PSEG NUCLEAR L.L.C.
SALEM/OPERATIONS

S1.OP-AB.RAD-0001(Q) REV. 31

ABNORMAL RADIATION

- Biennial Review Performed: Yes ____ No ____ NA ✓
- DCP Packages and Affected Document Numbers incorporated into this revision:
  DCP 80059610 Rev. 1, AD P07 Rev. 0
- The following OTSCs were incorporated into this revision: None

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REVISION SUMMARY:

- The following changes are a result of DCP 80059610 Rev. 1 - AD P07 Rev. 0 [**80059610/0337]**
  (1R13 Radiation Monitor Replacement / Relocation):

  - Step 3.6, Attachment 1 column, changed "1R13A-E" to "1R13A/B".
  - Attachment 1, Section 3.0, removed channels 1R13C, D & E and updated the description for 1R13A & B.
  - Attachment 5, removed channels 1R13C, D, E, F, & G from table. Updated the description and location for 1R13A & B.

IMPLEMENTATION REQUIREMENTS **Effective Date: June 9, 2009**

DCP 80059610 - 1R13A/B Monitors

ABNORMAL RADIATION

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

1.1 Any unexpected rise in activity on any Process, Filter, or Area Radiation Monitor.

1.2 Any unexpected warning or alarm on any Process, Filter, or Area Radiation Monitor.

2.0 **IMMEDIATE ACTIONS**

2.1 None

3.0 **SUBSEQUENT ACTIONS**

___ 3.1 **DETERMINE** affected Radiation monitor.

3.2 Is the alarm, warning, or rising indication valid? (**EVALUATE** the following):

- ♦ Chem istry Sampling
- ♦ Rising activity on related Radiation Monitors
- ♦ Maintenance activities in the vicinity of the Radiation detector
- ♦ Transfer of radioactive resins or other materials in the affected area
- ♦ No indication of failure or fault on affected Radiation Monitor
- ♦ Radioactive release from Salem or Hope Creek

___ YES ___ NO——> **GO TO** Step 3.8 _____ Time

V

NOTE

Attachment 5 provides information for local panel locations and functions.

___ 3.3 **ANNOUNCE** the following on Plant PA System:

- ♦ Affected Radiation Monitor number and name
- ♦ Location of area showing rise in Radiation Monitor indication

___ 3.4 IF a release to the environment is in progress,
THEN **DIRECT** Shift Radiation Protection Technician to complete and provide Page 2 of the Station Status Checklist (SSCL) for release rate determination.

___ 3.5 **NOTIFY** SM/CRS to refer to the Event Classification Guide, ODCM, and Technical Specifications.

___ 3.6 **INITIATE** applicable Attachment for the affected Radiation Monitor:

ATTACHMENT 1

Process Monitor	Description
1R1B-1	Control Room Intake Duct (Unit 1 side)
1R1B-2	Control Room Intake Duct (Unit 2 side)
1R6B	Primary Sample Lab Particulate
1R11A	Cont or Vent Air Particulate
1R12A-B	Cont or Vent Gas Effluent/Iodine
1R13A/B	11-15 FCU Cooling Water
1R15	Condenser Air Removal
1R17A-B	Component Cooling Liquid
1R18	Liquid Waste Disposal
1R19A-D	11-14 Steam Gen Blowdown
1R20A	Chem Lab Particulate
1R31A	Letdown Line (Gross)
1R36	Evap and Feed Preheater Cond
1R41D	Plant Vent Noble Gas Release Rate
1R45A-D	Plant Vent Accident Monitor
1R46A-D	Main Steam Line Monitors
1R53A-D	11-14 N^{16} MS Line Radiation Monitors

ATTACHMENT 2

Process Filter Monitor	Description
1R26	Reactor Coolant Filter
1R40	Condensate Filter

ATTACHMENT 3

Area Monitor	Description
1R1A	R43Control Room
1R2	Containment
1R3	Chem. Lab
1R4	Charging Pump Room
1R5	Fuel Handling Bldg
1R6A	Sampling Room
1R7	Incore Seal Table
1R9	Fuel Storage Area
1R10A 1R10B	Personnel Hatch - 100' Equipment Hatch - 130'
1R20B	Chem. Lab
1R23	Monitoring Room (local only)
1R32A	Fuel Handling Crane (local)
1R34	Mechanical Pent. Elev. 100'
1R44A	High Range Containment Area Monitor
1R44B	High Range Containment Area Monitor
1R47	Electrical Penetration Area

___ 3.7 WHEN Radiation Monitor indication returns to normal,

___ 3.7.1. **ANNOUNCE** on Plant PA System that Radiological conditions have cleared.

___ 3.7.2. **RESTORE** affected systems to service as available.

___ 3.7.3. **RETURN** any equipment actuated by automatic interlocks to normal operation.

___ 3.7.4. **GO TO** Section 4.0.

_____
Time

___ 3.8 **NOTIFY** SM/CRS to refer to the Event Classification Guide, AND **PERFORM** ACTION REQUIRED in applicable Technical Specifications and ODCM for inoperable radiation monitor.

4.0 COMPLETION AND REVIEW

___ 4.1 **CIRCLE** Entry Condition number in Section 1.0, OR **EXPLAIN** Entry Condition in Comments Section of Attachment 6.

___ 4.2 **COMPLETE** Attachment 6, Sections 1.0 and 2.0, and **SUBMIT** this procedure to the SM/CRS for review and approval.

___ 4.3 SM/CRS **PERFORM** the following:

___ 4.3.1. **REVIEW** this procedure with Attachments 1-4 (as applicable) and Attachment 6 for completeness and accuracy.

___ 4.3.2. **COMPLETE** Attachment 6, Section 3.0

___ 4.3.3. **SEND** completed procedure to Operations Staff.

END OF PROCEDURE

ATTACHMENT 1
(Page 1 of 6)

PROCESS RADIATION MONITORS

___ 1.0 IF 1R1B-1 or 1R1B-2, Control Room Intake Duct, is the affected monitor:
THEN:

___ 1.1 **COORDINATE** with Unit 2 RO to ensure Control Room Ventilation is aligned for ACCIDENT PRESSURIZED mode IAW the following procedures:

- ♦ S1.OP-SO.CAV-0001(Q), Control Room Ventilation Operation
- ♦ S2.OP-SO.CAV-0001(Q), Control Room Ventilation Operation

___ 1.2 **COORDINATE** with Radiation Protection to complete the following:

- ♦ **SAMPLE** intake air to determine source of elevated activity.
- ♦ **LOCATE** AND **ISOLATE** source of activity.

___ 2.0 IF any of the following is the affected monitor:

- ♦ 1R11A, Cont. or Vent Air Particulate
- ♦ 1R12A, Cont. or Vent Gas Effluent
- ♦ 1R12B, Cont. or Vent Gas Effluent-Iodine

THEN:

___ 2.1 IF fuel movement is in progress,
THEN **STOP** the fuel movement.

___ 2.2 IF the source of high radiation is due to a fuel handling incident,
THEN **GO TO** S1.OP-AB.FUEL-0001(Q), Fuel Handling Incident. _____ Time

___ 2.3 IF the Containment Equipment Hatch is open,
THEN **INITIATE** S1.OP-AB.CONT-0001(Q), Containment Closure. _____ Time

___ 2.4 IF the Containment Equipment Hatch is closed,
THEN:

___ A. **TERMINATE** any in-progress Containment Purge IAW S1.OP-SO.WG-0006(Q), Containment Purge to the Plant Vent.

___ B. **ENSURE** 1VC1, 1VC4, 1VC5 AND 1VC6 are CLOSED.

___ 2.5 **COORDINATE** with Chemistry and Radiation Protection to:

- ♦ **SAMPLE** determine the source of elevated activity.
- ♦ **LOCATE** AND **ISOLATE** source of activity.

ATTACHMENT 1
(Page 2 of 6)

PROCESS RADIATION MONITORS

___ 3.0 IF any 1R13, CFCU Cooling Water Monitor, is the affected monitor:
THEN:

___ 3.1 **CLOSE** associated SW72 valve for the affected CFCU to determine the source of activity (Isolate one at a time):

- ♦ 1R13A - 11, 12, 13 CFCU
- ♦ 1R13B - 13, 14, 15 CFCU

___ 3.2 **STOP** affected CFCU(s).

___ 3.3 **SEND** an Operator to DE-ENERGIZE 125V DC Control Power to affected CFCU(s) 460V breaker.

___ 3.4 **NOTIFY** the SM/CRS to review applicable Technical Specifications and ODCM.

___ 3.5 **DIRECT** Chemistry to determine the source of elevated activity by sampling.

___ 4.0 IF 1R17A or 1R17B is the affected monitor,
THEN:

___ 4.1 **ENSURE** 1CC149, Surge Tank Vent Valve, is CLOSED.

___ 4.2 **DIRECT** Chemistry / Radiation Protection to sample Component Cooling to verify activity rise.

___ 4.3 IF activity rise is verified in Component Cooling,
THEN **GO TO** S1.OP-AB.RC-0001(Q), Reactor Coolant System Leak, Attachment 1, to identify source of inleakage.

_____
Time

ATTACHMENT 1
(Page 3 of 6)

PROCESS RADIATION MONITORS

___ 5.0 IF 1R18, Liquid Waste Disposal, is the affected monitor:
THEN:

___ 5.1 **ENSURE** 1WL51, TO CIRC WTR DISCHARGE, is CLOSED to stop all Liquid Waste releases.

___ 5.2 **TERMINATE** any Liquid Waste Release procedure in effect.

___ 6.0 IF any 1R19, Steam Generator Blowdown Monitor, is the affected monitor:
THEN:

___ 6.1 **CLOSE** the following valves:

- 1GB50, VALVE FROM 11 SGBT
- 11GB10 through 14GB10, FROM 11 THROUGH 14 SG
- 11GB185 through 14GB185, FROM 11 THROUGH 14 SG
- 11GB4 through 14GB4, 11 THROUGH 14 SG OUTLET
- 11GB8 through 14GB8, FROM 11 THROUGH 14 SG

___ 6.2 **GO TO** S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak. _____ Time

ATTACHMENT 1
(Page 4 of 6)

PROCESS RADIATION MONITORS

___ 7.0 IF any 1R53, N^{16} MS Line Radiation Monitor, is in alarm,
THEN **GO TO** S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak. _____ Time

___ 8.0 IF 1R36, Evaporator and Feedwater Preheater Condensate Monitor, is the affected monitor:
THEN:

___ 8.1 **SEND** an Operator to ensure the following Heating Steam Supply/Condensate Return Valves are CLOSED:

___ A. 1HS49, Htg Stm Supply To U/1 Aux Bldg (100' El Aux Bldg)

___ B. 1HS293, HS Return Stop (84' El between SWGR Rooms)

___ C. 1HS921, Htg Stm Supply To U/1 Aux Bldg (100' El Aux Bldg)

___ 8.2 **COORDINATE** with Chemistry / Radiation Protection to complete the following:

- **DETERMINE** the source of activity rise by sampling
- **LOCATE** AND **ISOLATE** the source of activity

___ 9.0 IF any of the following is the affected monitor:

- 1R15, Condenser Air Removal Monitor
- 1R46A, 12 Steam Generator Main Steam Line Monitors
- 1R46B, 14 Steam Generator Main Steam Line Monitors
- 1R46C, 11 Steam Generator Main Steam Line Monitors
- 1R46D, 13 Steam Generator Main Steam Line Monitors

THEN **GO TO** S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak. _____ Time

___ 10.0 IF 1R31A, Letdown Line (Gross), is the affected monitor,
THEN **GO TO** S1.OP-AB.RC-0002(Q), High Activity in the Reactor Coolant. _____ Time

___ 11.0 IF 1R41D, Plant Vent Noble Gas Release Rate, is the affected monitor,
THEN:

___ 11.1 **ENSURE** 1VC1, 1VC4, 1VC5 AND 1VC6 are CLOSED.

___ 11.2 **ENSURE** 1WG41, GAS DECAY TK TO PLANT VENT, is CLOSED.

ATTACHMENT 1
(Page 5 of 6)

PROCESS RADIATION MONITORS

___ 11.3 **TERMINATE** gaseous release IAW Discharge of Gaseous Waste procedure in effect.

11.4 Is at least one R1B Control Room Intake Duct Radiation Monitor channel (in each Unit intake duct) OPERABLE?

___ NO ___ YES ——> **GO TO** Step 11.6 _____ Time

V

___ 11.5 Coordinate with Unit 2 RO to **ALIGN** Control Room Ventilation for ACCIDENT PRESSURIZED mode IAW the following procedures:

- ♦ S1.OP-SO.CAV-0001(Q), Control Room Ventilation Operation
- ♦ S2.OP-SO.CAV-0001(Q), Control Room Ventilation Operation

___ 11.6 **DIRECT** the Shift Radiation Protection Technician (SRPT) to:

___ A. **COMPLETE** dose assessment, every 30 minutes, IAW NC.EP-EP.ZZ-0309(Q), Dose Assessment.

___ B. **PROVIDE** Page 2 of the Station Status Checklist (SSCL) for release rate determination.

___ 11.7 **OBTAIN** release rates every 30 minutes using one of the following:

- ♦ Release Rates from SSCL, page 2 (ECG Att. 8) (preferred)

OR

- ♦ Attachment 4, Total Release Rate Calculations

___ 11.8 **PLACE** Auxiliary Building HEPA Plus Charcoal in service IAW S1.OP-SO.ABV-0001(Q), Auxiliary Building Ventilation Operation.

___ 11.9 **PLACE** Fuel Handling Building HEPA Plus Charcoal in service IAW S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation Operation.

ATTACHMENT 1
(Page 6 of 6)

PROCESS RADIATION MONITORS

___ 11.10 **COORDINATE** with Chemistry / Radiation Protection to complete the following:

- ♦ **DETERMINE** the source of activity rise by sampling.
- ♦ **LOCATE** AND **ISOLATE** the source of activity.

___ 11.11 **RECORD** sample results in the Control Room Log.

___ 12.0 IF 1R45A, B, C, or D, is the affected monitor:
THEN:

___ 12.1 **COORDINATE** with Chemistry / Radiation Protection (TSC and OSC if activated) to complete the following as appropriate:

- ♦ **DETERMINE** the source of activity rise by sampling.
- ♦ **LOCATE** AND **ISOLATE** the source of activity.
- ♦ **OBTAIN** 1R45 skid grab sample.

___ 13.0 IF any other Process Radiation Monitor is the affected monitor,
THEN **COORDINATE** with Chemistry and Radiation Protection to complete the following:

- ♦ **DETERMINE** the source of activity rise by sampling.
- ♦ **LOCATE** AND **ISOLATE** source of activity.

ATTACHMENT 2
(Page 1 of 1)

PROCESS FILTER RADIATION MONITORS

___ 1.0 **DIRECT** Chemistry Department to sample affected filter influent and effluent to determine if filter breakthrough has occurred.

___ 2.0 **EVALUATE** filter differential pressure to determine if filter overload has occurred.

___ 3.0 **DIRECT** Radiation Protection to survey filter.

___ 4.0 **INITIATE** actions to isolate, flush, or replace filter as necessary.

ATTACHMENT 3
(Page 1 of 1)

AREA RADIATION MONITORS

___ 1.0 IF 1R1A, Control Room Area, is the affected monitor,
THEN:

___ 1.1 Coordinate with Unit 2 RO to **ALIGN** Control Room Ventilation for ACCIDENT PRESSURIZED mode IAW the following procedures:

- ♦ S1.OP-SO.CAV-0001(Q), Control Room Ventilation Operation
- ♦ S2.OP-SO.CAV-0001(Q), Control Room Ventilation Operation

___ 1.2 **DIRECT** Radiation Protection to survey area to determine source of activity rise.

___ 2.0 IF 1R5, Fuel Handling Building Area Monitor,
OR 1R9, Fuel Storage Area Monitor, is the affected monitor,
THEN:

___ 2.1 **PLACE** Fuel Handling Building HEPA Plus Charcoal in service IAW S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation Operation.

___ 2.2 **DIRECT** Radiation Protection to survey area to determine source of activity rise.

___ 2.3 **ENSURE** a negative pressure is maintained in the Fuel Handling Building IAW S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation Operation.

___ 2.4 IF fuel handling is in progress,
THEN **GO TO** S1.OP-AB.FUEL-0001(Q), Fuel Handling Incident.

_____
Time

NOTE

High radiation indicated on 1R32A, Fuel Handling Crane Monitor, will prevent crane hoist UP operation.

Containment radiation levels of equal to or greater than 1.0E+5 R/HR indicated on 1R44A or 1R44B inserts ADVERSE CONTAINMENT correction factors into the Subcooling Monitor.

___ 3.0 IF any other Area Radiation Monitor, is the affected monitor,
THEN **DIRECT** Radiation Protection to survey area to determine source of activity rise.

ATTACHMENT 4
(Page 1 of 3)

TOTAL RELEASE RATE CALCULATIONS

1.0 CALCULATING TOTAL RELEASE RATE

NOTE

Additional copies of applicable section(s) may be made as necessary to support half-hour calculation requirements.

1.1 IF the following conditions can be met:

- ♦ 1R41D is OPERABLE
- ♦ Plant Vent Flow Rate instrumentation is functional (not in DEFAULT)
- ♦ 2R41D is OPERABLE

THEN **PERFORM** Total Release Rate Calculation IAW Section 2.0 of this Attachment.

1.2 IF **2**R41D is unavailable,
THEN **PERFORM** Total Release Rate Calculation IAW Section 3.0 of this Attachment.

ATTACHMENT 4
(Page 2 of 3)

TOTAL RELEASE RATE CALCULATIONS Page ___ of ___

2.0 TOTAL RELEASE RATE USING 1R41D AND 2R41D

TOTAL RELEASE RATE	INITIALS	TIME	DATE
____________ µCi/sec (1R41D) + ____________ µCi/sec (2R41D) = ____________ µCi/sec (Total)	__________	__________	__________
____________ µCi/sec (1R41D) + ____________ µCi/sec (2R41D) = ____________ µCi/sec (Total)	__________	__________	__________
____________ µCi/sec (1R41D) + ____________ µCi/sec (2R41D) = ____________ µCi/sec (Total)	__________	__________	__________
____________ µCi/sec (1R41D) + ____________ µCi/sec (2R41D) = ____________ µCi/sec (Total)	__________	__________	__________
____________ µCi/sec (1R41D) + ____________ µCi/sec (2R41D) = ____________ µCi/sec (Total)	__________	__________	__________

ATTACHMENT 4
(Page 3 of 3)

TOTAL RELEASE RATE CALCULATIONS Page ___ of ___

3.0 **ALTERNATE METHOD - TOTAL RELEASE RATE USING 1R41D AND 2R45B/C**

RELEASE PARAMETERS	TOTAL RELEASE RATE	INITIALS TIME DATE
(___________ µCi/sec 1R41D (___________ µCi/cc X 472 X __________cfm) = 2R45B/C Unit 2 Plant Vent Flow Rate	____________ µCi/sec (1R41D) + ____________ µCi/sec (2R45B or C) = ____________ µCi/sec (Total)	__________ __________
(___________ µCi/sec 1R41D (___________ µCi/cc X 472 X __________cfm) = 2R45B/C Unit 2 Plant Vent Flow Rate	____________ µCi/sec (1R41D) + ____________ µCi/sec (2R45B or C) = ____________ µCi/sec (Total)	__________ __________
(___________ µCi/sec 1R41D (___________ µCi/cc X 472 X __________cfm) = 2R45B/C Unit 2 Plant Vent Flow Rate	____________ µCi/sec (1R41D) + ____________ µCi/sec (2R45B or C) = ____________ µCi/sec (Total)	__________ __________
(___________ µCi/sec 1R41D (___________ µCi/cc X 472 X __________cfm) = 2R45B/C Unit 2 Plant Vent Flow Rate	____________ µCi/sec (1R41D) + ____________ µCi/sec (2R45B or C) = ____________ µCi/sec (Total)	__________ __________
(___________ µCi/sec 1R41D (___________ µCi/cc X 472 X __________cfm) = 2R45B/C Unit 2 Plant Vent Flow Rate	____________ µCi/sec (1R41D) + ____________ µCi/sec (2R45B or C) = ____________ µCi/sec (Total)	__________ __________

ATTACHMENT 5
(Page 1 of 4)

RMS CHANNEL SUMMARY

CHANNEL	DESCRIPTION	RECORDER	PT	LOCAL PANEL LOCATION	HIGH RAD ACTUATIONS
1R1A	Control Room (Area)	n/a		Control Room 1RP1	None. Alarm and indication only.
1R1B-1	Control Room Duct (Process)	1RA17971 (Rack 114)	1	Aux Bldg Elev 122', Control Equipment Room	Align suction to Unit 2 intake and sends start signal to 11 EACS Fan in ACCIDENT PRESSURIZED mode.
1R1B-2	Control Room Duct (Process)	1RA17971 (Rack 114)	2	Aux Bldg Elev 122', Control Equipment Room	Align suction to Unit 1 intake and sends start signal to 22 EACS Fan in ACCIDENT PRESSURIZED mode.
1R2	Containment (Area)	n/a		Cntmt Elev 130'	None
1R3	Chemistry Lab (Area)	n/a		Aux Bldg Elev 100' Chemistry Lab	None
1R4	Charging Pumps (Area)	n/a		Aux Bldg Elev 84'	None
1R5	FHB - SFP (Area)	n/a		FHB Elev 130', east wall center of SFP	Transfers FHB ventilation to HEPA and charcoal filters
1R6A	Primary Sample Lab (Area)	n/a		Aux Bldg Elev 122' Primary Sample Lab	None
1R6B	Primary Sample Lab Particulate (Process)	n/a		Aux Bldg Elev 122' Primary Sample Lab	None
1R7	In-Core Seal Table (Area)	n/a		Containment Elev 100'	Energizes warning lights at 100' and 130' airlocks
1R9	FHB - New Fuel Storage (Area)	n/a		FHB Elev 130', east wall center of NFP	Transfers FHB ventilation to HEPA and charcoal filters
1R10A	Personnel Hatch - Cntmt Elev 100' (Area)	n/a		Containment Elev 100', by airlock	Energizes warning lights at 100' and 130' airlocks
1R10B	Personnel Hatch - Cntmt Elev 130' (Area)	n/a		Containment Elev 130', by airlock	Energizes warning lights at 100' and 130' airlocks
1R11A	Ctnmt Particulate (Process)	n/a		Elev 78' Electrical penetration	Closes 1VC1, 1VC4, 1VC5 AND 1VC6

ATTACHMENT 5
(Page 2 of 4)

RMS CHANNEL SUMMARY

CHANNEL	DESCRIPTION	RECORDER	PT	LOCAL PANEL LOCATION	HIGH RAD ACTUATIONS
1R12A	Ctnmt Noble Gas (Process)	n/a		Elev 78' Electrical penetration	Closes 1VC1, 1VC4, 1VC5 AND 1VC6
1R12B	Ctnmt Iodine (Process)	n/a		Elev 78' Mechanical Penetration	
1R13A	11, 12, 13 CFCU Service Wtr (Process)	n/a		Circulating Water Thermal Monitoring Enclosure	None
1R13B	13, 14, 15 CFCU Service Wtr (Process)	n/a			
1R15	Condenser Air Ejector (Process)	n/a		Elev 100' Turbine Building	None
1R17A	Component Cooling (Process)	n/a		Elev 84' (near 11 CCW Pump)	Closes 1CC149
1R17B	Component Cooling (Process)	n/a		Elev 84' (12 CCHX Room)	Closes 1CC149
1R18	Liquid Waste Disposal (Process)	n/a		Elev 84' Aux Bldg, near WMT	Closes 1WL51
1R19A	11 SG Blowdown (Process)	n/a		Elev 100' Aux Bldg inside SGBD Room	Closes 11-14GB4, 11-14GB8, 11-14GB10, 11-14GB185, and 1GB50
1R19B	12 SG Blowdown (Process)	n/a		Elev 100' Aux Bldg inside SGBD Room	Closes 11-14GB4, 11-14GB8, 11-14GB10, 11-14GB185, and 1GB50

ATTACHMENT 5
(Page 3 of 4)

RMS CHANNEL SUMMARY

CHANNEL	DESCRIPTION	RECORDER	PT	LOCAL PANEL LOCATION	HIGH RAD ACTUATIONS
1R19C	13 SG Blowdown (Process)	n/a		Elev 100' Aux Bldg inside SGBD Room	Closes 11-14GB4, 11-14GB8, 11-14GB10, 11-14GB185, and 1GB50
1R19D	14 SG Blowdown (Process)	n/a		Elev 100' Aux Bldg inside SGBD Room	Closes 11-14GB4, 11-14GB8, 11-14GB10, 11-14GB185, and 1GB50
1R20A	Chem Lab Particulate (Process)	n/a		Aux Bldg Elev 100' Chemistry Lab	None
1R20B	Unit 2 Counting Room (Area)	n/a		Aux Bldg Elev 100' Counting Room	None
1R23	Monitoring Room (Area)	n/a		Service Bldg Elev 100' Control Point	None
1R26	Reactor Coolant Filter (Process Filter)	n/a		Elev 100' Aux Bldg, Demin area	None
1R31A	Letdown Gross Activity (Process)	n/a		Elev 84' Aux Bldg, between Panel 210 and Letdown Hx	None
1R32A	Fuel Handling Crane (Area)	n/a		Elev 130' Fuel Handling Bldg, on Spent Fuel Handling Crane	Locks out all crane motion other than downward movement of suspended load
1R34	North Pipe Penetration (Area)	n/a		Elev 100' Aux Bldg, north mechanical penetration area	None
1R36	Evaporator & Feedwater Preheat (Process)	n/a		Elev 84' Aux Bldg, near SFP Hx	Closes 1HS49, 1HS921, 1HS293 and 1SV1055
1R40	Condensate Filter (Process Filter)	n/a		Yard, Condensate Polishing Bldg	None
1R41A	Plant Vent Noble Gas - Low range	1RA16342R (green pen)		Elev 122' Aux Bldg, near 11 Aux Bldg Ventilation Supply Fan	None
1R41B	Plant Vent Noble Gas - Intermediate	1RA16342R (blue pen)		Elev 122' Aux Bldg, near 11 Aux Bldg Ventilation Supply Fan	None

ATTACHMENT 5
(Page 4 of 4)

RMS CHANNEL SUMMARY

CHANNEL	DESCRIPTION	RECORDER	PT	LOCAL PANEL LOCATION	HIGH RAD ACTUATIONS
1R41C	Plant Vent Noble Gas - High range	1RA16342R (red pen)		Elev 122' Aux Bldg, near 11 Aux Bldg Ventilation Supply Fan	None
1R41D	Plant Vent Noble Gas Release Rate (Composite)	None		Elev 122' Aux Bldg, near 11 Aux Bldg Ventilation Supply Fan	Closes 1VC1, 1VC4, 1VC5 AND 1VC6, 1WG41 and bypasses chem sample flowpath (F-1 filter) on 1R45 skid.
1R44A	Cntmt High Range (Area)	n/a		Cntmt Elev 130', near airlock	None
1R44B	Cntmt High Range (Area)	n/a		Cntmt Elev 130', near airlock	None
1R45A	Plant Vent Noble Gas Background	n/a		Elev 100' between Aux Bldg and FH Bldg	None
1R45B	Plant Vent Noble Gas Intermediate Range (Process)	n/a		Elev 100' between Aux Bldg and FH Bldg	None
1R45C	Plant Vent Noble Gas High Range (Process)	n/a		Elev 100' between Aux Bldg and FH Bldg	None
1R45D	Plant Vent Filter (Process)	n/a		Elev 100' between Aux Bldg and FH Bldg	None
1R46A - D	Main Steam Line (Process)	n/a		Elev 100' Aux Bldg, Relay Room	None
1R47	Elec Penetration (Area)	n/a		Elev 78' Electrical Penetration	None
1R53A-D	11-14 N^{16} MS Line Rad Monitor	1RP1		Elev 100' Aux Bldg, Relay Room	None

ATTACHMENT 6
(Page 1 of 2)

COMPLETION SIGN-OFF SHEET

1.0 **COMMENTS**:

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

ATTACHMENT 6
(Page 2 of 2)

COMPLETION SIGN-OFF SHEET

2.0 **SIGNATURES**:

Print	Initials	Signature	Date

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

This procedure with Attachments 1 - 4 (as applicable) and Attachment 6 is reviewed for completeness and accuracy. Entry conditions and all deficiencies, including corrective actions, are clearly recorded in the COMMENTS Section.

Signature: _____ Date:_____
SM/CRS

ABNORMAL RADIATION
TECHNICAL BASES DOCUMENT

1.0 REFERENCES

1.1 Technical Documents

A. Updated Final Safety Analysis Report:
   1. Section 9.4, Heating, Ventilation, and Air Conditioning Systems
   2. Section 11.4, Radiological Monitoring

B. Salem Generating Station Technical Specifications - Unit 1:
   1. 3.3.3.1, Radiation Monitoring Instrumentation
   2. 6.8.4.g, Radioactive Effluent Control Program

C. Salem Nuclear Generating Station Event Classification Guide

D. Salem Nuclear Generating Station Emergency Plan:
   1. Section 10, Assessment
   2. Section 11, Response
   3. Section 12, Exposure

E. Technical/Engineering Letters:
   1. Salem 1 and 2 Core Exit Thermocouple Processing System Technical Manual, 5587-ICE-0527, Rev. 2
   2. Letter from D.L. Branham, Lead Engineer, Radiation Protection/Chemistry Services, 16 October 1991
   3. Letter RMS 92-0019 dated May 22, 1992 from T. Murphy, Project Engineer-RMS to F. Wiltsee, PUP Group
   4. Letter NLR-I93142 dated March 3, 1993 from F. Thompson to M. Morroni
   5. Letter to L. Catalfomo, Operations Manager Salem from Craig Bersak, Engineering Analysis Group dated 05/25/95; "Review of operability determination for the single failure concern related to Salem Unit 1 & 2 Control Area Ventilation System as a result of PR 950524316"

1.2 Procedures

A. Emergency Plan Implementing Procedures:
   - ♦ 100 Series, SNSS/EDO Response
   - ♦ 300 Series, Radiation Protection Response

B. S1.OP-AB.FUEL-0001(Q), Fuel Handling Incident
C. S1.OP-AB.RAD-0001(Q), Abnormal Radiation
D. S1.OP-AB.RC-0001(Q), Reactor Coolant System Leak
E. S1.OP-AB.RC-0002(Q), High Activity in the Reactor Coolant
F. S1.OP-AB.SG-0001(Q), Steam Generator Tube Leak
G. S1.OP-AR.ZZ-0001(Q), Overhead Annunciators Window A

(Step continued on next page)

1.2 (Continued)

H. S1.OP-SO.ABV-0001(Q), Auxiliary Building Ventilation Operation
I. S1.OP-SO.CAV-0001(Q), Control Area Ventilation System Operation
J. S2.OP-SO.CAV-0001(Q), Control Area Ventilation System Operation
K. S1.OP-SO.FHV-0001(Q), Fuel Handling Building Ventilation System Operation
L. S1.OP-SO.RM-0001(Q), Radiation Monitoring Systems Operation
M. S1.OP-SO.WG-0006(Q), Containment Purge to the Plant Vent
N. S1.OP-SO.WG-0008(Q), Discharge of 11 Gas Decay Tank to the Plant Vent
O. S1.OP-SO.WG-0009(Q), Discharge of 12 Gas Decay Tank to the Plant Vent
P. S1.OP-SO.WG-0010(Q), Discharge of 13 Gas Decay Tank to the Plant Vent
Q. S1.OP-SO.WG-0011(Q), Discharge of 14 Gas Decay Tank to the Plant Vent

1.3 **Drawings**

A. 239077, No. 1 Unit Radiation Monitoring Gaseous Effluent Discharge
B. 239078, No. 1 Unit Radiation Monitoring Liquid Effluent Discharge
C. 232310, No. 1 & 2 Units Heating Steam & Condensate Return

1.4 **Other**

A. DCP 2EC-3212, Radiation Monitor 2R41D Skid
B. DCP 1EC-3244, Plant Vent APD Change Out
C. DCP 1EC-3308
D. DCP 1EC-3505, Control Room Ventilation Modification
E. DCP 1EC-3522, N16 Steam Main Line Radiation Monitors (1R53A-D)
F. DCP 1EC-3668, Package 10, Service Water Accumulators
G. DCP 80005321, Unit 1 RMS Upgrade - Pilot
H. DCP 80004814, Deletion of RMS Channels 1R24A/B, 1R25, 1R27, 1R28, 1R29, 1R30 and 1R33
I. DCP 80027246, Deletion of RMS Channel 1R43
J. DCP 80005242, Unit 1 1R11A, 1R12B and 1R12A RMS Upgrade
K. DCP 80030824, Deletion of RMS Channel 1R16
L. DCP 80045432, Deletion of RMS Channel 2R16
M. DCP 80019351, Unit 1 RMS Upgrade - Phase 1
N. DCP 80045600, Unit 1 Condenser Air Ejector Radiation Monitor (1R15) upgrade
O. DCP 80059610, 1R13 Radiation Monitor Replacement / Relocation
P. Tech Spec Amendment 263, Refueling Operations - Relaxation of Requirements Applicable During Movement of Irradiated Fuel

2.0 **DISCUSSION**

2.1 This procedure provides the direction necessary for recognizing and mitigating abnormal radiological events. This discussion provides the reasoning behind the logic and flowpath of the procedure. It is not intended to provide additional direction to the procedure.

2.2 Entry Conditions - Entry conditions are based on the Operator receiving one or more alarms associated with Radiation Monitoring, or detection of an abnormal rise in indication on a Radiation Monitor. The Radiation Monitoring System is divided into three main subsystems: Process Monitoring, Area Monitoring, and Process Filter Monitoring.

The Process Monitoring System continuously samples and analyzes systems which have the potential of causing an uncontrolled or unmonitored release to the environment, or would indicate a failure of a major boundary between radioactive materials and non-radioactive systems. Included with Process Monitors are Attachments 4 and 5 for determining release rates to the environment to aid in classification of the event.

The Area Monitoring System continuously monitors radiation levels in numerous areas throughout the power plant. Any changes in local Radiological conditions will be rapidly detected. These changes may be due to various events including local maintenance activities, or transfer of radioactive materials, such as resin flushes or movement of tools, waste, or equipment. They also may be an indicator of a fuel failure with the transport of the highly activated material through piping systems.

The Process Filter Monitoring System continuously monitors various filters installed in plant systems to indicate system malfunctions or filter depletion.

The following alarms are installed to alert the Operator of Abnormal Radiological conditions:

- OHA-A6, RMS HI RAD OR TRBL
- 1RP1, ACCIDENT RANGE ANNUNCIATOR

In addition to alarms, the Operator may be alerted to abnormal Radiological conditions by any of the following:

- Radiation Monitor Recorder located on Control Room panel 1RP1
- Indications on Control Room Radiation Monitor Computer
- Reports or local observation by plant personnel
- Reports of survey or sample results by Chemistry or Radiation Protection personnel

2.3 Immediate Actions - None

2.4 Subsequent Actions - The Operator initially determines the affected Radiation Monitor and verifies the validity of the alarm or rising indication. If the instrument proves to be inoperable, the Operator is directed to the appropriate Technical Specification and ODCM requiring an operable Radiation Monitoring System.

Should a valid warning, alarm, or indication occur, the Operator is directed to notify plant personnel of the affected area to minimize exposure. The Operator then initiates the applicable Attachment for the type of alarm. Each Attachment contains the actions and information pertinent to the affected Radiation Monitor, including verification of interlocks and required actions. Radiation Monitors addressed in the Event Classification Guide are annotated by a step requiring reference to this document. Action is taken to notify Chemistry and Radiation Protection personnel to assist Operators in locating and correcting the source of the problem. When the required actions in the appropriate Attachment have been performed, and all abnormal Radiological conditions are cleared, the Operator exits the procedure and resumes normal operation.

2.5 The methodology used in this procedure for calculation of noble gas release rates is the same used in the SPDS computer software. Digital Systems Group (DSG) controls SPDS software, therefore procedure methodology changes require coordination with DSG.

END OF DOCUMENT