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B 3.7.3.2	Spray and Sprinkler Systems	TRM/B 3.7-5
B 3.7.3.3	CO2 systems	TRM/B 3.7-7
B 3.7.3.4	Halon Systems	TRM/B 3.7-8
B 3.7.3.5	Fire Hose Stations	TRM/B 3.7-10
B 3.7.3.6	Yard Fire Hydrants and Hydrant Hose Houses	TRM/B 3.7-11
B 3.7.3.7	Fire Rated Assemblies	TRM/B 3.7-12
B 3.7.3.8	Fire Detection Instrumentation	TRM/B 3.7-14
B 3.7.4	Solid Radwaste System	TRM/B 3.7-15
B 3.7.5.1	Main Condenser Offgas Hydrogen Monitor	B 3.7-17
B 3.7.5.2	Main Condenser Explosive Gas Mixture	B 3.7-19
B 3.7.5.3	Liquid Holdup Tanks	B 3.7-20
B 3.7.6	ESSW Pumphouse Ventilation	TRM/B 3.7-21
B 3.7.7	Main Condenser Offgas Pretreatment Logarithmic Radiation Monitoring Instrumentation	TRM/B 3.7-22
B 3.7.8	Snubbers	B 3.7-24
B 3.7.9	Control Structure HVAC	TRM/B 3.7-31
B 3.7.10	Spent Fuel Storage Pools	TRM/B 3.7-33
B 3.8.1	Primary Containment Penetration Conductor Overcurrent Protective Devices	TRM/B 3.8-1
B 3.8.2.1	Motor Operated Valves Thermal Overload Protection - Continuous	TRM/B 3.8-3
B 3.8.2.2	Motor Operated Valves Thermal Overload Protection - Automatic	TRM/B 3.8-4
B 3.8.3	Diesel Generator (DG) Maintenance Activities	B 3.8-5
B 3.8.4	24VDC Electrical Power Subsystem	B 3.8-6
B 3.8.5	Degraded Voltage Protection	TRM/B 3.8-16
B 3.8.6	Emergency Switchgear Room Cooling	TRM/B 3.8-17
B.3.9.1	Decay Time	B 3.9-1
B 3.9.2	Communications	B 3.9-2

SECTION	TITLE	PAGE
B 3.9.3	Refueling Platform	B 3.9-3
B 3.10.1	Sealed Source Contamination	B 3.10-1
B 3.10.2	MODE 5 Shutdown Margin Test RPS Instrumentation	B 3.10-2
B 3.10.3	Independent Spent Fuel Storage Installation (ISFSI)	TRM/B 3.10-4
B 3.10.4	Leading Edge Flow Meter (LEFM)	TRM/B 3.10-6
B 3.11.1.1	Liquid Effluents Concentration	B 3.11-1
B 3.11.1.2	Liquid Effluents Dose	B 3.11-4
B 3.11.1.3	Liquid Waste Treatment System	B 3.11-6
B 3.11.1.4	Liquid Radwaste Effluent Monitoring Instrumentation	B 3.11-7
B 3.11.1.5	Radioactive Liquid Process Monitoring Instrumentation	TRM/B 3.11-10
B 3.11.2.1	Dose Rate	TRM/B 3.11-12
B 3.11.2.2	Dose - Noble Gases	B 3.11-16
B 3.11.2.3	Dose - Iodine, Tritium, and Radionuclides in Particulate Form	B 3.11-18
B 3.11.2.4	Gaseous Radwaste Treatment System	TRM/B 3.11-20
B 3.11.2.5	Ventilation Exhaust Treatment System	TRM/B 3.11-21
B 3.11.2.6	Radioactive Gaseous Effluent Monitoring Instrumentation	TRM/B 3.11-24
B 3.11.3	Total Dose	B 3.11-26
B 3.11.4.1	Monitoring Program	B 3.11-28
B 3.11.4.2	Land Use Census	B 3.11-34
B 3.11.4.3	Interlaboratory Comparison Program	TRM/B 3.11-36
B.3.12.1	Crane Travel - Spent Fuel Storage Pool	TRM/B 3.12-1
B.3.12.2	Heavy Loads Requirements	TRM/B 3.12-2
B.3.12.3	Light Loads Requirements	TRM/B 3.12-3

Adept TRM1 text TOC

3.3 Instrumentation

3.3.6 TRM Isolation Actuation Instrumentation

TRO 3.3.6 The TRM containment isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: As specified in Table 3.3.6-1

ACTIONS

NOTES

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable	A.1 Place channel in trip.	12 hours for Function 1.a and 2.a <u>AND</u> 24 hours for Functions other than Functions 1.a and 2.a
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour

TECHNICAL REQUIREMENT SURVEILLANCE

NOTES

1. Refer to Table 3.3.6-1 to determine which TRSs apply for each TRM Isolation Actuation Instrumentation Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated function maintains isolation capability.

SURVEILLANCE	FREQUENCY
TRS 3.3.6.1 Perform CHANNEL CHECK	12 hours
TRS 3.3.6.2 Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.3.6.3 Perform CHANNEL CALIBRATION	92 days
TRS 3.3.6.4 Perform CHANNEL CALIBRATION	24 months
TRS 3.3.6.5 Perform LOGIC SYSTEM FUNCTIONAL TEST	24 months
TRS 3.3.6.6 Perform RESPONSE TIME TEST	24 months on a staggered test basis

TABLE 3.3.6-1 (Page 1 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation				
a. Reactor Building Main Steam Tunnel Δ Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 108°F
b. Turbine Building Main Steam Line Tunnel Temperature - High	1,2,3	2	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 200°F
2. Primary Containment Isolation				
a. Main Steam Line Radiation – High, High	1,2,3	2	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5 TRS 3.3.6.6[a]	≤ 21 x full power background without hydrogen injection
3. High Pressure Coolant Injection (HPCI) System Isolation				
a. HPCI Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. HPCI Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F

(continued)

[a] Radiation detectors are exempt from response time testing.

TABLE 3.3.6-1 (Page 2 of 2)
PRIMARY CONTAINMENT ISOLATION INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Core Isolation Cooling (RCIC) System Isolation				
a. RCIC Pipe Routing Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
b. RCIC Equipment Room Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 98°F
5. Reactor Water Cleanup (RWCU) System Isolation				
a. RWCU Penetration Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
b. RWCU Pump Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
c. RWCU Heat Exchanger Area Δ Temperature - High	1,2,3	1	TRS 3.3.6.2 TRS 3.3.6.3 TRS 3.3.6.5	≤ 72°F
6. Shutdown Cooling System Isolation (a)				
a. RHR Flow - High	3,4,5	1	TRS 3.3.6.1 TRS 3.3.6.2 TRS 3.3.6.4 TRS 3.3.6.5	≤ 26,000 gpm

(a) Not required when the penetration is isolated from the reactor vessel via manual isolation valve, blind flange, or deactivated auto isolation valve.

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.1 Dose Rate

TRO 3.11.2.1 The dose rate due to radioactive materials released in gaseous effluents to areas at and beyond the SITE BOUNDARY (See FSAR Section 2.1.1.3) shall be limited to the following:

I. For Noble Gases:

A. Less than or equal to 500 mrems/yr to the total body, and

B. Less than or equal to 3000 mrems/yr to the skin

AND

II. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives greater than 8 days

A. Less than or equal to 1500 mrem/yr to any organ (Inhalation pathways only.)

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Dose rate(s) exceed the above limits	A.1 Restore the release rate to within the above limits	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.11.2.1.1	Determine the dose rate due to noble gases in gaseous effluents.	See ODCM
TRS 3.11.2.1.2	The dose rate due to iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the limits in accordance with the methodology and parameters of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 3.11.2.1-1	See Table 3.11.2.1-1

TABLE 3.11.2.1-1
RADIOACTIVE GASEOUS EFFLUENT SAMPLING AND ANALYSIS

Gaseous Release Type	Sampling Method and Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (µCi/ml)
A. Containment Purge	Prior to each purge Grab Sample	Prior to each purge	Principal Noble Gas Gamma Emitters	1E-4
			H-3	1E-6
B. Reactor Building Vents, Turbine Building Vents, and SGTS	31 days [a] Grab Sample	31 days [a]	Principal Noble Gas Gamma Emitters	1E-4
			H-3	1E-6
	Continuous [b] Iodine Cartridge Sample	7 days [c]	I-131	1E-12
			I-133	1E-10
	Continuous [b] Particulate sample	7 days [c]	Principal Particulate Gamma Emitters I-131	1E-11
	Continuous [b] Particulate Sample	92 days Composite [d]	Gross Alpha	1E-11
	Continuous [b] Particulate sample	92 days Composite [d]	Sr-89, Sr-90	1E-11

[a] Noble gas analyses shall be performed following shutdown, startup, or a THERMAL POWER change exceeding 15% of the RATED THERMAL POWER within a 1-hour period.

[b] The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with TROs 3.11.2.1, 3.11.2.2, and 3.11.2.3.

[c] Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup, or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in 1 hour, and analyses completed within 48 hours of changing. When samples collected for ≤ 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10.

[d] Minimum frequency for initiation of required analysis.

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

TRO 3.11.2.6 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.11.2.6-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure that the limits of Requirement 3.11.2.1 are not exceeded.

APPLICABILITY: According to Table 3.11.2.6-1

ACTIONS

NOTE
Separate condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required to ensure that the limits of Requirement 3.11.2.1 are not exceeded	A.1 Suspend the release of radioactive gaseous effluents monitored by the affected channel	Immediately
	OR	
	A.2 Declare the channel inoperable	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Reactor Building Ventilation System Noble Gas Activity Monitor low range channel inoperable	B.1 Take grab samples AND B.2 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1) AND B.3 Restore monitoring instrumentation	Once per 8 hours while release is in progress. Within 24 hours of grab sample 30 days
C. Deleted		
D. Reactor Building Ventilation Monitoring System Effluent System Flow Rate Monitor or Sampler Flow Rate Monitor inoperable	D.1 Estimate flow rate AND D.2 Restore monitoring instrumentation	Once per 4 hours while release is in progress 30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Turbine Building Ventilation System Noble Gas Activity Monitor low range channel inoperable	E.1 Verify mechanical vacuum pump is not in operation	Immediately
	AND	
	E.2 Take grab samples	Once per 8 hours while release is in progress
	AND	
	E.3 Analyze grab samples for isotopic activity to the required LLDs for the principal noble gas gamma emitters (Table 3.11.2.1-1)	Within 24 hours after sample
	AND	
	E.4 Restore monitoring instrumentation	30 days
F. Deleted		
G. Turbine Building Ventilation Monitoring System Effluent System Flow Rate Monitor or Sampler Flow Rate Monitor inoperable	G.1 Estimate flow rate	Once per 4 hours while release is in progress.
	AND	
	G.2 Restore monitoring instrumentation	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Standby Gas Treatment System Noble Gas Activity Monitor low range channel inoperable	H.1 Take grab samples	Once per 4 hours while release is in progress
	AND	
	H.2 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1)	Within 24 hours of grab sample being taken
	AND	
	H.3 Restore monitoring instrumentation	30 days
I. Deleted		
J. SGTS Ventilation Monitoring System Effluent flow rate monitor or sample flow rate monitor inoperable	J.1 Estimate flow rate	Once per 4 hours while release is in progress.
	AND	
	J.2 Restore monitoring instrumentation	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. Required Actions and Completion Times not met for Conditions B through J	K.1 Explain why this inoperability was not corrected in a timely manner	In the next Annual Radioactive Effluents Release Report per TS Section 5.6

TECHNICAL REQUIREMENT SURVEILLANCE

NOTE

Refer to Table 3.11.2.6-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.2.6.1	Perform CHANNEL CHECK	24 hours
TRS 3.11.2.6.2	Deleted	
TRS 3.11.2.6.3	Perform Source Check	31 days
TRS 3.11.2.6.4	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.2.6.5	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.2.6-1 (Page 1 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. REACTOR BUILDING VENTILATION MONITORING SYSTEM			
a. Noble Gas Activity Monitor (Low Range)	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Deleted			
c. Deleted			
d. Effluent System Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(continued)

TABLE 3.11.2.6-1 (Page 2 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
2. TURBINE BUILDING VENTILATION MONITORING SYSTEM			
a. Noble Gas Activity Monitor (Low Range)	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Deleted			
c. Deleted			
d. Effluent System Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(continued)

TABLE 3.11.2.6-1 (Page 3 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
3. STANDBY GAS TREATMENT SYSTEM (STGS) MONITOR			
a. Noble Gas Activity Monitor (Low Range)	During operation of SGTS	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Deleted			
c. Deleted			
d. Effluent System Flow Rate Monitor	During operation of SGTS	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	During operation of SGTS	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

B 3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

BASES

TRO

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in the ODCM (Reference 2) to ensure that the alarm/trip will occur prior to exceeding the release rate limits corresponding to dose rates above background to a member of the public at or beyond the site boundary to ≤ 500 mrem/yr to the total body or to ≤ 3000 mrem/yr to the skin. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. (References 3 and 4)

OPERABILITY requires their alarm/trip setpoints set to ensure that the limits of Requirement 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the methodology and parameters in the ODCM.

This section of the TRM is also part of the ODCM (Reference 2).

ACTIONS

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components.

Low range Noble Gas channel readings from the local vent monitor may be used to meet the requirement for a Noble Gas grab sample and grab sample analysis.

Noble Gas release grab samples are not required to be taken when there are no releases via that pathway. Effluent flow is to be determined by vent flow instrumentation or by a vent flow estimate every 4 hours. Continuous sample collection shall be on the same basis as described in the Bases for TRO 3.11.2.1

Monitoring may be interrupted for up to 30 minutes to perform particulate filter/iodine cartridge changeout required by TRM Table 3.11.2-1 without entering the TRO ACTIONS.

(continued)

B 3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

BASES (continued)

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the monitoring instrumentation is maintained OPERABLE.

The TRSs shall be performed in accordance with the Technical Specification definition for the test with the following additional requirements:

The CHANNEL FUNCTIONAL TEST for all noble gas activity monitors shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint,
2. Circuit failure, and
3. Instrument indicates a downscale failure.

The initial CHANNEL CALIBRATION for all noble gas activity monitors shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used in lieu of reference standards associated with the initial calibration.

Particulate or iodine sampling required to be in continuous service will be considered to remain and have been in continuous service when its service is interrupted for a period of time not to exceed 1 hour per sampling period. For particulate and iodine sampling, this is a small fraction of the normal minimum analysis frequency.

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls program.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual.
3. 10 CFR Part 20.
4. 10 CFR Part 50.