JPM NO. 1

Conduct An RCS Leakrate Surveillance

Job Performance Measure Exam

Submitted By	Don Jackson	9/20/2003 **Date**
Reviewed By		**Date**
SME Review/Validation By		**Date**
Approved By		**Date**

JPM Tasks

Task ID: Generic- 2.1.7 **Description:** CONDUCT AN RCS LEAKRATE SURVEILLANCE

Trainee: _____ Evaluator: _____

Evaluator Signature _____ Date _____

Trainee Performance: Satisfactory _____ Unsatisfactory _____

Start Time _____ **Stop Time:**

When I tell you to begin, you are to perform the task listed above. I will describe general conditions standard(s), initiating cue(s), and answer any questions you have. I will provide access to any tools necessary to perform the task. You may use any approved reference material normally available. To satisfactory complete this task, you must perform or simulate each critical element correctly. You are to inform the examiner when you have completed the task.

Method of Testing: Actual Performance, In the Classroom Setting

General Comments (For Evaluator Use):

Task Conditions:

A MANUAL RCS LEAK RATE CALCULATION WAS STARTED FOUR HOURS AGO.

Task Standards :

COMPLETE THE RCS LEAK RATE CALCULATION WITHIN THE REQUIRED ACCURACY.
K&A #: 2.1.7 ABILITY TO EVALUATE PLANT PERFORMANCE AND MAKE OPERATIONAL JUDGEMENTS BASED ON OPERATING CHARACTERISTICS, REACTOR BEHAVIOR, AND INSTRUMENT INTERPRETATION
IMPORTANCE FACTOR: RO=3.7 SRO=4.4
Applicability: RO & SRO
Estimated Completion Time: 40 minutes

Tools Needed:

CALCULATOR

Initiating Cues :

USING THE FINAL VALUES LISTED BELOW, MANUALLY CALCULATE THE RCS LEAK RATE IAW SOP-RCS-004, BEGIN AT STEP 4.1.3.1.

Final Values:

- Time- T+4 hours
- Pzr Liquid Temp- 650 degrees F
- Boric Acid Integrator- 100 gallons
- Primary Water Integrator- 450 gallons
- VCT Level- 24%
- Avg Pzr Level- 46%
- RCS Tavg NR RTD- 566 degrees F

Last Identified Leak Rate From 3 Days Ago is 1.7 GPM

References :

ID		Description	Review Date	Ref Flag
SOP	RCS-004	REACTOR COOLANT LEAKAGE SURVEILLANCE		

Safety Considerations :

NONE

Consequences of Inadequate Performance:

ERRANT LEAK RATE TO BASE PLANT OPERATIONAL DECISIONS FROM

Performance Checklist :

	Element :	Standards :	Conditions :
1	RECORD FINAL DATA	PLACE DATA FROM CUE SHEET IN THE APPROPRIATE PLACE ON Att1	Cue: Hand Out The Final Readings, and Initial Data On Att. 1

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	NOTIFY CHEMISTRY THAT THE LEAK RATE DATA COLLECTION IS COMPLETE	MAKES NOTIFICATION IN PERSON OR VIA PHONE	Cue: State That Notification Is Received and Understood

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
3	CALCULATE DIFFERENCES BETWEEN INITIAL AND FINAL DATA	PERFORMS CALCULATIONS CORRECTLY	Correct Values as Listed in Column for step 4.1.4 on Key (+/- 5% Acceptable)

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
4	PERFORM PRESSURIZER LEVEL CONVERSION FACTOR ON ATT 2	REFERS TO ATT 2, AND ENTERS DATA BASED ON PRESSURIZER TEMPERATURE	1. Finds Specific Volume for Sat. Liquid at 650 degrees F is .02670 2. Calculates PRZR Level Conv. Factor is 75.5 (+/- 5% Acceptable)

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
5	PERFORM RCS TEMPERATURE CONVERSION FACTOR CALC ON ATT 2	REFER TO ATT 2 AND ENTER DATA BASED ON RCS AVG. TEMPERATURE IN APPROPRIATE BLOCK	1. Determines Specific Volume For Saturated Liquid at 566 deg F is .02228 (+/- 5% Acceptable) 2. Calculates PRZR Level Conv. Factor is 85.426 (+/- 5% Acceptable)

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	CALCULATE CORRECTED VALUES BASED ON CONVERSION FACTOR	PERFORMS CALCULATION CORRECTLY	Multiply Step 4.1.4 Difference By Conversion Factors To Obtain Corrected Values (+/- 5% Acceptable)

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
7	CALCULATE TOTAL LEAKAGE IN GALLONS BY ADDING CORRECTED VALUE COLUMN	PERFORMS CALCULATIONS CORRECTLY	Note: Excludes the Time and Temp (First 2 Lines) Answer 488.67 gal Acceptable- 463-513 gal

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
8	CALCULATE RCS LEAK RATE BY DIVIDING TOTAL LEAKAGE BY ELAPSED TIME	PERFORMS CALCULATIONS CORRECTLY WITHIN 0.1 GPM	488.67 gal/ 4 hrs x 60 min=2.04 Acceptable- 1.94-2.14

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
9	COMPLETE ATT 3, RCS RATE REVIEW AND APPROVAL FORM	CALCULATION CORRECT WITHIN 0.1 GPM SIGNS AND DATES STEP 5	Actual- .34gpm Accept- .24-.44 gpm Signs and Dates Column

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

Terminating Cues :

THE JPM IS COMPLETE WHEN THE LEARATE CALCULATION IS COMPLETED

STUDENT HANDOUT

ATTACHMENT 1
RCS Leakrate Calculation

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Date _____

NOTE

IF CFMS is NOT available, THEN alternate CCR indications may be used, document indications used in applicable comment section of Attachment 3.

Parameter	Computer Point	Indicator	(Step 4.1.2) Initial	(Step 4.1.3) Final	(Step 4.1.4) Difference	Conversion Factor	(Step 4.1.9) Corrected Value
Time	_____	Control Room Clock	T=0	T=4 hours	(Final-Initial) _____	_____	_____
PRZR Liquid Temp.	_____	TI-453	650°F	°F	(Final-Initial) _____	_____	_____
Boric Acid	_____	Integrator	66.0 gal	gal	(Final-Initial) _____gal	_____	gal
Primary Water	_____	Integrator	24.0 gal	gal	(Final-Initial) _____gal	_____	gal
VCT Level	L0112A	LT-112	26.0%	%	(Initial-Final) _____%	19.3 gal/%	gal
Avg PRZR Level*	UO483 L0480A L0481A L0482A	_____	47.0%	%	(Initial-Final) _____%	(Step 4.1.5) gal/%	* gal
RCS Tavg NR RTD temperature (≥ 547 °F)	T0499A or U0484	CFMS or 3TR-412 T_{AVG} Recorder	567°F	°F	(Final-Initial) _____ °F	(Step 4.1.7) gal/ °F	gal
RCS Tavg WR RTD temperature (< 547 °F)	KTAVG	CFMS	N/A°F	°F	(Final-Initial) _____ °F	(Step 4.1.7) gal/ °F	gal
		_____			Total Leakage (Step 4.1.10) (add column)		gal
		_____			RCS Leakrate (Step 4.1.11) (total leakage/ elapsed time)		gpm

nly one pressurizer level indicator is required. Average Level (U0483) is preferred.
HEN pressurizer temperature is less than 650 °F,
HEN USE Actual pressurizer level per Graph RCS-3A.

ANSWER KEY

NOTE

IF CFMS is NOT available, THEN alternate CCR indications may be used, document indications used in applicable comment section of Attachment 3.

Parameter	Compute r Point	Indicator	(Step 4.1.2) Initial	(Step 4.1.3) Final	(Step 4.1.4) Difference	Conversion Factor	(Step 4.1.9) Corrected Value
Time	_____	Control Room Clock	T=0	T=4 hours	(Final-Initial) +4 Hours	_____	_____
PRZR Liquid Temp.	_____	TI-453	650°F	650°F	(Final-Initial) 0	_____	_____
Boric Acid	_____	Integrator	66.0 gal	100 gal	(Final-Initial) +34 gal	_____	34 gal
Primary Water	_____	Integrator	24.0 gal	450gal	(Final-Initial) +426 gal	_____	426gal
VCT Level	L0112A	LT-112	26.0%	24.0%	(Initial-Final) +2 %	19.3 gal/%	38.6gal
Avg PRZR Level*	UO483 L0480A L0481A L0482A	_____	47.0%	46.0%	(Initial-Final) +1 %	(Step 4.1.5) 75.40 gal/%	75.40gal *
RCS Tavg NR RTD temperature (≥ 547 °F)	T0499A or U0484	CFMS or 3TR-412 T_{AVG} Recorder	567°F	566 °F	(Final-Initial) -1 °F	(Step 4.1.7) 85.43 gal/ °F	-85.43gal
RCS Tavg WR RTD temperature (< 547 °F)	KTAVG	CFMS	N/A°F	°F	(Final-Initial) _____ °F	(Step 4.1.7) gal/ °F	gal
		_____			Total Leakage (Step 4.1.10) (add column)		488.57gal
		_____			RCS Leakrate (Step 4.1.11) (total leakage/ elapsed time)		2.04gpm

*Only one pressurizer level indicator is required. Average Level (U0483) is preferred.
WHEN pressurizer temperature is less than 650 °F,
THEN USE Actual pressurizer level per Graph RCS-3A.

ATTACHMENT 2
PRZR And RCS Correction Calculation

PRZR Level Conversion Factor (Step 4.1.5)

$$\frac{\text{125 gal/\%x0.01613 (specific volume for saturated liquid at 100 °F)}}{\text{(specific volume for saturated liquid at average PRZR liquid temperature)}}$$

2.0163 ÷ .02674 = 75.40

RCS Temperature Conversion Factor (Step 4.1.7)

$$\frac{\text{118 gal/ °F x 0.01613 (specific volume for saturated liquid at 100 °F)}}{\text{(specific volume for saturated liquid at average RCS temperature)}}$$

1.9033 ÷ .02228 = 85.43

ATTACHMENT 3
RCS Leakage Review And Approval
(Page 1 of 1)

NOTE

The value of 0.9 gpm used below is used, as a conservatism to ensure an unidentified leakrate of 1.0 gpm is NOT exceeded without taking actions as required by Technical Specifications. LCO 3.4.13 may apply.

1.0 RCS leakrate (Attachment 1) 2.04 gpm

2.0 WHEN required for SR 3.4.13.1,
THEN PERFORM SOP-RCS-005, Reactor Coolant Leakage Evaluation, to obtain value for Identified Leak rate.
Last Reactor Coolant Leakage Evaluation performed on 2 Days Ago (date)
Identified leak rate of 1.7 gpm

3.0 DETERMINE unidentified RCS Leakrate
(RCS leakrate - Identified leakrate) .34 gpm

4.0 Does unidentified RCS Leakrate exceed 0.9 gpm? Yes _____ No X

5.0 IF Step 4.0 was answered yes,
THEN PERFORM SOP-RCS-005, Reactor Coolant Leakage Evaluation.

Calculation Performed by:_____ _____ _____
Signature Date Time

Comments: _____

Reviewed by:_____ _____ _____ _____
Shift Manager Date Time

Candidate Cue Sheet

USING THE FINAL VALUES LISTED BELOW, MANUALLY CALCULATE THE RCS LEAK RATE IAW SOP-RCS-004, BEGIN AT STEP 4.1.3.1. INITIAL VALUES HAVE BEEN RECORDED ON THE PROVIDED ATTACHMENT TO SOP-RCS-004 WHEN THE SURVEILLANCE WAS INITIATED.

Final Values:

- Time- T+4 hours
- Pzr Liquid Temp- 650 degrees F
- Boric Acid Integrator- 100 gallons
- Primary Water Integrator- 450 gallons
- VCT Level- 24%
- Avg Pzr Level- 46%
- RCS Tavg NR RTD- 566 degrees F

Last Identified Leak Rate In Accordance With SR 3.4.13.1 Completed 2 Days Ago Was 1.7 GPM

Entergy
Nuclear Northeast

Procedure Use Is:

■ Continuous

☐ Reference

☐ Information

Control Copy:_____

Effective Date:_____

This procedure is TSR

S[illegible]RCS-004, Revi[illegible]22

REACTOR COOLANT LEAKAG[illegible]RVEILLANCE

3

Nick De Vries / 4/23/03

Writer Date

/

Reviewer Date

Approved By:

/

Procedure Sponsor, DM/Designee Date

Team 3E

Procedure Owner

Indian Point 3 Operations

EDITORIAL REVISION

REVISION SUMMARY

(Page 1 of 1)

1.0 REASON FOR REVISION

1.1 Incorporate Operator feedback (IP3-6353).

1.2 CR-IP3-2003-00385.

1.3 Procedure upgrade.

2.0 SUMMARY OF CHANGES

2.1 Upgraded procedure by incorporating place keeping lines, no rev bars.

2.2 Incorporated the Unit 3 designator onto the cover page.

2.3 Added step 4.2.4.2 "ENSURE the write-protect is disabled on the floppy disk" per CA-IP3-2003-00385.

2.4 Moved step 4.2.6 to after "old" step 4.2.8, per operator feedback IP3-6353.

2.5 Editorial change, revised Control Room abbreviation from 'CR' to 'CCR'.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure establishes the requirements for determination of Reactor Coolant Unidentified Leak rate.

1.2 This procedure applies to calculation of Reactor Coolant System leakage.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Performance of this procedure is required at least once per 72 hours when the unit is in Modes 1 – 4, in accordance with SR 3.4.13.1.

2.2 This procedure is not required in Mode 3 or 4 until 12 hours of steady state operation have occurred.

2.3 IF a diversion of the VCT is initiated during this test,
THEN the test SHALL be re-performed.

2.4 RCS Leakrate Calculation SHALL NOT be performed at VCT level greater than 75%.

2.5 The computer SHALL NOT be used to calculate RCS leakage when Tavg is less than 547°F.

2.6 A Manual RCS Leakrate Calculation may be performed anytime.

2.7 WHEN pressurizer temperature is less than 650 °F,
THEN pressurizer level SHALL be used for the leakrate calculation per Graph RCS-3A.

2.8 IF the preferred instrumentation or CFMS is NOT available THEN use alternate indications (document alternate indicators used, in applicable comment section).

3.0 PREREQUISITES

3.1 VCT level control is in Automatic.

3.2 The unit is in Mode 1, 2, 3, or 4.

4.0 PROCEDURE

4.1 Manual Calculation

_____ 4.1.1 NOTIFY Chemist to ensure purge or sampling of RCS is not performed during leakrate calculation data collection.

NOTE

All data is recorded on Attachment 1, RCS Leakrate Calculation unless otherwise specified.

_____ 4.1.2 RECORD Initial Data.

NOTE

The leakrate should be performed for at least 4 hours. However, as much additional time as possible should be allowed between initial and final data to increase leakrate accuracy and to reduce the chance of data anomalies (e.g., negative leak rates).
Less than 4 hours is only acceptable if a longer duration would cause the leakrate to be inaccurate (e.g., changing plant conditions).

_____ 4.1.3 WHEN test time has elapsed, THEN PERFORM the following:

_____ 4.1.3.1 RECORD Final Data.

_____ 4.1.3.2 IF test time was less than four hours, THEN RECORD reason in comments in Attachment 3, RCS Leakage Review and Approval.

_____ 4.1.3.3 NOTIFY Chemist leakrate calculation data collection is complete.

_____ 4.1.4 CALCULATE difference between Initial and Final Data (keeping + and - signs with values).

_____ 4.1.5 PERFORM PRZR level conversion factor calculation on Attachment 2, PRZR And RCS Correction Calculation.

_____ 4.1.6 RECORD answer obtained, in block for PRZR level conversion factor.

_____ 4.1.7 PERFORM RCS temperature conversion factor calculation on Attachment 2, PRZR And RCS Correction Calculation.

_____ 4.1.8 RECORD answer obtained in block for RCS temperature conversion factor.

_____ 4.1.9 CALCULATE Corrected Values, based on Conversion Factor.

_____ 4.1.10 CALCULATE Total leakage in gallons by adding Corrected Value column.

_____ 4.1.11 CALCULATE RCS leakrate by dividing Total Leakage (gal) by elapsed time (minutes).

_____ 4.1.12 RECORD N/A in blanks not used for calculation.

_____ 4.1.13 IF calculated leakrate appears to be unreliable (e.g., negative leakrate), THEN PERFORM one of the following:

_____ • TERMINATE this leakrate, INITIATE another leakrate calculation and COMPLETE Attachment 3, RCS Leakage Review and Approval.

OR

_____ • ALLOW additional time to elapse and RECALCULATE the leakrate.

_____ 4.1.14 COMPLETE Attachment 3, RCS Leakage Review and Approval.

4.2 Computer Calculation

NOTE

The user must be logged on to the network and assigned to the CCR user group to access the CCR computer programs.

_____ 4.2.1 NOTIFY Chemist to ensure purge or sampling of RCS is not performed during leakrate calculation data collection.

NOTE

Computer calculation is only valid at normal operating RCS temperature and pressure.

_____ 4.2.2 ENSURE Control Room personal computer is turned on.

_____ 4.2.3 ACCESS the CCR Program Main Menu.

_____ 4.2.4 IF the network is unavailable AND CRS computer is operational, THEN PERFORM the following:

_____ 4.2.4.1 OBTAIN the CCR Program bootable floppy disk from Shift Manager's safe.

_____ 4.2.4.2 ENSURE the write-protect is enabled on the floppy disk.

_____ 4.2.4.3 INSERT floppy disk in A: drive of CRS computer and restart PC.

_____ 4.2.5 From Main Menu, SELECT the following:

_____ 4.2.5.1 CCR Program option

_____ 4.2.5.2 RCS Leakage option

NOTE

IF CFMS is NOT available, THEN alternate indications may be used, document indications in applicable comments section of computer printout.

____ 4.2.6 INPUT data as program requests, separated by commas.

____ 4.2.7 IF calculated leakrate appears to be unreliable (e.g., negative leakrate), THEN PERFORM one of the following:

____ • TERMINATE this leakrate and INITIATE another leakrate calculation.

OR

____ • ALLOW additional time to elapse and RECALCULATE the leakrate.

____ 4.2.8 IF the RCS Leakage program is being run from the floppy disk, THEN INPUT the last identifed RCS leakage from SOP-RCS-005, Reactor Coolant System Leakage Evaluation.

____ 4.2.9 NOTIFY Chemist leakrate calculation data collection is complete.

4.3 Review and Approval of Calculation

____ 4.3.1 FORWARD calculation package to Shift Manager for the following:

____ • REVIEW data

____ • STATE action(s) taken or RECORD comments as necessary

____ • APPROVE calculation

____ 4.3.2 PLACE completed forms in Daily Operations binder.

5.0 REFERENCES

5.1 Commitment Documents

None

5.2 Development Documents

5.2.1 Technical Specifications SR 3.4.13.1

5.2.2 LCO 3.4.13

5.3 Interface Documents

5.3.1 SOP-RCS-005, Reactor Coolant Leakage Evaluation

5.3.2 Graph RCS-3A, Density Compensation for Hot Calibrated Level LT-459, LT-460, and LT-461

6.0 RECORDS AND DOCUMENTATION

The following required records are generated by this procedure and SHALL be maintained in accordance with IP3 Records Retention Schedule:

6.1 Attachment 1, RCS Leakrate Calculation

6.2 Attachment 3, RCS Leakage Review and Approval

6.3 Computer Calculation printout

ATTACHMENT 1
RCS Leakrate Calculation
(Page 1 of 1)

Date _____

NOTE

IF CFMS is NOT available, THEN alternate CCR indications may be used, document indications used in applicable comment section of Attachment 3.

Parameter	Computer Point	Indicator	(Step 4.1.2) Initial	(Step 4.1.3) Final	(Step 4.1.4) Difference	Conversion Factor	(Step 4.1.9) Corrected Value
Time	_____	Control Room Clock			(Final-Initial) _____	_____	_____
PRZR Liquid Temp.	_____	TI-453	°F	°F	(Final-Initial) _____	_____	_____
Boric Acid	_____	Integrator	gal	gal	(Final-Initial) _____gal	_____	gal
Primary Water	_____	Integrator	gal	gal	(Final-Initial) _____gal	_____	gal
VCT Level	L0112A	LT-112	%	%	(Initial-Final) _____%	19.3 gal/%	gal
Avg PRZR Level*	U0483 L0480A L0481A L0482A	_____	%	%	(Initial-Final) _____%	(Step 4.1.5) gal/%	* gal
RCS Tavg NR RTD temperature (≥ 547 °F)	T0499A or U0484	CFMS or 3TR-412 T_{AVG} Recorder	°F	°F	(Final-Initial) _____ °F	(Step 4.1.7) gal/ °F	gal
RCS Tavg WR RTD temperature (< 547 °F)	KTAVG	CFMS	°F	°F	(Final-Initial) _____ °F	(Step 4.1.7) gal/ °F	gal
_____					Total Leakage (Step 4.1.10) (add column)		gal
_____					RCS Leakrate (Step 4.1.11) (total leakage/ elapsed time)		gpm

*Only one pressurizer level indicator is required. Average Level (U0483) is preferred.
WHEN pressurizer temperature is less than 650 °F,
THEN USE Actual pressurizer level per Graph RCS-3A.

ATTACHMENT 2
PRZR And RCS Correction Calculation
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PRZR Level Conversion Factor (Step 4.1.5)

$$\frac{125 \text{ gal/\%} \times 0.01613 \text{ (specific volume for saturated liquid at 100 °F)}}{\text{(specific volume for saturated liquid at average PRZR liquid temperature)}}$$

2.0163 ÷ _____ = _____

RCS Temperature Conversion Factor (Step 4.1.7)

$$\frac{118 \text{ gal/ °F} \times 0.01613 \text{ (specific volume for saturated liquid at 100 °F)}}{\text{(specific volume for saturated liquid at average RCS temperature)}}$$

1.9033 ÷ _____ = _____

ATTACHMENT 3
RCS Leakage Review And Approval
(Page 1 of 1)

NOTE

The value of 0.9 gpm used below is used, as a conservatism to ensure an unidentified leakrate of 1.0 gpm is NOT exceeded without taking actions as required by Technical Specifications. LCO 3.4.13 may apply.

1.0 RCS leakrate (Attachment 1) _____ gpm

2.0 WHEN required for SR 3.4.13.1,
THEN PERFORM SOP-RCS-005, Reactor Coolant Leakage Evaluation, to obtain value for Identified Leak rate.
Last Reactor Coolant Leakage Evaluation performed on _____ (date)
Identified leak rate of _____ gpm

3.0 DETERMINE unidentified RCS Leakrate
(RCS leakrate - Identified leakrate) _____ gpm

4.0 Does unidentified RCS Leakrate exceed 0.9 gpm? Yes _____ No _____

5.0 IF Step 4.0 was answered yes,
THEN PERFORM SOP-RCS-005, Reactor Coolant Leakage Evaluation.

Calculation Performed by: _____ _____ _____
Signature Date Time

Comments: _____

_____

_____

_____

_____

_____

Reviewed by: _____ _____ _____ _____
Shift Manager Date Time

JPM NO. 2

CONDUCT A VALVE LINEUP VERIFICATION

Job Performance Measure Exam

Submitted By : Don Jackson_ 9/20/2003

Date

Reviewed By

Date

SME Review/Validation By

Date

Approved By

Date

JPM Tasks
Task ID: 2.1.29 **Description:** CONDUCT A VALVE LINEUP VERIFICATION OD-35, "COMPONENT VERIFICATION AND SYSTEM STATUS CONTROL"

Trainee: _____ Evaluator: _____

Evaluator Signature _____ Date _____

Trainee Performance: Satisfactory _____ Unsatisfactory _____

Start Time _____ **Stop Time:** _____

When I tell you to begin, you are to perform the task listed above. I will describe general conditions standard(s), initiating cue(s), and answer any questions you have. I will provide access to any tools necessary to perform the task. You may use any approved reference material normally available. To satisfactory complete this task, you must perform or simulate each critical element correctly. You are to inform the examiner when you have completed the task.

Method of Testing: Simulated Performance in the Plant

General Comments (For Evaluator Use):

Task Conditions:

THE CREW HAS DRAINED THE 32 FWST WITH THE ELECTRIC FIRE PUMP IN ACCORDANCE WITH SOP-FP-001 SECTION 4.12. THE SHIFT MANAGER HAS DIRECTED YOU TO PERFORM STEP 4.12.15 OF SOP-FP-001 TO INDEPENDENTLY VERIFY THE CORRECT ALIGNMENT OF SELECTED FIRE PROTECTION SYSTEM VALVES.

Task Standards :
CONDUCT A VALVE LINEUP VERIFICATION PER OD-35, "COMPONENT VERIFICATION AND SYSTEM STATUS CONTROL"

K&A #: 2.1.29 Knowledge of How To Conduct and Verify A Valve Lineup
IMPORTANCE FACTORS: SRO=3.3
Estimated Completion Time: 25 min

Tools Needed:

None

Initiating Cues :

THE CREW HAS DRAINED THE 32 FWST WITH THE ELECTRIC FIRE PUMP IN ACCORDANCE WITH SOP-FP-001 SECTION 4.12. THE SHIFT MANAGER HAS DIRECTED YOU TO PERFORM STEP 4.12.15 OF SOP-FP-001 TO INDEPENDENTLY VERIFY THE CORRECT ALIGNMENT OF SELECTED FIRE PROTECTION SYSTEM VALVES.

Safety Considerations :

PERSONNEL PROTECTIVE EQUIPMENT REQUIRED

Consequences of Inadequate Performance:

LOSS OF PLANT STATUS CONTROL IF NOT PERFORMED CORRECTLY

Performance Checklist :

	Element :	Standards :	Conditions :
1	OBTAIN A COPY OF SOP-FP-001 AND REVIEW STEP 4.12.15 FOR THE LINEUP ACTIVITY	OBTAINS AND REVIEWS THE SOP-FP-001 AND PREPARES	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	PERFORM LINEUP VERIFICATION OF VALVES IN STEP 4.12.15 OF SOP-FP-001	PERFORM LINEUP VERIFICATION OF STEP 4.12.15 OF SOP-FP-001	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	VERIFY POSITION OF FP-46	OBSERVE STEM POSITION, CHECK IN CLOSED DIRECTION SHOULD BE OPEN	**Cue: Checks in closed direction valve moves toward closed. Stem is out.**

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
	VERIFY POSITION OF FP-61	OBSERVE STEM POSITION, CHECK IN CLOSED DIRECTION SHOULD BE OPEN	**Cue: Checks in closed direction valve moves toward closed. Stem is out.**

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
5	VERIFY POSITION OF FP-48	OBSERVE STEM POSITION, CHECK IN CLOSED DIRECTION SHOULD BE OPEN	**Cue: Checks in closed direction valve moves toward closed. Stem is out.**

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	VERIFY POSITION OF FP-39-1	OBSERVE STEM POSITION, CHECK IN CLOSED DIRECTION SHOULD BE OPEN	**Cue: Checks in closed direction valve moves toward closed. Stem is out.**

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
7	VERIFY POSITION OF FP-28-3	OBSERVE STEM POSITION, CHECK IN CLOSED DIRECTION SHOULD BE CLOSED, RECOGNIZES VALVE IS IN WRONG POSITION	**Cue: Valve FP-28-3, Stem is Out Valve moves toward closed**

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
8	STOPS AND CALLS SHIFT MANAGER PER OD-35, STEP 4.1.9	STOPS AND CALLS SHIFT MANAGER TO INFORM OF THE DISCREPANCY	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

Terminating Cues :

JPM IS COMPLETE WHEN THE OPERATOR RECOGNIZES THE VALVE LINE UP DISCREPANCY AND THE CONTROL ROOM IS INFORMED.

Candidate Cue Sheet

THE TEAM HAS DRAINED THE 32 FWST WITH THE ELECTRIC FIRE PUMP IN ACCORDANCE WITH SOP-FP-001 SECTION 4.12. THE SHIFT MANAGER HAS DIRECTED YOU TO PERFORM STEP 4.12.15 OF SOP-FP-001 AS THE INDEPENDENT VERIFIER. DO NOT MOVE OR OPERATE ANY COMPONENTS, EVEN IF JUST CHECKING THE POSITION OF THE COMPONENT. DESCRIBE ANY AND ALL REQUIRED ACTIONS TO THE EXAMINER.

____4.12.13 THROTTLE fire hoses as needed at 'Medusa Head' to ensure Diesel Fire Pump does NOT start (approximately 2500 gpm).

____ • DRAIN 32 FWST to approximately 50,000 gallons (~5' from bottom)

OR

____ • DRAIN 32 FWST to a level as directed

____4.12.14 WHEN desired level is attained, THEN:

____4.12.14.1 PRESS AND HOLD Stop pushbutton while performing the following:

____a) PLACE Circuit Breaker in OFF.

____b) PLACE Isolation Switch in OFF.

____4.12.15 PERFORM the following lienup in the order listed:

VALVE	DESCRIPTION	NORMAL POSITION	REQUIRED POSITION	AS-LEFT	INITIALS	INDEP VERIFY
FP-46	Fire Pumps Recirculation Test Header Downstream Isolation	OPEN	OPEN	OPEN		
FP-61	Jockey Pumps Discharge To Motor Fire Pump Discharge Line Isolation	OPEN	OPEN	OPEN		
FP-48	Diesel Fire Pump Discharge To Motor Fire Pump Discharge Cross-Tie Isolation	OPEN	OPEN	OPEN		
FP-39-1	Fire Pumps Discharge To Ring Header Isolation	OPEN	OPEN	OPEN		
FP-28-3	Fire Pumps Recirculation Test Header Outside Test Valves Header Isolation	CLOSED	CLOSED	CLOSED		

____4.12.16 WHEN ready to place Electric Fire Pump in Standby, THEN PRESS and HOLD Stop Pushbutton while performing the following:

____4.12.16.1 PLACE Isolation Switch in ON.

____4.12.16.2 PLACE circuit breaker to ON.

____4.12.16.3 Independently verify both switches are ON per OD-35.

____4.12.17 VERIFY Power On light is illuminated.

____4.12.18 RELEASE Stop pushbutton.

____4.12.19 RETURN to Step 4.11.18.

Entergy
Nuclear Northeast

Procedure Use Is:

☑ Continuous

☐ Reference

☐ Information

Control Copy:_____

Effective Date:_____

This procedure is TSR

SOP-FP-001, Revision: 23

FIRE PROTECTION SYSTEM OPERATION

Greg Weaver / 03/25/03

Writer Date

/

Reviewer Date

Approved By:

/

Procedure Sponsor, DM/Designee Date

Team 3C

Procedure Owner

Indian Point 3 Operations

PARTIAL REVISION

REVISION SUMMARY
(Page 1 of 1)

1.0 REASON FOR REVISION

1.1 To support DCP-02-3-016FP implementation.

2.0 SUMMARY OF CHANGES

2.1 Incorporated TPC-02-0236 as follows:

2.1.1 Deleted Section 4.9, "Actuating or Resetting Charcoal Filter Deluge Valves" and incorporated Attachments 8 and 9 into Section 4.8 per FP Engineer

2.1.2 Changed title of Attachment 8 from "Actuation/Resetting of FP-240, PAB Exhaust Charcoal Filter Deluge Valve, from BIT Room" to "Resetting FP-240, PAB Exhaust Charcoal Filter Deluge Valve"

2.1.3 Changed title of Attachment 9 from "Actuation/Resetting of FP-239, VC Purge and Pressure Relief Charcoal Filter Flooding Valve, from BIT Room" to "Resetting FP-239, VC Purge and Pressure Relief Charcoal Filter Flooding Valve"

2.1.4 Changed entire step text of Attachment 8 to reflect TPC 02-0236 Insert A.

2.1.5 Changed entire step text of Attachment 9 to reflect TPC 02-0236 Insert B.

2.1.6 Changed step text of TPC 02-0236 Insert B, Step 5.0, to ensure Inlet Drain Valve (I) is closed per Fire Protection Engineer feedback.

2.2 Added new P/L 2.12 per feedback IP3-6377.

2.3 Rewrote Section 4.6 per Fire Protection Engineer feedback IP3-3781.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure establishes requirements for Fire Protection System (FPS) operation.

1.2 This procedure applies to the following:

- Startup/shutdown of fire system pumps
- System filling, venting and draining
- Supplying Nuclear Services City Water header
- Actuating/resetting deluge and sprinkler systems

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Diesel Fire Pump Fuel Oil Storage Tank (FOST) SHALL contain at least 134 gallons of fuel oil for pump operability. (TRM 3.7.A.1)

2.2 Foam compounds should NOT be subjected to temps greater than 125°F or less than 32°F, to prevent damage to compounds and breakdown of protection characteristics.

2.3 Fire hoses SHALL be drained, dried, and rolled up after use to prevent cracking of rubber linings.

2.4 WHEN in use OR isolated, THEN fire hydrants SHALL be fully open or fully closed to prevent leakage through, or blockage of, drain ports.

2.5 Safety Group should be contacted for applicable health hazard information and precautions.

2.6 Operating instructions for on-site CO_2 systems are provided in SOP-FP-003, Fire Protection CO_2 System Operation.

2.7 WHEN the Diesel Fire Pump is declared inoperable, THEN an hourly fire watch SHALL be established within 1 hour in the 15' TB South Loading Well, 15' Control Bldg, and 15' Admin Service Bldg (near Fire Brigade Room) (TRM 3.7.A.1.F)

2.8 IF a FIRE EMERGENCY occurs, THEN consideration should be given to isolating City Water to other plant systems in order to expedite filling of Fire Water Storage Tanks (FWSTs).

2.9 WHEN refilling following maintenance or testing activities, THEN inadvertent actuation of deluge/preaction system(s) may occur due to trim check valve leak-by and subsequent pressure chamber depressurization. Therefore, deluge/preaction system should remain isolated from header until header is refilled / repressurized.

2.10 Failure to properly fill and vent piping and components following maintenance or testing activities may cause damage due to water hammer effects. Consider using the following techniques to help minimize the effects of water hammering during the filling of drained portions of piping/components:

- Proper venting of drained pipe and or component
- Starting the Electric Fire Pump prior to filling piping and slowly opening the isolation valve to fill the piping.
- IF section of piping is small, THEN jockey pumps may be used to fill piping (~ 50 gpm discharge rate).

2.11 Information Notice IN-99-07 identified potential problems if deluge valves are left in the tripped condition for prolonged periods of time. To preclude degradation of the diaphram chamber (diaphram for Grinnell Multimatic A-4 Deluge Valves), valves should be reset within 24 hour period, using the appropriate Attachment.

2.12 IF a non-emergency situation exists, THEN Electric Fire Pump operation at shutoff head should be limited AND monitored to prevent excessive heating.

3.0 PREREQUISITES

3.1 FPS aligned per the following:

- COL-CW-1 City Water
- COL-EL-2 Lighting And Low Voltage Distribution Systems
- COL-EL-3 Instrument Buses And Distribution Panels
- COL-FP-1 Fire Pump House
- COL-FP-2 Fire Protection System Ring Header
- COL-FP-3 Fire Protection System
- COL-FP-4 Carbon Dioxide And Halon Fire Protection Systems

CAUTION

- Do NOT exceed maximum flow rate of 3750 gpm.
- Electric Engine SHALL be monitored for abnormal conditions during operation and immediately shut down if required.

4.12 Draining 32 FWST with Electric Fire Pump

_____4.12.1 ENSURE Steps 4.11.1 through 4.11.17 have been completed.

_____4.12.2 VERIFY Operability of Unit 3 Fire Pumps in accordance with Technical Requirements Manual (TRM) surveillance requirements TRS 3.7.A.1.5, 3.7.A.1.6 and 3.7.A.1.13.

——— • Electric Fire Pump will be isolated from the fire water header, which requires action in accordance with TRO 3.7.A.1.

_____4.12.3 CONNECT 2 1/2" fire protection Wye containing 2 valves to 'Medusa Head' valves (FP-63 – 70, outside fo Fire Pump House).

_____4.12.4 CONNECT sufficient length of 2 1/2" fire hose(s) to FP-63 – 70 valves.

_____4.12.5 ROUTE free end of fire hose(s) to a storm drain.

_____4.12.6 SECURE free end of fire hose(s) to prevent movement.

_____4.12.7 OPEN a valve (FP-63 through FP-70) at 'Medusa Head'.

_____4.12.7.1 OPEN Wye valve(s) connected to fire hose(s):

——— • THROTTLE Wye valve(s) as required during draining.

____4.12.8 PERFORM the following valve lineup in the order listed:

VALVE	DESCRIPTION	NORMAL POSITION	AS FOUND	TEST POSITION	INITIAL
FP-61	Jockey Pumps Discharge To Motor Fire Pump Discharge Line Isolation	OPEN		CLOSED	
FP-121	Jockey Pumps Suction Header Cross-Tie Isolation	CLOSED		CLOSED	
FP-36-1	Motor Fire Pump Suction Isolation	OPEN		OPEN	
FP-38-1	Motor Fire Pump Discharge Isolation	OPEN		OPEN	
FP-44	Fire Pumps Discharge to Ring Header Isolation	CLOSED		CLOSED	
FP-48	Diesel Fire Pump Discharge To Motor Fire Pump Discharge Cross-Tie Isolation	OPEN		CLOSED	
FP-46	Fire Pumps Recirculation Test Header Downstream Isolation	OPEN		CLOSED	
FP-47	Fire Pumps Recirculation Test Header Orifice Bypass	CLOSED		CLOSED	
FP-45	Fire Pumps Recirculation Test Header Isolation	CLOSED		CLOSED	
FP-91	Fire Pumps Recirculation Test Header To 31 FWST Isolation	CLOSED		CLOSED	
FP-39-1	Fire Pumps Discharge To Ring Header Isolation	OPEN		CLOSED	
FP-90	Fire Pumps Recirculation Test Header To 32 FWST Isolation	CLOSED		CLOSED	
FP-71	32 FWST Outlet To Fire Pumps Suction Header Isolation	OPEN		OPEN	
FP-28-3	Fire Pumps Recirculation Test Header Outside Test Valves Header Isolation	CLOSED		OPEN	

____4.12.9 REVIEW Unit Log to ensure motor starting requirements of SOP-EL-004A, Electric Motor Operation, will be met.

____4.12.10 PRESS AND HOLD Electric Fire Pump Stop pusbutton while performing the following:

____4.12.10.1 PLACE Electric Fire Pump Isolation Switch to ON.

____4.12.10.2 PLACE Electric Fire Pump circuit breaker to ON.

____4.12.10.3 CHECK Power On light illuminates.

____4.12.11 RELEASE Electric Fire Pump Stop P/B.

____4.12.12 VERIFY Electric Fire Pump starts.

____4.12.13 THROTTLE fire hoses as needed at 'Medusa Head' to ensure Diesel Fire Pump does NOT start (approximately 2500 gpm).

____ • DRAIN 32 FWST to approximately 50,000 gallons (~5' from bottom)

OR

____ • DRAIN 32 FWST to a level as directed

____4.12.14 WHEN desired level is attained, THEN:

____4.12.14.1 PRESS AND HOLD Stop pushbutton while performing the following:

____a) PLACE Circuit Breaker in OFF.

____b) PLACE Isolation Switch in OFF.

____4.12.15 PERFORM the following lienup in the order listed:

VALVE	DESCRIPTION	NORMAL POSITION	REQUIRED POSITION	AS-LEFT	INITIALS	INDEP VERIFY
FP-46	Fire Pumps Recirculation Test Header Downstream Isolation	OPEN	OPEN			
FP-61	Jockey Pumps Discharge To Motor Fire Pump Discharge Line Isolation	OPEN	OPEN			
FP-48	Diesel Fire Pump Discharge To Motor Fire Pump Discharge Cross-Tie Isolation	OPEN	OPEN			
FP-39-1	Fire Pumps Discharge To Ring Header Isolation	OPEN	OPEN			
FP-28-3	Fire Pumps Recirculation Test Header Outside Test Valves Header Isolation	CLOSED	CLOSED			

____4.12.16 WHEN ready to place Electric Fire Pump in Standby, THEN PRESS and HOLD Stop Pushbutton while performing the following:

____4.12.16.1 PLACE Isolation Switch in ON.

____4.12.16.2 PLACE circuit breaker to ON.

____4.12.16.3 Independently verify both switches are ON per OD-35.

____4.12.17 VERIFY Power On light is illuminated.

____4.12.18 RELEASE Stop pushbutton.

____4.12.19 RETURN to Step 4.11.18.

JPM NO. 3

RESPOND TO LOWERING REFUELING CAVITY LEVEL WITH THE TRANSFER TUBE GATE VALVE OPEN DURING REFUELING OPERATIONS

Job Performance Measure Exam

Submitted By : Don Jackson_ 9/20/2003

Date

Reviewed By

Date

SME Review/Validation By

Date

Approved By

Date

JPM Tasks

Task ID: 2.2.27 **Description:** ACTIONS FOR LOWERING REFUELING POOL LEVEL DURING REFUELING PER ONOP-RP-3

Trainee: _____ Evaluator: _____

Evaluator Signature _____ Date _____

Trainee Performance: Satisfactory _____ Unsatisfactory _____

Start Time _____ **Stop Time:** _____

When I tell you to begin, you are to perform the task listed above. I will describe general conditions standard(s), initiating cue(s), and answer any questions you have. I will provide access to any tools necessary to perform the task. You may use any approved reference material normally available. To satisfactory complete this task, you must perform or simulate each critical element correctly. You are to inform the examiner when you have completed the task.

Method of Testing: Performance Simulated in the Plant

General Comments (For Evaluator Use):

Task Conditions:

REFUELING ACTIVITIES ARE IN PROGRESS. THE CORE IS CURRENTLY BEING FULLY OFFLOADED FOR RHR MAINTENANCE. 42 ASSEMBLIES HAVE BEEN MOVED TO THE SPENT FUEL PIT. THERE IS CURRENTLY AN IRRADIATED FUEL ASSEMBLY IN THE REFUELING BRIDGE MAST. FUEL TRANSFER CART IS IN THE SPENT FUEL SERVICES BUILDING WITH AN IRRADIATED FUEL ASSEMBLY ON BOARD. AS THE FUEL HANDLING SUPERVISOR, YOU NOTICE THAT REFUELING CAVITY LEVEL HAS VISIBLY LOWERED OVER A 15 MINUTE PERIOD. YOU RECEIVE A REPORT FROM THE CONTROL ROOM THAT BASED ON CONTAINMENT SUMP LEVEL AND REPORTS FROM THE LOWER LEVELS OF CONTAINMENT THAT THERE IS A LEAK FROM THE REFUELING CAVITY.

Task Standards :

ACTIONS FOR LOSS OF REFUELING CAVITY LEVEL PER ONOP-RP-3
K&A #: 2.2.27 KNOWLEDGE OF THE REFUELING PROCESS
IMPORTANCE FACTORS: SRO=3.5
Estimated Completion Time: 45 min

Tools Needed:

NONE

Initiating Cues :

REFUELING ACTIVITIES ARE IN PROGRESS. THE CORE IS CURRENTLY BEING FULLY OFFLOADED FOR RHR MAINTENANCE.

- 42 ASSEMBLIES HAVE BEEN MOVED TO THE SPENT FUEL PIT.
- THERE IS CURRENTLY AN IRRADIATED FUEL ASSEMBLY IN THE REFUELING BRIDGE MAST, AND THE REFUELING BRIDGE IS POSITIONED OVER THE CORE.
- FUEL TRANSFER CART IS IN THE SPENT FUEL SERVICES BUILDING WITH AN IRRADIATED FUEL ASSEMBLY ON BOARD.
- THE UPENDER IN CONTAINMENT IS CURRENTLY LOWERED.
- ANNUNCIATOR "HIGH LEVEL REACTOR PIT" HI AND HI HI HAVE ALARMED
- THE REACTOR PIT SUMP PUMP INDICATES "ON" ON PANEL SAF
- CONTAINMENT WIDE RANGE LIQUID LEVEL IS READING 49 FEET

YOU ARE THE FUEL HANDLING SUPERVISOR IN THE VAPOR CONTAINMENT, YOU NOTICE THAT REFUELING CAVITY LEVEL HAS LOWERED 2 FEET OVER A 15 MINUTE PERIOD INDICATING A LARGE LEAK IS OCCURRING. YOU RECEIVE A REPORT FROM THE CONTROL ROOM THAT BASED ON CONTAINMENT SUMP LEVEL AND REPORTS FROM THE LOWER LEVELS OF CONTAINMENT THAT THERE IS A LEAK FROM THE REFUELING CAVITY.
YOU ARE TO RESPOND TO THE LOSS OF REFUELNG CAVITY WATER LEVEL PER ONOP-RP-3 "LOSS OF REFUELING CAVITY LEVEL DURING REFUELING".
FOR THE PURPOSES OF THIS JPM, THE DISCUSSION OF THE ACTIONS WILL TAKE PLACE IN THE FUEL SERVICES BUILDING, AND APPROPRIATE CUES WILL BE GIVEN BY THE EXAMINER AS IF YOU ARE ON THE MANIPULATOR CRANE IN THE VAPOR CONTAINMENT.

Safety Considerations :

NONE

Consequences of Inadequate Performance:

FUEL DAMAGE AND HIGH LEVELS OF RADIATION IN CONTAINMENT

Performance Checklist :

	Element :	Standards :	Conditions :
1	OBTAIN AND REVIEW ONOP-RP-3	OBTAINS AND REVIEWS CORRECT REV OF ONOP-RP-3	Cue: You Have The Correct Rev. of the Procedure 1. Reactor Pit Sump Pump is ON 2. Spent Fuel Pit Low Level Alarm Has Annunciated

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	ENSURE AUTO ACTIONS HAVE OCCURRED	DETERMINE CONDITION OF R-5, "FSB AREA RAD MONITOR" CONTACTS CONTROL ROOM FOR R-5 STATUS	Cue: R-5 Has Not Annunciated

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
3	VERIFIES CONTAINMENT EVACUATION ALARM AND CONTAINMENT VENTILATION ISOLATION	CONTAINMENT EVAC ALARM AND CONTAINMENT VENTILATION ISOLATION ARE ORDERED TO CONT RM	Cue: Containment Evac Alarm AND Cont. Vent Isol Have Been Initiated From The Control Room

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
4	ORDERS NON-ESSENTIAL PERSONNEL TO EVACUATE CONTAINMENT AND FSB	SELECTS WHO IS NON ESSENTIAL AND HAS THEM EVACUATE CONTAINMENT AND FSB	Consider: Needs Refueling Machine Operator, Upender Operator (Cont, and FSB), Transfer Tube Gate Valve Operator Functions Tasks Needed To Complete, Safely Move Fuel Into Core, Close Transfer Tube Gate Valve, Close Swinging Gate In Spent Fuel Pool, Move Transfer Cart To Containment

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
5	CLOSE SPENT FUEL POOL ISOLATION GATE, AND APPLY AIR TO GATE SEAL	ORDERS SPENT FUEL POOL ISOLATION GATE SHUT, AND ORDERS STATION AIR APPLIED TO THE SEAL	Cue: Spent Fuel Pool Isolation Gate Is Shut (Swings Into Position), and Air Is Applied To The Seal. Have Candidate Point Out Locations In FSB

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	SEND THE FUEL TRANSFER CONVEYER TO THE CONTAINMENT AND CLOSE THE FUEL TRANSFER TUBE GATE VALVE	ORDERS THE FUEL TRANSFER CONVEYER MOVED TO THE CONTAINMENT, AND ORDERS THE FUEL TRANSFER TUBE GATE VALVE CLOSED	Cue: The Conveyer Has Been Moved To The Containment and the Fuel Transfer Tube Gate Valve Is Shut. (Ensure Candidate Knows Why Conveyor Must Move To Containment- To Shut Fuel Transfer Tube Gate Valve Ensure Candidate Knows Location of Transfer Tube Gate Valve and Handle.) (Handle Is On Floor Near Transfer Cart Control Station, Squared End Goes On Stem In Pool. Clockwise To Close.)

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
7	DIRECT HEALTH PHYSICS TO CONSTANTLY MONITOR AND REPORT RAD LEVELS TO THE REFUELING SRO FOR THE CONTAINMENT AND FSB	DIRECTS HEALTH PHYSICS TO CONSTANTLY MONITOR AND REPORT RAD LEVELS TO HIMSELF, FOR THE CONTAINMENT AND FSB	Cue: Rad Levels Are Currently Normal Monitoring Will Be Continuous

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
8	IF THE LEAK IS SMALL THEN INITIATE BLENDED MAKE UP OF THE RCS	DETERMINES THAT BLENDED MAKEUP IS NOT APPROPRIATE FOR THE CURRENT SITUATION	Cue: The Leak Is Considered LARGE, Cue: Containment Water Level is 49 Feet

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

lement :	Standards :	Conditions :
9 IF THE LEAK IS LARGE ENOUGH TO ESTABLISH RECIRC PUMP OPERATION (48' 2" IN CONT), THEN OPEN SI-MOV-1802 A or B START 1 RECIRC PUMP, ESTBLISH A BALANCE OF FLOW TO LEAKAGE WITH SI-HCV-638 or 640, STOP CONTAINMENT SUMP PUMPS	VERIFIES CONTROL ROOM ESTABLISHES RECIRC FLOW IN ACCORDANCE WITH STEPS DETAILED TO THE LEFT	Cue: The Leak Is Considered LARGE, Cue: SI-MOV-1802A Is Open 31 Recirc Pump Has Been Started Flow Has Been Balanced With Leakage, and Containment Sump Pumps are Stopped

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

Element :	Standards :	Conditions :
10 PLACE THE IRRADIATED FUEL ASSEMBLY INTO ANY ACCESSIBLE CORE LOCATION, UNLATCH AND RAISE MAST	BASED ON CUE, RECOGNIZES THAT ASSEMBLY SHOULD BE PLACED BACK INTO THE CORE PER STEP 5.2.1, AND UNLATCH AND RAISE THE MAST, HOWEVER OTHER LOCATIONS ARE AVAILABLE IN THE PROCEDURE.	Cue: Motion Has Just Been Initiated By The Bridge/Trolley From The Core Toward The Upender, Mast is lowered and assembly is placed in the core and unlatched.

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

Element :	Standards :	Conditions :
11 CHECK THAT THERE IS NO ASSEMBLY IN THE RCC CHANGE FIXTURE	UPON CUE, RECOGNIZES THE STEP IS N/A	Cue: There Is No Assembly In The RCC Change Fixture

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
12	CHECK THAT THERE IS NO ASSEMBLY IN THE UPENDER (EITHER SIDE).	UPON CUE, RECOGNIZES THE STEP IS N/A	Cue: There Is No Assembly In Either Upender

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
13	CHECK THAT THERE IS NO ASSEMBLY SUSPENDED FROM THE SPENT FUEL HANDLING TOOL	UPON CUE, RECOGNIZES THE STEP IS N/A	Cue: There Is No Assembly Suspended From The Spent Fuel Handling Tool

Comments :

Critical Task? N

Terminating Cues :

MITIGATING ACTIONS ARE COMPLETE FOR THE LOSS OF REFUELING POOL LEVEL, THIS JPM IS COMPLETE

Candidate Cue Sheet

REFUELING ACTIVITIES ARE IN PROGRESS. THE CORE IS CURRENTLY BEING FULLY OFFLOADED FOR RHR MAINTENANCE.

- 42 ASSEMBLIES HAVE BEEN MOVED TO THE SPENT FUEL PIT.
- THERE IS CURRENTLY AN IRRADIATED FUEL ASSEMBLY IN THE REFUELING BRIDGE MAST, AND THE REFUELING BRIDGE IS POSITIONED OVER THE CORE.
- FUEL TRANSFER CART IS IN THE SPENT FUEL SERVICES BUILDING WITH AN IRRADIATED FUEL ASSEMBLY ON BOARD.
- THE UPENDER IN CONTAINMENT IS CURRENTLY LOWERED.
- ANNUNCIATOR "HIGH LEVEL REACTOR PIT" HI AND HI HI HAVE ALARMED
- THE REACTOR PIT SUMP PUMP INDICATES "ON" ON PANEL SAF
- CONTAINMENT WIDE RANGE LIQUID LEVEL IS READING 49 FEET

YOU ARE THE FUEL HANDLING SUPERVISOR IN THE VAPOR CONTAINMENT, YOU NOTICE THAT REFUELING CAVITY LEVEL HAS LOWERED 2 FEET OVER A 15 MINUTE PERIOD INDICATING A LARGE LEAK IS OCCURRING. YOU RECEIVE A REPORT FROM THE CONTROL ROOM THAT BASED ON CONTAINMENT SUMP LEVEL AND REPORTS FROM THE LOWER LEVELS OF CONTAINMENT THAT THERE IS A LEAK FROM THE REFUELING CAVITY.

YOU ARE TO RESPOND TO THE LOSS OF REFUELNG CAVITY WATER LEVEL PER ONOP-RP-3 "LOSS OF REFUELING CAVITY LEVEL DURING REFUELING".

FOR THE PURPOSES OF THIS JPM, THE DISCUSSION OF THE ACTIONS WILL TAKE PLACE IN THE FUEL SERVICES BUILDING, AND APPROPRIATE CUES WILL BE GIVEN BY THE EXAMINER AS IF YOU ARE ON THE MANIPULATOR CRANE IN THE VAPOR CONTAINMENT.

Entergy
Nuclear Northeast

Procedure Use Is:

☑ Continuous

☐ Reference

☐ Information

This procedure is
TSR

Control Copy: _____

Effective Date: _____

ONOP-RP-3, Revision: 7

LOSS OF REFUELING CAVITY WATER LEVEL DURING REFUELING

Vince Mahoney / 1/2/04
Writer Date

/
Reviewer Date

Approved By:

/
Procedure Sponsor, DM/Designee Date

Crew E
Procedure Owner

PARTIAL REVISION

REVISION SUMMARY PAGE
(THIS PROCEDURE HAS NO FOLDOUT PAGE)

1.0 REASON FOR REVISION

1.1. Incorporate feedback

2.0 SUMMARY OF CHANGES

2.1. Revised Step 1.1.2 per operator markup.

2.2. Added new Step 1.1.3 per operator markup.

2.3. Moved note that was previously after Step 4.4 to before Step 4.4. (ip3-1369)

2.4. Changed Steps 4.4, 4.5 & 4.6 from Instruct to DIRECT.

2.5. Made numerous editorial changes throughout the procedure for IF, THEN statements. (No rev bars)

2.6. Revised Note before Step 5.2. (ip3-1369)

2.7. Revised Note before Step 5.7.1 (Operator Markup)

2.8. Extensively revised Step 4.8 and made it a continuous action step.

2.9. Revised step 5.7.3 to make it a contingency based on the amount of water loss in the VC.

CAUTION

DURING REFUELING OPERATIONS, IF AN EVENT OCCURS WHICH CAUSES DRAINAGE OF THE REFUELING CAVITY, POTENTIAL RADIOLOGICAL HAZARDS TO PERSONNEL IN THE CONTAINMENT BUILDING AND THE FUEL STORAGE BUILDING (FSB) MAY RESULT. AN IRRADIATED FUEL ASSEMBLY, EXPOSED PARTIALLY OR ENTIRELY TO AIR MAY PRESENT RADIATION FIELDS OF 50,000 R/HR. AT 30 FT.

NOTE

Events covered by this procedure may lead to implementation of the Emergency Plan and classification using the Emergency Plan Volume II, Table 4-1.

1.0 PURPOSE

1.1. This off normal responds to a loss of Refueling Cavity level.

1.1.1. Under a condition of gross cavity seal failure or steam generator nozzle dam failure with no operator action initiated, the refueling cavity will drain to the elevation of the reactor vessel flange (69' - 1 1/2"). If this were to occur, fuel assemblies suspended from either the manipulator crane or spent fuel handling tool, located vertically in either upender or located in the RCC change fixture would be partially or entirely exposed to air. Specifically:

1.1.1.1. Fuel assemblies suspended from the manipulator crane or spent fuel handling tool (assuming both the isolation gate and the fuel transfer tube gate valve are open), at elevations typical of fuel movement, would be entirely exposed to air.

1.1.1.2. Fuel assemblies in either upender (in a vertical position) or in the RCC change fixture would be exposed to 14.25 inches of air.

1.1.1.3. Fuel assemblies in either upender (in a horizontal position) would be submerged in 11.86 feet of water.

1.1.1.4. Fuel assemblies in the spent fuel pool would be submerged in 11.75 inches of water (assuming both the isolation gate and the fuel transfer tube gate valve are open).

1.1.1.5. Damaged fuel assemblies U12, U21 and T64 located in SFP locations SS-37, SS-39 and SS-41 respectively, would be submerged in 2.75 inches of water.

1.1.2. A loss of cavity water level will cause the entire upper internals package to be exposed to air. Although the radiation fields resulting from the upper internals package alone would be significantly lower than those resulting from an exposed irradiated fuel assembly, a radiological hazard may still exist. In this case, the actions taken should be based solely on the potential radiological hazard to personnel.

1.1.3. A loss of refueling water level through the cavity drain is treated as a special case because the lower cavity will not be an acceptable storage location for an irradiated fuel assembly.

2.0 SYMPTOMS/ENTRY CONDITIONS

2.1. Any one or more of the following may be indicative of this off-normal condition:

2.1.1. Visual observation of the incident.

2.1.2. Annunciation of the "HIGH LEVEL REACTOR PIT" alarm (Hi and Hi-Hi).

2.1.3. The reactor pit sump pump indicates "On" on panel SAF.

2.1.4. Increase in the containment sump and recirculation sump level indicators and annunciation of the "CONTAINMENT SUMP OVERFLOW" alarm.

2.1.5. Annunciation of the "SPENT FUEL PIT LEVEL" alarm.

2.1.6. Increase in containment wide range liquid level recorder.

2.1.7. Abnormally high readings or alarms on any of the following Area Radiation Monitors:

- Containment Area Radiation Monitor R-2.
- Incore Instrumentation Room Area Radiation Monitor R-7.
- Containment High Range Area Monitors R-25 and R-26.
- Fuel Storage Building Area Radiation Monitor R-5.

2.1.8. Alarms on local portable monitors.

3.0 AUTOMATIC ACTIONS

3.1. IF the FSB Area Radiation Monitor, R-5 annunciates, THEN the following will occur:

- The FSB supply fans will stop and their outlet dampers will close (if fan was in service).
- The exhaust fan will start (if not already running).
- The inlet and outlet dampers of the charcoal filter will open (if not blocked open).
- The sliding door will close.
- Station Air will inflate the seals on all FSB perimeter doors.

4.0 INITIAL OPERATOR ACTIONS

4.1. Ensure that the proper automatic actions have occurred.

4.2. Sound the containment evacuation alarm and initiate containment ventilation isolation.

4.3. Evacuate all non-essential personnel from the Containment Building and FSB.

NOTE

If the leak is small and it is desired to slow the rate of level decrease, the transfer tube gate valve may remain open and station air removed from the isolation gate to allow leakage from the spent fuel pool into the refueling cavity. This condition will provide more time for irradiated fuel assembly placement. Radiation levels in the FSB must be closely monitored and carefully considered in this condition.

4.4. DIRECT refueling operators to close the spent fuel pool isolation gate and to apply station air to the gate seal.

4.5. DIRECT refueling operators to return the fuel transfer conveyor to containment, if necessary, and close the fuel transfer tube gate valve.

4.6. DIRECT Health Physics personnel to constantly monitor radiation levels in the Containment Building and FSB and to keep the CR and Refueling SRO continuously updated.

4.7. IF the leak is small THEN, initiate blended make-up to the RCS.

4.8. ***IF the leak is large enough so that conditions are established for recirculation pump operation (48'-2" containment water level), THEN PERFORM the following:***

4.8.1. OPEN SI-MOV-1802A OR B.

4.8.2. START one Recirc Pump to return water to the refueling cavity.

4.8.3. ESTABLISH a balanced flow between cavity leakage and recirc pump discharge by using SI-HCV-638 or 640.

4.8.4. SECURE the Containment Sump Pumps in order to ensure recirculation water inventory.

4.8.5. IF containment water level drops below 48'-2", THEN PERFORM the following immediately

4.8.5.1. TRIP the Recirc Pump.

4.8.5.2. CLOSE SI-MOV-1802A & B.

CAUTION

PRIOR TO INSTALLING THE FILTER BYPASS BLOCKING ASSEMBLIES, THE CHARCOAL FILTER INLET AND OUTLET DAMPERS SHOULD BE MANUALLY BLOCKED OPEN TO PROTECT THE FANS AND DUCT WORK AGAINST A DEAD HEAD CONDITION.

AN IRRADIATED FUEL ASSEMBLY, EXPOSED PARTIALLY OR ENTIRELY TO AIR, PRESENTS AN EXTREME RADIOLOGICAL HAZARD. RADIATION FIELDS OF 50,000 R/HR. AT 30 FT. ARE LIKELY.

5.0 SUBSEQUENT ACTIONS

5.1. IF R-5 alarmed, ensure the charcoal filter bed inlet and outlet dampers have opened (if not already blocked open), THEN install the upper and lower charcoal filter bypass blocking assemblies (if not already installed).

5.1.1. Secure exhaust fan while operator is installing the bypass panel assemblies.

NOTE

- Depending on the location of any irradiated fuel assembly in transit, the operator should proceed to the applicable section of this procedure
- Annunciation of the "High Level Reactor Pit" alarm is a positive indication of a cavity seal or nozzle dam failure
- The locations listed for fuel assembly placement are listed in preferential order, however, the final decision for placement should be based on:
  - Rate of decrease of the refueling cavity water level and the source of the leakage.
  - Location of fuel assembly in transit.
  - Available locations for placement.
  - Possibility of having multiple fuel assemblies in transit and their locations.

5.2. **Irradiated Fuel Assembly Suspended By The Manipulator Crane**

5.2.1. Place the irradiated fuel assembly into any accessible core location.

5.2.1.1. Unlatch the assembly and raise the mast clear of the fuel.

OR

5.2.2. IF the upender is available, THEN place the irradiated fuel assembly into the upender.

5.2.2.1. Unlatch the assembly and raise the mast until the "gripper up disengaged" light is illuminated.

5.2.2.2. Lower the upender to its horizontal position.

OR

5.2.3. Place the irradiated fuel assembly directly west of the RCC change fixture beside the tracks in the transfer canal.

5.2.3.1. Lower the fuel assembly until it just touches the floor ("slack cable" light illuminated). Do not unlatch the fuel assembly from the crane.

5.3. **Irradiated Fuel Assembly Located In The RCC Change Fixture**

5.3.1. The Refueling SRO shall determine whether time permits to move the fuel assembly (or assemblies) to another location. This determination should be based on visual observation of the rate of decrease of the refueling cavity water level and rate of increase of radiation levels.

5.3.2. IF an RCCA is suspended by the RCC change fixture THEN, place the RCCA back into the fuel assembly and unlatch it from the fixture.

5.3.3. Place the irradiated fuel assembly into any accessible core location.

5.3.3.1. Unlatch the assembly and raise the mast clear of the fuel.

OR

5.3.4. IF the upender is available THEN, place the irradiated fuel assembly into the upender.

5.3.4.1. Unlatch the assembly and raise the mast until the "gripper up disengaged" light is illuminated.

5.3.4.2. Lower the upender to its horizontal position.

OR

5.3.5. Place the irradiated fuel assembly directly west of the RCC change fixture beside the tracks in the transfer canal.

5.3.5.1. Lower the fuel assembly until it just touches the floor ("slack cable" light illuminated). Do not unlatch the fuel assembly from the crane.

5.3.6. IF an RCCA is stored in the RCC change fixture THEN, leave it there.

5.4. **Irradiated Fuel Assembly Located In Either Upender**

5.4.1. Lower the upender into its horizontal position.

5.4.2. If necessary, move the conveyer to the containment side of the fuel transfer tube and close the transfer tube gate valve.

5.5. **Irradiated Fuel Assembly Suspended From The Spent Fuel Pool Handling Tool**

5.5.1. Place the irradiated fuel assembly into any accessible spent fuel pit location.

5.5.1.1. Unlatch the assembly and raise the handling tool clear of the fuel.

OR

5.5.2. IF the upender is available, THEN place the irradiated fuel assembly into the upender.

5.5.2.1. Unlatch the assembly and raise the handling tool clear of the upender.

5.5.2.2. Lower the upender into its horizontal position.

5.5.2.3. Move the conveyer to the containment side of the fuel transfer tube and close the transfer tube gate valve.

OR

5.5.3. Place the irradiated fuel assembly directly east of the transfer system in the transfer canal or in the fuel cask area.

5.5.3.1. Lower the fuel assembly until it just touches the floor. Do not unlatch the fuel assembly from the handling tool.

5.6. **Leakage Through Refueling Cavity Drain**

NOTE

In this condition, the only locations for safe storage are the reactor core and the spent fuel pool storage racks.

5.6.1. Place the irradiated fuel assembly in the reactor core or the spent fuel pool storage racks depending on location (Containment or FSB).

5.6.2. Unlatch the fuel assembly and raise the mast or tool clear of the fuel.

5.6.3. Make all efforts to close the fuel transfer tube gate valve if not previously done.

5.7. **Leakage While Moving The Upper Or Lower Internals**

CAUTION

EXTREMELY HIGH RADIATION FIELDS WILL EXIST IF THE LOWER INTERNALS IS PARTIALLY OR ENTIRELY EXPOSED TO AIR. ALTHOUGH THE RADIATION FIELDS WILL BE SIGNIFICANTLY LOWER FROM AN EXPOSED UPPER INTERNALS, A RADIATION HAZARD MAY STILL EXIST.

NOTE

All attempts should be made to place the internals back into the reactor vessel. If the refueling cavity were to drain to the vessel flange elevation, the entire upper internals would be exposed to air if seated in the storage stand. If the refueling cavity were to fully drain through the cavity drain, the entire lower internals would be exposed to air if seated in its storage stand.

5.7.1. IF the polar crane is connected to the internals and the internals is not seated in its storage stand, THEN:

5.7.1.1. Make all attempts to place the internals back into the reactor vessel.

OR

5.7.1.2. Place the internals into its storage stand location.

5.7.1.3. IF the internals are seated in its storage stand, THEN do not attempt to move it.

5.7.2. IF it is determined by the Refueling SRO that it is impossible to place all irradiated fuel assemblies into any of the safe locations listed or its unsafe for personnel to continue such attempts, THEN:

5.7.2.1. Verify that all fuel assemblies are physically secure.

5.7.2.2. Evacuate all personnel from the Containment Building and the Fuel Storage Building.

5.7.2.3. Verify that all personnel have evacuated the Containment Building and Fuel Storage Building.

5.7.3. IF VC Sump level is rising due to loss of Reactor Cavity level, THEN SECURE the containment sump pumps in order to ensure recirculation water inventory. This is done by placing their control switches, located on the Waste Disposal Panel, into the "Off" position.

5.7.4. IF blended make-up or internal recirculation is unavailable, THEN consider using external recirculation using the RHR pumps for returning water to the refueling cavity.

5.7.5. IF the previous make-up or recirculation of spilled water is of sufficient quantity to allow movement of any irradiated fuel assemblies which have not yet been placed into a safe location, THEN proceed as per Section 5.0.

5.7.6. Verify that RHR is in service.

NOTE

The remaining steps may not be possible to perform if the FSB has been evacuated.

5.7.7. Verify that the spent fuel pool isolation gate has been closed and station air has been applied to the gate seal. Isolate the FSB from the containment building by closing the fuel transfer tube gate valve, if not previously done.

5.7.8. Stop the spent fuel pool cooling pumps if the level in the pool decreases to a point near or below the pump suction (i.e. approximately six feet below the normal level of the pool).

5.7.9. If necessary, initiate make-up to the spent fuel pool and start a spent fuel pool cooling pump when possible as per SOP-SFP-1.

5.7.10. Have the chemist sample and analyze the RCS and spent fuel pool to verify adequate boron concentration. If necessary, adjust as per SOP-CVCS-3 and SOP-SFP-1 respectively.

JPM NO. 4

PERFORM CALCULATIONS FOR A GASEOUS RADIOACTIVE RELEASE PERMIT

Job Performance Measure Exam

Submitted By : Don Jackson_ 9/20/2003

Date

Reviewed By

Date

SME Review/Validation By

Date

Approved By

Date

JPM Tasks

Task ID: 2.3.8 **Description:** PERFORM CALCULATIONS FOR A GASEOUS RADIOACTIVE RELEASE PERMIT

Trainee: _____ Evaluator: _____

Evaluator Signature _____ Date _____

Trainee Performance: Satisfactory _____ Unsatisfactory _____

Start Time _____ **Stop Time:**

When I tell you to begin, you are to perform the task listed above. I will describe general conditions standard(s), initiating cue(s), and answer any questions you have. I will provide access to any tools necessary to perform the task. You may use any approved reference material normally available. To satisfactory complete this task, you must perform or simulate each critical element correctly. You are to inform the examiner when you have completed the task.

Method of Testing: Actual Performance in the Classroom

General Comments (For Evaluator Use):

Task Conditions:

THE CALCULATIONS FOR THE GDT CURIE CONTENT, PLANT VENT RELEASE RATE, ALLOWABLE GDT RELEASE RATE, RELEASE TIME, AND R-44 ALARM SETPOINT ARE DONE WITHIN 25% OF ACTUAL VALUES.

Task Standards :

PERFORM CALCULATIONS FOR A GASEOUS RADIOACTIVE RELEASE PERMIT IN ACCORDANCE WITH SOP-WDS-013
K&A #: SYSTEM GENERIC 2.3.8 KNOWLEDGE OF THE PROCESS FOR PERFORMING A PLANNED GASEOUS RADIOACTIVITY RELEASE
IMPORTANCE FACTORS: SRO=3.2
Estimated Completion Time: 35 min

Tools Needed:

CALCULATOR

Initiating Cues :

USING SECTION 4.2 of SOP-WDS-013, "GASEOUS WASTE RELEASES", PERFORM CALCULATIONS IN ACCORDANCE WITH STEPS 4.2.9- 4.2.19 TO COMPLETE ATTACHMENT 1, "GASEOUS WASTE RELEASE PERMIT" FOR 33 LARGE GAS DECAY TANK.

- 33 LGDT PRESSURE IS 87 PSIG
- 33 LGDT VOLUME IS 525 CUBIC FEET
- THE 33 LGDT HAS BEEN ISOLATED AND SAMPLED BY CHEMISTRY
- CHEMISTRY GRAB SAMPLE #03-050 TAKEN 2 HOURS AGO INDICATES THAT NOBLE GAS IN 33 LGDT IS 1.05E-3
- A GASEOUS WASTE RELEASE PERMIT IS BEING PREPARED TO DISCHARGE THE DECAY TANK
- DATA NECESSARY TO SUPPORT THE RELEASE PERMIT HAS BEEN COLLECTED AND RECORDED ON ATT.1 OF SOP-WDS-013
- THE CCR PERSONAL COMPUTER IS NOT AVAILABLE, AND THE SOFTWARE CAN NOT BE USED
- THE PAB/VC EXHAUST FANS ARE IN SERVICE AND DISCHARGING AT 30,000 SCFM
- R-27 CHANNEL 4 IS READING 10 uc/sec, WITH AN ALARM SETPOINT OF 3.08E+3 uc/sec, AND AN ALERT SETPOINT OF 1.05E+3

Safety Considerations :

NONE

Consequences of Inadequate Performance:

INACCURATE RELEASE LIMITING SETPOINTS, POSSIBLE RELEASE RATE ABOVE LEVEL PERMISSIBLE

Performance Checklist :

	Element :	Standards :	Conditions :
1	OBTAIN AND REVIEW SOP-WDS-013, ENTER DATA IN 4.2.9	OBTAINS AND REVIEWS SOP-WDS-013, STEPS 4.2.9-4.2.19, ENTERS ITEM 4 525 CUFT, ITEM 7 TODAY 2 HRS AGO ITEM 6- 1.05E-3 uci/cc	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	DETERMINE GDT CURIE CONTENT	PERFORMS THE FOLLOWING CALCULATION AND RECORDS ON ATT. 1 A=(1.93E+03)*C*V*P A=(1.93E+03)*(1.05E-3)*(525)*(101.7)= 1.08E+5 Acceptable Range-(8.1e+4-1.35e+5)	

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
3	DETERMINE AVAILABLE RELEASE RATE (D), IN Uci/sec	WITH R-27, CHAN 4 IN SERVICE, DETERMINE (D) BY SUBTRACTING THE CURRENT READING FROM THE ALARM SETPOINT D=3.08E+3-.01E+3=3.07E+3 Acceptable Range- (2.302E+3-3.838E+3)	

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
4	RECORD N/A ON ATT. 1 FOR I-131 ACTIVITY, CALCULATED ALARM SETPOINT, CALCULATED R-12 AUTO CLOSURE SETPOINT, ACTUAL R-12 AUTO CLOSURE SETPOINT	RECORDS N/A ON ATT. 1 FOR I-131 ACTIVITY, CALCULATED ALARM SETPOINT, CALCULATED R-12 AUTO CLOSURE SETPOINT, ACTUAL R-12 AUTO CLOSURE SETPOINT	

omments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
5	RECORD DISCHARGE MONITOR AND ACTUAL ALARM SETPOINT FOR DISCHARGE MONITOR ON ATT. 1	RECORDS MONITOR AND SETPOINT	Cue: Values Given On Cue Sheet

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	DETERMINE MAX ALLOWED RELEASE RATE IN SCFM , USING EMAX= D/(C*472)	PERFORMS CALCULATION AND RECORDS ON ATT. 1 EMAX= D/(C*472) EMAX= 3.07E+3/(1.05E-3)*472= 6195 Acceptable Range- (4646-7743)	

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

lement : 7 SELECT A CONSERVATIVE ACTUAL RELEASE RATE (E)

Standards : USES NOTE AND CALCULATES E AS 1% OF EMAX
E= .01 X 6195=62
Acceptable Range- 47-77

Conditions :

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

lement : 8 DETERMINE CONSERVATIVE RCV-014 LIFT SETTING USING "E" AND ATT 12

Standards : FROM TABLE RCV-014 % OPEN IS 84%
Acceptable Range-72%- 89%

Conditions :

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

lement : 9 RECORD EMAX, E, AND RCV-014 SETTINGS

Standards : VERIFIES VALUES RECORDED NOTES THEY ARE IN ERROR

Conditions :

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

lement : 10 DETERMINE CALCULATED RELEASE RATE "R"

Standards : PERFORMS CALCULATION
R=E x C x 472
R= 62 x 1.05E-3x 472= 30.7 uc/sec
Acceptable Range- 23.0-38.4 uc/sec

Conditions :

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
11	DETERMINE IF CALCULATED RELEASE RATE IS GREATER THAN AVAILABLE RELEASE RATE	DETERMINES CALCULATED RELEASE RATE IS LESS THAN AVAILABLE RELEASE RATE	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

erminating Cues :

TERMINATE THE JPM ONCE DETERMINATION IS MADE THAT CALCULATED RELEASE RATE IS LESS THAN AVAILABLE RELEASE RATE.

Candidate Cue Sheet

USING SECTION 4.2 of SOP-WDS-013, "GASEOUS WASTE RELEASES", PERFORM CALCULATIONS IN ACCORDANCE WITH STEPS 4.2.9- 4.2.19 TO COMPLETE ATTACHMENT 1, "GASEOUS WASTE RELEASE PERMIT" FOR 33 LARGE GAS DECAY TANK.

- 33 LGDT PRESSURE IS 87 PSIG
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- THE CCR PERSONAL COMPUTER IS NOT AVAILABLE, AND THE SOFTWARE CAN NOT BE USED
- THE PAB/VC EXHAUST FANS ARE IN SERVICE AND DISCHARGING AT 30,000 SCFM
- R-27 CHANNEL 4 IS READING 10 uc/sec, WITH AN ALARM SETPOINT OF 3.08E+3 uc/sec, AND AN ALERT SETPOINT OF 1.05E+3

ATTACHMENT 1, GASEOUS WASTE RELEASE PERMIT FORM

(Page 1 of 1)

Tank/ System (1) 33LGDT Current Date/Time (2) Today (Date) Now (Time) Permit No. (3) 03-002

Volume (4) 525 ft³ Initial Pressure (5) 87 psig Concentration of Noble Gas (C)(6) 1.05 E-3 µCi/cc

Grab Sample:(7) Sample # 03-050 Date Today Time 2 hrs ago OR R-12 Monitor

Activity (A)(8) 1.08 E +5 µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc

VC Purge Only

Calculated Release Rate (R)(9) 30.7 µCi/sec Available Release Rate (D)(10) 3.07 E+3 µCi/sec

---

Discharge Monitor (11) R-27 Actual Alarm Setpoint (12) 3.08E+3 µCi/sec

Calculated alarm setpoint (13) N/A µCi/sec Alert setpoint (14) 1.05 E+3 µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) N/A µCi/cc Actual (16) N/A µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17)_____ placed out service @ _____ (Date) _____ (Time)
- Vent Sample:(18) Sample #_____ Date_____ Time_____ Results (19)_____ µCi/cc (Noble Gas)
- Vent flow rate (20)_____cfm Continuous Release Rate (CR)(21)_____µCi/sec

Release Calculations verified by (22)_____

Release Path Valve Alignment Verified (23)_____ CRS/SM

Discharge Authorized (24)_____ CRS/SM Release Start (25)_____ (Date) _____ (Time)

Final Pressure (26)_____psig Release Stop (27)_____ (Date) _____ (Time)

Calculations Results: S (28) – Emax (29) 6195 ft³/min

E(30) 62 ft³/min RCV-014 Setting (31) 84 % open

Comments:(32)_____

Entergy
Nuclear Northeast

Procedure Use Is:

☒ Continuous

☐ Reference

☐ Information

Control Copy:_____

Effective Date:_____

This procedure is TSR

SOP-WDS-013, Revision: 18

GASEOUS WASTE RELEASES

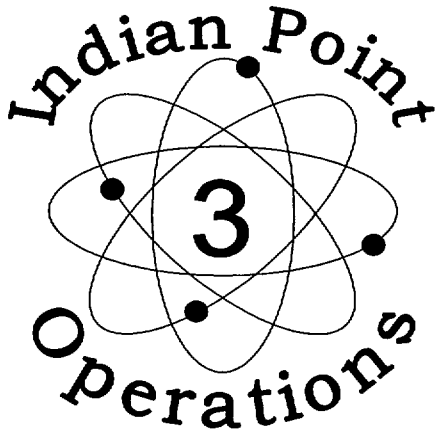
Nick De Vries / 7/25/02
Writer Date

/
Reviewer Date

Approved By:

/
Procedure Sponsor, DM/Designee Date

Crew E
Procedure Owner



PARTIAL REVISION

REVISION SUMMARY
(Page 1 of 1)

1.0 REASON FOR REVISION

1.1 Incorporated feedback (IP3-5347, 5649, 5813, 5816).

1.2 Procedure Upgrade.

2.0 SUMMARY OF CHANGES

2.1 Upgraded procedure by incorporating place keeping lines, no rev bars.

2.2 Step 2.5 corrected Con Edison IP2 Shift Supervisor to Unit 2 Shift Manager (IP3-5649).

2.3 Steps 2.5, 2.6 and 4.7.1 changed Chemistry General Supervisor to Chemistry Management.

2.4 Step 2.8.3 corrected Performance Group to Programs and Components Engineering.

2.5 Deleted step 4.2.1 note, requirement of the tracking sheets no longer applies (IP3-5813).

2.6 Corrected typo in step 4.2.12 bullet (IP3-5816)

2.7 Revised step 4.4.4 per chemist comment (IP3-5347).

2.8 Step 4.4.20.5 added sub step b) per Chemist feedback (IP3-5347).

2.9 Step 4.4.20.7 added sub step a) per Chemist feedback (IP3-5347).

2.10 Revised step 4.4.7 per Chemist feedback (IP3-5347).

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure establishes requirements for completion of radioactive gaseous release permits per AP-11, Radioactive Effluents Control Program.

1.2 This procedure applies to the following gaseous releases:

- VC pressure relief
- Large and small gas decay tanks
- VC purge
- RCS and SG primary side maintenance
- Bldg ventilation with monitors OOS

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Alarm setpoints specified in this procedure refer to Alarm value on channel initiating any automatic isolation function.

2.2 Use of a particular release rate depends on expected evolution and rate of release:

- IF release rate is less than or equal to annual release rate, THEN Shift Manager (SM) or CRS authorization is required.
- IF release rate is greater than annual release rate AND less than or equal to quarterly release rate, THEN Manager of Operations or Assistant Operations Manager (AOM) authorization is required.
- IF release rate is greater than quarterly release rate AND less than or equal to instantaneous release rate, THEN Vice President Operations IP3 authorization is required.

2.3 WHEN instantaneous or quarterly release limits are authorized, THEN authorization SHALL be documented on release permit or appropriate SOP-RM-010 Table in CRS Waste Permit Book.

2.4 WHEN instantaneous release rate limit is used to perform a release, THEN a review of calculations SHALL be performed by Radiological Engineering or Chemistry:

- IF possible, THEN this review should be performed prior to release.
- Allowable release rate may be adjusted following review based on ODCM allowed methodology.

2.5 By mutual agreement with Unit 2 Shift Manager, one unit can reduce or eliminate gaseous discharges to allow other unit to use full site permissible discharge rate:

- WHEN option is exercised, THEN SM SHALL document and Chemistry Management SHALL be informed.

2.6 WHEN a release is expected to continue greater than 2 days, THEN a new release permit SHALL be issued each day:

- VC purge release permits may be terminated at discretion of Chemistry Management and be considered as a continuous release until purge is terminated.
- WHEN plant conditions change such that activity in VC may significantly change, THEN a new permit SHALL be issued.

2.7 Concurrent releases are evaluated using remaining available release rate (D):

- This method assumes all currently approved releases are occurring simultaneously.
- In this case, the table in Step 4.5.8 provides authorized release rate for each pathway.

2.8 Preferred order of methods to obtain plant vent flow rate are as follows:

2.8.1 Flow instrument read out associated with R-27, on RM-23A module.

2.8.2 Flow instrument associated with CFMS display 255.

2.8.3 Programs and Components Engineering flow measurement for associated fan/ventilation configuration or rated fan flow rate.

2.9 R-27, Plant Vent Noble Gas Monitor, is the final effluent release monitor used in calculations throughout this procedure:

- IF R-27 is OOS, THEN R-14 may be used provided setpoint is adjusted to current authorized value.
- Method to substitute R-14 in release calculations is described in Attachment 8.

2.10 Quarterly radiation monitor (RM) conversion factors are supplied by Chemistry and maintained in Waste Permit Book in Control Room.

2.11 Digital RMs are equipped with an ALERT alarm:

- With the exception of R-11 and R-12, the Alert setpoint may be set (as per SOP-RM-010) at CRS discretion to provide early indication of approaching High Alarm setpoint.
- R-11 and R-12 Alert setpoint changes require concurrence from Chemistry or HP due to VAPOR CONTAINMENT EVACUATION alarm, which occurs at Alert setpoint.

2.12 WHEN this procedure is revised or changed per Temporary Procedure Change (TPC), THEN a review SHALL be performed for impact on associated Control Room Computer program.

2.13 Gaseous waste in gas decay tanks is evaluated prior to release for potential impact on effluent limits. Further decay may be necessary based on ODCM calculations performed by Chemistry.

2.14 IF a release has NOT been started within 24 hours after associated sample has been obtained, THEN a new sample should be obtained and analyzed prior to starting release **{Reference 5.1.4}**.

2.15 Release permits can be electronically generated from the Control Room (CR) menu system, which prepares the permit per existing procedural instructions.

3.0 PREREQUISITES

3.1 Requirements of AP-11, Radioactive Effluents Control Program, for gaseous releases have been reviewed.

____ 4.1.19.2 IF R-27 or R-14 alarm setpoint was adjusted AND other current gaseous release permits do NOT require a release rate greater than annual limit, THEN:

____ a) RE-ADJUST affected RM alert or alarm setpoint per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

____ b) RECORD restored setpoint per SOP-RM-010, Radiation Monitor Setpoint Control.

____ 4.1.19.3 IF R-12 alarm setpoint was adjusted, THEN:

____ a) ADJUST R-12 alert and alarm setpoints to pre-release values, or other values determined by Chemistry or HP, as per SOP-RM-008.

____ b) RECORD as left setpoints per SOP-RM-010, Radiation Monitor Setpoint Control. **{Reference 5.1.1}**

4.2 Large And Small Gas Decay Tank Release Permits

____ 4.2.1 IF Chemistry pre-release calculations determine that tank to be released may approach effluent release limits or guidelines, THEN ENSURE tank is allowed to decay for as long as reasonable such that effluent limits are NOT challenged. **{Reference 5.1.3}**

NOTE

- Attachment 3 is an example of a completed release permit for LGDT Release.
- Number appearing in () at end of each step that requires data entry on Attachment 1 corresponds to number for that data blank on Attachment 1.

____ 4.2.2 RECORD the following information on Attachment 1, Gaseous Waste Release Permit Form:

____ • Tank to be released as System (1)

____ • Tank initial pressure (5) **{Reference 5.1.4}**

____ • Current date and time (2)

_____ 4.2.3 PERFORM valve alignment to isolate tank and prepare to sample per applicable attachment:

_____ • Attachment 9 LGDT Release Verification Alignments

_____ • Attachment 10 SGDT Release Verification Alignments

_____ 4.2.4 INITIATE IV of gas decay tank release path per applicable attachment:

_____ • Attachment 9 LGDT Release Verification Alignments

_____ • Attachment 10 SGDT Release Verification Alignments

_____ 4.2.5 ENSURE WD-PCV-1040, Gas Decay Tanks Release Header Pressure Control Valve, is set to maintain approximately 20-psig downstream pressure.

_____ 4.2.6 DIRECT Chemistry to sample isolated tank.

_____ 4.2.7 WHEN Chemistry has obtained a sample,
THEN CLOSE WD-PCV-1040 (set to less than 0) to isolate tank.

_____ 4.2.8 ASSIGN permit number (next consecutive number for gaseous release permits) and RECORD on Attachment 1. (3)

NOTE

- Unpressurized volume in LGDT is 525 ft3.
- Unpressurized volume in SGDT is 40 ft^3.

_____ 4.2.9 RECORD the following on Attachment 1:

_____ • Gas decay tank unpressurized volume (V) (4)

_____ • Chemistry sample #, date and time (7)

_____ • Concentration of Noble Gas (C) in tank (μCi/cc) (6)

NOTE

1.93E+03 = (28,317 cc/ft3) * (1/14.7 atmospheres/psia)

____ 4.2.10 DETERMINE total activity (A), in μCi, in gas decay tank and RECORD on Attachment 1, as follows: (8)

A = (1.93 E+03) * (C) * (V) * (P), where:

C = Concentration of noble gas activity in tank (μCi/cc) (6)

V = unpressurized volume of tank (ft3) (4)

P = initial pressure of tank, in psia (psia = psig + 14.7) (5)

____ 4.2.11 DETERMINE available release rate (D), in μCi/sec as follows, and RECORD on Attachment 1: (10)

____ 4.2.11.1 IF R-27, Channel 4 is in service, THEN DETERMINE available release rate (D) by calculating difference between current alarm setpoint (normally annual limit, as per AP-11) and current reading on R-27, Channel 4.

____ 4.2.11.2 IF R-27, Channel 4 is OOS AND R-14 is in service, THEN DETERMINE available release rate on R-14 per Attachment 8.

____ 4.2.11.3 IF both R-27, Channel 4 AND R-14 are OOS, THEN:

____ a) DIRECT Chemistry to sample Plant Vent.

____ b) CALCULATE Available Release Rate, (D) per Steps 4.5.7 and 4.5.8.

____ c) COMPLETE "discharge monitor OOS" section of Attachment 1. (17) (18) (19)

____ 4.2.12 RECORD N/A for the following on Attachment 1:

____ • Iodine 131 Activity (8a)

____ • Calculated alarm setpoint (13)

____ • Calculated R-12 Auto closure setpoint (15)

____ • Actual R-12 Auto closure setpoint (16)

_____ 4.2.13 RECORD discharge monitor (11) and Actual Alarm Setpoint for discharge monitor on Attachment 1. (12)

NOTE

472 = (28,317 cc/ft^3)/(60 sec/min)

_____ 4.2.14 DETERMINE maximum allowable release rate (Emax), in SCFM for this release using the following equation:

Emax = D / (C * 472), where:

Emax = Maximum allowable release rate (ft3/min)

D= Available Release Rate (μCi/sec) (10)

C= Concentration of noble gas activity in tank (μCi/cc) (6)

NOTE

- Emax represents flow rate (SCFM) corresponding to release rate limit for this tank.
- Maximum flow through RCV-014 at 20 psig is 120 SCFM.
- IF Emax is greater than 120 SCFM, THEN this release will NOT approach current alarm setpoint for any lift setting of RCV-014.
- Typical conservative setting of RCV-014 is approximately 1% of Emax. This setting results in a release rate corresponding to 1% of current alarm setpoint.

_____ 4.2.15 SELECT a conservative actual release rate (E), in SCFM that is less than Emax for this release.

_____ 4.2.16 DETERMINE associated conservative percent lift setting, in % Open, for RCV-014 using conservative actual release rate (E) in SCFM and Attachment 12, RCV-014 Valve Position Table.

_____ 4.2.17 RECORD the following on Attachment 1:

_____ • Emax - Maximum allowable release rate (ft3/min) (29)

_____ • E - Actual Release Rate (ft3/min) (30)

_____ • Conservative percent lift setting for RCV-014 (% open) (31)

NOTE

472 = (28,317 cc/ft^3)/(60 sec/min)

_____ 4.2.18 DETERMINE Calculated Release Rate, (R) in μCi/sec and RECORD on Attachment 1, as follows: (9)

R = E * C * 472, where:

R = Calculated Release Rate (μCi/sec)

E = Release rate for RCV-014 position (ft3/min) (30)

C = Concentration of noble gas activity in tank (μCi/cc) (6)

NOTE

WHEN a new release rate has been authorized,
THEN a new alarm setpoint for RM must be established.

_____ 4.2.19 IF Calculated Release Rate (R) is greater than Available Release Rate (D), THEN ESTABLISH a new alarm setpoint (S) as follows:

_____ 4.2.19.1 OBTAIN authorization for higher release rate per Steps 2.2, 2.3, and 2.4.

_____ • IF authorization can NOT be obtained, THEN ALLOW gas decay tank to decay further and TERMINATE Attachment 1.

_____ 4.2.19.2 ADJUST RM to new alarm setpoint (S) per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ 4.2.19.3 RECORD setpoint change per SOP-RM-010, Radiation Monitor Setpoint Control.

_____ 4.2.19.4 RECORD setpoint change and the granting of applicable permission on Attachment 1. (28)

_____ 4.2.19.5 RETURN to Step 4.2.11.

_____ 4.2.20 IF R-27 is operable, THEN ENTER an alert setpoint (at a value between current alarm setpoint and expected release rate (R)) at CRS discretion and RECORD on Attachment 1. (14)

_____ 4.2.21 ENSURE IV of gas decay tank release path per applicable attachment is complete:

_____ • Attachment 9 LGDT Release Verification Alignments

_____ • Attachment 10 SGDT Release Verification Alignments

_____ 4.2.22 WHEN valve alignment has been verified, THEN:

_____ 4.2.22.1 REQUEST CRS/SM sign for verification of release alignment on Attachment 1. (23)

_____ 4.2.22.2 REQUEST CRS/SM authorize release on Attachment 1. (24)

_____ 4.2.22.3 OBTAIN key to permissive switch for RCV-014 and PLACE switch in UNBLOCK (on Radiation Monitoring Control Panel).

_____ 4.2.22.4 OPEN WD-PCV-1040, Gas Decay Tanks Release Header Pressure Control Valve, to maintain approximately 20-psig downstream pressure.

CAUTION

- The following step initiates release to environment.
- Conservative setting SHALL NOT be exceeded.

_____ 4.2.22.5 Slowly OPEN RCV-014, Plant Vent Radiation control valve, to lift setting recorded on Attachment 1. (31)

_____ 4.2.23 RECORD Release Start date and time on Attachment 1. (25)

_____ 4.2.24 Periodically MONITOR plant vent activity.

_____ 4.2.25 WHEN tank is empty OR release is to be terminated, THEN:

_____ 4.2.25.1 CLOSE RCV-014, Plant Vent Radiation control valve.

_____ 4.2.25.2 CLOSE WD-PCV-1040, Gas Decay Tanks Release Header Pressure Control Valve, by setting to less than 0.

_____ 4.2.25.3 PERFORM restoration section of applicable Attachment 9 or 10 for released gas decay tank.

_____ 4.2.25.4 RECORD Release Stop date and time and Final Pressure in tank on Attachment 1. (27) (26).

_____ 4.2.25.5 PLACE permissive switch for RCV-014 in BLOCK and REMOVE key.

_____ 4.2.26 IF R-27 or R-14 alarm setpoint was adjusted AND current gaseous release permits do NOT require a release rate greater than annual limit, THEN:

_____ 4.2.26.1 ADJUST affected alarm setpoint to the pre-release value per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ 4.2.26.2 RECORD as left setpoint per SOP-RM-010, Radiation Monitor Setpoint Control **{Reference 5.1.1}**

_____ 4.2.27 ATTACH all valve alignment verification forms to release permit.

_____ 4.2.28 ALIGN waste gas decay tank as required for current plant conditions per SOP-WDS-002, Gaseous Waste Disposal System Operation.

CAUTION

- VC Purge System SHALL NOT be operated in Modes 1 – 4 per LCO 3.6.3 Action Statement.
- The following releases can result in an extremely high release rate and SHALL be conducted in cooperation with Chemistry and HP.

NOTE

- VC Purge Release permits SHALL be re-issued daily to reflect changing conditions inside VC until purge is secure or reclassified.
- An example of a completed release permit is provided in Attachment 4.
- Number appearing in () at end of each step that requires data entry on Attachment 1 corresponds to number for that data blank on Attachment 1.

4.3 VC Purge Release Permits

_____ 4.3.1 RECORD VC Purge as the System on Attachment 1. (1)

_____ 4.3.2 RECORD current date and time and N/A for Initial Pressure. (2) (5)

_____ 4.3.3 ASSIGN a permit number (normally next consecutive number gaseous release permit number), and RECORD on Attachment 1. (3)

NOTE

- R-12 and a fan cooler unit SHALL be in service AND a Chemistry sample SHALL be obtained for VC purges.
- IF VC purge is reclassified as Building Ventilation AND an effluent monitor (R-27 or R-14) is in service per Radiological Environmental Controls (RECS) 2.2-1, Action 9, THEN R-12 is NOT required to be in service.
- IF a VC purge is required following power operation, THEN Iodine 131 activity is recorded on permit before starting VC purge. Subsequent recording of Iodine 131 activity is NOT required.

_____ 4.3.4 OBTAIN VC Noble Gas concentration and grab sample number, date, time from Chemistry AND RECORD on Attachment 1. (6) & (7)

_____ 4.3.5 IF this VC purge is following a period of power operation, THEN OBTAIN and RECORD Iodine 131 activity on Attachment 1. (8a)

NOTE

1.89E+07 cc/sec = (40,000 ft^3/min) * (28,317 cc/ft^3)/(60 sec/min)

____ 4.3.6 DETERMINE Calculated Release Rate (R) for both Noble Gas and Iodine (separately), using the following equation, and RECORD both on Attachment 1. (9)

R = (1.89E+07 cc/sec) * (C), where:

C = Concentration of Noble Gas (6) or Iodine 131 Activity (8a) in VC (μCi/cc)

____ 4.3.7 RECORD discharge monitor used on Attachment 1 (11).

____ 4.3.8 RECORD current authorized discharge monitor alarm setpoint on Attachment 1 (13).

NOTE

VC purges may require use of Instantaneous Release Rate.

____ 4.3.9 IF either Calculated Release Rate (R) is greater than AP-11 Annual Release Rate, THEN OBTAIN authorization for higher release rate as described in Steps 2.2, 2.3, and 2.4.

____ 4.3.10 IF ODCM Instantaneous Release Rate is to be used, THEN:

____ 4.3.10.1 REQUEST Chemistry to calculate ODCM limit and expected release rate.

____ 4.3.10.2 ATTACH ODCM calculations to release permit.

____ 4.3.11 IF either R is greater than ODCM release rate limit, THEN ENSURE VC Purge is NOT performed and CONTACT Chemistry.

____ 4.3.12 DETERMINE Available Release Rate (D) by calculating difference between current alarm setpoint and current reading on effluent RM (either R-27 or R-14) and RECORD on Attachment 1. (10)

____ • IF R-27, Channel 4 is OOS AND R-14 is in service, THEN DETERMINE Available Release Rate on R-14 radiation monitor as per Attachment 8.

____ • IF both R-27, Channel 4 AND R-14 are OOS, THEN CONTACT Chemistry prior to proceeding with a VC Purge permit.

_____ 4.3.13 IF either Calculated Release Rate (R) is greater than Available Release Rate (D), THEN OBTAIN authorization for higher release rate per Steps 2.2, 2.3, and 2.4 OR DISCONTINUE processing release permit.

_____ 4.3.14 IF a new release rate has been authorized, THEN ESTABLISH a new alarm setpoint for effluent RM as follows:

_____ 4.3.14.1 RECORD new release rate (S) and the granting of applicable permission on Attachment 1. (28) (32)

_____ 4.3.14.2 ADJUST applicable RM to new alarm setpoint (S) per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ 4.3.14.3 RECORD setpoint change per SOP-RM-010, Radiation Monitor Setpoint Control.

NOTE

Auto closure setpoint for R-11, R-12, and R-27 SHALL be evaluated by Chemistry and HP Management to prevent unnecessary closure.

_____ 4.3.15 RECORD discharge monitor (R14/27) and Actual alarm setpoint on Attachment 1 (11) (12).

_____ 4.3.16 IF R-27 is operable, THEN ENTER an alert setpoint (at a value below current alarm setpoint) at CRS discretion and RECORD on Attachment 1. (14)

NOTE

1.89E+07 cc/sec = (40,000 ft^3/min) * (28,317 cc/ft^3)/(60 sec/min)

_____ 4.3.17 DETERMINE R-12 auto closure setpoint and RECORD on Attachment 1: (15)

_____ • R-12 setpoint (μCi/cc) = IR/(1.89E+07 cc/sec) where:

IR = AP-11 or ODCM instantaneous release rate, as applicable (μCi/sec)

_____ • IF necessary, THEN ADJUST R-12 auto closure setpoint to less than or equal to calculated value and RECORD new value on Attachment 1. (16)

NOTE

Valve alignment verification is NOT required for VC purges.

_____ 4.3.18 WHEN permit is complete per AP-11 Attachment B Section 2.3, THEN:

_____ 4.3.18.1 RECORD "N/A" for the following on Attachment 1:

- _____ Release path valve alignment verification (23)
- _____ Volume (4)
- _____ Activity (A) (8)
- _____ E (30)
- _____ Emax (29)
- _____ RCV-014 setting (31)

_____ 4.3.18.2 REQUEST CRS/SM authorize release on Attachment 1. (24)

_____ 4.3.18.3 NOTIFY Watch Chemist that release is imminent.

_____ 4.3.18.4 INITIATE VC purge per SOP-CB-003, Containment Pressure Relief And Purge System Operation.

_____ 4.3.18.5 RECORD date and time release is initiated on Attachment 1. (25)

_____ 4.3.18.6 NOTIFY Watch Chemist that release has begun.

_____ 4.3.18.7 IF VC purge is required for longer than one day, THEN

_____ a) EVALUATE (with Chemistry Management, as required) the following data once per day:

- _____ Calculated Release Rate (R) (9)
- _____ Available Release Rate (D) (10)
- _____ R-12 alarm setpoints (15) (16)
- _____ R-12 alert setpoint (not on permit)
- _____ R-11 alert/alarm setpoints (not on permit)

NOTE

These setpoints may be subject to other planned releases.

_____ b) CONSIDER lowering R-27/R-14 alert/alarm setpoints per AP-11 sequence of limits, targeting initial pre-release setpoint as final objective.

_____ 4.3.19 WHEN VC activity reaches baseline value prescribed by Chemistry Management, THEN PERFORM one of the following:

_____ • SECURE VC purge per SOP-CB-003, Containment Pressure Relief And Purge System Operation.

_____ • RECLASSIFY Purge as Continuous Building Ventilation as VC Purge is complete.

_____ 4.3.20 WHEN VC purge is complete, THEN:

_____ 4.3.20.1 RECORD Release Stop date and time on Attachment 1. (27)

_____ 4.3.20.2 RECORD N/A for Final Pressure on Attachment 1. (26)

_____ 4.3.20.3 IF R-27 or R-14 alarm setpoint was adjusted AND other current gaseous release permits do NOT require a release rate greater than annual limit, THEN:

_____ a) ADJUST affected RM alarm setpoint to its pre-release value per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ b) RECORD as left setpoint per SOP-RM-010, Radiation Monitor Setpoint Control. **{Reference 5.1.1}**

4.4 RCS And SG Primary Side Maintenance

CAUTION

The following releases can result in an extremely high release rate and SHALL be conducted in cooperation with Chemistry and HP.

NOTE

- RCS or SG maintenance permits SHALL be re-issued daily due to changing conditions inside VC. As a minimum, calculated release rate (R) should be recalculated and re-authorization of available release rates obtained.
- An example of a completed release permit is provided in Attachment 5.
- IF Reactor Coolant Noble Gas is less than minimum detectable activity (MDA), THEN a permit is NOT required, as per AP-11.
- Number appearing in () at end of each step that requires data entry on Attachment 1 corresponds to number for that data blank on Attachment 1.

_____ 4.4.1 REQUEST Radiological Engineering to evaluate requirements for Containment Integrity per AP-11.

_____ 4.4.2 OBTAIN RCS Noble Gas concentration and grab sample number, date, time from Chemistry.

_____ 4.4.3 RECORD RCS specific activity and grab sample number, date, time for noble gas on Attachment 1. (6) (7)

_____ 4.4.4 RECORD source of release on Attachment (1) Gaseous Waste Release Permit Form; for example:

- _____ • RCS eductor on PRT
- _____ • SG manway
- _____ • PZR vent through sample line / fume hood / plant vent

_____ 4.4.5 RECORD current date and time on Attachment 1. (2)

_____ 4.4.6 ASSIGN a permit number, normally next consecutive gaseous release permit number, and RECORD on Attachment 1. (3)

____ 4.4.7 DETERMINE the release flow rate as follows:

____ • IF using SG maintenance system
THEN use measured flow from the fan configuration with the lowest rate as determined by Chemistry or HP.

- o IF flow is not available
THEN use 50 ft^3/min first, 500 ft^3/min for each subsequent SG.

____ • Eductor flow rate is 30 ft^3/min.

____ • Prmary gas release rate from Chemistry sampling is 1.0 ft^3/min.

NOTE

472 cc/sec = (28317 cc/ft^3)/(60 sec/min)

____ 4.4.8 DETERMINE Calculated Release Rate (R) using the following equation, and RECORD on Attachment 1: (9)

R= (FR) * (C) * (472 cc/sec), where:

R= Calculated Release Rate (μCi/sec)

C= Concentration of Reactor Coolant noble gas activity (μCi/cc) (6)

FR= estimated flow rate from Step 4.4.7 (ft3/min)

NOTE

These releases may require use of instantaneous release rate.

____ 4.4.9 RECORD discharge monitor used and current authorized alarm setpoint on Attachment 1 (11) (13).

____ 4.4.10 IF Calculated Release Rate (R) is greater than AP-11 Annual Release Rate, THEN OBTAIN authorization for higher release rate as described in Steps 2.2, 2.3, and 2.4.

____ 4.4.11 IF ODCM Instantaneous Release Rate is to be used, THEN:

____ 4.4.11.1 REQUEST Chemistry to calculate ODCM limit and expected release rate.

____ 4.4.11.2 ATTACH ODCM calculations to release permit.

_____ 4.4.11 IF ODCM Instantaneous Release Rate is to be used, THEN:

_____ 4.4.11.1 REQUEST Chemistry to calculate ODCM limit and expected release rate.

_____ 4.4.11.2 ATTACH ODCM calculations to release permit.

_____ 4.4.12 IF R is greater than ODCM release rate limit, THEN ENSURE release is NOT performed and CONTACT Chemistry Management.

_____ 4.4.13 DETERMINE Available Release Rate (D) by Calculating difference between current alarm setpoint and current reading on effluent RM (either R-27 or R-14) and RECORD on Attachment 1. (10)

_____ • IF R-27, Channel 4 is OOS AND R-14 is in service, THEN DETERMINE available release rate on R-14 as per Attachment 8.

_____ • IF both R-27, Channel 4 AND R-14 are OOS, THEN release SHALL NOT be performed, as per AP-11.

_____ 4.4.14 IF Calculated Release Rate (R) is greater than Available Release Rate (D), THEN OBTAIN authorization for higher release rate per Steps 2.2, 2.3, and 2.4 OR DISCONTINUE processing release permit.

_____ 4.4.15 IF a new release rate has been authorized, THEN ESTABLISH a new alarm setpoint for effluent RM:

_____ 4.4.15.1 RECORD new release rate (S) and the granting of applicable permission on Attachment 1. (28) (32)

_____ 4.4.15.2 ADJUST applicable RM to new alarm setpoint (S) per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ 4.4.15.3 RECORD setpoint change per SOP-RM-010, Radiation Monitor Setpoint Control.

_____ 4.4.16 IF R-27 is operable, THEN ENTER an alert setpoint (at a value below current alarm setpoint), at CRS discretion, and RECORD on Attachment 1. (14)

_____ 4.4.17 ENTER actual alarm setpoint for discharge monitor on Attachment 1 (12)

_____ 4.4.18 IF Containment Integrity requirements are specified in Step 4.4.1, THEN ESTABLISH Containment Integrity.

NOTE

- Auto closure setpoint for R-11, R-12, and R-27 SHALL be evaluated by Chemistry and HP management to prevent unnecessary closure.
- These release permits require R-12 to be in service unless specifically exempted by GCS as per AP-11.
- 5.30E-08 sec/cc = (60 sec/min)/(40,000 ft^3/min)*(28,317 cc/ft^3)

_____ 4.4.19 DETERMINE R-12 auto closure setpoint AND RECORD on Attachment 1: (15)

_____ • R-12 setpoint (μCi/cc) = IR * 5.30E-08 sec/cc where:

IR= AP-11 or ODCM instantaneous release rate, as applicable (μCi/sec)

_____ 4.4.19.1 IF necessary, THEN ADJUST R-12 auto closure setpoint to less than or equal to calculated value and RECORD new value on Attachment 1. (16)

NOTE

Valve alignment verification is NOT required for this type of release.

_____ 4.4.20 WHEN permit is complete, THEN:

_____ 4.4.20.1 RECORD "N/A" for the following on Attachment 1:

_____ • Release path valve alignment verification (23)
_____ • Volume (4)
_____ • Initial Pressure (5)
_____ • Activity (A) (8)
_____ • Iodine 131 Activity (8a)
_____ • Final Pressure (26)
_____ • E (30)
_____ • Emax (29)
_____ • RCV-014 setting (31)

_____ 4.4.20.2 REQUEST CRS/SM authorize release on Attachment 1. (24)

_____ 4.4.20.3 NOTIFY Watch Chemist that release is imminent.

____ 4.4.20.4 IF release is being performed with equipment hatch or airlocks open AND RCS noble gas concentration is above value that would result in a site boundary dose at 31 day dose projection limit, THEN PERFORM the following to satisfy requirements of AP-11, Appendix B, Step 2.4.2.4:

____ a) ASSIGN individuals the responsibility to close or secure hatch and air locks in the event of an auto closure signal.

____ b) ENSURE that HP has installed or provided monitoring to quantify any potential release.

____ c) IF an auto closure signal is initiated, THEN DIRECT assigned individuals to close or secure hatch and airlocks within 30 minutes.

____ 4.4.20.5 COORDINATE with HP and Chemistry to determine ventilation system requirements.

____ a) IF required, THEN START ventilation system components as necessary

- Maintenance Exhaust System
- Eductor
- Portable Vent Cart

____ b) IF required, THEN INITIATE release using the appropriate procedure.

____ 4.4.20.6 RECORD date and time release is initiated on Attachment 1. (25)

____ 4.4.20.7 NOTIFY Chemistry that release has been initiated.

____ a) IF automatic isolation is NOT available, THEN MONITOR the release continuously and manually isolate release before approaching Alarm set point.

____ 4.4.20.8 IF release is required for longer than one day, THEN EVALUATE the following (as a minimum) once per day:

____ • Calculated Release Rate (R) (9)
____ • Available Release Rate (D) (10)

NOTE

IF RCS noble gas activity is subsequently determined to be less than MDA, THEN permit may be terminated.

_____ 4.4.21 WHEN release is completed OR determined to be normal ventilation per Chemistry, THEN:

_____ 4.4.21.1 RECORD date and time on Attachment 1. (27)

_____ 4.4.21.2 IF R-27 or R-14 alarm setpoint was adjusted AND other current gaseous release permits do NOT require a release rate greater than annual limit, THEN:

_____ a) ADJUST affected RM alarm setpoint to its pre-release value per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet).

_____ b) RECORD as left setpoint per SOP-RM-010, Radiation Monitor Setpoint Control. **{Reference 5.1.1}**

_____ 4.4.21.3 IF desired, THEN SECURE Ventilation System per HP and Chemistry direction.

NOTE

- A release permit SHALL be re-issued daily to reflect changing conditions within affected bldg.
- Examples of completed release permits are provided in Attachment 6.
- Number appearing in () at end of each step that requires data entry on Attachment 1 corresponds to number for that data blank on Attachment 1.

4.5 Building Ventilation With Monitors OOS

_____ 4.5.1 IF any of the following process RMs are removed from service, THEN COMPLETE a release permit DAILY for each one, per instructions in this procedure section:

- _____ • Both R-14 and R-27, Low Range Plant Vent Noble Gas
- _____ • R-59, RAMS Noble Gas
- _____ • R-46, Administration (Admin) Bldg Noble Gas
- _____ • R-15, Condenser Air Ejector

_____ 4.5.2 RECORD the following information on Attachment 1:

- _____ • Affected release path (1)
- _____ • Current date and time (2)
- _____ • Affected discharge monitor(s) and date and time monitor(s) were removed from service (17)

_____ 4.5.3 ASSIGN a permit number, normally next consecutive gaseous release permit number, and RECORD on Attachment 1. (3)

_____ 4.5.4 OBTAIN the following information and RECORD on Attachment 1:

- _____ • Sample number, date, and time of sample (18)
- _____ • Release path Concentration of Noble Gas (19)

_____ 4.5.5 DETERMINE bldg exhaust flow rate is determined as follows:

Release Point	Exhaust Flow Rate or Source of its Determination
Admin Bldg	12500 ft^3/min (per ODCM)
RAMS	From R-59's flow instrument
Plant Vent	From R-27's flow instrument
Condenser Air Ejector	From Performance and Reliability Group

_____ 4.5.5.1 IF R-59 flow instrument is OOS, THEN ESTIMATE RAMS Bldg ventilation flow rate every 4 hours by summing rated exhaust flow rates of all operating fans.

_____ 4.5.5.2 IF R-27 flow instrument is OOS, THEN ESTIMATE Plant Vent flow rate every 4 hours, by one of the following methods:

_____ • Rosemount transmitter reading from CFMS (preferred)

_____ • Summing rated exhaust fan flow rates for all operating fans or a flow measurement from Performance Group.

_____ 4.5.6 RECORD flow rate of affected release path on Attachment 1. (20)

_____ • IF flow rate monitor for affected release path is OOS, THEN RECORD above estimate on applicable log sheets or in Unit Log, every 4 hours.

NOTE

472 = (28,317 cc/ft^3)/(60 sec/min)

_____ 4.5.7 DETERMINE Continuous Release Rate from affected vent using the following equation, and RECORD on Attachment 1: (21)

CR = (FR) * (C) * (472), where:

CR = Continuous Release Rate (μCi/sec)

C = Concentration of Noble Gas activity in release path from Chemistry grab sample (μCi/cc) (19)

FR = applicable vent path flow rate from Step 4.5.5 (ft^3/min)

NOTE

Available Release Rate (D) is normally determined by difference between current discharge RM reading and associated alarm setpoint. IF RMs are OOS, THEN RAMS, Admin Bldg, and Condenser Air Ejector release paths use 1% of instantaneous release rate and Plant Vent uses 100% of annual release rate.

____ 4.5.8 DETERMINE Available Release Rate using the following equation and RECORD on Attachment 1: (10)

D = (ARR) - (CR), where:

D = Available Release Rate (μCi/sec)

CR = Continuous Release Rate (μCi/sec) (21)

ARR = Authorized Release Rate (μCi/sec) from table below:

RELEASE PATH	AUTHORIZED RELEASE RATE (ARR) (μCi/sec)	BASIS
Plant Vent	3080	Annual Release Rate
RAMS	381	1% of Instantaneous Release Rate
Admin Bldg	381	1% of Instantaneous Release Rate
Condenser Air Ejector	381	1% of Instantaneous Release Rate

____ 4.5.9 IF Continuous Release Rate (CR) is greater than Available Release Rate (D), THEN OBTAIN authorization for higher release rate per Steps 2.2, 2.3, and 2.4.

____ 4.5.10 WHEN permit is complete, THEN:

____ 4.5.10.1 RECORD start date and time on Attachment 1 (25).

____ 4.5.10.2 RECORD "N/A" for the following on Attachment 1 (23)

- ____ Volume (4) and Pressure (5)
- ____ Concentration of Noble Gas (6)
- ____ Grab Sample (7) and Activity (A) (8)
- ____ Iodine 131 Activity (8a)
- ____ Calculated Release Rate (9)
- ____ Discharge Monitor (11)
- ____ Calculated Alarm Setpoint (13) & Alert Setpoint (14)
- ____ R12 Auto Closure/Alarm setpoints: Calclulated (15)
- ____ R12 Auto Closure/Alarm setpoints: Actual (16)
- ____ Release path valve alignment verification (23)
- ____ Final Pressure (26)
- ____ S (28)
- ____ Emax (29)
- ____ E (30)
- ____ RCV-014 setting (31)

____ 4.5.10.3 REQUEST CRS/SM authorize release on Attachment 1. (24)

____ 4.5.10.4 IF release is required for longer than 1 day, THEN ISSUE a new release permit on a daily basis with the following updated information:

- ____ A new Continuous Release Rate (CR) from Chemistry (21)
- ____ A new Available Release Rate (D) (10)

____ 4.5.11 WHEN release is complete, THEN RECORD Release Stop date and time on Attachment 1. (27)

____ 4.5.12 WHEN affected RM is returned to service, THEN:

____ 4.5.12.1 RECORD date and time of permit termination as Release Stop on Attachment 1. (27)

____ 4.5.12.2 EVALUATE alert and alarm setpoints, AND, if necessary, ADJUST per SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet):

- ____ RECORD as left setpoint per SOP-RM-010, Radiation Monitor Setpoint Control. **{Reference 5.1.1}**

4.6 Computer Generated Airborne Release Permits

NOTE

- All requirements of applicable section of this procedure and AP-11, Radioactive Effluents Control Program, apply to permits generated by computer.
- Computer program, computer messages and output do NOT take precedence over plant procedures.

_____ 4.6.1 REVIEW all requirements of release prior to generating a permit.

_____ 4.6.2 SELECT Release Permits program from Main Menu on Control Room personal computer.

_____ 4.6.3 SELECT Airborne & Liquid Release Permits.

NOTE

Dates are entered as MM/DD/YYYY and time as HH:MM.

_____ 4.6.4 ENSURE computer system date and time are correct.

_____ 4.6.5 SELECT Gaseous Permits (G).

NOTE

- Default values are displayed in parenthesis following a prompt for user input and are used throughout program.
- IF a discharge RM is OOS for a release,
  THEN associated data will NOT be requested or printed on permit.

_____ 4.6.6 ENTER data as requested to define release.

_____ 4.6.7 PRINT release permit.

_____ 4.6.8 IF a printer problem is encountered,
THEN SELECT menu item 5 to re-print last created permit.

_____ 4.6.9 REVIEW permit for accuracy and completeness.

_____ 4.6.10 PERFORM release per applicable section of this procedure.

4.7 Unplanned Gaseous Releases

NOTE

An unplanned release is a discrete discharge of radioactive material from a source other than what was originally intended, per AP-11.

____ 4.7.1 IF unplanned release occurs, THEN:

____ 4.7.1.1 NOTIFY the following individuals:

- ____ Radiological and Environmental Services (RES) Manager
- ____ Chemistry Management
- ____ Manager of Operations
- ____ General Manager Plant Operations
- ____ Vice President Operations IP3

____ 4.7.1.2 IF possible, THEN DIRECT Chemistry to obtain a sample of release source.

____ 4.7.1.3 RECORD information required on Attachment 11, Evaluation Of Unplanned Gaseous Release.

____ 4.7.1.4 FORWARD completed Attachment 11 to Chemistry Management within one day.

5.0 REFERENCES

5.1 Commitment Documents

5.1.1 DER 94-1233

5.1.2 IER 90-14, Inspection Of Radiological Environmental Monitoring Program

5.1.3 DER 97-2754, Gaseous Release Permit Deviation

5.1.4 DER 98-0631

5.2 Development Documents

5.2.1 Radiological Environmental Controls (RECS)

5.2.2 Drawing No. 9321-F-27303, Flow Diagram Waste Disposal System-Gas

5.2.3 AP-21.9, Inoperable Technical Specification Equipment Tracking Log

5.2.4 ONOP-RM-1, Failure of Radiation Monitors

5.2.5 ONOP-RM-2, High Activity-Radiation Monitoring System

5.2.6 SOR 93519

5.3 Interface Documents

5.3.1 AP-11, Radioactive Effluents Control Program

5.3.2 LCO 3.6.3

5.3.3 Radiological Environmental Controls (RECS) Table 2.2-1, ACTION 9.

5.3.4 SOP-CB-003, Containment Pressure Relief And Purge System Operation

5.3.5 SOP-RM-008, Radiation Monitoring Control Cabinet (Bantam 11/RM-23A Cabinet)

5.3.6 SOP-RM-010, Radiation Monitor Setpoint Control

5.3.7 Offsite Dose Calculation Manual (ODCM)

5.3.8 FSAR Section 11.2.3.1

5.3.9 SOP-WDS-002, Gaseous Waste Disposal System Operation.

6.0 RECORDS AND DOCUMENTATION

6.1 Records

The following required records are generated by this procedure and SHALL be maintained in accordance with IP3 Records Retention Schedule:

6.1.1 Gaseous Waste Release Permits

- Attachment 1 — Gaseous Waste Release Permit Form, or electronic equivalent
- Attachment 9 — LGDT Release Verification Alignments
- Attachment 10 — SGDT Release Verification Alignments

6.2 Documentation

The following documentation resulting from this procedure are NOT required to be controlled and maintained in accordance with the IP3 Records Retention Schedule:

6.2.1 Attachment 11, Evaluation Of Unplanned Gas Release

ATTACHMENT 1,
GASEOUS WASTE RELEASE PERMIT FORM
(Page 1 of 1)

Tank/
System (1)_____ Current
Date/Time (2)_____ _____ Permit No. (3)_____
Date Time

Volume (4)_____ft^3 Initial Pressure (5)_____psig Concentration of
Noble Gas (C)(6)_____µCi/c

Grab Sample:(7) Sample #_____ Date_____ Time_____ OR R-12 Monitor

Activity (A)(8)_____µCi Noble Gas Iodine 131 Activity (8a)_____µCi/cc
VC Purge Only

Calculated Release Rate (R)(9) _____µCi/sec Available Release Rate (D)(10) _____µCi/sec

---

Discharge Monitor (11)_____ Actual Alarm Setpoint (12)_____µCi/se

Calculated alarm setpoint (13)_____µCi/sec Alert setpoint (14)_____µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15)_____µCi/cc Actual (16)_____µCi/c

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17)_____ placed out service @ _____ _____
  Date Time
- Vent Sample:(18) Sample #_____ Date_____ Time_____ Results (19)_____µCi/c
  (Noble Gas)
- Vent flow rate (20)_____cfm Continuous Release Rate (CR)(21)_____µCi/sec

  Release Calculations verified by (22)_____

Release Path Valve Alignment Verified (23)_____
CRS/SM

Discharge Authorized (24)_____ Release Start (25)_____ _____
CRS/SM Date Time

Final Pressure (26)_____psig Release Stop (27)_____ _____
Date Time

Calculations Results: S (28)_____ Emax (29)_____ft^3/min

E(30)_____ft^3/min RCV-014 Setting (31)_____% open

Comments:(32)_____

ATTACHMENT 2,
EXAMPLE OF VC PRESSURE RELEASE PERMIT
(Page 1 of 1)

Tank/ System (1) VC Pressure Relief Current Date/ Time (2) 1/1/01 (Date) 0001 (Time) Permit No. (3) 1

Volume (4) N/A ft^3 Initial Pressure (5) .9 psig Concentration of Noble Gas (C)(6) 4.00E-05 µCi/cc

Grab Sample:(7) Sample # 30028 Date 07/01/1992 Time 1205 OR R-12 Monitor

Activity (A)(8) N/A µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/sec (VC Purge Only)

Calculated Release Rate (R)(9) 1.13E+01 µCi/sec Available Release Rate (D)(10) 3.07E+03 µCi/sec

---

Discharge Monitor (11) R-27 Actual Alarm Setpoint (12) 3.08E+03 µCi/sec

Calculated alarm setpoint (13) N/A µCi/sec Alert setpoint (14) 1.50E+03 µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) 1.32E-01 µCi/cc Actual (16) 2.00E-04 µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) N/A placed out service @ N/A (Date) N/A (Time)
- Vent Sample:(18) Sample # N/A Date N/A Time N/A Results (19) N/A µCi/cc (Noble Gas)
- Vent flow rate (20) N/A cfm Continuous Release Rate (CR)(21) N/A µCi/sec

  Release Calculations verified by (22) N/A

Release Path Valve Alignment Verified (23) N/A (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 07/01/1992 (Date) 1210 (Time)

Final Pressure (26) 0.1 psig Release Stop (27) 07/01/1992 (Date) 1510 (Time)

Calculations Results: S(28) N/A Emax(29) N/A ft^3/min

E(30) N/A ft^3/min RCV-014 Setting(31) N/A % open

Comments:(32)

ATTACHMENT 3,
EXAMPLE OF LGDT RELEASE PERMIT
(Page 1 of 1)

Tank/ System (1) 31 LGDT

Current Date/ Time(2) 04/01/2001 (Date) 1600 (Time) Permit No.(3) 2

Volume (4) 525 ft^3 Initial Pressure (5) 100 psig Concentration of Noble Gas (C)(6) 1.00E-03 µCi/cc

Grab Sample:(7) Sample # 35601 Date 04/01/2001 Time 1605 OR R-12 Monitor

Activity (A)(8) 1.16E+05 µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc (VC Purge Only)

Calculated Release Rate (R)(9) 12.3 µCi/sec Available Release Rate (D)(10) 3.07E+03 µCi/sec

---

Discharge Monitor (11) R-27 Actual Alarm Setpoint (12) 3.08E+03 µCi/sec

Calculated alarm setpoint (13) N/A µCi/sec Alert setpoint (14) 1.50E+03 µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) N/A µCi/cc Actual (16) N/A µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) N/A placed out service @ N/A (Date) N/A (Time)
- Vent Sample:(18) Sample # N/A Date N/A Time N/A Results (19) N/A µCi/cc (Noble Gas)
- Vent flow rate (20) N/A cfm Continuous Release Rate (CR)(21) N/A µCi/sec

Release Calculations verified by (22) N/A

Release Path Valve Alignment Verified (23) CRS or SM (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 04/01/2001 (Date) 1610 (Time)

Final Pressure (26) 10 psig Release Stop (27) 04/01/2001 (Date) 1700 (Time)

Calculations Results: S(28) _____ Emax(29) 6525 ft^3/min

E(30) 26 ft^3/min RCV-014 Setting (31) 40 % open

Comments:(32) _____

ATTACHMENT 4,
EXAMPLE OF VC PURGE RELEASE PERMIT
(Page 1 of 1)

Tank/ System (1) VC Purge Current Date/Time (2) 4/1/01 (Date) 0101 (Time) Permit No. (3) 3

Volume (4) N/A ft^3 Initial Pressure (5) N/A psig Concentration of Noble Gas (C)(6) 1.00E-03 µCi/cc

Grab Sample:(7) Sample # 35602 Date 07/01/1992 Time 2320 OR R-12 Monitor

Activity (A)(8) N/A µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc VC Purge Only

Calculated Release Rate (R)(9) 1.89E+04 µCi/sec Available Release Rate (D)(10) 3.73E+04 µCi/sec

---

Discharge Monitor (11) R-27 Actual Alarm Setpoint (12) 1.97E+05 µCi/sec

Calculated alarm setpoint (13) 1.97E+05 µCi/sec Alert setpoint (14) 8.00E+04 µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) 1.97E-03 µCi/cc Actual (16) 2.00E-04 µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) N/A placed out service @ N/A (Date) N/A (Time)
- Vent Sample:(18) Sample # N/A Date N/A Time N/A Results (19) N/A µCi/cc (Noble Gas)
- Vent flow rate (20) N/A cfm Continuous Release Rate (CR)(21) N/A µCi/sec

Release Calculations verified by (22) N/A

Release Path Valve Alignment Verified (23) N/A (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 07/01/1992 (Date) 2330 (Time)

Final Pressure (26) N/A psig Release Stop (27) 07/02/1992 (Date) 2330 (Time)

Calculations Results: S(28) 1.97E+05 Emax(29) N/A ft^3/min

E(30) N/A ft^3/min RCV-014 Setting (31) N/A % open

Comments:(32) Permission to use Inst Rel Rate limit granted by Site Executive Officer.
Permission to use ODCM methodology granted by RES Manager.

ATTACHMENT 5,
EXAMPLE OF RCS EDUCTOR OR S/G MANWAY RELEASE PERMIT
(Page 1 of 1)

Tank/ System (1) RCS Eductor or S/G Manway Current Date/Time (2) 07/01/2000 (Date) 1600 (Time) Permit No. (3) 4

Volume (4) N/A ft^3 Initial Pressure (5) N/A psig Concentration of Noble Gas (C)(6) 1.00E-03 µCi/cc

Grab Sample:(7) Sample # 35603 Date 07/01/2000 Time 1605 OR R-12 Monitor

Activity (A)(8) N/A µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc (VC Purge Only)

Calculated Release Rate (R)(9) 1.42E+01 µCi/sec Available Release Rate (D)(10) 3.07E+03 µCi/sec

---

Discharge Monitor (11) R-27 Actual Alarm Setpoint (12) 3.08E+03 µCi/sec

Calculated alarm setpoint (13) 3.17E+03 µCi/sec Alert setpoint (14) 1.50E+03 µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) 1.97E-03 µCi/cc Actual (16) 2.00E-04 µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) N/A placed out service @ N/A (Date) N/A (Time)
- Vent Sample:(18) Sample # N/A Date N/A Time N/A Results (19) N/A µCi/cc (Noble Gas)
- Vent flow rate (20) N/A cfm Continuous Release Rate (CR)(21) N/A µCi/sec

Release Calculations verified by (22) N/A

Release Path Valve Alignment Verified (23) N/A (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 07/01/2000 (Date) 1610 (Time)

Final Pressure (26) N/A psig Release Stop (27) 07/02/2000 (Date) 0800 (Time)

Calculations Results: S(28) N/A Emax (29) N/A ft^3/min

E(30) N/A ft^3/min RCV-014 Setting (31) N/A % open

Comments:(32)

ATTACHMENT 6,
EXAMPLE OF CONTINUOUS RELEASE PERMIT WITH DISCHARGE MONITORS OOS

(Page 1 of 1)

Tank/ System (1) Plant Vent Current Date/Time (2) 07/07/2000 (Date) 1600 (Time) Permit No. (3) 5

Volume (4) N/A ft^3 Initial Pressure (5) N/A psig Concentration of Noble Gas (C)(6) N/A µCi/cc

Grab Sample:(7) Sample # N/A Date N/A Time N/A OR R-12 Monitor

Activity (A)(8) N/A µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc (VC Purge Only)

Calculated Release Rate (R)(9) N/A µCi/sec Available Release Rate (D)(10) 3.08E+03 µCi/sec

---

Discharge Monitor (11) N/A Actual Alarm Setpoint (12) N/A µCi/sec

Calculated alarm setpoint (13) N/A µCi/sec Alert setpoint (14) N/A µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) N/A µCi/cc Actual (16) N/A µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) R-14 & R-27 placed out service @ 07/07/2000 (Date) 1500 (Time)
- Vent Sample:(18) Sample # 35604 Date 07/07/2000 Time 1530 Results (19) 1.00E-07 µCi/cc (Noble Gas)
- Vent flow rate (20) 50000 cfm Continuous Release Rate (CR)(21) 2.36E+00 µCi/sec

Release Calculations verified by (22) CRS or SM

Release Path Valve Alignment Verified (23) N/A (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 07/07/2000 (Date) 1500 (Time)

Final Pressure (26) N/A psig Release Stop (27) 07/08/2000 (Date) 1500 (Time)

Calculations Results: S(28) N/A Emax(29) N/A ft^3/min

E(30) N/A ft^3/min RCV-014 Setting(31) N/A % open

Comments:(32)

ATTACHMENT 7,
EXAMPLE OF BATCH RELEASE PERMIT WITH DISCHARGE MONITORS OOS
(Page 1 of 1)

Tank/ System (1) VC Pressure Relief Current Date/Time (2) 07/07/2000 (Date) 2300 (Time) Permit No.(3) 6

Volume (4) N/A ft^3 Initial Pressure (5) 2.0 psig Concentration of Noble Gas (C)(6) 2.00E-04 µCi/cc

Grab Sample:(7) Sample # 33344 Date 07/07/2000 Time 2320 OR R-12 Monitor

Activity (A)(8) N/A µCi Noble Gas Iodine 131 Activity (8a) N/A µCi/cc (VC Purge Only)

Calculated Release Rate (R)(9) 5.66E+01 µCi/sec Available Release Rate (D)(10) 3.08E+03 µCi/sec

---

Discharge Monitor (11) OOS Actual Alarm Setpoint (12) N/A µCi/sec

Calculated alarm setpoint (13) N/A ΦCi/sec Alert setpoint (14) N/A µCi/sec

R-12 Auto Closure/Alarm Setpoints: Calculated (15) 1.32E-01 µCi/cc Actual (16) 2.00E-04 µCi/cc

IF discharge monitor is OOS, THEN COMPLETE the following:

- Monitor (17) R-14 & R-27 placed out service @ 07/07/2000 (Date) 1500 (Time)
- Vent Sample:(18) Sample # 35608 Date 07/07/2000 Time 1530 Results (19) 2.00E-07 µCi/cc (Noble Gas)
- Vent flow rate (20) 50000 cfm Continuous Release Rate (CR)(21) 5.00E+00 µCi/sec

Release Calculations verified by (22) N/A

Release Path Valve Alignment Verified (23) N/A (CRS/SM)

Discharge Authorized (24) CRS or SM (CRS/SM) Release Start (25) 07/07/2000 (Date) 2330 (Time)

Final Pressure (26) 0.2 psig Release Stop (27) 07/08/2000 (Date) 0200 (Time)

Calculations Results: S(28) N/A Emax(29) N/A ft^3/min

E(30) N/A ft^3/min RCV-014 Setting(31) N/A % open

Comments:(32)

ATTACHMENT 8,
CALCULATIONS FOR R-14 IN PLACE OF R-27

(Page 1 of 1)

Calculating An R-14 Alarm Setpoint

$$SP = \frac{ARR}{(FR * 472)}$$

SP = alarm setpoint for R-14 (in μCi/cc)

ARR = authorized release rate (in μCi/sec), from AP-11

FR = plant vent flow rate (in ft^3/min)

472 = (28,317 cc/ft^3) / (60 sec/min)

Available Release Rate (D)

$$D = (D14) * (FR) * (472)$$

D = available release rate (in μCi/sec)

D14 = difference between current alarm setpoint and current R-14 reading (in μCi/cc)

FR = plant vent flow rate (in ft^3/min)

472 = (28,317 cc/ft^3) / (60 sec/min)

ATTACHMENT 9,
LGDT RELEASE VERIFICATION ALIGNMENTS
(Page 1 of 4)

31 LARGE GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1663	N_2 Supply to 31 LGDT Isolation	CLOSED		
WD-1645	31 LGDT Drain (1)	CLOSED		
WD-PCV-1036B	31 LGDT to Gas Analyzer Pressure Control Valve (1)	CLOSED		
WD-PCV-1036A	31 LGDT Fill Pressure Control Valve (1)	CLOSED		
WD-1644A	31 LGDT Fill Isolation (1)	CLOSED		
WD-AOV-1629	31 LGDT Reuse Header to CVCS (1) HUTs Isolation	CLOSED		
WD-1643A	31 LGDT Isolation (1)	OPEN		
WD-1633	PT-1036 Root Isolation	OPEN		
WD-1617	31 LGDT to Release Header Isolation	OPEN		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Large Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1644A	31 LGDT Fill Isolation (1)	OPEN		

ATTACHMENT 9,
LGDT RELEASE VERIFICATION ALIGNMENTS
(Page 2 of 4)

32 LARGE GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1666	N_2 Supply to 32 LGDT Isolation	CLOSED		
WD-1646	32 LGDT Drain (1)	CLOSED		
WD-PCV-1037B	32 LGDT to Gas Analyzer Pressure Control Valve (1)	CLOSED		
WD-PCV-1037A	32 LGDT Fill Pressure Control Valve (1)	CLOSED		
WD-1644B	32 LGDT Fill Isolation (1)	CLOSED		
WD-AOV-1630	32 LGDT Reuse Header to CVCS HUTs Isolation (1)	CLOSED		
WD-1643B	32 LGDT Isolation (1)	OPEN		
WD-1634	PT-1037 Root Isolation	OPEN		
WD-1618	32 LGDT to Release Header Isolation	OPEN		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Large Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1644B	32 LGDT Fill Isolation (1)	OPEN		

ATTACHMENT 9,
LGDT RELEASE VERIFICATION ALIGNMENTS
(Page 3 of 4)

33 LARGE GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1639	N_2 Supply to 33 LGDT Isolation	CLOSED		
WD-1647	33 LGDT Drain (1)	CLOSED		
WD-PCV-1038B	33 LGDT to Gas Analyzer Pressure Control Valve (1)	CLOSED		
WD-PCV-1038A	33 LGDT Fill Pressure Control Valve (1)	CLOSED		
WD-1644C	33 LGDT Fill Isolation (1)	CLOSED		
WD-AOV-1631	33 LGDT Reuse Header to CVCS HUTs Isolation (1)	CLOSED		
WD-1643C	33 LGDT Isolation (1)	OPEN		
WD-1635	PT-1038 Root Isolation	OPEN		
WD-1619	33 LGDT to Release Header Isolation	OPEN		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Large Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1644C	33 LGDT Fill Isolation (1)	OPEN		

ATTACHMENT 9,
LGDT RELEASE VERIFICATION ALIGNMENTS
(Page 4 of 4)

34 LARGE GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1640	N_2 Supply to 34 LGDT Isolation	CLOSED		
WD-1648	34 LGDT Drain (1)	CLOSED		
WD-PCV-1039B	34 LGDT to Gas Analyzer Pressure Control Valve (1)	CLOSED		
WD-PCV-1039A	34 LGDT Fill Pressure Control Valve (1)	CLOSED		
WD-1644D	34 LGDT Fill Isolation (1)	CLOSED		
WD-AOV-1632	34 LGDT Reuse Header to CVCS HUTs Isolation (1)	CLOSED		
WD-1643D	34 LGDT Isolation (1)	OPEN		
WD-1636	PT-1039 Root Isolation	OPEN		
WD-1620	34 LGDT to Release Header Isolation	OPEN		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Large Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1620	34 LGDT to Release Header Isolation	CLOSED		
WD-1644D	34 LGDT to Fill Isolation (1)	OPEN		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 1 of 6)

31 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641A	N_2 Supply to 31 SGDT Isolation	CLOSED		
WD-1642A	31 SGDT Drain (1)	CLOSED		
WD-1651A	31 SGDT Fill Isolation (1)	CLOSED		
WD-1676A	PT-1052 Root Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	OPEN		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 2 of 6)

32 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641B	N_2 Supply to 32 SGDT Isolation	CLOSED		
WD-1642B	32 SGDT Drain (1)	CLOSED		
WD-1651B	32 SGDT Fill Isolation (1)	CLOSED		
WD-1676B	PT-1053 Root Isolation	OPEN		
WD-1652B	32 SGDT to Release Header Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 3 of 6)

33 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641C	N_2 Supply to 33 SGDT Isolation	CLOSED		
WD-1642C	33 SGDT Drain (1)	CLOSED		
WD-1651C	33 SGDT Fill Isolation (1)	CLOSED		
WD-1676C	PT-1054 Root Isolation	OPEN		
WD-1652C	33 SGDT to Release Header Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 4 of 6)

34 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641D	N_2 Supply to 34 SGDT Isolation	CLOSED		
WD-1642D	34 SGDT Drain (1)	CLOSED		
WD-1651D	34 SGDT Fill Isolation (1)	CLOSED		
WD-1676D	PT-1055 Root Isolation	OPEN		
WD-1652D	34 SGDT to Release Header Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 5 of 6)

35 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641E	N_2 Supply to 35 SGDT Isolation	CLOSED		
WD-1642E	35 SGDT Drain (1)	CLOSED		
WD-1651E	35 SGDT Fill Isolation (1)	CLOSED		
WD-1676E	PT-1056 Root Isolation	OPEN		
WD-1652E	35 SGDT to Release Header Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 10,
SGDT RELEASE ALIGNMENT
(Page 6 of 6)

36 SMALL GAS DECAY TANK Date:_____

RELEASE ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1641F	N_2 Supply to 36 SGDT Isolation	CLOSED		
WD-1642F	36 SGDT Drain (1)	CLOSED		
WD-1651F	36 SGDT Fill Isolation (1)	CLOSED		
WD-1676F	PT-1057 Root Isolation	OPEN		
WD-1652F	36 SGDT to Release Header Isolation	OPEN		
WD-1652A	31 SGDT to Release Header Isolation	CLOSED		
WD-1652B	32 SGDT to Release Header Isolation	CLOSED		
WD-1652C	33 SGDT to Release Header Isolation	CLOSED		
WD-1652D	34 SGDT to Release Header Isolation	CLOSED		
WD-1652E	35 SGDT to Release Header Isolation	CLOSED		
WD-1617	31 LGDT to Release Header Isolation	CLOSED		
WD-1618	32 LGDT to Release Header Isolation	CLOSED		
WD-1619	33 LGDT to Release Header Isolation	CLOSED		
WD-1620	34 LGDT to Release Header Isolation	CLOSED		

(1) Actual nomenclature for these valves on label is Small Gas Decay Tank.

The above valve alignment has been verified correct _____ **{Reference 5.1.2}**
CRS/SM

RESTORATION ALIGNMENT				
VALVE NUMBER	**VALVE DESCRIPTION**	**REQUIRED POSITION**	**ALIGNED BY**	**VERIFIED BY**
WD-1652F	36 SGDT to Release Header Isolation	CLOSED		

ATTACHMENT 11,
EVALUATION OF UNPLANNED GASEOUS RELEASE
(Page 1 of 2)

Date: _____ Start Time _____

Source of Release: _____ Stop Time _____

Duration _____ minutes

RELEASE DATA

Plant Vent Flow Rate: _____ ft^3/min Highest release rate: _____ µCi/sec (R-27, Ch 4)

Average reading during highest 5-minute interval: ____µCi/cc (R-14) _____µCi/cc (R-27, Ch 1)

R-27 ten-minute averages bracketing release (use additional sheets, if necessary):

Time Interval	Concentration (µCi/cc)	Time Interval	Concentration (µCi/cc)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Average reading during 1 hour interval bracketing release _____ µCi/cc (R-14)

_____µCi/sec (R-27, Ch 4) _____ µCi/cc (R-27, Ch 1)

Comments: _____

_____

_____

RAD CHEMISTRY SAMPLE DATA

Sample # _____ Date/Time _____ Activity _____ µCi/cc

K = _____ L = _____

M = _____ N = _____

MET DATA

Wind Direction: _____ Wind Speed: _____ Pasquill Cat. _____

ATTACHMENT 11,
EVALUATION OF UNPLANNED GASEOUS RELEASE
(Page 2 of 2)

Date _____ Source of Release:_____

ESTIMATION of RELEASE MAGNITUDE

NOTE

Release Concentration (μCi/cc) is either:

- R-27 concentration during highest 5 min interval or grab sample concentration if taken at peak and steady state condition.
- R-14 average concentration over peak 5-minute interval.

Release Rate (μCi/sec) = Release Concentration (μCi/cc) * PV flow rate (ft^3/min) * 28317 (cc/ft^3) * (1 min/60 sec)

Release Rate (μCi/sec) = _____ μCi/cc _____ ft^3/min * 472 (cc)(min)/(ft^3)(sec)

Release Rate (μCi/sec) = _____ μCi/sec

Estimated % of Instantaneous Limit = (Release Rate (μCi/sec) / 3.81 E4 (μCi/sec) * 100

Estimated % of Instantaneous Limit = _____ %

_____ _____

Shift Manager CR #

ESTIMATION OF TOTAL CURIES RELEASED

Curies Released (Ci) = Release Concentration * PV flow rate (ft^3/min) * 28317 cc/ft^3 * 10^{-6} Ci/μCi * duration (min)

Release Concentration (μCi/cc) = average R-27 (Channel 1) reading or average R-14 reading.

Curies Released (Ci) = _____μCi/cc * _____ ft3/min * 28317 * 10^{-6} * _____ min

Curies Released (Ci) = _____ Curies

ATTACHMENT 12,
RCV-014 VALVE POSITION TABLE

(Page 1 of 1)

RCV-014 Release Rate (SCFM) vs Valve Position (% Open)							
SCFM	% Open	SCFM	% Open	SCFM	% Open	SCFM	% Open
5	5	34	**53**	59	**83**	84	**91**
10	10	35	**54**	60	**83**	85	**91**
11	11	36	**56**	61	**84**	86	**92**
12	12	37	**57**	62	**84**	87	**92**
13	13	38	**59**	63	**84**	88	**92**
14	15	39	**60**	64	**85**	89	**93**
15	16	40	**62**	65	**85**	90	**93**
16	17	41	**63**	66	**85**	91	**93**
17	18	42	**65**	67	**86**	92	**94**
18	19	43	**66**	68	**86**	93	**94**
19	21	44	**68**	69	**86**	94	**94**
20	24	45	**69**	70	**87**	95	**95**
21	26	46	**71**	71	**87**	96	**95**
22	29	47	**72**	72	**87**	97	**95**
23	31	48	**74**	73	**88**	98	**96**
24	34	49	**75**	74	**88**	99	**96**
25	37	50	**77**	75	**88**	100	**96**
26	40	51	**79**	76	**89**	102	**97**
27	42	52	**81**	77	**89**	104	**97**
28	44	53	**81**	78	**89**	106	**97**
29	46	54	**81**	79	**90**	108	**98**
30	47	55	**82**	80	**90**	110	**98**
31	48	56	**82**	81	**90**	112	**98**
32	50	57	**82**	82	**91**	115	**99**
33	52	58	**83**	83	**91**	120	**100**

JPM NO. 5
Emergency Plan Classification For General Emergency Including PAR

Job Performance Measure Exam

Submitted By	Don Jackson	9/20/2003 **Date**
Reviewed By		**Date**
SME Review/Validation By		**Date**
Approved By		**Date**

NRC Operating Exam- JPM 5

Indian Point 3

Week of December 8, 2003

JPM Tasks
2.4.41

Description: GENERAL EMERGENCY CLASSIFICATION AND PAR

Trainee: _____ Evaluator: _____

Evaluator Signature _____ Date _____

Trainee Performance: Satisfactory _____ Unsatisfactory _____

Start Time _____ **Stop Time:** _____

This Is A Time Critcal JPM- Identification Must Be Completed In 15 Min, and Notification Must Occur in the Next 15 Min.

When I tell you to begin, you are to perform the task listed above. I will describe general conditions standard(s), initiating cue(s), and answer any questions you have. I will provide access to any tools necessary to perform the task. You may use any approved reference material normally available. To satisfactory complete this task, you must perform or simulate each critical element correctly. You are to inform the examiner when you have completed the task.

Method of Testing: Actual Performance in the Classroom Setting

General Comments (For Evaluator Use):

Task Conditions:

A REACTOR TRIP AND SAFETY INJECTION HAVE OCCURRED, E-0 "REACTOR TRIP OR SAFETY INJECTION" IS COMPLETE AND A TRANSITION TO E-3, " STEAM GENERATOR TUBE RUPTURE" HAS OCCURRED. UPON ENTRY INTO E-3, " STEAM GENERATOR TUBE RUPTURE" , THE STA REPORTS THAT A RED PATH EXISTS ON HEAT SINK, THE CREW TRANSITIONS TO FR-H.1 " RESPONSE TO LOSS OF SECONDARY HEAT SINK" . IT IS DETERMINED THAT A 300 GPM SGTR EXISTS ON 32 S/G, IN ADDITION A S/G SAFETY IS STUCK OPEN ON 32 S/G. WHILE IN FR-H.1 IT IS DETERMINED THAT DE-I 131 IS 475UCI/CC, R-25 IS READING 20 R/HR, AND R-26 IS READING 16 R/HR. WIND IS 7 METERS PER SECOND FROM 220 DEGREES, STABILITY CLASS "C". AN AFW PUMP IS QUICKLY RECOVERED AND FR-H.1 IS EXITED. AS THE SHIFT MANAGER, MAKE THE E-PLAN CLASSIFICATION , INITIAL NOTIFICATIONS, AND ANY PROTECTIVE ACTION RECOMMENDATIONS IF NECESSARY.

ask Standards :

K&A #: ADMIN- 2.4.41- KNOWLEDGE OF THE EMERGENCY ACTION LEVELS THRESHOLDS AND CLASSIFICATIONS
Applicability: SRO
A GENERAL EMERGENCY IS DECLARED, AND ACTIONS PER IP-2001 HAVE BEEN COMPLETED INCLUDING THE ASSOCIATED PROTECTIVE ACTION RECOMMENDATION
Estimated Completion Time: 30 minutes

Tools Needed:
None

Initiating Cues :

A REACTOR TRIP AND SAFETY INJECTION HAVE OCCURRED, E-0 "REACTOR TRIP OR SAFETY INJECTION" IS COMPLETE AND A TRANSITION TO E-3, " STEAM GENERATOR TUBE RUPTURE" HAS OCCURRED. UPON ENTRY INTO E-3, " STEAM GENERATOR TUBE RUPTURE" , THE STA REPORTS THAT A RED PATH EXISTS ON HEAT SINK, THE CREW TRANSITIONS TO FR-H.1 " RESPONSE TO LOSS OF SECONDARY HEAT SINK" . IT IS DETERMINED THAT A 300 GPM SGTR EXISTS ON 32 S/G, IN ADDITION A S/G SAFETY IS STUCK OPEN ON 32 S/G. WHILE IN FR-H.1 IT IS DETERMINED THAT DE-I 131 IS 475UCI/CC, R-25 IS READING 20 R/HR, AND R-26 IS READING 16 R/HR. WIND IS 7 METERS PER SECOND FROM 220 DEGREES. THE STABILITY CLASS IS "C". AN AFW PUMP IS QUICKLY RECOVERED AND FR-H.1 IS EXITED. AS THE SHIFT MANAGER, MAKE THE E-PLAN CLASSIFICATION, INITIAL NOTIFICATIONS, AND ANY PROTECTIVE ACTION RECOMMENDATIONS IF NECESSARY.

References :

ID	Description	Review Date	Ref Flag
IP-2001	EMERGENCY PLAN PROCEDURE FOR ED,POM, SM		X
	EMERGENCY ACTION LEVELS		X

Safety Considerations :
None

Consequences of Inadequate Performance:
DELAY OF PROTECTIVE ACTIONS FOR PUBLIC HEALTH AND SAFETY

Performance Checklist :

	Element :	Standards :	Conditions :
1	OBTAIN & REVIEW IP-3 EMERGENCY RESPONSE ACTIVATION PROCEDURES	EMERGENCY RESPONSE PLAN IS REVIEWED	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
2	REVIEW ATT 5.1 TO SELECT GENERAL EMERGENCY PER CATEGORY 4.2.2	GENERAL EMERGENCY IS DECELARED PER CATEGORY 4.2.2	MUST COMPLETE IN 15 MINUTES

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
3	SM ENTERS IP-2001 AND ASSUMES ED, AND ENTERS ATT 5.4	ENTERS IP-2001 ASSUMES ED AND ENTERS ATT 5.4	MUST COMPLETE IMMEDIATE ACTIONS IN 15 MINUTES THIS INCLUDES EP FORM 1

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
4	SM/ED COMPLETES CONTROL ROOM INITIAL NOTIFICATION CHECKLIST	CONTROL ROOM INITIAL NOTIFICATION CHECKLIST FORM EP-4	

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
5	NOTIFY SECURITY OF GENERAL EMERGENCY	CONTACTS SECURITY PER ATT 5.4	

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	BEGIN SITE ACCOUNTABILITY	SM TAKES ACTION PER ATT 5.4 AND EP-4	CUE: SIMULATE SOUNDING ALARMS AND ANNOUNCEMENTS

Comments :

Critical Task? N

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
6	COMPLETE PART 1- NYS RADIOLOGICAL EMER DATA FORM	EP FORM 1 PART 1 IS COMPLETED PER ATTACHED EXAMPLE	

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

	Element :	Standards :	Conditions :
7	PROTECTIVE ACTION RECOMMENDATION MADE PER IP-EP-410 "PROTECTIVE ACTION RECOMMENDATIONS"	EVACUATE AND IMPLEMENT KI ALL ERPAS 0-2 MILES (1,2,3,4, 7,29,30,38,39,42,43,44,45,46), AND 2-5 MILES DOWNWIND (8,9,16,18,49) , RECOMMEND SHELTERING NON- EVACUATED ERPAS	

Comments :

Critical Task? Y

Satisfactory **Unsatisfactory**

Terminating Cues :

THIS JPM IS TERMINATED ONCE THE EP FORM 1 NYS RADIOLOGICAL EMERGENCY DATA FORM IS COMPLETED WITH THE APPROPRIATE EVENT CLASSIFICATION AND PAR

Candidate Cue Sheet

.....This Activity Is Time Critical.....

THE FOLLOWING SEQUENCE OF EVENTS OCCURS WHILE ON SHIFT:

- A REACTOR TRIP AND SAFETY INJECTION HAVE OCCURRED, E-0 "REACTOR TRIP OR SAFETY INJECTION" IS COMPLETE AND A TRANSITION TO E-3, " STEAM GENERATOR TUBE RUPTURE" HAS OCCURRED.
- UPON ENTRY INTO E-3, " STEAM GENERATOR TUBE RUPTURE" , THE STA REPORTS THAT A RED PATH EXISTS ON HEAT SINK, THE CREW TRANSITIONS TO FR-H.1 " RESPONSE TO LOSS OF SECONDARY HEAT SINK" .
- IT IS DETERMINED THAT A 300 GPM SGTR EXISTS ON 32 S/G, IN ADDITION A S/G SAFETY IS STUCK OPEN ON 32 S/G.
- WHILE IN FR-H.1 IT IS DETERMINED THAT DE-I 131 IS 475UCI/CC, R-25 IS READING 20 R/HR, AND R-26 IS READING 16 R/HR.
- WIND IS 7 METERS PER SECOND FROM 220 DEGREES. THE STABILITY CLASS IS "C".
- AN AFW PUMP IS QUICKLY RECOVERED AND FR-H.1 IS EXITED.

AS THE SHIFT MANAGER, MAKE THE E-PLAN CLASSIFICATION, INITIAL NOTIFICATIONS, AND ANY PROTECTIVE ACTION RECOMMENDATIONS IF NECESSARY.

.....This Activity Is Time Critical.....

New York State
Radiological Emergency Data Form
Indian Point Energy Center
Part I - General Information Instructions

Notification # ____

1. This message being transmitted on: _____ (Date) at: _____ (Time) ☐ AM ☐ PM VIA: (A. RECS) B. Other _____

2. This is... ~~A. NOT an Exercise~~ N/A (B. An Exercise)

3. The Facility Affected is: A. Unit 2 (B. Unit 3) C. Both

4. The Emergency A. Unusual Event B. Alert (D. General Emergency) E. Emergency Terminated F. Recovery G. Other

5. This Emergency Classification Declared on: _____ (Date) at: _____ (Time) ☐ AM ☐ PM

6. Release of Radioactive Materials due to the Classified Event:
A. No Release
B. Release **BELOW** federally approved operating limits (Technical Specifications) ☐ To Atmosphere ☐ To Water
C. Release **ABOVE** federally approved operating limits (Technical Specifications) ☐ To Atmosphere ☐ To Water
(D. Unmonitored Release – requiring evaluation)

7. Protective Action Recommendations:
A. No need for Protective Actions outside the site boundary.
(B.) **EVACUATE** and implement the KI plan for the following ERPAs:

(1)	(2)	(3)	(4)	5	6	(7)	(8)	(9)	10	11	12	13	14	15	(16)	17	(18)	19	20
21	22	23	24	25	26	27	28	(29)	(30)	31	32	33	34	35	36	37	(38)	(39)	40
41	(42)	(43)	(44)	(45)	(46)	47	48	(49)	50	51									

(C.) **SHELTER** all remaining ERPAs.

8. **EAL Number:** 4.2.2
Brief Event Description: S/G Tube Rupture with SECONDARY RELEASE
A S/G Tube Rupture exists on 32 S/G with a failed open S/G Safety Valve on 32 S/G. There is evidence of fuel damage.

9. The Plant status is: A. Stable B. Improving (C. Degrading) D. Hot Shutdown E. Cold Shutdown

10. Reactor Shutdown: A. Not Applicable B. _____ (Date) at: _____ (Time) ☐AM ☐PM

11. Wind Speed: 7 Meters/Second at elevation 10 meters.

12. Wind Direction: (From) 220 Degrees at elevation 10 meters.

13. Stability Class: A B (C) D E F G

14. Report By: _____ (Communicator's Name) at Telephone Number (914) ____-_____

Message Received by: _____ | Message Ended at: _____

Emergency Director Review and Approval: Candidate must sign

Control Room Initial Notification Checklist – Alert / SAE / GE

Notify Protected Area Personnel: | Time

Note: If the Shift Manager does not feel it is safe to relocate personnel at this time DO NOT sound the Site Assembly Alarm or call for personnel to report to the Assembly Areas.

1. Contact opposite unit's Control Room and inform them of classification, time, EAL# and brief description.
   Unit 2: 734-5294 (5295) **Unit 3**: 736-8277 (8282)
2. Coordinate the following with the opposite unit Control Room:
   a. Sounding of the Site Assembly Alarm for 30 seconds and,
   b. Announcing the following message over both Unit's P.A. Systems three (3) times:
   "Attention all personnel, a (*Alert / Site Area Emergency / General Emergency*) has been declared"
   "All Essential Personnel report to your assigned emergency facility"
   "All other personnel report to the (Energy Education Center [Unit 2]**)/ (Training Center** [Unit 3]**)"**
3. Notify Security Shift Supervisor at 736-8067 (8068) and provide them with the affected unit, date/time of classification. **IF** Unit 3 is declaring the event, **THEN** request an Offsite Communicator report to the Control Room

Notify Emergency Response Organization: (Unit 2 Control Room activates DIALOGIC system) | Time

4. Request direction from Shift Manger (Emergency Director) as to ERO mobilization needed utilizing the appropriate envelope. **IF** Unit 3 is the affected unit **THEN** contact the Unit 2 Control Room and direct notification by one of the following, as appropriate:
   - **IF** a Security Event, **THEN** use **Envelope C "IPEC ERO Mobilization to Backup Locations"** (Form EP-36, Primary – ERO Activation Checklist) to mobilize EROs to backup locations.
   - **Otherwise** use **Envelope A "IPEC ERO Mobilization"** (Form EP-36, Primary – ERO Activation Checklist) to mobilize EROs.

Notify State and Counties: (to be initiated within 15 min. of classification)

5. Pick up the console handset and depress the **"RECS"** button **(If V-Band** press the number **"7"** button on the keypad.)
6. When you hear the message *"You have initiated a conference ..."* state:
   "This is to report an event at Indian Point. Standby for roll call"
7. **IF** you did not hear the above message within 5 seconds of pressing the button **THEN** hang up **(If V-Band** press **"Clear"** to hang up) , wait 5 seconds and repeat steps 5 and 6.
8. **IF** unable to contact any station via RECS **THEN** use Local Government Radio (LGR) (instructions on back) **OR** telephone (phone numbers on back), to contact Warning Point(s) for those stations not reached.
9. Enter time you are starting the initial roll call in the space provided below.
10. Initiate roll call by asking **"(*location title*) are you on the line?"** for each of the following stations, stopping after each name is read to allow station to identify itself. Check off "Initial Roll Call" for each location as they answer:

Time Initial Roll Call Started _____

Time Final Roll Call Completed _____

Location	Initial Roll Call	Final Roll Call
New York State	☐	☐
Westchester County	☐	☐
Peekskill City	☐	☐
Rockland County	☐	☐
Orange County	☐	☐
Putnam County	☐	☐
West Point	☐	☐

11. **SLOWLY** read all of the information from the completed and approved NYS Radiological Emergency Data Form Part I. After reading form say **"Stay on line for final roll call."**
12. Perform a final roll call by asking **"(*location title*) did you copy?"** for each location. Check off **"Final Roll Call"** for each location as they answer the roll call. **IF** any location did not copy the message **THEN** instruct them to call the State for clarification or, if requested, repeat the information.
13. End notification by saying **"Indian Point out at (*time*)"**. Enter the time above when final roll call is completed.
14. **IF** any location did not answer the initial roll call **THEN** contact the missing location via telephone and direct them to either call the State to obtain the notification information or read form information over the telephone. Record the location and time of this notification in the comment section of this form.

Go to page 2 (back)

CCR Initial Notification Checklist Alert/SAE/GE (cont)

Notify Media Relations:	Time
15. Call Indian Point Communications Representative at 914-271-7031 **IF** individual answers **THEN** read the following statement: **"This is the Unit __ Control Room, a(n) (** Alert/Site Area Emergency/General Emergency) (circle proper classification) **was declared at** _____ **on Emergency Action Level number** _____ " (time) (EAL #) Obtain and enter name of individual contacted: _____ **OR** **IF** after 2-5 rings the machine picks up **THEN** read the above message into machine after beep.	

Notify NRC: (to be initiated within 1 hr. of classification)	Time
16. **IF** it is during normal working hours **THEN** notify the affected unit(s) NRC Resident Inspector **Unit 2:** 739-9361 or x 5347 **Unit 3:** 739-8899 **IF** during off-hours **THEN** call or page the NRC Senior Resident Inspector using phone numbers provided in the Emergency Telephone Directory Provide the Inspector with Date/Time of NUE classification, EAL # and brief description of event.	
17. Contact NRC by calling main number listed on ENS phone. **(IF** main number does not work **THEN** use 1st, 2nd or 3rd backup number, or region 4 alternate number listed.) Inform them that this is a 50.72 notification and provide them with Date/Time of emergency classification, EAL # and brief description of event. Complete NRC Form 361, if requested.	

18. Record any Comments: _____

_____

19. Date and sign this form	Date:	Signature:

20. Inform the Shift Manager that you have completed emergency notifications.

21. Fax copies of the NYS Radiological Data Form, Part I to State, counties, TSC, EOF and JNC and provide originals to the Shift Manager.

Use of Local Government Radio or commercial telephone:

A. If using the LGR (for **V-Band** depress the **"LGR"** button on the communications console) verify power on and pickup the handset & depress the handset button. Conduct roll call (see step 7). If using the commercial telephone, then dial the Warning Points phone numbers.

B. Transmit the following: **"This is to report that a (emergency classification) has been declared at Indian Point Energy Center. Stand by for a fax of the Part I form."**

C. Fax the Part I form to the State and Counties Warning Points and EOC's.

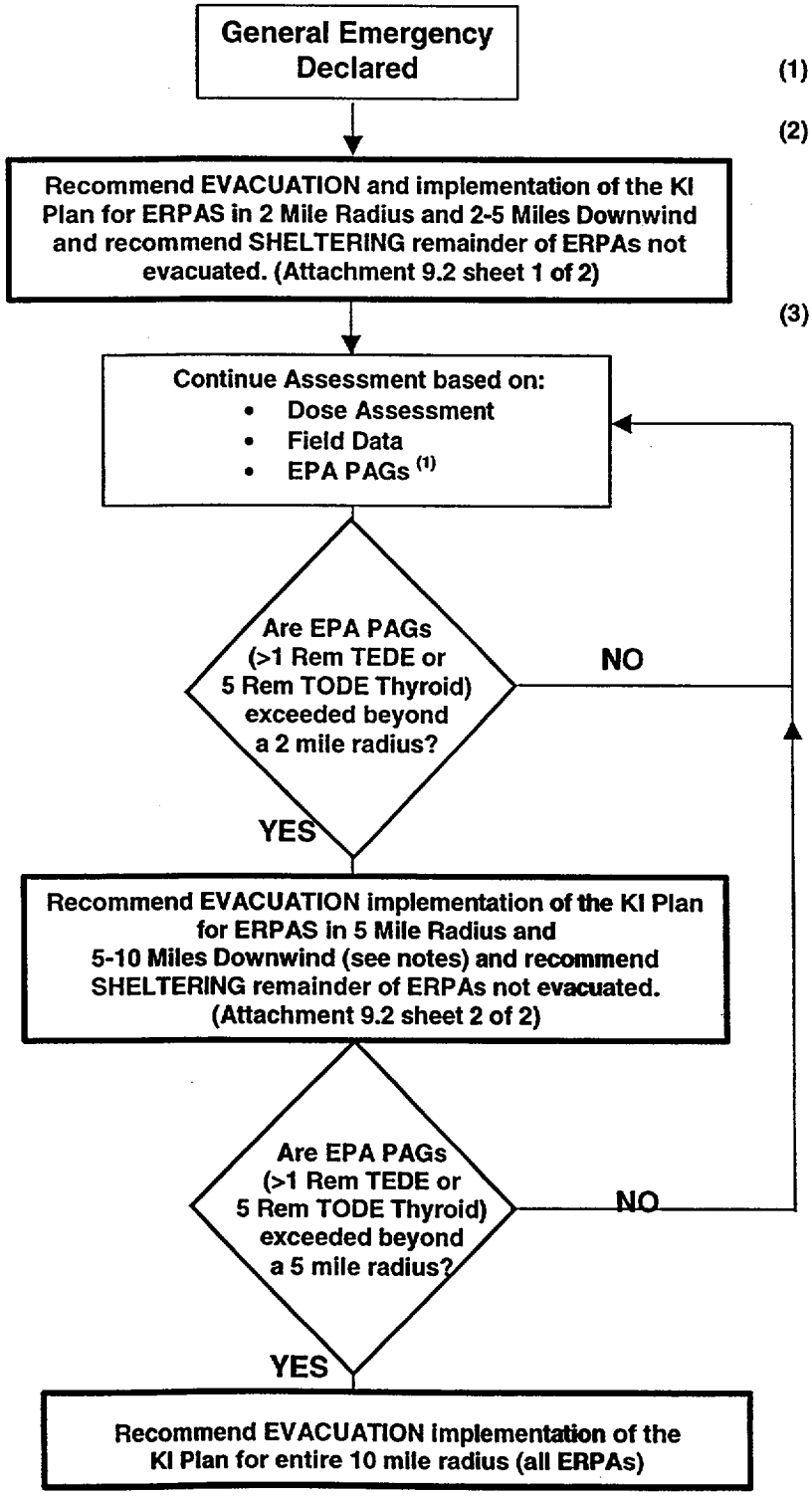
Warning Point and EOC phone numbers

Location	Warning Point Phone #	EOC Phone #
Westchester County	914-864-7890	914-995-3026 or 995-3027
Peekskill City	914-737-8000	914-737-8000
Rockland County	845-364-8600	845-364-8800 or 364-8900
Orange County	845-291-4033	845-291-3199
Putnam County	845-225-4300	845-225-3896 or 225-9376
West Point	845-938-8846	845-938-8846
New York State	518-457-2200 or 457-6811	518-457-9900

Attachment 9.1

FLOWCHART FOR GENERAL EMERGENCY PROTECTIVE ACTION DECISIONS

Sheet1 of 1



Notes:

(1) Refer to Attachment 9.3 for details on EPA PAGs.

(2) IF an EPA PAG is exceeded or expected to be exceeded beyond 10 miles THEN consider the need for PARs beyond 10 miles and discuss possible actions with State.

(3) IF recommended ERPAS change THEN add new ERPAS to new PAR DO NOT subtract any ERPA in which actions have previously been recommended.

Attachment 9.2

CONVERSION OF SECTOR/ZONES TO ERPAS – 2-5 Miles Downwind

Sheet 1 of 2

TABLE I - 0-2 MILE RADIUS - Evacuate all listed ERPAs including the river ERPAs.

1, 2, 3, 4, 7, 29, 30, 38, 39, 42, 43, 44, 45, 46

TABLE IIA - 2-5 MILES DOWNWIND for Up-Valley Plumes

Up-Valley Plumes (wind speed < 4 m/sec and wind direction from 102°-209°)	
Pasquil Stability Categories	ERPAs affected
A, B	8, 9, 16, 18, 26, 49
C, D, E, F, G	8, 9, 16, 18, 26,

TABLE IIB - 2-5 MILES DOWNWIND for Down-Valley Plumes

Down-Valley Plumes (wind speed < 4 m/sec and wind direction from 340°-101°)	
Pasquill Stability Categories	ERPAs affected
A, B	5, 6, 31, 47, 48, 49
C, D, E, F, G	5, 6, 31, 47, 48, 49

TABLE IIC - 2-5 MILES DOWNWIND for Cross-Valley Plumes

Cross-Valley (wind speed ≥ 4 m/sec OR wind direction from 210°-339°)			
Wind Direct From (deg)	Center Sector No	Pasquil Stability Categories A & B ERPAs affected	Pasquil Stability Categories C-G ERPAs affected
169 - 190	1 N	8, 9, 16, 18, 24,26, 40	8, 16, 18, 26
191 - 213	2 NNE	8, 9, 16, 18, 26, 49	8, 9, 16, 18
214 - 235	3 NE	8, 9, 16, 18, 49	8, 9, 16, 18, 49
236 - 258	4 ENE	5, 8, 9, 16, 18, 48, 49	8, 9, 49
259 - 280	5 E	5, 6, 8, 9, 47, 48, 49	5, 8, 9, 47, 48, 49
281 - 303	6 ESE	5, 6, 8, 9, 47, 48, 49	5, 6, 9, 47, 48, 49
304 - 325	7 SE	5, 6, 9, 31, 47, 48, 49	5, 6, 47, 48, 49
326 - 348	8 SSE	5, 6, 31, 47, 48, 49	5, 6, 31, 47, 48, 49
349 - 010	9 S	5, 6, 31, 47, 48, 49	6, 31, 47, 48
011 - 033	10 SSW	6, 31, 40, 47, 48	31
034 - 055	11 SW	31, 40	31, 40
056 - 078	12 WSW	31, 40	31, 40
079 - 100	13 W	24, 26, 31, 40	40
101 - 123	14 WNW	16, 24, 26, 40	24, 26, 40
124 - 145	15 NW	8, 16, 24, 26, 40	16, 24, 26, 40
146 - 168	16 NNW	8, 16, 18, 24, 26, 40	8, 16, 24, 26, 40

Attachment 9.2

CONVERSION OF SECTOR/ZONES TO ERPAS – 5-10 Miles Downwind

Sheet 2 of 2

TABLE I - 0-5 MILE RADIUS - Evacuate all listed ERPAs including the river ERPAs

1, 2, 3, 4, 5, 6, 7, 8, 9, 16, 18, 24, 26, 29, 30, 31, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49

TABLE IIA – 5-10 MILES DOWNWIND for Up-Valley Plumes

Up-Valley Plumes (wind speed < 4 m/sec and wind direction from 102°-209°)	
Pasquil Stability Categories	ERPAs
A, B	10, 11, 12, 13, 14, 17, 19, 20, 23, 25
C, D, E, F, G	10, 11, 12, 17, 19, 20, 23, 25

TABLE IIB - 5-10 MILES DOWNWIND for Down-Valley Plumes

Down-Valley Plumes (wind speed ≤ 4 m/sec and wind direction from 340°-101°)	
Pasquil Stability Categories	ERPAs affected
A, B	12, 21, 22, 32, 33, 34, 35, 36, 37, 41, 50, 51
C, D, E, F, G	12, 21, 22, 32, 33, 34, 35, 36, 37, 50, 51

TABLE IIC – 5-10 MILES DOWNWIND for Cross-Valley Plumes

Cross-Valley (wind speed ≥ 4 m/sec OR wind direction from 210°-339°)			
Wind Direct From (deg)	Center Sector No	Pasquil Stability Categories A & B ERPAs affected	Pasquil Stability Categories C-G ERPAs affected
169 - 190	1 N	10, 11, 17, 19, 20, 23, 25, 27	17, 19, 23, 25
191 - 213	2 NNE	10, 11, 12, 13, 14, 17, 19, 20, 23, 25	10, 11, 17, 19, 20, 23
214 - 235	3 NE	10,11,12,13,14,15,17,19,20,23	10,11,12,13,14,17,19, 20
236 - 258	4 ENE	10,11,12,13,14,15,17,19,20,21,50	10,11,12,13,14,15,19,20
259 - 280	5 E	10,11,12,13,14,15,19,20,21,22,50,51	10,11,12,13,14,15, 20,21,50
281 - 303	6 ESE	10,11,12,13,14,15,20,21,22,32,50,51	11,12,13,14,15,21,22,50,51
304 - 325	7 SE	11,12,13,14,15,21,22,32,33,34,35,50,51	12,13,21,22,32,50,51
326 - 348	8 SSE	12,13,21,22,32,33,34,35,36,37,50,51	12,21,22,32,33,34,35,50,51
349 - 010	9 S	12,21,22,32,33,34,35,36,37,41,50,51	22,32,33,34,35,36, 37,51
011 - 033	10 SSW	22,32,33,34,35,36,37,41,51	32,33,34,35,36,37,41
034 - 055	11 SW	28,32,33,34,35,36,37,41	34,35,36,37,41
056 - 078	12 WSW	27,28,34,35,36,37,41	28,34,36,37,41
079 - 100	13 W	25,27,28,34,36,37,41	27,28,41
101 - 123	14 WNW	25,27,28,41	25,27,28
124 - 145	15 NW	17,23,25,27,28	25,27,28
146 - 168	16 NNW	17,19,23,25,27,28	17,23,25,27

Entergy

CONTROLLED COPY #: 23

EMERGENCY PLAN PROCEDURES

PROCEDURE NO. IC/EALs REV. 9

TITLE: Initiating Conditions and Emergency Action Levels

THIS PROCEDURE IS TSR X

THIS PROCEDURE IS NOT TSR

WRITTEN BY: Kelly Walker 7/8/02
SIGNATURE/DATE

REVIEWED BY: MaryAnn Wilson 7/8/02
SIGNATURE/DATE

APPROVED BY: [signature] 7/8/02
SIGNATURE/DATE

EFFECTIVE DATE: 7/11/02

PROCEDURE USE IS

REFERENCE

INITIATING CONDITIONS AND EMERGENCY ACTION LEVELS (EALS)

TABLE OF CONTENTS

Initiating Conditions and Emergency Action Levels

1.0 PURPOSE

This procedure is to be used prior to an emergency classification. This procedure is to be used for declaring an event into one of the four emergency classification.

2.0 RESPONSIBILITIES

2.1 The Shift Manager (SM), and/or Emergency Director (ED) shall implement this procedure.

2.2 The Control Room Supervisor (CRS) shall implement this procedure if the SM is unavailable to do so.

3.0 REFERENCES

3.1 AP-21, "Conduct of Operations"

3.2 IP-2001, "Emergency Director (ED), Plant Operations Manager (POM), Shift Manager (SM) Procedure"

3.3 IP-EP-255, Emergency Operations Facility Management and Liaisons

3.4 Emergency Action Levels Technical Bases

3.5 IP-EP-610, Emergency Termination and Recovery

4.0 PROCEDURE

4.1 Initial Declaration:

A. The SM or CRS shall use the Emergency Action Levels Attachment 5.1 to select categories related to plant events or conditions.

B. The SM or CRS shall determine the most appropriate emergency.

NOTE

If the Emergency Action Level is not clear, reference the Emergency Action Levels Technical Bases for clarification. It is located in the CR with Emergency Plan procedures.

C. Upon determining the emergency classification, the SM or CRS shall declare the emergency classification.

NOTE

The initial emergency classification should be made within 15 minutes following the identification of an event or combination of events to ensure that proper protective and corrective actions are taken.

The initial emergency classification will normally be made by the SM. It is the SM's primary responsibility to act in accordance AP-21 to ensure that necessary actions are taken to return equipment or systems to a safe, stable condition. The emergency classification shall not interfere with this primary responsibility.

An event that occurs and ends in a very short period of time, or an event occurs and goes unnoticed until after an event has terminated, must still be classified and required notification to the NRC, State, and Counties made. The implementation of the emergency plan should be used as appropriate in these circumstances.

D. Upon declaration of an emergency, the SM shall implement IP-2001 and assume the role as ED.

4.2 Reclassification:

A. If reclassification to a higher level is necessary, the ED shall repeat the classification steps above ensuring input from the Control Room (CR) staff.

NOTE

The Emergency Operations Facility (EOF) ED shall use IP-EP-255.

4.3 Termination/Recovery:

A. An emergency classification will not be declassified but will be terminated or go into Recovery using criteria established in IP-EP-610, Emergency Termination and Recovery.

5.0 ATTACHMENTS

5.1 Initiating Conditions and Emergency Action Levels

END OF TEXT

CATEGORY 1.0 CSFST STATUS

Category	General	Site Area	Alert	Unusual Event
1.1 Subcriticality	1.1.3 {1,2,3} RED path in F-0.1, Subcriticality AND Actual or imminent entry into EITHER: RED Path in F-0.2, Core Cooling OR Red Path in F-0.3, Heat Sink	1.1.2 {1,2,3} RED path in F-0.1 Subcriticality	1.1.1 {1,2,3} Any Failure of an automatic trip signal to reduce power range < 5% AND Manual trip is successful	
1.2 Core Cooling	1.2.2 {1,2,3,4} RED path in F-0.2, Core Cooling AND Functional restoration procedures not effective within 15 minutes.	1.2.1 {1,2,3,4} ORANGE or RED path in F-0.2, Core Cooling		
1.3 Heat Sink		1.3.1 {1,2,3,4} RED path in F-0.3, HEAT SINK AND Heat sink is required		
1.4 Integrity			1.4.1 {1,2,3,4} Red Path on F-0.4, Integrity	
1.5 Containment	1.5.1 {1,2,3,4} Red Path F-0.5, Containment resulting from loss of coolant.			

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 2.0 REACTOR FUEL

Category	General	Site Area	Alert	Unusual Event
2.1 Coolant Activity		2.1.3 {1,2,3;4} Coolant activity > 300 µCi/cc dose equivalent I-131 AND any of the following: • RED path on F-0.4, Integrity • Primary system leakage > 75 gpm • RCS subcooling < SI initiation setpoint • > 0.06 µCi/cc on R-11 or R-12 due to RCS leakage		2.1.1 {1,2,3,4} Coolant sample activity: > 1.0 µCi/cc dose equivalent I-131 OR > 100/(E Bar) µCi/cc for all noble gases with half-lives >10 minutes
2.2 Containment Radiation	2.2.3 {1,2,3,4} Containment Radiation monitor R-25 or R-26 > 68 R/HR	2.2.2 {1,2,3,4} Containment Radiation monitor R-25 or R-26 > 17 R/HR	2.2.1 {1,2,3,4} > 0.06 µCi/cc on R-11 or R-12 due to RCS leakage.	

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 2.0 REACTOR FUEL

Category	General	Site Area	Alert	Unusual Event
2.3 Refueling Accidents Or Other Radiation Monitors			2.3.2 {1,2,3,4,5,6} Confirmed sustained alarm on ANY of the following radiation monitors resulting from an uncontrolled fuel handling process: • R-2 or R-7 Vapor Containment Area Monitors • R-5 Fuel Storage Building Area Monitor • R-12 Containment Gas activity • R-25 or 26 Vapor Containment High Radiation Area Monitors 2.3.3 {1,2,3,4,5,6} Report of visual observation of irradiated fuel uncovered	2.3.1 {1,2,3,4,5,6} Spent fuel pool (reactor cavity during refueling) water level cannot be restored and maintained above the spent fuel pool low water level alarm setpoint

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 3.0 REACTOR COOLANT SYSTEM

Category	General	Site Area	Alert	Unusual Event
3.1 RCS Leakage [NOTE: This includes Primary to Secondary Leakage]		3.1.3 {1,2,3,4,5,6} RVLIS cannot be maintained > 33% with no RCP's running OR With the reactor vessel head removed, it is reported that water level in the reactor vessel is dropping in an uncontrolled manner and core uncovery is likely	3.1.2 {1,2,3,4} Primary system leakage exceeding the capacity (75 gpm) of a single charging pump	3.1.1 {1,2,3,4} Unidentified or pressure boundary leakage > 10 gpm OR Identified leakage > 25 gpm
3.2 Primary to Secondary Leakage [NOTE: For Primary to Secondary Leakage, Category 3.1 also applies.]		3.2.2 {1,2,3,4} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 75 gpm 3.2.3 {1,2,3,4} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 0.3 gpm in any steam generator AND Coolant activity > 300 µCi/cc of dose equivalent I-131		3.2.1 {1,2,3,4} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 0.3 gpm in any steam generator.
3.3 RCS Subcooling			3.3.1 {1,2,3,4} RCS Subcooling < SI initiation setpoint due to RCS leakage	

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 4.0 CONTAINMENT

Category	General	Site Area	Alert	Unusual Event
4.1 Containment Integrity Status	4.1.4 {1,2,3,4} Confirmed Phase "B" isolation signal following confirmed LOCA with less than minimum containment cooling safeguards equipment operating, Table 4.3 AND Any indicators of fuel clad loss, Table 4.1 4.1.5 {1,2,3,4} EITHER: Rapid, uncontrolled decrease in containment pressure following initial increase due to RCS failure OR Loss of primary coolant inside containment with containment pressure or sump level response not consistent with LOCA conditions AND Any indicators of fuel clad damage, Table 4.2	4.1.2 {1,2,3,4} Rapid, uncontrolled decrease in containment pressure following initial increase due to RCS failure OR Loss of primary coolant inside containment with containment pressure or sump level response not consistent with LOCA conditions		4.1.1 {1,2,3,4} Both doors open on a VC airlock for > 4 hrs. OR Inability to close containment pressure relief or purge valves which results in a radiological release pathway to the environment for > 4 hrs. OR Any Phase "A" or Phase "B" or containment ventilation isolation valve(s) not closed when required which results in a radiological release pathway to the environment

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 4.0 CONTAINMENT

Category	General	Site Area	Alert	Unusual Event
4.1 Containment Integrity Status (Continued)	4.1.6 {1,2,3,4} Either: Any Phase "A" or Phase"B" or CVI valve (s) not closed when required following confirmed LOCA OR Inability to isolate any primary system discharging outside containment AMD Radiological release to the environment exists as a result AND Any indicators of fuel clad damage, Table 4.2	4.1.3 {1,2,3,4} Either: Any Phase "A" or Phase "B' or CVI Valve(s) not closed when required following confirmed LOCA OR Inability to isolate any primary system discharging outside containment. AND Radiological release to the environment exists as a result		
4.2 SG Tube Rupture w/ Secondary Release	4.2.2 {1,2,3,4} Unisolable secondary side line break with SG tube rupture as identified in E-3 "Steam Generator Tube Rupture" AND Any Indicators of fuel clad damage, Table 4.2	4.2.1 {1,2,3,4} Unisolable faulted (outside VC) ruptured steam generator		
4.3 Combustible Gas Concentrations	4.3.1 {1,2,3,4} > 4% Hydrogen concentration in containment			

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 4.0 CONTAINMENT

Table 4.1 Fuel Clad Loss Indicators
1. Coolant activity > 300 µCi/cc dose equivalent of I-131
2. Containment radiation monitor R-25 or R-26 reading > 17 R/hr
3. RED path in F-0.2, CORE COOLING

Table 4.2 Fuel Clad Damage Indicators
1. ORANGE or RED path in F-0.2, CORE COOLING
2. RED path in F-0.3, HEAT SINK AND Heat sink is required
3. Coolant activity > 300 µCi/cc dose equivalent I-131
4. Containment radiation monitor R-25 or R-26 reading > 17 R/hr

Table 4.3 Minimum Containment Cooling Safeguards Equipment	
Fan Cooler Units Operating Required	Spray Pumps Required
< 3	2
3	1
5	0

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 5.0 RADIOACTIVITY RELEASE

Category	General	Site Area	Alert	Unusual Event
5.1 Effluent Monitors	5.1.4 {1,2,3,4,5,6} A valid reading on any monitors Table 5.1 column "GE" for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "GE" within this time period.	5.1.3 {1,2,3,4,5,6} A valid reading on any monitors Table 5.1 column "SAE" for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "SAE" within this time period.	5.1.2{1,2,3,4,5,6} A valid reading on any monitors Table 5.1 column "Alert for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "Alert" within this time period.	5.1.1 {1,2,3,4,5,6} A valid reading on any monitors Table 5.1 column "NUE" for > 60 minutes unless sample analysis can confirm release rates < 2 x improved technical specifications within this time period.
5.2 Dose Projections/ Environmental Measurements/ Release Rates	5.2.5 {1,2,3,4,5,6} Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates > Table 5.2 column "GE" at the site boundary or beyond.	5.2.4 {1,2,3,4,5,6} Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates > Table 5.2 column "SAE" at the site boundary or beyond.	5.2.2 1,2,3,4,5,6} Confirmed sample analysis for gaseous or liquid release rates > 200 x improved technical specifications limits for > 15 minutes 5.2.3 {1,2,3,4,5,6} Dose projections or field surveys resulting from actual or imminent release which indicate doses/ dose rate > Table 5.2 column "Alert" at the site boundary or beyond	5.2.1 {1,2,3,4,5,6} Confirmed sample analysis for gaseous or liquid release rates > 2 x improved technical specifications limits for > 60 minutes.

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 5.0 RADIOACTIVITY RELEASE

Category	General	Site Area	Alert	Unusual Event
5.3 Area Radiation Levels			5.3.2 {1,2,3,4,5,6} Sustained area Radiation levels > 15 Mr/hr in EITHER: Control Room OR CAS and SAS 5.3.3 {1,2,3,4,5,6} Sustained abnormal area radiation levels > 8 R/hr within any areas, Table 5.3	5.3.1 {1,2,3,4,5,6} Any sustained direct ARM reading > 100 x alarm or offscale high resulting from an uncontrolled process

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued – Next Page

CATEGORY 5.0 RADIOACTIVITY RELEASE

Table 5.1 Effluent Monitor Classification Thresholds

Monitor	GE	SAE	Alert	NUE
R-27	360 Ci/sec	36.0 Ci/sec	3.6 Ci/sec	7.24E4μCi/sec
R-14	N/A	N/A	N/A	2.72E-3μCi/cc
R-19	N/A	N/A	475 μCi/cc	9.50 μCi/cc

Table 5.2
Dose Projection/Env. Measurement Classification Thresholds

	GE	SAE	Alert
TEDE	1000 mRem	100 mRem	10 mRem
CDE Thyroid	5000 mRem	500 mRem	N/A
External Exposure Rate	1000 mRem/hr	100 mRem/hr	10 mRem/hr
Thyroid exposure rate (for 1 hr. of inhalation)	5000 mRem/hr	500 mRem/hr	N/A

Table 5.3
Plant Areas

- Auxiliary Feedpump Building
- P.A.B.
- Fuel Storage Building
- Control Building
- Service Water Pumps
- Refueling Water Tank
- Diesel Fuel Tank
- Vital Area Access to Containment
- Appendix R Diesel Generator
- Backup Service Water

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued – Next Page

CATEGORY 6.0 ELECTRICAL FAILURES

Category	General	Site Area	Alert	Unusual Event
6.1 Loss of AC Power Sources	6.1.5 {1,2,3,4} Loss of all safeguard bus AC power AND EITHER: Power restoration to any emergency bus is not likely in ≤ 4 hrs. OR Actual or imminent entry into ORANGE or RED path on F-0.2, "Core Cooling"	6.1.4 {1,2,3,4} Loss of all safeguard bus AC power > 15 minutes.	6.1.2 {5,6 or Defueled} Loss of all safeguard bus AC power > 15 minutes. 6.1.3 {1,2,3,4} 480V safeguard bus power supplies REDUCED TO ONLY ONE of the following for > 15 minutes: • 480V EDG 31 • 480V EDG 32 • 480V EDG 33 • Appendix R Diesel • Unit Auxiliary transformer • Station Auxiliary transformer • 13W92 feeder • 13W93 feeder	6.1.1 {1,2,3,4,5,6} Safeguards buses not capable of being powered from at least one of the following sources for > 15 minutes: • Unit Auxiliary transformer • Station Auxiliary transformer • 13W92 feeder • 13W93 feeder
6.2 Loss of DC Power Sources		6.2.2 {1,2,3,4} < 105 vdc bus voltage indications for > 15 minutes on the switchable voltmeter for all of the following panels: • 31 • 32 • 33 • 34		6.2.1 {5,6} < 105 vdc bus voltage indications for > 15 minutes on the switchable voltmeter for all of the following panels: • 31 • 32 • 33 • 34

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

Table Continued - Next Page

CATEGORY 7.0 EQUIPMENT FAILURES

Category	General	Site Area	Alert	Unusual Event
7.1 Technical Specifications/ Requirements				7.1.1 {1,2,3,4} Plant is not brought to required operating mode within Improved Technical Specifications LCO Action Statement Time.
7.2 System Failures or Control Room Evacuation		7.2.5 {1,2,3} Control Room Evacuation AND Plant control cannot be established per ONOP-FP-1A, "Safe Shutdown From Outside the Control Room" in ≤ 30 minutes	7.2.2 {1,2,3} Turbine failure generated missiles which causes or potentially causes any required safety related system or structure to become inoperable. 7.2.3{1,2,3} Entry into ONOP-FP-1A, "Safe Shutdown From Outside the Control Room" 7.2.4 {5,6} Reactor coolant temperature cannot be maintained < 200 °F	7.2.1 {1,2,3} Report of main turbine failure requiring turbine trip resulting in: Damage to turbine generator seals OR Casing penetration

1 = Power Operation
2 = Startup
3 = Hot Standby
4 = Hot Shutdown
5 = Cold Shutdown
6 = Refueling

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CATEGORY 7.0 EQUPMENT FAILURES

Category	General	Site Area	Alert	Unusual Event
7.3 Loss of Indications/ Alarms/ Communication Capability		7.3.4 {1,2,3,4} Loss of most safety system annunciators or indications on Control Room Panels, Table 7.3 AND Loss of CFMS, QSPDS and other control room indicators needed to monitor critical safety function status AND A significant plant transient in progress	7.3.3 {1,2,3,4} Unplanned loss of most safety system annunciators or indications on Control Room Panels, Table 7.3 for > 15 minutes AND Increased surveillance is required for safe plant operation AND EITHER: A significant plant transient in progress OR CFMS and QSPDS are unavailable	7.3.1 {1,2,3,4} Unplanned loss of most safety system annunciators or indications on Control Room Panels, Table 7.3 for > 15 minutes AND Increased surveillance is required for safe plant operation 7.3.2 {1,2,3,4,5,6} Loss of all communications capability affecting the ability to EITHER: Perform routine onsite operations (phones, sound powered phone systems, page party system, and radios/walkie talkies) OR Notify offsite agencies or personnel (ENS, Bell lines, FAX transmissions, and dedicated phone systems)

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2 = Startup
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5 = Cold Shutdown
6 = Refueling

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CATEGORY 7.0 EQUIPMENT FAILURES

Table 7.3 Vital Control Room Panels						
SAF	SBF-1	SBF-2	SCF	SDF	SEF	SFF
SGF	SHF	SJF	SKF	SLF	SMF	SNF
SOF	FAF	FBF	FCF	FDF	---	---

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5 = Cold Shutdown
6 = Refueling

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CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.1 Security Threats	8.1.4 {1,2,3,4,5,6} Security Event which results in: Loss of plant control from the Control Room OR Loss of remote shutdown capability	8.1.3 {1,2,3,4,5,6} Intrusion into a plant security vital area by an adversary OR Any security event which represents actual or likely failures of plant systems needed to protect the public	8.1.2{1,2,3,4,5,6} Intrusion into plant Protected Area by an adversary OR Any security event which represents an actual substantial degradation of the level of safety of the plant	8.1.1 {1,2,3,4,5,6} Bomb Device or other indication of attempted sabotage discovered within plant Protected Area OR Notification of any credible site specific security threat by the Security Shift Supervisor or outside agency (NRC, military or law enforcement)
8.2 Fire or Explosion			8.2.3{1,2,3,4,5,6} Fire or explosion in any plant area, Table 8.1, which causes or potentially causes any required safety related system or structure to become inoperable	8.2.1 {1,2,3,4,5,6} Confirmed fire in or contiguous to any plant area, Table 8.1 not extinguished in # 15 minutes of Control Room notification 8.2.2 {1,2,3,4,5,6} Report by plant personnel of an explosion within Protected Area boundary resulting in visible damage to non-vital permanent structures or equipment

1 = Power Operation
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5 = Cold Shutdown
6 = Refueling

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CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.3 Man-Made Events			8.3.3 {1,2,3,4,5,6} Vehicle crash or projectile impact which causes or potentially causes any required safety related system or structure to become inoperable, Table 8.1 8.3.4 {1,2,3,4,5,6} Report or detection of toxic or flammable gases within a plant area, Table 8.1, in concentrations that will be life threatening to plant personnel or preclude access to equipment (even when using personal protective equipment) needed for safe plant operation	8.3.1 {1,2,3,4,5,6} Vehicle crash into or projectile which impacts plant structures or systems within Protected Area boundary 8.3.2 {1,2,3,4,5,6} Report or detection of toxic or flammable gases that could enter or have entered within the Protected Area boundary in amounts that could affect the health of plant personnel or safe plant operation OR Report by local, county or state officials, or Unit 2 for potential evacuation of site personnel based on offsite event

1 = Power Operation
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5 = Cold Shutdown
6 = Refueling

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CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.4 Natural Events			8.4.4 {1,2,3,4,5,6} Earthquake felt in plant based upon consensus of Control Room Operators on duty AND Kinemetrics Strong Motion Accelographs in the VC produce an alarm in the Control Room AND Amber and red Peak Shock Annunciators indicate seismic activity 8.4.5 {1,2,3,4,5,6} Sustained winds > 90 mph OR Tornado strikes a plant vital area, Table 8.1	8.4.1 {1,2,3,4,5,6} Earthquake felt in plant based upon a consensus of Control Room Operators on duty AND EITHER Kinemetrics Strong Motion Accelographs in the VC produce an alarm in the Control Room OR At least one amber Peak Shock Annunciator is lit 8.4.2 {1,2,3,4,5,6} Report by plant personnel of tornado within plant Protected Area boundary 8.4.3 {1,2,3,4,5,6} River level ≥ 14.5' (Ø MSL) OR Intake structure level < -4.5' (Ø MSL)

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5 = Cold Shutdown
6 = Refueling

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CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.4 Natural Events			8.4.6 {1,2,3,4,5,6} Assessment by the Control Room personnel that a natural event has occurred which causes or potentially causes any required safety related system or structure to become inoperable, Table 8.1 8.4.7 {1,2,3,4,5,6} River level ≥ 15' (Ø MSL) OR Low intake structure level resulting in loss of service water flow	

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CATEGORY 8.0 HAZARDS

Table 8.1 Plant Areas
• Auxiliary Feedpump Building
• P.A.B.
• CAS/SAS
• Fuel Storage Building
• Control Building
• Control Room
• Service Water Pumps
• Refueling Water Tank
• EDG Rooms
• Diesel Fuel Tanks
• Vital Area Access to Containment
• Appendix R Diesel Generator
• Backup Service Water

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5 = Cold Shutdown
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CATEGORY 9.0 OTHER

Category	General	Site Area	Alert	Unusual Event
9.1 Other	9.1.7 {1,2,3,4,5,6} As determined by the Shift Manager or Emergency Director, events are in progress which indicate actual, or imminent core damage and the potential for a large release of radioactive material in excess of EPA PAGs outside the site boundary. 9.1.8 {1,2,3,4} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to a loss of any two fission product barriers and loss or potential loss of the third	9.1.5 {1,2,3,4,5,6} As determined by the Shift Manager or Emergency Director, events are in progress which indicate actual or likely failures of plant systems needed to protect the public. Any releases are not expected to result in exposures which exceed EPA PAGs. 9.1.6 {1,2,3,4} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to EITHER: Loss or potential loss of both fuel clad and RCS barrier OR Loss or potential loss of either fuel clad or RCS barrier in conjunction with a loss of containment	9.1.3 {1,2,3,4,5,6} Any event, as determined by the Shift Manager or Emergency Director, that could cause or has caused actual substantial degradation of the level of safety of the plant. 9.1.4 {1,2,3,4} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to a loss or potential loss of either fuel clad or RCS barrier	9.1.1 {1,2,3,4,5,6} Any event, as determined by the Shift Manager or Emergency Director, that could lead to or has led to a potential degradation of the level of safety of the plant. 9.1.2 {1,2,3,4} Any event, as determined by the Shift Manager or Emergency Director, that could lead to a loss or potential loss of containment

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5 = Cold Shutdown
6 = Refueling