-4
- Copy of S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feed Pump Acceptance Criteria, if applicable
- Pump DLI Vibration Analyzer Printout

7.0 REFERENCES

7.1 Updated Final Safety Analysis Report:

7.1.1 3.9.4, Inservice Testing of Pumps and Valves
7.1.2 10.4.7.2, Auxiliary Feedwater System
7.1.3 15.2.8, Loss of Normal Feedwater

7.2 Drawings:

7.2.1 205336, No. 2 Unit Auxiliary Feedwater

7.3 Procedures:

7.3.1 NC.WM-AP.ZZ-0000(Q), Notification Process
7.3.2 NC.WM-AP.ZZ-0001(Q), Work Management Process
7.3.3 NC.WM-AP.ZZ-0002(Q), Performance Improvement Process
7.3.4 NC.NA-AP.ZZ-0022(Q), Measuring & Test Equipment, Lifting & Rigging and Tool Control
7.3.5 NC.NA-AP.ZZ-0050(Q), Station Testing Program
7.3.6 SH.RA-AP.ZZ-0105(Q), IST Program Management

7.4 Others:

7.4.1 OM-6, Inservice Testing of Pumps in Light-Water Reactor Power Plants (1988 Edition)
7.4.2 OM-10, Inservice Testing of Valves in Light-Water Reactor Power Plants (1988 Edition)
7.4.3 Salem Generating Station IST Manual
7.4.4 NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants

7.5 Cross-References:

7.5.1 Technical Specifications - Unit 2:

A. 4.0.5, Inservice Inspection and Testing
B. 4.7.1.2.b.1, Auxiliary Feedwater System

7.5.2 Procedures:

A. NC.NA-AP.ZZ-0011(Q), Records Management Program
B. NC.WM-AP.ZZ-0003(Q), Regular Maintenance Process
C. NC.NA-AP.ZZ-0070(Q), Inservice Testing Program
D. S2.OP-PT.AF-0002(Q), Auxiliary Feedwater Backleakage
E. SC.OP-AP.ZZ-0106(Q), Operability Determination
F. S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feed Pump Acceptance Criteria
G. SC.IC-DC.ZZ-0003(Q), Controlotron Model 960 and 990 Flow Computer Zero Adjustment.

7.6 Commitments:

7.6.1 C0265 - NSO LER 311/89-015-00
7.6.2 C0270 - NRC GL 88-03
7.6.3 C0275 - NRC INSP 90-03
7.6.4 C0283 - NRC VIOL 311/87-18-0
7.6.5 C0284 - NRC VIOL 272/90-014-00
7.6.6 C0289 - INSTRUMENT CALIBRATION REQUIREMENTS
7.6.7 C0290 - NRC INFO 84-51
7.6.8 C0583 - NRC VIOL 50-272/94-21
7.6.9 C0600 - NLR-N89196, Salem IST Conduct

ATTACHMENT 1
(Page 1 of 2)

INSTRUMENT AND TEST EQUIPMENT DATA

1.0 SAP ORDER DATA

SAP Order Number(s):	**Reason for Test**
02 NRC EXAM - ADMIN	✓ Scheduled Surveillance ___ Post-Maintenance Operability ___ Establish New Baseline Data ___ Other (Explain in Comments)

2.0 VIBRATION DATA COLLECTION EQUIPMENT:

Instrument/Test Equipment	Description	Calibration Due Date	Initials
DLIW-DC7-05	DLI Watchman DC-7 Data Collector	3-3-03	FVK
DLI-TA-03	DLI Triaxial Accelerometer	2-9-03	FVK

3.0 TEMPORARY TEST EQUIPMENT

Temporary Test Equipment	ID Number & Cal. Due Date	Installation Point	Installation		Removal	
			Initials	Date	Initials	Date
Heise CM or equivalent 0-60 psig	# 00007 Date: 1-19-03	Instr. Vent for 2PL8647 (suction pressure)	TR (1)(2)	TODAY		
Heise CM or equivalent 0-3000 psig	# 00003 Date: 12-16-02	Instr. Vent for 2PL1678 (discharge pressure)	TR (1)(2)	TODAY		

(1) Installation of suction and discharge pressure gauges at same elevation ensures consistent pump performance data.

(2) Maintenance Techincian shall ensure the pressure gauge sensing line is filled and vented during installation.

ATTACHMENT 1
(Page 2 of 2)

INSTRUMENT AND TEST EQUIPMENT DATA

4.0 CONTROLOTRON DATA

Description	ID Number	Calibration Overdue Date
Controlotron	2FL14752	12-29-02
SC.IC-DC.ZZ-0003(Q), Controlotron Model 960 and 990 Flow Computer Zero Adjustment has been completed.		
Performed By: Ted Robbins Date: TODAY Time: 1 HR AGO		

5.0 POST TEST CALIBRATION RESULTS

Instrument/Test Equipment	ID Number	SAT	UNSAT	Initials
Heise CM or equivalent 0-60 psig (1)				N/A
Heise CM or equivalent 0-3000 psig (1)				N/A

(1) Post-Test Calibration is NOT required when Electronic Pressure Modules (digital) are used.

Performed by N/A Date _____
M&TE Technician

Performed by N/A Date _____
M&TE Supervisor

ATTACHMENT 2
(Page 1 of 2)

21 AUXILIARY FEEDWATER PUMP SURVEILLANCE DATA

1.0 VIBRATION READINGS:

Vibration Position 1: MOTOR OUTBOARD
Vibration Position 2: MOTOR INBOARD
Vibration Position 3: PUMP INBOARD
Vibration Position 4: PUMP OUTBOARD

21 AF Pump Vibration Results		Test Results		
		Acceptable Range SAT	Alert Range SAT	Required Action UNSAT
Non-Technical Specification Acceptance Criteria (Non-ASME)				
Vibration Position 1A	.16 in/sec (1)	FAK		
Vibration Position 1H	.20 in/sec (1)	FAK		
Vibration Position 1V	.08 in/sec (1)	FAK		
Vibration Position 2A	.15 in/sec (1)	FAK		
Vibration Position 2H	.21 in/sec (1)	FAK		
Vibration Position 2V	.11 in/sec (1)	FAK		
Vibration Position 3A	.45 in/sec (1)	FAK		
Technical Specification Acceptance Criteria (ASME)				
$ Vibration Position 3H	.62 in/sec (1)	FAK		
$ Vibration Position 3V	.62 in/sec (1)	FAK		
$ Vibration Position 4A	.53 in/sec (1)	FAK		
$ Vibration Position 4H	.65 in/sec (1)	FAK		
$ Vibration Position 4V	.41 in/sec (1)	FAK		
Acceptance Criteria:	Vibration Results for the 21 Auxiliary Feedwater Pump are within bands specified in S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria OR data represents new baseline data as determined by the IST Implementation Engineer.			

(1) Vibration data is only required to be recorded, when a DLI Vibration Analyzer Printout is NOT available.

ATTACHMENT 2
(Page 2 of 2)

21 AF PUMP SURVEILLANCE DATA

2.0 PUMP PERFORMANCE DATA:

Pump Performance Parameter	Parameter Value	Test Results		
		Acceptable Range SAT	Alert Range SAT	Required Action UNSAT
Pump Suction Pressure RUNNING (Heise Gauge) (A)	25 psig	N/A	N/A	N/A
Pump Discharge Pressure (Heise Gauge) (B)	1422 psig	✓	N/A	
Differential Pressure (B) - (A) = psid	1397 psid	✓		
Pump Recirc. Flow Rate (2FL14752)	161 gpm	✓	N/A	

Technical Specification Acceptance Criteria (ASME):

Measured values are within bands specified in S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria OR data represents new baseline data as determined by the IST Implementation Engineer.

Independent Verification of Calculation Performed By: Lane Oberembt [C0284]

3.0 CHECK VALVE DATA:

Check Valve	Stroke	Technical Specification Acceptance Criteria (ASME)	Test Results	
			SAT	UNSAT
21AF4	PARTIAL OPEN	Flow is ≥ the minimum value identified in the Acceptable Range of S2.RA-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feedwater Pump Acceptance Criteria, as indicated on the Controlotron.	✓	

ATTACHMENT 3
(Page 1 of 1)

INDEPENDENT VERIFICATION

Component	Description	Normal Position	IV
21AF40	AF PMP RECIRC V	Handwheel LATCHED in NEUTRAL position	LO
21AF40-A/S	AIR SUPPLY TO 21AF40 (2SV537)	O	LO
21AF40 Regulator Petcock	Regulator downstream of 21AF40-A/S supplying 2SV537	X	LO
23AF21	STEAM GENERATOR INLET VALVE	Demand 98% (1)	LO
24AF21	STEAM GENERATOR INLET VALVE	Demand 98% (1)	LO

(1) Valve may be throttled as required for S/G level control when AFW System is in service.

ATTACHMENT 4
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 COMMENTS: (Include test deficiencies and corrective actions.)

ATTACHMENT 4
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

2.0 SIGNATURES:

Print	Initials	Signature	Date
FRANK KAMINSKI	FK	Francis P Kaminski	TODAY
TED ROBBINS	TR	Theodore Robbins	TODAY
LANE OBEREMBT	LO	Lane Oberembt	TODAY

INDEPENDENT VERIFICATION:

3.0 STA REVIEW AND OS/CRS FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1-4 is reviewed for completeness and accuracy. All deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section of this attachment. Technical Specification compliance, procedure compliance, and Acceptance Criteria are evaluated. **[C0283]**

Signature:_____ Date:_____
CRS

Signature:_____ Date:_____
STA

Signature:_____ Date:_____
OS/CRS

4.0 IST IMPLEMENTATION ENGINEER REVIEW:

Test Results are reviewed for acceptability. If required, revision of Acceptance Criteria and test frequency change is initiated. Forward completed procedure to Operations Staff.

Signature:_____ Date:_____
IST Implementation Engineer

PSEG Internal Use Only

IST GROUP
S2.RA-ST.AF-0001(Q) - REV. 5

INSERVICE TESTING
21 AUXILIARY FEED PUMP
ACCEPTANCE CRITERIA

USE CATEGORY : II

REVISION SUMMARY Biennial Review performed: Yes ✓ No __

- The following OTSC's were evaluated for incorporation into this Revision: None
- 80024023, changed designation of Vibration point 3A to Non Technical Specification acceptance criteria, and added change to Reference Section.
- Revision bars have been utilized to indicate changes.

IMPLEMENTATION REQUIREMENTS

- Effective Date 4/26/01

APPROVED: _____ 4/26/01
Manager - Reliability Programs **Date**

INSERVICE TESTING
21 AUXILIARY FEED PUMP
ACCEPTANCE CRITERIA

TABLE OF CONTENTS

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ATTACHMENTS

Attachment 1 — 21 AF Pump Surveillance Data Acceptance Criteria 5

1.0 **PURPOSE**

To provide the acceptance criteria necessary to evaluate the Inservice Testing data IAW Technical Specifications 4.0.5 and 4.7.1.2.b.1 relative to performance of S2.OP-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feed Pump. **[C0265]**

2.0 **PREREQUISITES**

None

3.0 **PRECAUTIONS AND LIMITATIONS**

None

4.0 **EQUIPMENT/MATERIAL REQUIRED**

None

5.0 **PROCEDURE**

None

END OF PROCEDURE SECTION

6.0 RECORDS

None

7.0 REFERENCES

7.1 Updated Final Safety Analysis Report:

7.1.1 Section 3.9.4, Inservice Testing of Pumps and Valves

7.1.2 Section 10.4.7.2, Auxiliary Feedwater System

7.1.3 Section 15.2.8, Loss of Normal Feedwater

7.2 Technical Specifications - Unit 2:

7.2.1 3.7.1.2, Auxiliary Feedwater System

7.3 Drawings:

7.3.1 205336, No. 2 Unit Auxiliary Feedwater

7.4 Procedures:

7.4.1 NC.NA-AP.ZZ-0050(Q), Station Testing Program

7.4.2 NC.NA-AP.ZZ-0070(Q), Inservice Testing Program

7.4.3 NC.WM-AP.ZZ-0000(Q), Notification Process

7.4.4 NC.WM-AP.ZZ-0001(Q), Work Management Process

7.4.5 NC.WM-AP.ZZ-0002(Q), Performance Improvement Process

7.4.6 NC.WM-AP.ZZ-0003(Q), Regular Maintenance Process

7.5 Others:

7.5.1 NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants

7.5.2 Salem Generating Station IST Manual

7.5.3 ASME Section XI Subsection IWP (1989 Edition)

7.5.4 ASME Standard OMa-1988, Part 6

7.5.5 NOTF #20001328, Potential Non-Conservative Technical Specification (AFW)

7.5.6 NFS 99-288, Salem Units 1 & 2 Degraded Flow Head Curves for AFW Pumps

7.5.7 Design Calculation F-C-AF-MDC-0445, Auxiliary Feedwater Hydraulic Analysis

7.5.8 80024023, Changed to IST Acceptance Criteria

7.6 Cross-References:

7.6.1 Technical Specifications - Unit 2:

A. 4.0.5, Inservice Inspection and Testing

B. 4.7.1.2.b.1, Auxiliary Feedwater System

7.6.2 Procedures:

A. S2.OP-ST.AF-0001(Q), Inservice Testing - 21 Auxiliary Feed Pump

B. SH.RA-AP.ZZ-0105(Q), IST Program Management

7.7 Commitments:

7.7.1 C0265 - NSO/LER/89-015-00

ATTACHMENT 1

21 AF PUMP SURVEILLANCE DATA ACCEPTANCE CRITERIA

(Page 1 of 2)

1.0 PUMP VIBRATION READINGS:

21 AF Pump Vib. Pos.	Reference Value (in/sec)	Date	Acceptance Range SAT	Alert Range SAT	Required Action Range UNSAT
1A (2)	0.14	11/14/1999 (1)	0.0 - 0.280	> 0.280 - 0.700	> 0.700
1H (2)	0.17		0.0 - 0.306	> 0.306 - 0.700	> 0.700
1V (2)	0.05		0.0 - 0.125	> 0.125 - 0.300	> 0.300
2A (2)	0.11		0.0 - 0.275	> 0.275 - 0.660	> 0.660
2H (2)	0.18		0.0 - 0.324	> 0.324 - 0.700	> 0.700
2V (2)	0.09		0.0 - 0.225	> 0.225 - 0.540	> 0.540
3A (2)	0.44		0.0 - 0.640	> 0.640 - 0.765	> 0.765
3H (3)	0.53		0.0 - 0.730	> 0.730 - 0.855	> 0.855
3V (3)	0.40		0.0 - 0.600	> 0.600 - 0.700	> 0.700
4A (3)	0.42		0.0 - 0.620	> 0.620 - 0.745	> 0.745
4H (3)	0.63		0.0 - 0.830	> 0.830 - 0.955	> 0.955
4V (3)	0.35		0.0 - 0.525	> 0.525 - 0.700	> 0.700

(1) Reference values collected under Order # 50007044

(2) Non-Technical Specification (Non-ASME) Acceptance Criteria.

(3) Technical Specification (ASME) Acceptance Criteria.

ATTACHMENT 1

21 AF PUMP SURVEILLANCE DATA ACCEPTANCE CRITERIA

(Page 2 of 2)

2.0 PUMP HYDRAULIC DATA:

Pump Performance Parameter	Reference Value	Date	Test Results				
			Acceptable Range SAT	Alert Range SAT		Required Action UNSAT	
				Low	High	Low	High
Suction Pressure Pump Running (A)	24 psig	05/05/93 (4)	N/A	N/A		N/A	
Pump Discharge Pressure (B)	1420.0 psig		≥ 1305.0 (5)	N/A		< 1305.0 (5)	N/A
Differential Pressure (B) - (A) = psid	1396.0 psid		1369 - 1536	N/A	N/A	< 1369 (7)	> 1536
Pump Recirc Flow Rate	160.0 gpm		157 - 163	N/A		< 157 (6)	> 163 (6)

(4) Reference values collected under WO #930406034.

(5) The 1305.0 psig minimum discharge pressure is the Technical Specification 4.7.1.2.b.1 minimum pump discharge pressure while in recirculation flow of ≥1275 psig plus 30 psig for instrument uncertainty (PR #970821298).

(6) Values outside of those listed in the acceptance range do not necessarily make the pump inoperable, but do invalidate performance of the procedure.

(7) Minimum pump differential pressure at 160 gpm is ≥1369 psid IAW F-C-AF-MDC-0445, Rev 2, Auxiliary Feedwater Hydraulic Analysis.

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: ADMINISTRATIVE (Waste Gas)

TASK: Review a radioactive gaseous waste release form

TASK NUMBER: 0710050302

JPM NUMBER: GOLF NRC – SRO A3

ALTERNATE PATH: [ ]

K/A NUMBER: 2.3.6

IMPORTANCE FACTOR: RO ____ SRO 3.1

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

EVALUATION SETTING/METHOD: Room with references

REFERENCES: S1.OP-SO.WG-0009, Rev. 25

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 13 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee
_____	_____	_____

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

ACTUAL JPM COMPLETION TIME: _____ Minutes

ACTUAL TIME CRITICAL COMPLETION: N/A Minutes

JPM PERFORMED BY: _____ **GRADE:** [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: ADMINISTRATIVE (Waste Gas)

TASK: Review a radioactive gaseous waste release form

TASK NUMBER: 0710050302

INITIAL CONDITIONS:

1. Unit 1 is at 100% power
2. A release from 12 Gas Decay Tank is planned for this shift. The previous shift initiated the paperwork.
3. The release will continue until 12 Gas Decay Tank is completely depressurized in order to allow replacement of the relief valve
4. RMS Channel 1R41D is inoperable

SIMULATOR SETUP: N/A

INITIATING CUE:

You are the Unit 1 CRS. S1.OP-SO.WG-0009, Attachment 2 – 12 GDT RADIOACTIVE GASEOUS RELEASE FORM, has been submitted for your approval.

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **ADMINISTRATIVE (Waste Gas)**

TASK: **Review a radioactive gaseous waste release form**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	1	Provide a copy of S1.OP-SO.WG-0009, Attachment 2 completed up to the OS/CRS signature line START TIME:	CUE: Review Attachment 2 only. Assume that the other sections of S1.OP-SO.WG-0009 have been completed properly.		
		Attachment 2 review:			
	2	Ensure Section 1.0 (SAMPLE REQUEST) completed correctly	Verifies all lines initialed, blanks filled in and signature by OS/CRS		
	3	Ensure Section 2.0 (SAMPLE POINT) is completed correctly	Both lines initialed/signed		
*	4	Ensure Section 3.0 (DOSE, VOLUME ESTIMATES AND APPROVAL-Chemistry) is completed correctly	Determines that Estimated Final Pressure should be 0 PSIG not 10 PSIG* If necessary ***CUE:*** Completely review the document before returning it to Chemistry Determines that line reading "IF RMS Channel 2R41 A, B, or D is inoperable - - -" should NOT be N/A*		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: **ADMINISTRATIVE (Waste Gas)**

TASK: **Review a radioactive gaseous waste release form**

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5	Ensure Section 4.0 (RELEASE REVIEW AND APPROVAL-Operations) completed correctly	Verifies release rate >32 SCFM ***NOTE:*** If at the plant or in the simulator, the Evaluator can elect to have the candidate point out the indication related to 4.2 and 4.3 ***CUE:*** The information in 4.2, Ventilation Configuration, and 4.3, Radiation Monitor Release Data/Source Check/Channel Operable, matches indications 4.5 - Does NOT sign* – returns to Chemistry for corrective action		
	6	STOP TIME:			

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

INITIAL CONDITIONS:

1. Unit 1 is at 100% power
2. A release from 12 Gas Decay Tank is planned for this shift. The previous shift initiated the paperwork.
3. The release will continue until 12 Gas Decay Tank is completely depressurized in order to allow replacement of the relief valve
4. RMS Channel 1R41D is inoperable

INITIATING CUE:

You are the Unit 1 CRS. S1.OP-SO.WG-0009, Attachment 2 – 12 GDT RADIOACTIVE GASEOUS RELEASE FORM, has been submitted for your approval.

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

S1.OP-SO.WG-0009(Q) - REV. 25

DISCHARGE OF 12 GAS DECAY TANK TO PLANT VENT

USE CATEGORY : I

REVISION SUMMARY: Biennial Review Performed: Yes ✓ No ___ NA ___

- The following changes to this procedure are incorporated IAW Technical Specification Amendment 234. **(80018643)**
  - Step 1.2 - changed "4.3.3.9, Table 4.3-13, Item 1a", to "6.8.4.g.1.
  - Steps 2.3, 2.4, 2.5, 2.6, 3.9, 3.10, 5.2.2, 5.2.2.A.1, 5.2.2.A.2, 5.2.3.A, 5.2.4, 5.2.5, 5.2.6, Attachment 2, Attachment 3, and Attachment 4 - changed references from Technical Specification 3.3.3.9, Radioactive Gas Effluent Monitoring Instrumentation, to the Offsite Dose Calculation Manual.
  - Steps 3.7 and 5.2.4 - changed references from Technical Specification 3.11.2, Gaseous Effluents, to the Offsite Dose Calculation Manual.
  - Added Step 3.8 - to provide program requirement guidance for the changes implemented by Technical Specification Amendment 234.
  - Added Technical Specification Amendment 234 to references.
  - Added Technical Specification 6.8.4.g, Radioactive Effluent Controls Program, to references.
  - Added GL 89-01, Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program, to references.

IMPLEMENTATION REQUIREMENTS Effective Date 12/21/00

- Technical Specification Amendment 234

APPROVED: [signature] Operations Manager - Salem 12/18/00 Date

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

S1.OP-SO.WG-0009(Q) - REV. 25

DISCHARGE OF 12 GAS DECAY TANK TO PLANT VENT

USE CATEGORY : I

REVISION SUMMARY:

- Added Offsite Dose Calculation Manual, to references.
- Deleted Technical Specification 3.3.3.9, Radioactive Gas Effluent Monitoring Instrumentation, from references.
- Deleted Technical Specification 3.11.2.1, 3.11.2.2, 3.11.2.3, and 3.11.2.4, Gaseous Effluents.

♦ The following editorial changes delete redundant Chemistry, Radiation Department, and O/S signature and recording data steps. Previously approved in S1.OP-SO.WL-0001(Q). **(RR1409)**

- Old step 5.2.8 and Attachment 2, Section 4.4 - deleted Radiation Protection Supervisor approval.
- Old step 5.2.10 and Attachment 2, Section 4.7 - deleted O/S final approval.
- Step 5.3.1 - added step to complete and attach additional chemistry paprerwork.
- Attachment 5, Section 3.0 - deleted the step to forward procedure to Technical Supervisor - Chemistry for completion.
- Attachment 2, Sections 2.0 and 3.0 - revised to align with SC.CH-TI.ZZ-0146(Q).
- Attachment 2, Old Section 3.0 - deleted Dose Estimates table. Data redundant to Radioactive Gaseous Release Initiation Form.
- Attachment 2, Step 6.0 - deleted Chemistry signoff.

PSEG NUCLEAR L.L.C.

SALEM/OPERATIONS

S1.OP-SO.WG-0009(Q) - REV. 25

DISCHARGE OF 12 GAS DECAY TANK TO PLANT VENT

USE CATEGORY : I

REVISION SUMMARY:

- The following changes to this procedure contain only editorial enhancements as described in NC.DM-AP.ZZ-0001(Q):
  - Upgraded to the latest administrative standards.
  - Changed "NCO" to "RO/PO."
  - Deleted WG MECH 001 - Gaseous Waste Disposal System Mechanical System Alignment, from references.
  - Step 3.9 - Changed NC.NA-AP.ZZ-0006(Q) to NC.WM-AP.ZZ-0002(Q), Performance Improvement Process.
  - Added NC.WM-AP.ZZ-0002(Q), Performance Improvement Process, in references.
  - Changed NC.NA-AP.ZZ-0003(Q), Document Management Program, to NC.NA-AP.ZZ-0011(Q), Records Management Program.
- Note prior to Step 5.2.11.H - revised because pressure fluctuates between "0" psig and "10" psig to during the opening of WG41. **(RR1372)**
- Steps 5.1.1.B, 5.1.1.C, 5.2.7, and Attachment 1, Section 1.0 - added Pre-Release Verification to ensure correct valve lineup if the release paperwork is delayed. **(R22342)**
- Step 5.1.3 - added to provide a termination path if the release is not to be completed. **(80019587)**

DISCHARGE OF 12 GAS DECAY TANK TO PLANT VENT

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1.0 PURPOSE

1.1 To provide instructions necessary to:

1.1.1 Place 12 Gas Decay Tank (GDT) in Holdup.

1.1.2 Conduct a controlled Radioactive Gas Release from 12 GDT. **[C0160]**

1.2 This procedure satisfies Technical Specification 6.8.4.g.1 for Channel Operable and Source Check prior to each release.

2.0 PREREQUISITES

___ 2.1 **REVIEW** Components "Off Normal and Off-Normal Tagged" List(s) for system and support system(s) associated with the evolution to be performed in this procedure.

___ 2.2 The following systems are in service:

___ 2.2.1 Auxiliary Building Ventilation IAW S1.OP-SO.ABV-0001(Q), Auxiliary Building Ventilation Operation

___ 2.2.2 Fuel Handling Building Ventilation System IAW S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation Operation.

___ 2.3 **ENSURE** Noble Gas Activity Monitor (1R41A & D OR 1R16) are OPERABLE (IAW the ODCM).

___ 2.4 **ENSURE** Plant Vent Flow Rate Monitor and Sample Flow Rate Monitor are OPERABLE (IAW the ODCM).

___ 2.5 **ENSURE** Noble Gas Activity Monitor 1R41A & D is OPERABLE (IAW the ODCM).

___ 2.6 **ENSURE** Iodine Sampler and Particulate Sampler (Chemistry Dept.) are OPERABLE (IAW the ODCM).

3.0 PRECAUTIONS AND LIMITATIONS

___ 3.1 Procedure Use and adherence policy as found in NC.NA-AP.ZZ-0001(Q), Nuclear Procedure System, is applicable to this procedure.

___ 3.2 DO NOT release more than one GDT at a time.

___ 3.3 DO NOT Purge Unit 1 Containment during the GDT Release.

___ 3.4 DO NOT Purge/Release Unit 1 VCT during the GDT Release.

___ 3.5 DO NOT transfer Waste Gas from one GDT to another during the GDT release.

___ 3.6 The actual maximum GDT release rate is 32 SCFM based on system design. The calculated maximum allowable release rate shall be >32 SCFM. Tanks with a calculated maximum allowable release rate of ≤32 SCFM shall not be released.

___ 3.7 GDT Release shall be terminated if pressure downstream of 1WG38, Gas Decay Tank Vent Pressure Control Valve, is >8.0 psig. This will ensure the actual release rate does not exceed 32 SCFM (IAW the ODCM).

___ 3.8 The program requirements of Radiological Effluent Technical Specifications (RETS) are located in the Offsite Dose Calculation Manual (ODCM) and Process Control Program (PCP). **(80018643)**

___ 3.9 Inoperability of the Noble Gas Activity Monitor (1R16, 1R12A, 1R41A & D), Iodine Sampler, Particulate Sampler, Flow Rate Monitor, or Sampler Flow Rate Monitor for >30 days is reportable IAW NC.WM-AP.ZZ-0002(Q), Performance Improvement Process (IAW the ODCM).

___ 3.10 The Independent Verification requirements contained in the ODCM SHALL BE PERFORMED prior to the release of radioactive waste gas to the environment. **(970630118)**

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 PROCEDURE

5.1 12 Gas Decay Tank (GDT) Release Preparation

___ 5.1.1 **ALIGN** 12 GDT for Holdup as follows:

___ A. **OBTAIN** a CRS Tagging Request for 12WG31, GDT INLET VALVE, in the CLOSED position and with specific instructions that this tag should only be released IAW this procedure.

___ B. **PERFORM** 12 GDT Holdup Alignment IAW Attachment 1, Section 1.0.

___ C. **DIRECT** second operator to complete Independent Verification (IV) of 12 GDT Holdup Alignment IAW Attachment 1, Section 1.0.

___ 5.1.2 **INITIATE** 12 GDT Radioactive Gaseous Release Form as follows:

___ A. **COMPLETE** Attachment 2, Section 1.0.

___ B. **FORWARD** entire procedure to Chemistry Department for completion of Attachment 2, Sections 2.0 and 3.0.

___ 5.1.3 IF Chemistry has NOT granted permission for the release,
OR the release is no longer required,
THEN:

___ A. **OBTAIN** a CRS Tagging Release for 12WG31, GDT INLET VALVE.

___ B. **TERMINATE** this procedure.

5.2 12 Gas Decay Tank Release

___ 5.2.1 **ENSURE** Attachment 2, Sections 2.0 and 3.0, are complete with approval for Radioactive Gaseous Release.

___ 5.2.2 IF at least one of the following Radiation Monitors is OPERABLE, THEN **ENSURE** the following IAW the ODCM:

___ A. IF 1R41A & D, Plant Vent Noble Gas monitor is OPERABLE, THEN:

___ 1. **ENSURE** in calibration, set to alarm, and will close 1WG41, Gas Decay Tank Vent Control Valve (IAW the ODCM).

___ 2. **ENSURE** 1R41 sample system flow control is OPERABLE (IAW the ODCM). **[C0332, C0333]**

___ 3. **PERFORM** a source check and channel check (visual inspection of monitor read out).

___ 4. **ENSURE** 1ND17572 - 1WG41 Waste Gas Decay Tank in NORMAL.

OR

___ B. IF 1R16, Plant Vent In Line Noble Gas Monitor, is OPERABLE, THEN **PERFORM** 1R16 source check and channel check (visual inspection of monitor read out).

___ 5.2.3 IF RMS Channel 1R41A or D is inoperable, THEN:

___ A. **ENSURE** Chemistry Department has documented completion of the following contingency actions on Attachment 2, Section 3.4 (IAW the ODCM):

___ 1. **ANALYZE** at least two independent samples of 12 GDT contents.

___ 2. **INDEPENDENTLY VERIFY** release rate calculations by at least two technically qualified members of the Facility Staff.

___ 3. IF RMS Channel 1R16 is inoperable, THEN **OBTAIN** grab samples at least once per 8 hours, AND **ANALYZE** for gross activity within 24 hours.

___ B. **PLACE** 1ND17572 - 1WG41 Waste Gas Decay Tank in BLOCK.

___ 5.2.4 IF Iodine Sampler OR Particulate Sampler is inoperable, THEN **ENSURE** Chemistry Department is collecting a continuous sample of the effluent release pathway with auxiliary sampling equipment (IAW the ODCM).

___ 5.2.5 IF Plant Vent Flow Rate Monitor is inoperable, THEN **ESTIMATE** the Plant Vent Flow Rate at least once per 4 hours IAW Attachment 4 and the ODCM.

___ 5.2.6 IF Sampler Flow Rate Monitor is inoperable, THEN **ENSURE** Chemistry Department is estimating flow rate at least once per 4 hours IAW SC.CH-AB.ZZ-1102(Q) and the ODCM.

___ 5.2.7 **PERFORM** Pre-Release Verification of 12 GDT Holdup Alignment IAW Attachment 1, Section 1.0.

___ 5.2.8 **RECORD** the following on Attachment 2:

- Section 4.1, Release Verification
- Section 4.2, Ventilation Configuration
- Section 4.3, Radiation Monitor Release Data
- Section 4.4, Release Review

___ 5.2.9 OS/CRS **REVIEW** AND **COMPLETE** Attachment 2, Section 4.5.

CAUTION

DO NOT release 12WG31, GDT INLET VALVE, until commencing the release.

___ 5.2.10 **OBTAIN** the CRS Tagging Release for 12WG31.

___ 5.2.11 **PERFORM** the following preparations at Panel 104-1 for the GDT release:

___ A. **ENSURE** 12 GDT is NOT in service.

___ B. **ENSURE** 12 GDT is NOT selected for "Standby".

___ C. **RECORD** 12 GDT "Initial Pressure" (PIS1037) on Attachment 3.

(step continued on next page)

5.2.11 (continued)

___ D. **LATCH AND SET** 1WG41, GDT VENT CONT VALVE, as follows:

NOTE
1WG41 Controller (1HIC-14) must be set to <0% or 1WG41 will NOT latch.

___ 1. **TURN** controller fully counterclockwise until indicator <0%.

___ 2. **POSITION** Selector Switch to OPEN AND **RELEASE** to AUTO position. (Spring return to AUTO).

___ 3. **TURN** controller clockwise until indicator ≥100%.

NOTE
1WG41 will begin to open when the indicator is ≈20%.

___ 4. **ENSURE** with Unit 1 Control Room that 1WG41 valve has lost the CLOSED indication AND audible alarm received.

___ 5. **TURN** controller fully counterclockwise until indicator <0%.

___ 6. **ENSURE** with Unit 1 Control Room that 1WG41 has closed indication.

___ E. **PERFORM** an Independent Verification of the 1WG41 valve position controller,
AND **RECORD** the Independent Verification on Attachment 1, Section 2.0.

___ F. **NOTIFY** Unit 1 Control Room to mark 1R41 and 1R16 Chart Recorders with the following information in preparation for the GDT release:

- ♦ 12 GDT
- ♦ Date/Time
- ♦ RO/PO Initials

___ G. **OPEN** 12WG31, GDT INLET VALVE.

(step continued on next page)

5.2.11 (continued)

NOTE

While 1WG41 is opening, pressure downstream of 1WG38 will fluctuate between "0" psig and "10" psig until 1WG41 is fully open (100%). Once 1WG41 is fully open, 1WG38 will throttle to maintain <8 psig during the release. **(20016988)**

___ H. Slowly **OPEN** 12WG34.

___ I. **RECORD** Independent Verification (IV) of 12 GDT discharge valves 12WG31 and 12WG34 on Attachment 1, Section 3.0, prior to commencing 12 GDT release.

___ 5.2.12 **COMMENCE** 12 GDT release as follows:

___ A. **POSITION** 1WG41 Selector Switch to OPEN AND **RELEASE** to AUTO position. (Spring return to AUTO).

___ B. SLOWLY **SET** 1WG41 controller to ≤100% position which corresponds to a maximum release rate of 32 SCFM.

___ C. **PERFORM** an Independent Verification of the positioning of 1WG41 on Attachment 1, Section 4.0.

___ D. **RECORD** In Progress Release Data on Attachment 2, Section 5.1.

___ 5.2.13 **PERFORM** the following during 12 GDT release:

NOTE

An operator should be stationed at Panel 104-1 to immediately close 12WG34 upon receipt of a High Radiation Alarm or indication of 1WG41 closure.

___ A. **CALCULATE** 12 GDT Average Release Rate every 10 minutes on Attachment 3,
AND **ADJUST** 1WG41 controller position as required based on results.

___ B. IF Plant Vent Flow Rate Monitor is inoperable,
THEN **RECORD** Plant Vent Flow Rate Discharge Estimation on Attachment 4 at least once every four hours during GDT release.

(step continued on next page)

5.2.13 (continued)

___ C. **RECORD** Meteorological Data in Attachment 2, Section 5.2.

___ ♦ IF Meteorological Monitor is NOT OPERABLE,
THEN **NOTIFY** the OS/CRS (UFSAR 7.7.2.12).

___ D. IF at any time during the release pressure downstream of 1WG38 is >8.0 psig (1PL8678),
OR 1WG41 CLOSES,
THEN **TERMINATE** the GDT release as follows:

___ 1. **TURN** 1WG41 controller fully counter-clockwise until indicator is <0%.

___ 2. **PLACE** 1WG41-SWT in CLOSE position,
AND **ENSURE** 1WG41 is CLOSED.

___ 3. **CLOSE** 12WG34.

___ 4. **RECORD** Final Release Data in Attachment 2, Section 5.3.

___ 5. **INITIATE** an Action Request to correct the malfunction.

___ 5.2.14 When 12 GDT pressure ≈10 psig OR as directed by OS/CRS,
SECURE the GDT release:

___ A. **TURN** 1WG41 controller fully counter-clockwise until indicator is <0%.

___ B. **PLACE** 1WG41-SWT in CLOSE position,
AND **ENSURE** 1WG41 is CLOSED.

___ C. **CLOSE** 12WG34.

___ D. **RECORD** Final Release Data in Attachment 2, Section 5.3.

___ 5.2.15 IF GDT release is completed,
THEN **OPEN** 12WG28, 12 Waste Gas Decay Tank Inlet Valve.

___ 5.2.16 IF 1ND17572 - 1WG41 Waste Gas Decay Tank is in BLOCK,
THEN **PLACE** 1ND17572 in NORMAL.

___ 5.2.17 Direct second operator to **PERFORM** Independent Verification of valves manipulated in this procedure IAW Attachment 1, Section 5.0.

5.3 Completion and Review

___ 5.3.1 **COMPLETE** any additional paperwork required by the Chemistry Department AND **ATTACH** it with this procedure.

___ 5.3.2 **COMPLETE** Attachment 5, Sections 1.0 and 2.0, AND **FORWARD** this procedure to OS/CRS for review and approval.

___ 5.3.3 OS/CRS **PERFORM** the following:

___ A. **COMPLETE** Attachment 2, Section 5.4

___ B. **REVIEW** this procedure with Attachments 1-5 for completeness and accuracy.

___ C. **COMPLETE** Attachment 5, Section 3.0.

___ D. **FORWARD** completed procedure to Technical Supervisor - Chemistry for completion and record retention.

END OF PROCEDURE SECTION

6.0 RECORDS

6.1 Retain entire procedure IAW NC.NA-AP.ZZ-0011(Q), Records Management Program.

7.0 REFERENCES

7.1 Salem Generating Station Updated Final Safety Analysis Report:

7.1.1 Section 11.3, Gaseous Waste System
7.1.2 Section 11.4, Radiological Monitoring
7.1.3 Section 9.4, Heating, Ventilation, and Air Conditioning Systems
7.1.4 15.3.6.3, Gas Decay Tank Rupture Analysis

7.2 Technical Specifications - Unit 1:

7.2.1 3.7.7.1 Auxiliary Building Exhaust Filtration System
7.2.2 3.9.12 Fuel Handling Area Ventilation System

7.3 Procedures:

7.3.1 NC.NA-AP.ZZ-0020(Q), Control of Nonconforming Components and Structures
7.3.2 SC.OP-AP.ZZ-0102(Q), Use of Procedures
7.3.3 SC.OP-DL.ZZ-0030(Q), Radwaste Monitoring & Control Program
7.3.4 S1.OP-DL.ZZ-0002(Q), Control Room Readings (Modes 5, 6 & Defueled)
7.3.5 S1.OP-DL.ZZ-0003(Q), Control Room Readings (Modes 1-4)
7.3.6 S1.OP-SO.ABV-0001(Q), Auxiliary Building Ventilation System Operation
7.3.7 S1.OP-SO.CA-0001(Q), Control Air System Operation
7.3.8 S1.OP-SO.CVC-0010(Q), Establishing VCT Atmosphere
7.3.9 S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation Operation
7.3.10 S1.OP-SO.RM-0001(Q), Radiation Monitoring System Operation
7.3.11 S1.OP-SO.WG-0003(Q), Waste Gas Disposal System Operation
7.3.12 S1.OP-SO.WG-0006(Q), Containment Purge to Plant Vent
7.3.13 S1.OP-SO.WG-0007(Q), Transfer of Waste Gas

7.4 Drawings:

7.4.1 203461, No.1 Relay Room Terminal Block Rack
7.4.2 205237, Auxiliary Building - Ventilation
7.4.3 205240, Waste Disposal - Gas
7.4.4 246548, RMS Plant Ventilation Monitor, Flow and Velocity Comparator

7.5 Others:

7.5.1 DCP 1EE-0205, 1WG41 Valve Modification to Mechanically Restrict Flow to ≤32 SCFM
7.5.2 DCP 1EC-3244, RMS Channel 1R41 Replacement
7.5.3 DE-CB.ABV-0022(Q), Configuration Baseline Documentation for Auxiliary Building Ventilation System
7.5.4 DE-CB.FHV-0021(Q), Configuration Baseline Documentation for Fuel Handling Building Ventilation System
7.5.5 DEF-DES-91-00064, PUP-90-0073 (File: 670), Design Basis for Gaseous Radwaste Release Path Components 1WG41, 1WG38, 2WG41, and 2WG38
7.5.6 PIR 970630118, Independent Verification Missed on Liquid Release.
7.5.7 SER Section 11.0, Radioactive Waste Management
7.5.8 SER Supplement 1, Section 11.0, Radioactive Waste Management
7.5.9 Reg. Guide 1.33, Quality Assurance Program Requirements (Operations)
7.5.10 Reg. Guide 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants
7.5.11 SC-WG001-01, Salem Unit 1, 2 Gas Decay Tank Pressure - Alarm and Recorder (Setpoint Calc & Scaling)
7.5.12 10CFR50, Appendix I
7.5.13 Technical Specification Amendment 234

7.6 Cross References:

7.6.1 Updated Final Safety Analysis Report:

A. Section 7.7.2.12, Seismic Monitoring Instrumentation

7.6.2 Technical Specifications - Unit 1:

A. 6.8.4.g - Radiological Effluent Controls Program

7.6.3 Others:

A. GL 89-01, Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program
B. Offsite Dose Calculation Manual

7.6.4 Procedures:

A. NC.NA-AP.ZZ-0001(Q), Nuclear Procedure System
B. NC.NA-AP.ZZ-0011(Q), Records Management Program
C. NC.WM-AP.ZZ-0002(Q), Performance Improvement Process
D. SC.CH-AB.ZZ-1102(Q), Response to Inoperable Technical Specification Effluent Monitors and Equipment
E. SC.CH-TI.ZZ-0146(Q), Radiological Gaseous Effluent Discharges

7.7 Commitments:

7.7.1 C0160 - AR M29-89-124 Quality Assurance Audit Radioactive Effluents and Controls
7.7.2 C0317 - NSO Incident Report 89-679
7.7.3 C0332 - NSO LER 90-016-00
7.7.4 C0333 - NSO LER 88-026-00

ATTACHMENT 1
(Page 1 of 2)

12 GAS DECAY TANK ALIGNMENT/VERIFICATION

1.0 PRE - RELEASE ALIGNMENT/VERIFICATION

VALVE NO.	DESCRIPTION	POSITION	OPER INITIALS	IV INITIALS	PRE-RELEASE VERIF
12WG31	GDT INLET V	*CLOSED			
12WG32	GDT PRESS TAP	OPEN			
11WG34	GDT STOP TO PLNT V	CLOSED			
12WG34	GDT STOP TO PLNT V	CLOSED			
13WG34	GDT STOP TO PLNT V	CLOSED			
14WG34	GDT STOP TO PLNT V	CLOSED			
12WG35	GDT STOP V TO HUT	CLOSED			
12WG28	WG GDT INLET V	CLOSED			
12WG29	GDT INLET CONT V	CLOSED			
12WG56	GDT DR V	CLOSED			
12WG60	N2 SUP TO GDT STOP	CLOSED			
1WG41	GDT VENT CONT V	CLOSED			
1WG928	GDT TO VENT HDR STOP V	CLOSED			
1WG81	WG VENT PRESS TAP	OPEN			
12WG131 [C0317]	GDT PRESS TRANS V	OPEN			

* Cleared and Tagged for CRS.

2.0 1WG41 VALVE POSITION CONTROLLER

VALVE NO.	DESCRIPTION	POSITION	IV INITIALS
1WG41	GDT VENT CONT V	0%	

ATTACHMENT 1
(Page 2 of 2)

12 GAS DECAY TANK ALIGNMENT/VERIFICATION

3.0 PRE-RELEASE VERIFICATION

VALVE NO.	DESCRIPTION	POSITION	IV INITIALS
12WG31	GDT INLET V	OPEN	
12WG34	GDT STOP TO PLNT V	OPEN	

4.0 IN-PROGRESS VERIFICATION

VALVE NO.	DESCRIPTION	POSITION	IV INITIALS
1WG41	GDT VENT CONT V	≤100%	

5.0 POST RELEASE VERIFICATION

COMPONENT	DESCRIPTION	POSITION	IV INITIALS
12WG28	WG GDT INLET V	OPEN	
12WG31	GDT INLET V	OPEN	
12WG34	GDT STOP TO PLNT V	CLOSED	
1WG41	GDT VENT CONT V	CLOSED	
1ND17572	1WG41 WASTE GAS DECAY TANK	NORMAL	

ATTACHMENT 2
(Page 1 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. 2002 - Exam

1.0 SAMPLE REQUEST (Operations)

EG 1.1 12 GDT has not been added to since (time) 0100 (date) 35 DAYS AGO and is at 92 PSIG as indicated by 1PIS1037.

EG 1.2 A pre-release sample of 12 GDT and release rate computation is requested.

Signature: E Gallagher (OS/CRS) Date TODAY

2.0 SAMPLE POINT (Chemistry)

KP 2.1 **PERFORM** gaseous discharge process IAW SC.CH-TI.ZZ-0146(Q), Radiological Gaseous Effluent Discharges.

KP 2.2 After completion of SC.CH-TI.ZZ-0146(Q), **COMPLETE** Parts 3.1 through 3.4.

3.0 DOSE, VOLUME ESTIMATES AND APPROVAL (Chemistry)

3.1 Instrumentation:

KP ♦ **INDICATE** if the following instruments are in service for release:

INSTRUMENTATION	IN SERVICE
Iodine Sampler	KP
Particulate Sampler	KP
Sampler Flow Rate Monitor	KP

ATTACHMENT 2
(Page 2 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. 2002-Exam

3.0 DOSE, VOLUME ESTIMATES AND APPROVAL (continued)

3.2 Pressure:

PP ♦ **COMPLETE** the following required data for 12 GDT:

Isolated Pressure 92 (PSIG)

NOTE

Final pressure is assumed to be 10 PSIG. If maintenance is to be performed and a complete release of tank contents is necessary, then final pressure is assumed to be 0 PSIG.

Estimated Final Pressure 10 (PSIG)

3.3 Volume:

PP ♦ **ESTIMATE** total volume of Waste Gas to be released:

3.201E+03 (CUFT)

ATTACHMENT 2
(Page 3 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. 2002 - Exam

3.0 DOSE, VOLUME ESTIMATES AND APPROVAL (continued)

3.4 Approval:

NOTE

Calculated maximum allowable release rate must be >32 SCFM. Tanks with a calculated maximum allowable release rate of ≤32 SCFM cannot be released.

KP ◆ Approval is granted to release 12 GDT at the Calculated Maximum Allowable Release Rate of 50 SCFM.

KP ◆ This Release is consistent with the Limits set forth in the Offsite Dose Calculation Manual.

N/A ◆ IF RMS Channel 1R41A or D is inoperable,
THEN the following have been completed (IAW the ODCM):

A. At least two independent samples of 12 GDT contents have been analyzed.

B. Release rate calculations have been independently verified by at least two technically qualified members of the Facility Staff.

C. IF RMS Channel 1R16 is inoperable,
THEN grab samples are being obtained at least once per 8 hours,
AND analyzed for gross activity within 24 hours.

KP ◆ IF Iodine Sampler or Particulate Sampler is inoperable,
THEN a continuous sample of the effluent release pathway is being collected with auxiliary sampling equipment IAW SC.CH-AB.ZZ-1102(Q), Response to Inoperable Technical Specification Effluent Monitors and Equipment.

KP ◆ IF Sampler Flow Rate Monitor is inoperable,
THEN flow rate is being estimated at least once per 4 hours IAW SC.CH-AB.ZZ-1102(Q), Response to Inoperable Technical Specification Effluent Monitors and Equipment.

KP ◆ All Chemistry requirements for 12 GDT release to the Plant Vent are satisfied and authorization given.

Signature: Frank Person Time 30 mins. ago Date TODAY
Chemistry

KP ◆ **FORWARD** this Radioactive Gaseous Release Form to OS/CRS.

ATTACHMENT 2
(Page 4 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. 2002-Exam

4.0 RELEASE REVIEW AND APPROVAL (Operations)

4.1 Release Verification:

QRO ◆ Calculated Maximum Allowable Release Rate from Section 3.4: 50 SCFM.

QRO ◆ Calculated Maximum Allowable Release Rate is >32 SCFM.

4.2 Ventilation Configuration:

Total number of Auxiliary Building Exhaust Fans In Service	Total Number of Fuel Handling Building Exhaust Fans In Service	Pressure Relief In Service (Yes/No)
2	1	NO

4.3 Radiation Monitor Release Data/Source Check/Channel Operable:

Time	Date	Radiation Monitor	Source Check	Monitor Prior to Release
15 mins. ago	TODAY	1R16	OP/INOP	1.22E02 CPM
15 mins. ago	TODAY	1R41A	OP/INOP	1.35E02 µCi/cc
15 mins. ago	TODAY	1R41D	N/A	0 µCi/sec

4.4 Release Review

Qualified Reactor Operator Time 10 mins ago Date TODAY
RO/PO

4.5 All requirements in Section 3.0 and subsections 4.1 thru 4.4 are met to authorize the release of the tank.

_____ Time _____ Date _____
OS/CRS

Public Service Electric and Gas | EMS | 20371.172.002.G
Salem Generating Station | | Unit # 1
BATCH GASEOUS EFFLUENT PERMIT | | Allocation100.%

I. REQUEST:

X NORMAL	POINT OF RELEASE	ESTIMATED START:
UNPLANNED	#12 Waste Gas Decay Tank	01-jul-2002 09:30:00
RELEASE VOLUME (EST.)	POINT OF DISCHARGE	ESTIMATED STOP:
3.2143E+03 CF	Unit #1 Plant Vent	01-jul-2002 11:10:27

II. SAMPLE IDENTIFICATION:

NUMBER	COLLECTION DATE/TIME	ANALYSIS DATE/TIME
428	21-jun-2002 10:50:00	21-jun-2002 10:57:20

Noble Gas File Name : CAS_SAM:20020621005_ADC2_WGDT.CNF
Particulate File Name: N/A
Radioiodine File Name: N/A

III. RADIOANALYSIS - GASEOUS:

CUMULATIVE DOSES

AIR DOSE BETA(M)	AIR DOSE GAMMA(M)	ORGAN DOSE(M)
1.36E-04 mrad < 1.25	1.21E-06 mrad < 0.63	1.35E-03 mrem < 1.88
AIR DOSE-BETA(Q)	AIR DOSE-GAMMA(Q)	ORGAN DOSE(Q)
1.36E-04 mrad < 10.00	1.21E-06 mrad < 5.00	1.35E-03 mrem < 7.50
AIR DOSE-BETA(A)	AIR DOSE-GAMMA(A)	ORGAN DOSE(A)
9.43E-03 mrad < 20.00	2.72E-03 mrad < 10.00	8.70E-03 mrem < 15.00

YEARLY DOSE RATES

T-BODY DOSE RATE	5.92E-03 mrem/yr < 500.00
SKIN DOSE RATE	4.98E-01 mrem/yr < 3000.00
ORGAN DOSE RATE	1.70E-02 mrem/yr < 1500.00

IV. RADIATION MONITOR(S):

NUMBER		MAX SETPOINT	ALERT SETPOINT	EXPECTED RESPONSE
1R41D	(NG)	2.000E+04 uCi/s	1.000E+04 uCi/s	1.665E+02 uCi/s
1R41D	(NG)	1.227E+12 uCi/s	6.137E+11 uCi/s	

V. AUTHORIZATION:

MAX. VOLUME	MAX. EFFLUENT FLOW RATE
3.2143E+03 CF	3.2000E+01 CFM

The above-named source has been sampled and analyzed and is in compliance with the Offsite Dose Calculation Manual. Release is authorized for the volume and flow rates specified.

Please Return Permit to Chemistry Upon Completion

ATTACHMENT 2
(Page 5 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. _____

5.0 RELEASE DATA (Operations)

5.1 In Progress Release Data:

___ ♦ Release started: Time _____ Date _____

___ ♦ Pressure downstream of 1WG38:

1PL8678
PSIG*

* Shall be maintained ≤8.0 psig to ensure GDT release rate ≤32 SCFM.

___ ♦ **PERFORM** an Independent Verification of:

___ IV ♦ 1WG38 pressure (1PL8678) ≤8.0 psig.

___ IV ♦ 1WG41 controller positioned ≤100% (corresponds to a maximum gaseous release rate of ≤32 SCFM).

_____ Date _____ Time _____
Independent Verifier

5.2 Meteorological Data.

___ ♦ Meteorological conditions at time of Release.
(El. 33' is preferred channel and should be used if available)

___ ♦ Wind Speed _____ MPH at El. _____ '

___ ♦ Wind Direction _____ ° at El. _____ '

___ ♦ Δ T (_____ ' - 33 ') _____ C°

ATTACHMENT 2
(Page 6 of 6)

12 GDT RADIOACTIVE GASEOUS RELEASE FORM

RELEASE NO. _____

5.0 RELEASE DATA (continued)

5.3 Final Release Data:

Time	Date	Radiation Monitor	Highest Reading during release	1PIS1037
		1R16	CPM	PSIG
		1R41A	μCi/cc	
		1R41D	μCi/sec	

___ ♦ Plant Vent Flow during Release (average):

_____ SCFM

5.4 12 GDT Radioactive Gaseous Release conducted under supervision of:

_____ Date _____
(OS/CRS)

ATTACHMENT 3
(Page 1 of 1)

12 GDT RELEASE RATE CALCULATION

Initial Pressure = _____ psig (1PIS1037) Time _____

Time (Min)	GDT Pressure (psig)	Average Release Rate (psig/min) *	Initials
+10			
+20			
+30			
+40			
+50			
+60			
+70			
+80			
+90			
+100			
+110			
+120			
+130			
+140			
+150			
+160			
+170			
+180			

$$\textit{Average Release Rate} = \frac{\textit{Initial GDT Pressure} - \textit{GDT Pressure}}{\textit{Time (Min)}}$$

* Maintain Average Release Rate ≤1.0 psig/min by reducing 1WG41 valve position. Average Release Rate at end of GDT release shall NOT exceed 1.0 psig/min (IAW the ODCM).

ATTACHMENT 4
(Page 1 of 1)

PLANT VENT FLOW RATE
DISCHARGE ESTIMATION

1.0 ESTIMATED FLOW RATE

NOTE

If Plant Vent Flow Rate Monitor is inoperable, Plant Vent Flow Rate shall be estimated at least once per four hours (IAW the ODCM).

AUX BLDG EXHAUST FANS IN SERVICE	# FHB EXHAUST FANS IN SERVICE	PRESS RELIEF IN SERVICE	EST. PLANT VENT FLOW RATE
2	1	N	68,540 (SCFM)
2	1	Y	70,940 (SCFM)
2	2	N	78,540 (SCFM)
2	2	Y	80,940 (SCFM)

___ 1.1 IF Plant Vent Flow Rate Monitor is inoperable,
THEN **RECORD** estimated flow rate at least once every 4 hours.

Time	Date	Estimated Plant Vent Flow Rate
		SCFM
		SCFM
		SCFM
		SCFM
		SCFM
		SCFM

ATTACHMENT 5
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 COMMENTS:

(Include procedure deficiencies and corrective actions.)

ATTACHMENT 5
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

2.0 SIGNATURES:

Print	Initials	Signature	Date

INDEPENDENT VERIFICATION:

3.0 OS/CRS FINAL REVIEW AND APPROVAL:

This procedure with Attachments 1-5 is reviewed for completeness and accuracy.
All deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section of this attachment.

Signature:_____ Date:_____
(OS/CRS)

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

JPM NUMBER: GOLF NRC – SROA.4 ***(ESG-1)***

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.38

IMPORTANCE FACTOR: N/A (RO) 4.0 (SRO)

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

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

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

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

INITIATING CUE:

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

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

INITIAL CONDITIONS:

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

INITIATING CUE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

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

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

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

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators ***CUE:*** I am the Primary Communicator		
*	5	Complete the ICMF ***CUE:*** For purposes of the examination, if a release occurred during the event then check the "radiological release in progress" block. The OS would have checked that block if the ECG had been done in real time. ***KEY ATTACHED***	Fills out Section II: • *Checks block for the emergency classification • Time: Current Time • Date: Today's Date • EAL#(s): 3.2.2.b • *Description of Event: Brief description capturing the major elements Fills out Section III: • *Checks block for no release in progress Fills out Section IV: ***CUE:*** Wind direction is from 265°, 12 mph Initials for approval to transmit		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

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

Key for ESG-1

ATTACHMENT 2

ALERT

I. EMERGENCY COORDINATOR (EC) LOG SHEET

Initials

A. DECLARE AN ALERT AT SALEM UNIT 2

EAL # 3.2.2.b Declared at CURRENT TIME hrs on TODAY'S DATE
time date

EC

B. NOTIFICATIONS

1. CALL communicators to the Control Room.

EC

2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).

EC

3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the CM1 to implement **ECG Attachment 6.**

EC

4. DIRECT the Secondary Communicator (CM2) to implement **ECG Attachment 8** for an ALERT.

EC

5. **LOCATE** the confidential envelope in the Operations Superintendent (O.S.) Desk marked "Emergency Callout". Remove the card that contains the Emergency Callout System activation steps; follow the directions. When complete return to this procedure.

(EP96-003)

OS

6. IMPLEMENT EPEP 102 for OS, EDO or ERM.

EC

Key for ESG-1

INITIAL CONTACT MESSAGE FORM

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

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

II.

☑ THIS IS NOTIFICATION OF AN **ALERT** WHICH WAS DECLARED AT Current Time (Time - 24 HR CLOCK) ON Today's Date (DATE).

EAL # 3.2.2. b DESCRIPTION OF EVENT: Large Break LOCA. Subcooling is 0° As A Result of RCS Leakage.

III.

☑ NO RADIOLOGICAL RELEASE IS IN PROGRESS.

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS.

} see NOTE for release definition

IV.

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

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

Candidate's Initials

EC Initials
(Approval to Transmit ICMF)

NOTE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

JPM NUMBER: GOLF NRC – SROA.4 ***(ESG-2)***

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.38

IMPORTANCE FACTOR: N/A (RO) 4.0 (SRO)

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

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

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM PERFORMED BY: _____ **GRADE:** [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

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

INITIATING CUE:

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

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume OS duties	***CUE:*** The regulatory commitment time clock has started		
	1	Reviews ECG to classify event	***NOTE:*** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event as an ALERT and refers to ECG Attachment 2		
	3	Fills out Section A of the Attachment	• Unit:2 • EAL#(s): 3.2.3.a • Time: Current Time • Date: Today's Date • Initials as EC		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators ***CUE:*** I am the Primary Communicator		
*	5	Complete the ICMF ***CUE:*** For purposes of the examination, if a release occurred during the event then check the "radiological release in progress" block. The OS would have checked that block if the ECG had been done in real time. ***KEY ATTACHED***	Fills out Section II: • *Checks block for the emergency classification • Time: Current Time • Date: Today's Date • EAL#(s): 3.2.3.a • *Description of Event: Brief description capturing the major elements Fills out Section III: • *Checks block for no release in progress Fills out Section IV: ***CUE:*** Wind direction is from 265°, 12 mph Initials for approval to transmit		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

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

INITIAL CONDITIONS:

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

INITIATING CUE:

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

Key for ESG-2

ATTACHMENT 2

ALERT

I. EMERGENCY COORDINATOR (EC) LOG SHEET

Initials

A. DECLARE AN ALERT AT SALEM UNIT 2

EAL # 3.2.3.a Declared at Current Time (time) hrs on Today's Date (date) _____ EC

B. NOTIFICATIONS

1. CALL communicators to the Control Room. _____ EC

2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment). _____ EC

3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the CM1 to implement **ECG Attachment 6.** _____ EC

4. DIRECT the Secondary Communicator (CM2) to implement **ECG Attachment 8** for an ALERT. _____ EC

5. **LOCATE** the confidential envelope in the Operations Superintendent (O.S.) Desk marked "Emergency Callout". Remove the card that contains the Emergency Callout System activation steps; follow the directions. When complete return to this procedure.

   (EP96-003) _____ OS

6. IMPLEMENT EPEP 102 for OS, EDO or ERM. _____ EC

KEY FOR ESG-2

INITIAL CONTACT MESSAGE FORM

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

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

II. ☑ THIS IS NOTIFICATION OF AN **ALERT** WHICH WAS DECLARED AT CURRENT TIME (Time - 24 HR CLOCK) ON TODAY'S DATE (DATE).

EAL # 3.2.3.a DESCRIPTION OF EVENT: ONE CENTRIFUGAL CHARGING PUMP CANNOT MAINTAIN PZR LEVEL > 17% AND A STEAM GENERATOR TUBE RUPTURE HAS OCCURRED.

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

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

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

CANDIDATE'S INITIALS

EC Initials
(Approval to Transmit ICMF)

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

JPM NUMBER: GOLF NRC – SROA.4 ***(ESG-3)***

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.38

IMPORTANCE FACTOR: RO: N/A SRO: 4.0

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

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

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

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

INITIATING CUE:

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

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume OS duties	***CUE:*** The regulatory commitment time clock has started		
	1	Reviews ECG to classify event	***NOTE:*** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event as an ALERT and refers to ECG Attachment 2		
	3	Fills out Section A of the Attachment	• Unit: 2 • EAL#(s): 3.2.1.a • Time: Current Time • Date: Today's Date • Initials as EC		

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

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators ***CUE:*** I am the Primary Communicator		
*	5	Complete the ICMF ***CUE:*** For purposes of the examination, if a release occurred during the event then check the "radiological release in progress" block. The OS would have checked that block if the ECG had been done in real time. ***KEY ATTACHED***	Fills out Section II: • *Checks block for the emergency classification • Time: Current Time • Date: Today's Date • EAL#(s): 3.2.1.a • *Description of Event: Brief description capturing the major elements Fills out Section III: • *Checks block for no release in progress Fills out Section IV: ***CUE:*** Wind direction is from 265°, 12 mph Initials for approval to transmit		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

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

INITIAL CONDITIONS:

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

INITIATING CUE:

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

KEY FOR ESG-3

ATTACHMENT 2

ALERT

I. EMERGENCY COORDINATOR (EC) LOG SHEET

1124
Initials

A. DECLARE AN ALERT AT SALEM UNIT 2

EAL # 3.2.1.a Declared at CURRENT TIME hrs on TODAY'S DATE
time date

EC

B. NOTIFICATIONS

1. CALL communicators to the Control Room.

EC

2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).

EC

3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the CM1 to implement **ECG Attachment 6.**

EC

4. DIRECT the Secondary Communicator (CM2) to implement **ECG Attachment 8** for an ALERT.

EC

5. **LOCATE** the confidential envelope in the Operations Superintendent (O.S.) Desk marked "Emergency Callout". Remove the card that contains the Emergency Callout System activation steps; follow the directions. When complete return to this procedure.

(EP96-003)

OS

6. IMPLEMENT EPEP 102 for OS, EDO or ERM.

EC

KEY FOR ESG-3

INITIAL CONTACT MESSAGE FORM

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

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

II.

☑ THIS IS NOTIFICATION OF AN **ALERT** WHICH WAS DECLARED AT CURRENT TIME (Time - 24 HR CLOCK) ON TODAY'S DATE (DATE).

EAL # 3.2.1.a DESCRIPTION OF EVENT: HEAT SINK RED PATH HAS OCCURRED DUE TO STEAM GENERATOR LEVELS LESS THAN 9% AND TOTAL FEEDWATER FLOW < 2264 LBM/HR.

III.

☑ NO RADIOLOGICAL RELEASE IS IN PROGRESS.

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS.

} see NOTE for release definition

IV.

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

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

CANDIDATE'S INITIALS

EC Initials
(Approval to Transmit ICMF)

NOTE:

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

JPM NUMBER: GOLF NRC – SROA.4 ***(ESG-SPARE)***

ALTERNATE PATH: [ ]

K/A NUMBER: 2.4.38

IMPORTANCE FACTOR: N/A (RO) 4.0 (SRO)

APPLICABILITY:

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

EVALUATION SETTING/METHOD: Simulate (Simulator or Classroom)

REFERENCES: Salem ECG

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

VALIDATED JPM COMPLETION TIME: 12 minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: 15 minutes

APPROVAL:

BARGAINING UNIT REPRESENTATIVE	TRAINING SUPERVISOR or designee	OPERATIONS MANAGER or designee

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

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

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION: _____

JPM PERFORMED BY: _____ **GRADE:** [ ] **SAT** [ ] **UNSAT**

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____

DATE: _____

SYSTEM: Emergency Plan

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

TASK NUMBER: 1240020502

INITIAL CONDITIONS:

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

INITIATING CUE:

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

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

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide candidate with "Tear-off sheet"	Reviews initial conditions and EOP's (as necessary – 5 minute limit prior to starting)		
		*START TIME: _____ *Start time begins when candidate reports he/she is ready to assume OS duties	***CUE:*** The regulatory commitment time clock has started		
	1	Reviews ECG to classify event	***NOTE:*** It is acceptable to use the laminated tables in the simulator, rather than the ECG		
	2	Classifies the event	Determines the classification of the event as an ALERT and refers to ECG Attachment 2		
	3	Fills out Section A of the Attachment	• Unit: 2 • EAL#(s): 3.2.2.a • Time: Current Time • Date: Today's Date • Initials as EC		

OPERATOR TRAINING PROGRAM NAME: _____

JOB PERFORMANCE MEASURE DATE: _____

SYSTEM: **Emergency Plan**

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

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	4	Call communicators to the Control Room	Pages communicators ***CUE:*** I am the Primary Communicator		
*	5	Complete the ICMF ***CUE:*** For purposes of the examination, if a release occurred during the event then check the "radiological release in progress" block. The OS would have checked that block if the ECG had been done in real time. ***KEY ATTACHED***	Fills out Section II: • *Checks block for the emergency classification • Time: Current Time • Date: Today's Date • EAL#(s): 3.2.2.a • *Description of Event: Brief description capturing the major elements Fills out Section III: • *Checks block for no release in progress Fills out Section IV: ***CUE:*** Wind direction is from 265°, 12 mph Initials for approval to transmit		
*	6	Provide the ICMF to the Primary Communicator (CM1) and direct the CM1 to implement ECG Attachment 6	Provides ICMF to CM1 within 15 minutes of START TIME COMPLETION TIME: _____		

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

INITIAL CONDITIONS:

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

INITIATING CUE:

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

KEY FOR ESG - SPARE

INITIAL CONTACT MESSAGE FORM

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

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

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

DECLARED AT CURRENT TIME ON TODAY'S DATE.
(Time - 24 HR CLOCK) (DATE)

EAL # 3.2.2.a DESCRIPTION OF EVENT: ONE CENTRIFUGAL CHARGING PUMP CANNOT MAINTAIN PZR LEVEL >17%

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

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

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

CANDIDATE'S INITIALS
EC Initials
(Approval to Transmit ICMF)

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

Key for ESG-Spare

ATTACHMENT 2

ALERT

I. EMERGENCY COORDINATOR (EC) LOG SHEET

Initials

A. DECLARE AN ALERT AT SALEM UNIT 2

EAL # 3.2.2.a Declared at CURRENT TIME hrs on TODAY'S DATE ____ EC
time date

B. NOTIFICATIONS

1. CALL communicators to the Control Room. ____ EC

2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment). ____ EC

3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the CM1 to implement **ECG Attachment 6.** ____ EC

4. DIRECT the Secondary Communicator (CM2) to implement **ECG Attachment 8** for an ALERT. ____ EC

5. **LOCATE** the confidential envelope in the Operations Superintendent (O.S.) Desk marked "Emergency Callout". Remove the card that contains the Emergency Callout System activation steps; follow the directions. When complete return to this procedure.
(EP96-003) ____ OS

6. IMPLEMENT EPEP 102 for OS, EDO or ERM. ____ EC