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2.0 PLANT PROGRAMS AND SETPOINTS

2.2 Instrument Trip Setpoint Table

The Instrument Trip Setpoint Limits in Table 2.2-1 are the Trip Setpoint value limits that were contained in the Instrumentation Setpoint tables for protection systems and other functions important to safety that were included in the scope of the original Standard Technical Specifications. Actual instrument setpoints are established utilizing the Allowable Values specified in the Technical Specifications and Technical Requirements. Allowable Values are established in the Reference LCOs and TROs identified in this Table. TRO references are enclosed in square brackets.

Instrumentation process setpoints for the listed subsystems and trip functions are set consistent with the Trip Setpoint Limit Column of Table 2.2-1. Actual setpoints are established in accordance with engineering procedures.

Alarm setpoints and other non-protection system trip settings as may be found in the Technical Specifications or in the Technical Requirements are not included in this table.

Reference NDAP-QA-1104 Setpoint Change Control

TABLE 2.2-1 (Page 1 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.1	Reactor Protection		
2.2.1.1	3.3.1.1	Intermediate Range Monitor, Neutron Flux - High	≤ 120/125 divisions of full scale
2.2.1.2	3.3.1.1	Average Power Range Monitor, Neutron Flux - High Setdown	≤ 15% of RATED THERMAL POWER
2.2.1.3	3.3.1.1	Average Power Range Monitor, Flow Biased Simulated Thermal Power - High Two Loop Operation	See COLR - TRO 3.2
2.2.1.4	3.3.1.1	Average Power Range Monitor, Flow Biased Simulated Thermal Power - High Single Loop Operation	See COLR - TRO 3.2
2.2.1.5	3.3.1.1	Average Power Range Monitor, Flow Biased Simulated Thermal Power - High Flow Clamped	≤ 113.5% of RATED THERMAL POWER
2.2.1.6	3.3.1.1	Average Power Range Monitor, Fixed Neutron Flux - High	≤ 118% of RATED THERMAL POWER
2.2.1.7	3.3.1.1	Reactor Vessel Steam Dome Pressure - High	≤ 1087 psig
2.2.1.8	3.3.1.1	Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches [(a)]
2.2.1.9	3.3.1.1	Main Steam Isolation Valve - Closure	≤ 10% closed
2.2.1.10		This Section Not Used	
2.2.1.11	3.3.1.1	Drywell Pressure - High	≤ 1.72 psig
2.2.1.12	3.3.1.1	Scram Discharge Volume Water Level - High - Level Transmitter	≤ 65 gallons
2.2.1.13	3.3.1.1	Scram Discharge Volume Water Level - High - Float Switch	≤ 61 gallons
2.2.1.14	3.3.1.1	Turbine Stop Valve - Closure	≤ 5.5% closed
2.2.1.15	3.3.1.1	Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≥ 500 psig

(continued)

(a) See Figure 2.2-1

TABLE 2.2-1 (Page 2 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.1.16 OPRM Instrumentation			
2.2.1.16.1	3.3.1.3	Sp Cell Signal Amplitude	See COLR – TRO 3.2
2.2.1.16.2	3.3.1.3	N2 Confirmation Count Permissive	See COLR – TRO 3.2
2.2.1.16.3	[3.3.9]	TOL Period Confirmation Tolerance	0.10 sec
2.2.1.16.4	[3.3.9]	Ta Averaging Filter	5 sec
2.2.1.16.5	[3.3.9]	Fc Conditioning Filter Cutoff Frequency	1.5 Hz
2.2.1.16.6	[3.3.9]	Tmin Minimum Oscillation Period	1.0 sec
2.2.1.16.7	[3.3.9]	Tmax Maximum Oscillation Period	3.5 sec
2.2.1.16.8	[3.3.9]	Noise Floor Peak Discrimination Threshold	1
2.2.1.16.9	[3.3.9]	Minimum LPRM/Cell Cell Operability Requirement	2
2.2.1.16.10	[3.3.9]	S1 Peak Threshold Setpoint	1.20
2.2.1.16.11	[3.3.9]	S2 Valley Threshold Setpoint	0.85
2.2.1.16.12	[3.3.9]	Smax Max. Amplitude Trip Setpoint	1.50
2.2.1.16.13	[3.3.9]	DR3 Growth Rate Factor Setpoint	1.60
2.2.1.16.14	[3.3.9]	T1 lo S1 to S2 Timer Range	0.5 sec
2.2.1.16.15	[3.3.9]	T1 hi S1 to S2 Timer Range	1.75 sec
2.2.1.16.16	[3.3.9]	T2 lo S2 to (S3 or Smax) Timer Range	0.5 sec
2.2.1.16.17	[3.3.9]	T2 hi S2 to (S3 or Smax) Timer Range	1.75 sec
2.2.2 Isolation Actuation Instrumentation			
2.2.2.1 Primary Containment Isolation			
2.2.2.1.1	3.3.6.1	Reactor Vessel Water Level Low, Level 3	≥ 13.0 inches[(a)]
2.2.2.1.2	3.3.6.1	Reactor Vessel Water Level Low Low, Level 2	≥ -38.0 inches[(a)]
2.2.2.1.3	3.3.6.1	Reactor Vessel Water Level Low Low Low, Level 1	≥ -129 inches[(a)]
2.2.2.1.4	3.3.6.1	Drywell Pressure - High	≤ 1.72 psig
2.2.2.1.5	3.3.6.1/[3.3.6]	SGTS Exhaust Radiation - High	≤ 23.0 mR/hr
2.2.2.1.6	[3.3.6]	Main Steam Line Radiation – High High	≤ 15 x full power background without hydrogen injection

(continued)

TABLE 2.2-1 (Page 3 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.2.2	Secondary Containment Isolation		
2.2.2.2.1	3.3.6.2	Reactor Vessel Water Level - Low Low, Level 2	≥ -38.0 inches[a]
2.2.2.2.2	3.3.6.2	Drywell Pressure - High	≤ 1.72 psig
2.2.2.2.3	3.3.6.2	Refuel Floor High Exhaust Duct Radiation - High	≤ 18 mR/hr
2.2.2.2.4	3.3.6.2	Railroad Access Shaft Exhaust Duct Radiation - High	≤ 5 mR/hr
2.2.2.2.5	3.3.6.2	Refuel Floor Wall Exhaust Duct Radiation - High	≤ 21 mR/hr
2.2.2.3	Main Steam Line Isolation		
2.2.2.3.1	3.3.6.1	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches[a]
2.2.2.3.2	3.3.6.1	Main Steam Line Pressure - Low	≥ 861 psig
2.2.2.3.3	3.3.6.1	Main Steam Line Flow - High	≤ 113 psid
2.2.2.3.4	3.3.6.1	Condenser Vacuum - Low	≥ 9.0 inches Hg vacuum
2.2.2.3.5	3.3.6.1	Reactor Building Main Steam Line Tunnel Temperature - High	≤ 177°F
2.2.2.3.6		This Section Not Used	
2.2.2.3.7	[3.3.6]	Reactor Building Main Steam Line Tunnel Δ Temperature - High	≤ 99°F
2.2.2.3.8	[3.3.6]	Turbine Building Main Steam Tunnel Temperature - High	≤ 197°F
2.2.2.4	Reactor Water Cleanup System Isolation		
2.2.2.4.1	3.3.6.1	Reactor Vessel Water Level - Low Low, Level 2	≥ -38 inches[a]
2.2.2.4.2	3.3.6.1	RWCU Δ Flow - High	≤ 59 gpm
2.2.2.4.3	3.3.6.1	RWCU Flow - High	≤ 462 gpm
2.2.2.4.4	3.3.6.1	RWCU Penetration Area Temperature - High	≤ 131°F
2.2.2.4.5	[3.3.6]	RWCU Penetration Room Area Δ Temperature - High	≤ 69°F
2.2.2.4.6	3.3.6.1	RWCU Pump Area Temperature - High	≤ 147°F
2.2.2.4.7	[3.3.6]	RWCU Pump Room Area Δ Temperature - High	≤ 69°F
2.2.2.4.8	3.3.6.1	RWCU Heat Exchanger Area Temperature - High	≤ 147°F
2.2.2.4.9	[3.3.6]	RWCU Heat Exchanger Room Area Δ Temperature – High	≤ 69°F

(continued)

[a] See Figure 2.2-1

TABLE 2.2-1 (Page 4 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.2.5	Reactor Core Isolation Cooling System Isolation		
2.2.2.5.1	3.3.6.1	RCIC Steam Line Δ Pressure - High	≤ 188 inches H_2O
2.2.2.5.2	3.3.6.1	RCIC Steam Supply Line Pressure - Low	≥ 60 psig
2.2.2.5.3	3.3.6.1	RCIC Turbine Exhaust Diaphragm Pressure - High	≤ 10.0 psig
2.2.2.5.4	3.3.6.1	RCIC Equipment Room Temperature - High	≤ 167°F
2.2.2.5.5	3.3.6.1	RCIC Pipe Routing Area Temperature - High	≤ 167°F
2.2.2.5.6	3.3.6.1	RCIC Emergency Area Cooler Temperature - High	≤ 167°F
2.2.2.5.7	3.3.6.1	Drywell Pressure - High	≤ 1.72 psig
2.2.2.5.8	[3.3.6]	RCIC Equipment Room Δ Temperature - High	≤ 89°F
2.2.2.5.9	[3.3.6]	RCIC Pipe Routing Area Δ Temperature - High	≤ 89°F
2.2.2.6	High Pressure Coolant Injection System Isolation		
2.2.2.6.1	3.3.6.1	HPCI Steam Line Δ Pressure - High	≤ 370 inches H_2O
2.2.2.6.2	3.3.6.1	HPCI Steam Supply Line Pressure - Low	≥ 104 psig
2.2.2.6.3	3.3.6.1	HPCI Turbine Exhaust Diaphragm Pressure - High	≤ 10 psig
2.2.2.6.4	3.3.6.1	HPCI Equipment Room Temperature - High	≤ 167°F
2.2.2.6.5	3.3.6.1	HPCI Emergency Area Cooler Temperature - High	≤ 167°F
2.2.2.6.6	3.3.6.1	HPCI Pipe Routing Area Temperature - High	≤ 167°F
2.2.2.6.7	3.3.6.1	Drywell Pressure - High	≤ 1.72 psig
2.2.2.6.8	[3.3.6]	HPCI Equipment Room Δ Temperature - High	≤ 89°F
2.2.2.6.9	[3.3.6]	HPCI Pipe Routing Area Δ Temperature - High	≤ 89°F
2.2.2.7	Shutdown Cooling/System Isolation		
2.2.2.7.1	3.3.6.1	Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches[a]
2.2.2.7.2	3.3.6.1	Reactor Vessel Steam Dome Pressure - High	≤ 98 psig
2.2.2.7.3	[3.3.6]	RHR Flow - High	≤ 25,000 gpm
2.2.3	ECCS Actuation		
2.2.3.1	Core Spray System		
2.2.3.1.1	3.3.5.1	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches[a]
2.2.3.1.2	3.3.5.1	Drywell Pressure - High	≤ 1.72 psig
2.2.3.1.3	3.3.5.1	Reactor Vessel Steam Dome Pressure - Low injection permissive	≥ 413, ≤ 427 psig

(continued)

[a] See Figure 2.2-1

TABLE 2.2-1 (Page 5 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.3.2	LPCI Mode of RHR System		
2.2.3.2.1	3.3.5.1	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches[(a)]
2.2.3.2.2	3.3.5.1	Drywell Pressure - High	≤ 1.72 psig
2.2.3.2.3	3.3.5.1	Reactor Vessel Steam Dome Pressure - Low, injection permissive	≥ 413, ≤ 427 psig
2.2.3.2.4	3.3.5.1	Reactor Vessel Steam Dome Pressure - Low, Recirculation Discharge Valve permissive	≥ 236 psig, decreasing
2.2.3.3	HPCI System		
2.2.3.3.1	3.3.5.1	Reactor Vessel Water Level - Low Low, Level 2	≥ -38 inches[(a)]
2.2.3.3.2	3.3.5.1	Drywell Pressure - High	≤ 1.72 psig
2.2.3.3.3	3.3.5.1	Condensate Storage Tank Level - Low	≥ 36.0 inches above tank bottom
2.2.3.3.4	3.3.5.1	Reactor Vessel Water Level - High, Level 8	≤ 54 inches
2.2.3.4	Automatic Depressurization System (ADS)		
2.2.3.4.1	3.3.5.1	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches
2.2.3.4.2	3.3.5.1	Drywell Pressure - High	≤ 1.72 psig
2.2.3.4.3	3.3.5.1	ADS Timer	≤ 102 seconds
2.2.3.4.4	3.3.5.1	Core Spray Pump Discharge Pressure - High	≥ 135, ≤ 155 psig
2.2.3.4.5	3.3.5.1	Low Pressure Coolant Injection Pump Discharge Pressure - High	≥ 121, ≤ 129 psig
2.2.3.4.6	3.3.5.1	Reactor Vessel Water Level - Low, Level 3 Confirmatory	≥ 13 inches
2.2.3.4.7	3.3.5.1	ADS Drywell Pressure Bypass Timer	≤ 420 seconds
2.2.3.5	Loss of Power - ECCS Actuation		
2.2.3.5.1	4.16kv ESS Bus Undervoltage (Loss of Voltage < 20%)		
2.2.3.5.1.1	3.3.8.1	Bus Undervoltage	≥ 823.2, ≤ 856.8 Volts
2.2.3.5.1.2	3.3.8.1	Time delay	≥ 0.4, ≤ 0.6 seconds

(continued)

[(a)] See Figure 2.2-1

TABLE 2.2-1 (Page 6 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.3.5.2	4.16kV ESS Bus Undervoltage (Degraded Voltage < 65%)		
2.2.3.5.2.1	3.3.8.1	Bus Undervoltage	≥ 2641.1, ≤ 2748.9 Volts
2.2.3.5.2.2	3.3.8.1	Time delay	≥ 2.7, ≤ 3.3 seconds
2.2.3.5.3	4.16kV ESS Bus Undervoltage (Degraded Voltage, < 93%)		
2.2.3.5.3.1	3.3.8.1	Bus Undervoltage	≥ 3829.3, ≤ 3906.7 Volts
2.2.3.5.3.2	3.3.8.1	Time Delay (Non-LOCA)	≥ 4 minute, 30 seconds ≤ 5 minute, 30 seconds
2.2.3.5.3.4	3.3.8.1	Time Delay (LOCA)	≥ 9, ≤ 11 seconds
2.2.3.5.4	480V ESS Bus 0B565 Undervoltage (Degraded Voltage, < 65%)		
2.2.3.5.4.1	[3.8.5]	480V Basis	≥ 308.9, ≤ 315.1 Volts
2.2.3.5.4.2	[3.8.5]	Time Delay	≥ 4.5, ≤ 5.5 seconds
2.2.3.5.5	480V ESS Bus 0B565 Undervoltage (Degraded Voltage, < 92%)		
2.2.3.5.5.1	[3.8.5]	480V Basis	≥ 437.6, ≤ 446.4 Volts
2.2.3.5.5.2	[3.8.5]	Time Delay	≥ 9, ≤ 11 seconds
2.2.4	ATWS Alternate Rod Injection and Recirculation Pump Trip		
2.2.4.1	3.3.4.2/[3.1.1]	Reactor Vessel, Water Level - Low Low, Level 2	≥ -38 inches[(a)]
2.2.4.1	3.3.4.2/[3.1.1]	Reactor Vessel Steam Dome Pressure – High	≤ 1135 psig
2.2.5	End of Cycle Recirculation Pump Trip		
2.2.5.1	3.3.4.1	Turbine Stop Valve-Closure	≤ 5.5% closed
2.2.5.2	3.3.4.1	Turbine Control Valve - Fast Closure	≥ 500 psig
2.2.6	Reactor Core Isolation Cooling System Actuation		
2.2.6.1	3.3.5.2	Reactor Vessel Water Level - Low Low, Level 2	≥ -38 inches[(a)]
2.2.6.2	3.3.5.2	Reactor Vessel Water Level - High, Level 8	≤ 54 inches[(a)]
2.2.6.3	3.3.5.2	Condensate Storage Tank Level – Low	≥ 36.0 inches above tank bottom

(continued)

[(a)] See Figure 2.2-1

TABLE 2.2-1 (Page 7 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.7	Control Rod Block		
2.2.7.1	Rod Block Monitor		
2.2.7.1.1	3.3.2	Low Power Range Upscale - Two Loop Operation	≤ 0.58W + 52%
2.2.7.1.2	3.3.2	Low Power Range Upscale - Single Loop Operation	≤ 0.58W + 47%
2.2.7.1.3		Downscale	5%
2.2.7.2	APRM		
2.2.7.2.1	[3.1.3]	Flow Biased Simulated Thermal Power-High - Two Loop Operation	See COLR - TRO 3.2
2.2.7.2.2	[3.1.3]	Flow Biased Simulated Thermal Power High - Single Loop Operation	See COLR - TRO 3.2
2.2.7.2.3	[3.1.3]	Flow Biased Simulated Thermal Power High - High Flow Clamped	≤ 108% of RATED THERMAL POWER
2.2.7.2.4	[3.1.3]	Downscale	≥ 5% of RATED THERMAL POWER
2.2.7.2.5	[3.1.3]	Neutron Flux - High Setdown	≤ 12% of RATED THERMAL POWER
2.2.7.3	Source Range Monitors		
2.2.7.3.1	[3.1.3]	Upscale	≤ 2E5 cps
2.2.7.3.2	[3.1.3]	Downscale	≥ 0.7 cps[(b)]
2.2.7.4	Intermediate Range Monitors		
2.2.7.4.1	[3.1.3]	Upscale	≤ 108/125 divisions of full scale
2.2.7.4.2	[3.1.3]	Downscale	≥ 5/125 divisions of full scale
2.2.7.5	Scram Discharge Volume		
2.2.7.5.1	[3.1.3]	Water Level – High	≤ 35.9 gallons
2.2.7.6	Reactor Coolant System Recirculation Flow		
2.2.7.6.1	[3.1.3]	Upscale	114%
2.2.7.6.2	[3.1.3]	Comparator	≤ 10% flow deviation

(continued)

(b) Provided signal-to-noise ratio is ≥ 2. Otherwise, ≥ 3 cps.

TABLE 2.2-1 (Page 8 of 8)
INSTRUMENTATION SETPOINTS

	SYSTEM/REFERENCE LCO [TRO]	TRIP FUNCTION	TRIP SETPOINT
2.2.8	CREOASS		
2.2.8.1	3.3.7.1	Main Control Room Outside Air Intake Radiation Monitor	≤ 5 mR/hr
2.2.8.1.1	3.3.7.1	Reactor Vessel Water Level - Low Low, Level 2	≥ -38.0 inches[a]
2.2.8.1.2	3.3.7.1	Drywell Pressure – High	≤ 1.72 psig
2.2.8.1.3	3.3.7.1	Refuel Floor High Exhaust Duct Radiation - High	≤ 18 mR/hr
2.2.8.1.4	3.3.7.1	Railroad Access Shaft Exhaust Duct Radiation – High	≤ 5 mR/hr
2.2.8.1.5	3.3.7.1	Refuel Floor Wall Exhaust Duct Radiation - High	≤ 21 mR/hr
2.2.9	Feedwater/Main Turbine Trip System Actuation		
2.2.9.1	3.3.2.2	Reactor Vessel Level – High	≤ 54.0 inches[a]
2.2.10	MVP Isolation		
2.2.10.1	[3.3.11]	Main Steam Line Radiation – High High	≤ 15 x full power background without hydrogen injection

[a] See Figure 2.2-1

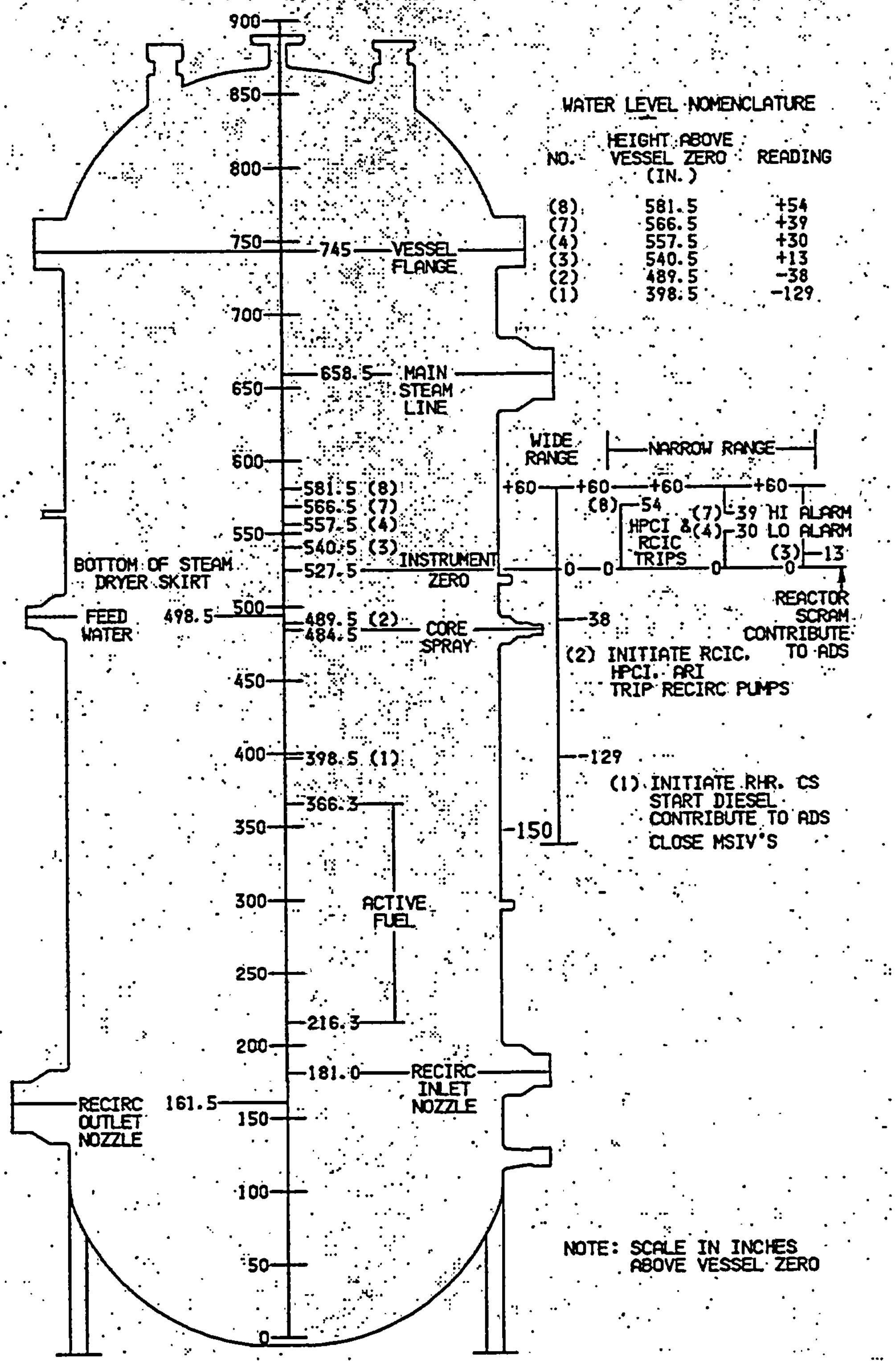

FIGURE 2.2-1
REACTOR VESSEL WATER LEVEL

CADAM ID: FIG2..2.1 .A

3.3 Instrumentation

3.3.10 Reactor Recirculation Pump MG Set Stops

TRO 3.3.10 Each Reactor Recirculation pump MG set scoop tube electrical and mechanical stop shall be OPERABLE with overspeed setpoints corresponding to a core flow of:

Electrical Stop: ≤ 109.5 million lbm/hr, and

Mechanical Stop: ≤ 110.5 million lbm/hr

APPLICABILITY: MODES 1 and 2

ACTIONS

-----NOTE-----
Separate Condition entry allowed for each recirculation pump MG set.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One electrical or mechanical stop for either or both reactor recirculation pump MG set scoop tube(s) inoperable.	A.1 Restore the inoperable stop(s) to OPERABLE status.	Next scheduled performance of TRS 3.3.10.1
B. Both electrical and mechanical stops for either Reactor Recirculation pump MG set scoop tube inoperable.	-----NOTE----- Scoop tube may be unlocked intermittently under administrative control. ---------- B.1 Initiate actions to lock the scoop tube on the affected Reactor Recirculation MG Set in place.	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.3.10.1	Demonstrate each Reactor Recirculation pump MG set scoop tube electrical and mechanical stop to be OPERABLE.	24 months

3.4 Reactor Coolant System (RCS)

3.4.4 Reactor Recirculation Flow and Rod Line Limit

TRO 3.4.4 Operating loop flow rate shall be ≤ 50% of rated loop flow rate and the reactor shall be operating at a THERMAL POWER/core flow condition below the 80% rod line shown in the Power Flow map specified in the COLR.

APPLICABILITY: MODES 1, 2, 3, and 4 during recirculation pump start.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the TRO not met	A.1 Restore parameter(s) to within limits	Prior to recirculation pump start

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.4.4.1	Verify the operating loop flow rate is ≤ 50% of rated loop flow rate and that the reactor is operating at a THERMAL POWER/core flow condition below the 80% rod line shown the Power Flow map specified in the COLR.	Once within 15 minutes prior to each recirculation pump start

3.7 Plant Systems

3.7.8 Snubbers

TRO 3.7.8 All snubbers shall be OPERABLE

APPLICABILITY: At all times

ACTIONS

-----NOTE-----
Separate condition entry is allowed for each snubber

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. -----NOTE----- Required Action A.2 shall be completed if this Condition is entered. ---------- One or more snubbers inoperable	A.1 Declare the supported system inoperable AND A.2 Perform an engineering evaluation on the supported component OR A.3 If an engineering evaluation has been performed on the supported component, replace or restore the inoperable snubber(s) to OPERABLE status	72 hours 72 hours 72 hours
B. Required Action and associated Completion Time of Condition A not met	B.1 Declare the supported system inoperable	Immediately

(continued)

Actions (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C Any snubber selected for functional testing either fails to activate or fails to move due to manufacturer or design deficiency.	C. ----------NOTE---------- This action shall be independent of the Testing Requirements for snubbers not meeting the functional test acceptance criteria per TRS 3.7.8.2 ------------------------------ All snubbers of the same design subject to the same defect shall be functionally tested	Within the current inspection interval.
D. The snubber service life will be exceeded prior to the next scheduled snubber service life review.	D.1 Reevaluate the snubber service life	Prior to exceeding snubber service life
	OR	
	D.2 Replace or recondition the snubber so as to extend its service life beyond the date of the next scheduled service life review	Prior to exceeding snubber service life

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.7.8.1	Demonstrate each snubber OPERABLE by performance of visual inspection	As directed by Table 3.7.8-1
TRS 3.7.8.2	Perform functional test of a representative sampling of all snubbers per Table 3.7.8-3.	24 months

(continued)

TECHNICAL REQUIREMENT SURVEILLANCE (continued)

SURVEILLANCE		FREQUENCY
TRS 3.7.8.3	-----NOTE----- Documentation of critical parts replaced so that the maximum service life is not exceeded shall be retained as required by FSAR 17.2.17. ---------- Monitor the installation and maintenance records for each snubber to ensure that the service life has not been exceeded and will not be exceeded prior to the next snubber surveillance inspection.	24 months
TRS 3.7.8.4	-----NOTE----- Snubbers tested per this surveillance are in addition to snubbers selected for the sample plan per TRS 3.7.8.2. ---------- Test snubbers in locations of snubbers that failed the functional test during the previous test period.	At the time of the next functional test.
TRS 3.7.8.5	An inspection shall be performed of all snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems within.	As necessary

Table 3.7.8-1

SNUBBER VISUAL INSPECTION INTERVAL

Number Of Unacceptable Visually Inspected Snubbers in Previous Inspection Interval	Inspection Interval
1. Equal to or less than the applicable number in Table 3.7.8-2 Column A	May be twice the previous interval but not greater than 48 months
2. Equal to or less than the applicable number in Table 3.7.8-2 Column B but greater than the applicable number in Column A	Same as the previous interval
3. Equal to or greater than the applicable number in Table 3.7.8-2 Column C	Two-thirds of the previous interval
4. Less than the applicable number in Table 3.7.8-2 Column C but greater than the applicable number in Column B	Equal to the previous interval (I_{i-1}), reduced proportionally by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval (N_{i-1}) and the number in Column B (N_B) to the difference in the numbers in Columns C (N_C) and B, or: $I_i = I_{i-1} - \frac{1}{3} I_{i-1} \left(\frac{N_{i-1} - N_B}{N_C - N_B} \right)$

TABLE 3.7.8-2
NUMBER OF UNACCEPTABLE SNUBBERS
PREVIOUS SNUBBER VISUAL INSPECTION INTERVAL

Population	Column A	Column B	Column C
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1,000 or greater	29	56	109

NOTES

1. Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B or C if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.
2. The provisions of TRS 3.0.2 are applicable for all inspection intervals up to and including 48 months.

TABLE 3.7.8-3
REPRESENTATIVE SAMPLING

SAMPLE	FAILED SNUBBERS	REPRESENTATIVE SAMPLING (a)
1. Initial	0	10%
2. Re-Test	>0 in initial sample	Additional 5%(b) for each failure
3. Continued Testing	>0 In Re-test or Continued Testing Samples	Additional 5% for each failure to 100%(b)

(a) Percentage of the total population of each type of snubber

(b) An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure and to determine the OPERABILITY of other snubbers, irrespective of type, which may be subject to the same failure mode. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested. If additional sampling is required due to failure of only one type of snubber, additional samples should be limited to the type of snubber, which has failed the functional testing.

3.7 Plant Systems

3.7.10 Spent Fuel Storage Pools (SFSPs)

TRO 3.7.10 The following conditions shall be met when the Unit 1 and Unit 2 SFSPs are not cross-connected through the Cask Storage Pit.

a. The Unit 2 SFSP water temperature is less than or equal to 115 °F.

b. Both subsystems of the ESW system must have at least one pump and the respective flow path to the Spent Fuel Storage Pool OPERABLE.

c. One RHR Fuel Pool Cooling subsystem must be OPERABLE. (Cannot be the same set of equipment used to meet item d.)

d. RHR must have one subsystem of Suppression Pool Cooling OPERABLE. (Cannot be the same set of equipment used to meet item c.)

e. Zone II is capable of being aligned to the Recirculation Plenum.

APPLICABILITY: MODES 1, 2, 3, and 4 when the analyzed nominal decay heat in one SFSP is $\leq 5.1 \times 10^6$ BTU/hr concurrent with the analyzed nominal decay heat in the other SFSP $\leq 4.0 \times 10^6$ BTU/hr.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel pool water temperature > 115 °F.	A.1 Restore the temperature ≤ 115 °F.	12 hours
B. Less than two subsystems of ESW with at least one pump or the respective flow path to the Spent Fuel Storage Pool OPERABLE.	B.1 Restore two subsystems of ESW with at least one pump and the respective flow path to the Spent Fuel Storage Pool to OPERABLE status.	48 hours
C. No RHR Fuel Pool Cooling subsystem's OPERABLE.	C.1 Restore one subsystem to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
D.	No RHR Suppression Pool Cooling subsystem's OPERABLE.	D.1	Restore one subsystem to OPERABLE status.	7 days
E.	Zone II not capable of being aligned to the Recirculation plenum.	E.1	Restore alignment capability.	7 days
F.	Required Actions and associated Completion Times not met.	F.1	Initiate actions to cross-connect the Unit 1 and Unit 2 Spent Fuel Storage Pools through the Cask Storage Pit.	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.7.10.1	Verify the fuel pool temperature is less than or equal to 115 °F.	24 hours
TRS 3.7.10.2	Verify both subsystems of ESW have at least one pump and the respective flow path to the Spent Fuel Storage Pool OPERABLE.	Once within 12 hours after the SFSP is isolated from the Cask Storage Pit <u>AND</u> Once per 24 hours thereafter
TRS 3.7.10.3	Verify that an RHR Fuel Pool Cooling subsystem is OPERABLE.	Once within 12 hours after the SFSP is isolated from the Cask Storage Pit <u>AND</u> Once per 24 hours thereafter

(continued)

TECHNICAL REQUIREMENT SURVEILLANCE (continued)

SURVEILLANCE		FREQUENCY
TRS 3.7.10.4	Verify that RHR has one subsystem of Suppression Pool Cooling OPERABLE.	Once within 12 hours after the SFSP is isolated from the Cask Storage Pit AND Once per 24 hours thereafter
TRS 3.7.10.5	Verify that Zone II is capable of being aligned to the Recirculation Plenum.	Once within 12 hours after the SFSP is isolated from the Cask Storage Pit AND Once per 24 hours thereafter

3.8 Electrical Power

3.8.2 Motor Operated Valves Thermal Overload Protection

3.8.2.1 Motor Operated Valves (MOV) Thermal Overload Protection - Continuous

TRO 3.8.2.1 Thermal overload protection for each valve in Table 3.8.2.1-1 shall be bypassed.

APPLICABILITY: When the motor operated valve is required to be OPERABLE unless otherwise specified.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves with thermal overload protection not bypassed.	A.1 Declare affected valve(s) inoperable.	8 hours
	AND	
	A.2 Enter applicable Conditions and Required Actions for affected system(s).	8 hours

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.8.2.1.1	Verify thermal overload protection for required valves is bypassed.	24 months <u>AND</u> Following maintenance on motor starter <u>AND</u> Following activities during which thermal overload protection was temporarily placed in force

TABLE 3.8.2.1-1 (Page 1 of 4)
MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

VALVE NUMBER	SYSTEM(S) AFFECTED
HV-21313	Cont. Isol.
HV-21314	Cont. Isol.
HV-21345	Cont. Isol.
HV-21346	Cont. Isol.
HV-22603	Cont. Isol.
HV-25766	Cont. Isol.
HV-25768	Cont. Isol.
HV-252-2F001A	CS
HV-252-2F001B	CS
HV-252-2F004A	CS
HV-252-2F004B	CS
HV-252-2F005A	CS
HV-252-2F005B	CS
HV-252-2F015A	CS
HV-252-2F015B	CS
HV-252-2F031A	CS
HV-252-2F031B	CS
HV-08693A	ESW
HV-08693B	ESW
HV-21144A	ESW
HV-21144B	ESW
HV-255-2F001	HPCI
HV-255-2F002	HPCI
HV-255-2F003	HPCI
HV-255-2F004	HPCI
HV-255-2F006	HPCI
HV-255-2F007	HPCI
HV-255-2F008	HPCI
HV-255-2F011	HPCI
HV-255-2F012	HPCI
HV-255-2F042	HPCI
HV-255-2F059	HPCI
HV-255-2F066	HPCI
HV-255-2F075	HPCI
HV-255-2F079	HPCI
HV-241-2F016	NSSS
HV-241-2F019	NSSS

(continued)

TABLE 3.8.2.1-1 (Page 2 of 4)
MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

VALVE NUMBER	SYSTEM(S) AFFECTED
HV-25012	RCIC
HV-249-2F007	RCIC
HV-249-2F008	RCIC
HV-249-2F010	RCIC
HV-249-2F012	RCIC
HV-249-2F013	RCIC
HV-249-2F019	RCIC
HV-249-2F022	RCIC
HV-249-2F031	RCIC
HV-249-2F045	RCIC
HV-249-2F046	RCIC
HV-249-2F059	RCIC
HV-249-2F060	RCIC
HV-249-2F062	RCIC
HV-249-2F084	RCIC
HV-25112	RHR
HV-251-2F003A	RHR
HV-251-2F003B	RHR
HV-251-2F004A	RHR
HV-251-2F004B	RHR
HV-251-2F004C	RHR
HV-251-2F004D	RHR
HV-251-2F006A	RHR
HV-251-2F006B	RHR
HV-251-2F006C	RHR
HV-251-2F006D	RHR
HV-251-2F007A	RHR
HV-251-2F007B	RHR
HV-251-2F008	RHR
HV-251-2F009	RHR
HV-251-2F010A	RHR
HV-251-2F010B	RHR
HV-251-2F015A	RHR
HV-251-2F015B	RHR
HV-251-2F016A	RHR
HV-251-2F016B	RHR
HV-251-2F017A	RHR
HV-251-2F017B	RHR
HV-251-2F021A	RHR
HV-251-2F021B	RHR
HV-251-2F022	RHR

(continued)

TABLE 3.8.2.1-1 (Page 3 of 4)
MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

VALVE NUMBER	SYSTEM(S) AFFECTED
HV-251-2F023	RHR
HV-251-2F024A	RHR
HV-251-2F024B	RHR
HV-251-2F027A	RHR
HV-251-2F027B	RHR
HV-251-2F028A	RHR
HV-251-2F028B	RHR
HV-251-2F040	RHR
HV-251-2F047A	RHR
HV-251-2F047B	RHR
HV-251-2F048A	RHR
HV-251-2F048B	RHR
HV-251-2F049	RHR
HV-251-2F103A	RHR
HV-251-2F103B	RHR
HV-251-2F104A	RHR
HV-251-2F104B	RHR
HV-01201A1	RHRSW
HV-01201A2	RHRSW
HV-01201B1	RHRSW
HV-01201B2	RHRSW
HV-01222A	RHRSW
HV-01222B	RHRSW
HV-01224A1	RHRSW
HV-01224A2	RHRSW
HV-01224B1	RHRSW
HV-01224B2	RHRSW
HV-21210A	RHRSW
HV-21210B	RHRSW
HV-21215A	RHRSW
HV-21215B	RHRSW
HV-251-2F073A	RHRSW
HV-251-2F073B	RHRSW
HV-251-2F075A	RHRSW
HV-251-2F075B	RHRSW
HV-24182A	RWCU
HV-24182B	RWCU
HV-244-2F001	RWCU

(continued)

TABLE 3.8.2.1-1 (Page 4 of 4)
MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

VALVE NUMBER	SYSTEM(S) AFFECTED
HV-244-2F004	RWCU
HV-243-2F031A	RX RECIRC
HV-243-2F031B	RX RECIRC
HV-243-2F032A	RX RECIRC
HV-243-2F032B	RX RECIRC

3.8.2 Motor Operated Valves Thermal Overload Protection

3.8.2.2 Motor Operated Valves (MOV) Thermal Overload Protection - Automatic

TRO 3.8.2.2 Thermal overload protection for each valve in Table 3.8.2.2-1 shall have automatic bypass capability.

APPLICABILITY: When diesel generator (DG) E is not aligned to the Class 1E distribution system and the valve is open.

ACTIONS

-----NOTE-----
Separate condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more MOVs with automatic bypass of thermal overload protection inoperable.	A.1 Continuously bypass the thermal overload protection.	8 hours
	<u>OR</u>	
	A.2.1 Verify DG E is not running.	8 hours
	<u>AND</u>	
	A.2.2 Verify the affected ESW flow path is isolated.	8 hours

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.8.2.2.1	Verify automatic bypass of MOV thermal overload protection is OPERABLE.	24 months

TABLE 3.8.2.2-1
MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - AUTOMATIC

VALVE NUMBER	SYSTEM AFFECTED
HV01110E	ESW
HV01120E	ESW
HV01112E	ESW
HV01122E	ESW

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.4 Liquid Radwaste Effluent Monitoring Instrumentation

TRO 3.11.1.4 The Radioactive Liquid Radwaste Effluent Monitoring Instrumentation channels shown in Table 3.11.1.4-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of TRO 3.11.1.1.

APPLICABILITY: At all times.

ACTIONS

-----NOTE-----
1. Separate condition entry is allowed for each channel
2. The provisions of TRO 3.0.4 are not applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more radioactive liquid effluent monitoring instrumentation alarm/trip channels setpoint less conservative than the limits allowed by TRO 3.11.1.1	A.1 Suspend the release of radioactive liquid effluents monitored by the affected channel	Immediately
	OR	
	A.2 Declare the channel inoperable	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Liquid Radwaste releases are necessary and Effluent Line Gross Radioactivity Monitoring Instrumentation inoperable.	B.1 Analyze at least two independent samples in accordance with TRO 3.11.1.1	Prior to initiating each release.
	<u>AND</u>	
	B.2 Independently determine release rates for samples analyzed per Action B.1	Prior to initiating each release.
	<u>AND</u>	
	B.3 Perform and independently verify discharge valve lineup	Prior to initiating each release.
	<u>AND</u>	
	B.4 Restore monitoring instrumentation	14 days
C. Liquid Radwaste releases are not in progress and the Gross Radioactivity Monitoring instrumentation is inoperable because the inoperable channel is caused by a discharge valve interlock in an off-normal condition or not functioning.	C.1 Maintain at least one isolation valve closed between each source of release and the liquid radwaste discharge valve.	Within 1 hour of securing from release or discovery of inoperable instrument.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Liquid Radwaste releases are necessary and Effluent Line or Cooling Tower Blowdown Flow Monitoring Instrumentation inoperable.	D.1 Estimate Flow Rate. AND D.2 Restore Monitoring Instrumentation.	Once per 4 hours during releases. 30 days
E. Liquid Radwaste releases are not in progress and cooling tower blowdown flow monitoring instrumentation is inoperable because the inoperable channel is a discharge valve interlock in an off-normal condition or not functioning.	E.1 Maintain at least one isolation valve closed between each source of release and the liquid radwaste discharge valve.	Within 1 hour of securing release or discovery of inoperable instrument.
F. Required Action and Associated Completion Time of Conditions B, C, D, or E not met.	F.1 ------------NOTE------------ Only applicable to Condition B ------------------------------- Suspend release of radioactive effluents via this pathway AND F.2 Explain why the inoperability was not corrected in a timely manner	Immediately In the next Radioactive Effluent Release Report per TS Section 5.6

TECHNICAL REQUIREMENT SURVEILLANCE

-----NOTE-----

Refer to Table 3.11.1.4-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.1.4.1	Perform CHANNEL CHECK.	24 hours
TRS 3.11.1.4.2	Perform CHANNEL CHECK including a source check.	Prior to commencing release
TRS 3.11.1.4.3	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.1.4.4	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.1.4-1

LIQUID RADWASTE EFFLUENT MONITORING INSTRUMENTATION

FUNCTION			REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1.	GROSS RADIOACTIVITY MONITORS PROVIDING AUTOMATIC TERMINATION OF RELEASE			
	a.	Liquid Radwaste Effluent Line	1	TRS 3.11.1.4.2 TRS 3.11.1.4.3 TRS 3.11.1.4.4
2.	FLOW RATE MEASUREMENT DEVICES			
	a.	Liquid Radwaste Effluent Line	1	TRS 3.11.1.4.1[a] TRS 3.11.1.4.3 TRS 3.11.1.4.4
	b.	Cooling Tower Blowdown	1	TRS 3.11.1.4.1[a] TRS 3.11.1.4.3 TRS 3.11.1.4.4

(a) Only required when performing batch releases.

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.5 Radioactive Liquid Process Monitoring Instrumentation

TRO 3.11.1.5 The Radioactive Liquid Process Monitoring Instrumentation channels shown in Table 3.11.1.5-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure the alarm will occur prior to exceeding the limits of TRO 3.11.1.1.

APPLICABILITY: As specified in Table 3.11.1.5-1.

ACTIONS

-----NOTE-----

1. Separate condition entry is allowed for each channel.
2. The provisions of TRO 3.0.4 are not applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A One or more Radioactive Liquid Process Monitoring Instrumentation alarm/trip channels setpoint less conservative than the limits allowed by TRO 3.11.1.1.	A.1 Suspend the release of liquid effluents monitored by the affected channel <u>OR</u> A.2 Declare the channel inoperable	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Radioactive Liquid Process Monitoring Instrumentation otherwise inoperable.	B.1.1 Suspend the release of liquid effluents monitored by the affected channel. OR B.1.2 Analyze grab samples for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1).	Immediately Once per 8 hours when the associated pathway is in service
	AND B.2 Restore monitoring instrumentation	30 days
C. Required Action and Associated Completion Time of Conditions B not met.	C.1 Explain why the inoperability was not corrected in a timely manner	In the next Radioactive Effluent Release Report per TS Section 5.6
D. RHR Heat Exchanger to be drained to the spray pond.	D.1 Analyze grab samples from the RHR Heat Exchanger for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1).	Prior to draining RHR Heat Exchanger to the spray pond.

TECHNICAL REQUIREMENT SURVEILLANCE

---NOTE---
Refer to Table 3.11.1.5-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.1.5.1	Perform CHANNEL CHECK.	24 hours
TRS 3.11.1.5.2	Perform a Source Check	31 days
TRS 3.11.1.5.3	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.1.5.4	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.1.5-1
RADIOACTIVE LIQUID PROCESS MONITORING INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS	APPLICABILITY	SURVEILLANCE REQUIREMENTS
GROSS RADIOACTIVITY MONITORS NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE			
1. Service Water System Effluent Line	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
2. Supplemental Decay Heat Removal Service Water	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
3. RHR Service Water System Effluent Line.	1/Loop	(b)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4

(a) System aligned through Fuel Pool Cooling Heat Exchanger. Alignment change between Service Water System Effluent Line and Supplemental Decay Heat Removal Service Water is not considered to be a change in the applicable condition.

(b) At all times

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-----
1. 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 <u>OR</u> A.2 Declare the channel inoperable	Immediately 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	Once per 8 hours while release is in progress.
	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)	Within 24 hours of grab sample
	AND	
	B.3 Restore monitoring instrumentation.	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.	Once per 4 hours while release is in progress
	AND	
	D.2 Restore monitoring instrumentation.	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 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. AND	Once per 4 hours while release is in progress.
	H.2 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1). AND	Within 24 hours of grab sample being taken.
	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. AND	Once per 4 hours while release is in progress.
	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 Radioactive Effluent 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 (SGTS) MONITOR			
a. Noble Gas Activity Monitor (Low Range)	During operation of SGTS[a]	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[a]	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[a]	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(a) The provisions of TRO 3.0.4 are not applicable.

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.1 Monitoring Program

TRO 3.11.4.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.11.4.1-1.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radiological environmental monitoring program not being conducted as specified in Table 3.11.4.1-1	A.1 Report and describe the events and any actions taken to prevent their recurrence in the Annual Radiological Environmental Operating Report	Annually
B. The average level of radioactivity over any calendar quarter as the result of an individual radionuclide in plant effluents in a particular environmental exposure pathway in a particular environmental sampling medium, at a specified location exceeds the applicable reporting level of Table 3.11.4.1-2	B.1 Prepare and submit a Special Report to the Commission	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. More than one of the radionuclides in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified monitoring location and are the result of plant effluents AND The sum of the ratios of the quarterly average activity levels to their corresponding reporting levels of each detected radionuclide, from Table 3.11.4.1-2, is ≥ 1.0	C.1 Prepare and submit a Special Report to the Commission	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Radionuclide(s) other than those in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified location and are the result of plant effluents AND The potential annual dose to a MEMBER OF THE PUBLIC from all detected radionuclides that are the result of plant effluents is greater than or equal to the calendar year limits of TROs 3.11.1.2, 3.11.2.2 and 3.11.2.3	D.1 Prepare and submit a Special Report to the Commission	30 days
E. The requirements for a Special Report per Conditions B, C, or D are met, but the radionuclides that are detected are not the result of plant effluents	E.1 Report and discuss the reasons for not attributing identified radionuclides to plant effluents in the Annual Radiological Environmental Operating Report	Annually

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Milk or fresh leafy vegetable samples are unavailable from one or more of the sample locations required by Table 3.11.4.1-1	-----------------NOTE---------------- The specific locations from which samples were unavailable may then be deleted from the monitoring program. ---	
	F.1 Identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program	30 days
	<u>AND</u>	
	F.2 Identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Radioactive Effluent Release Report	Annually

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.4.1.1	Collect the radiological environmental monitoring samples pursuant to Table 3.11.4.1-1	As required by Table 3.11.4.1-1
TRS 3.11.4.1.2	Analyze samples pursuant to the requirements of Table 3.11.4.1-1 with equipment meeting the detection capabilities required by Table 3.11.4.1-3	As required by Table 3.11.4.1-1
TRS 3.11.4.1.3	Determine annual cumulative potential dose contributions from radionuclides detected in environmental samples in accordance with the methodology and parameters in the ODCM.	Annually

TABLE 3.11.4.1-1 (Page 1 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. DIRECT RADIATION	40 routine monitoring stations with two or more dosimeters or with one instrument for measuring and recording dose rate continuously placed as follows: 1. An inner ring of stations, one in each meteorological sector, in the general area of the SITE BOUNDARY 2. An outer ring of stations, one in each meteorological sector, in the 3 to 9 mile range from the site 3. The balance of the stations placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations	Quarterly	Gamma dose quarterly
2. AIRBORNE			
Radioiodine and Particulates	Samples from 5 locations a. 1 sample from close to each of the 3 SITE BOUNDARY locations (in different sectors) with the highest calculated annual average groundlevel χ/Q b. 1 sample from the vicinity of the community having one of the highest calculated annual ground level χ/Q c. 1 sample from a control location, between 15 and 30 km distant and in the least prevalent wind direction of wind blowing from the plant	Continual sampler operation with sample collection weekly, or more frequently if required by dust loading	<u>Radioiodine Canister:</u> I-131 Analysis weekly <u>Particulate Sampler:</u> Gross Beta radio activity analysis following filter change[a] Gamma isotopic analysis of composite (by location) quarterly

(continued)

[a] Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thorn daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

TABLE 3.11.4.1-1 (Page 2 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. WATERBORNE			
a. Surface	1 sample upstream 1 sample downstream	Composite sample over one-month period	Gamma isotopic analysis monthly. Composite for tritium analyses quarterly
b. Ground	Samples from 1 or 2 sources only if likely to be affected	Quarterly	Gamma isotopic and tritium analyses quarterly
c. Drinking	1 sample from each of 1 to 3 of the nearest water supplies that could be affected by its discharge 1 sample from a control location	Composite sample over 2-week period when I-131 analysis is performed, monthly composite otherwise	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year. Composite for gross beta and gamma isotopic analyses monthly. Composite for tritium analyses quarterly
d. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value	Semiannually	Gamma isotopic analyses semiannually

(continued)

TABLE 3.11.4.1-1 (Page 3 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. INGESTION			
a. Milk	a. Samples from milking animals in 3 locations within 5km from the plant having the highest dose potential. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 and 8km distant where doses are calculated to be greater than 1 mrem per year.	Semimonthly when animals are on pasture, monthly at other times.	Gamma isotopic and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
	1 sample from milking animals at a control location (between 15 and 30km from the plant preferably in the least prevalent direction for wind blowing from the plant).		
b. Fish and/or Invertebrates	b. 1 sample of each of two recreationally important species in vicinity of plant discharge area.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis on edible portions.
	1 sample of same species in areas not influenced by plant discharge.		
c. Food Products	c. 1 sample of each principal class of food products from any area which is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest	Gamma isotopic analysis on edible portions.
	Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown between 15 to 30km from the plant, preferably, in the least prevalent direction for wind blowing from the plant if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.

TABLE 3.11.4.1-2
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES
Reporting Levels

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)
H-3	20,000[(a)]				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400[(b)]				
I-131	2	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200[(b)]			300	

[(a)] For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/l may be used.
[(b)] Total for parent and daughter.

TABLE 3.11.4.1-3
DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS
LOWER LIMIT OF DETECTION (LLD)

Analysis	Water (pCi/1)	Airborne Particulate Or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/1)	Food Products (pCi/kg, wet)	Sediments (pCi/kg, dry)
Gross Beta	4	0.01				
H-3	2000					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-95	30					
Nb-95	15					
I-131	1[a]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	60			60		
La-140	15			15		

[a] LLD for drinking water samples.

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.2 Land Use Census

TRO 3.11.4.2 A land use census shall be conducted.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Land use census identifies a location(s) which yields a calculated dose or dose commitment greater than the values currently being calculated in Requirement 3.11.2.3	A.1 Identify the new location(s) in the next Radioactive Effluent Release Report	As defined by the Radioactive Effluent Release Report
B. Land use census identifies a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Requirement 3.11.4.1	B.1 Add the new location(s) to the radiological environmental monitoring program	30 days
	<u>AND</u>	
	B.2 Identify the new location(s) in the next Radioactive Effluent Release Report per TS Section 5.6	As defined in Radioactive Effluent Release Report

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.4.2.1 Conduct the land use census	12 months

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES

TRO

The TRM Actuation instrumentation automatically initiates closure of appropriate primary containment isolation valves (PCIVs). The function of the PCIVs, in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) (Reference 1). The TRM Isolation Actuation Instrument has been relocated from the Technical Specifications because the identified Function is not credited in the plant design basis to mitigate any plant event, but does provide a diverse means to initiate an Isolation Actuation.

The isolation instrumentation includes the sensors, relays, and instruments that are necessary to cause initiation of primary containment and reactor coolant pressure boundary (RCPB) isolation. When the setpoint is reached, the sensor actuates, which then outputs an isolation signal to the isolation logic. Monitoring a wide range of independent parameters provides functional diversity. The input parameters to the isolation logic are:

(a) Main steam line radiation,
(b) Reactor Building Main Steam Differential Temperature - High,
(c) Turbine Building Main Steam Line Tunnel Temperature - High,
(d) HPCI Pipe Routing Area Differential Temperature - High,
(e) HPCI Equipment Room Differential Temperature - High,
(f) RCIC Pipe Routing Area Differential Temperature - High,
(g) RCIC Equipment Room Differential Temperature - High,
(h) RWCU Penetration Area Differential Temperature - High,
(i) RWCU Pump Area Differential Temperature - High,
(j) RWCU Heat Exchanger Area Differential Temperature - High, and
(k) RHR Flow - High.

The valves associated with these trip channels are identified in Table B 3.3.6-1. Each of these valves is also associated with other trip channels as identified in LCO Bases B 3.6.1.3.

Functions (d) and (f) trips will occur only after a 15 minute time delay; the other trips occur after a one second delay. See Tech Spec Basis B 3.3.6-1.

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

ACTIONS

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components. The Actions are modified by Note 2, which identifies that if the degradation of any TRM Isolation Actuation Instrumentation impacts the OPERABILITY of any Technical Specification Isolation Instruments identified in LCO 3.3.6.1, "Primary Containment Isolation Instrumentation", the appropriate Technical Specification Actions must be taken. This Note is necessary because the TRM Isolation Actuation Instrumentation can impact the capability of the Technical Specification Isolation Instrumentation. If this occurs, both the TRM and Technical Specification Required Actions must be taken to ensure proper compensatory actions are taken.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the TRM Isolation Actuation Instrumentation Functions are maintained OPERABLE. TRM Isolation Actuation Instrumentation Surveillances are performed consistent with the Bases for LCO 3.3.6.1 "Isolation Activation Instrumentation."

TRS 3.3.6.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs in LCO 3.6.1.3 overlaps this surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform portions of this surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the surveillance when performed at the 24 month Frequency.

TRS 3.3.6.6

Response time testing for the Function 1.a and Function 2.a ≤ 10 second requirement per FSAR Table 7.3-29 is met by testing the channel for the ≤ 1 second channel response time requirement per FSAR Table 7.3-29 for Function 1.a.

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

REFERENCES

1. FSAR Section 7.3.1

2. NRC Inspection and Enforcement Manual, Part 9900: Technical Guidance, Standard Technical Specification Section 1.0 Definitions, Issue dated 12/8/96.

Table B 3.3.6-1
Primary Containment Isolation Valves
(Page 1 of 1)

Plant systems	Valve Number	Valve Description	Isolation Signal Function No. (Table.3.3.6-1)
Nuclear Boiler	HV-241F022A	MSIV	1.a, 1.b
	HV-241F022B	MSIV	1.a, 1.b
	HV-241F022C	MSIV	1.a, 1.b
	HV-241F022D	MSIV	1.a, 1.b
	HV-241F028A	MSIV	1.a, 1.b
	HV-241F028B	MSIV	1.a, 1.b
	HV-241F028C	MSIV	1.a, 1.b
	HV-241F028D	MSIV	1.a, 1.b
	HV-241F016	MSL Drain Isolation Valve	1.a, 1.b
	HV-241F019	MSL Drain Isolation Valve	1.a, 1.b
Reactor Recirculation	HV-243F019	Reactor Coolant Sample Valve	2.a
	HV-243F020	Reactor Coolant Sample Valve	2.a
HPCI	HV-255F002	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F003	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F100	HPCI Steam Supply Valve	3.a, 3.b
	HV-255F042	HPCI Suction Valve	3.a, 3.b
RCIC	HV-249F007	RCIC Steam Supply Valve	4.a, 4.b
	HV-249F008	RCIC Steam Supply Valve	4.a, 4.b
	HV-249F088	RCIC Steam Supply Valve	4.a, 4.b
RWCU	HV-244F001	RWCU Suction Valve	5.a, 5.b, 5.c
	HV-244F004	RWCU Suction Valve	5.a, 5.b, 5.c
RHR	HV-251F022	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-251F023	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-251F008	RHR – Shutdown Cooling Valve	6.a
	HV-251F009	RHR – Shutdown Cooling Valve	6.a

B 3.6.4 Primary Containment Closed System Boundaries

BASES

TRO

A closed system used as a primary containment isolation boundary is defined as a piping system outside primary containment that does not communicate directly with the atmosphere outside primary containment, meets the design requirements of NUREG-75/087, (Reference 1), as described in FSAR Section 6.2.4 (Reference 2), and is considered an extension of primary containment. The design of several containment penetrations relies upon a single Primary Containment Isolation Valve (PCIV) and a closed piping system outside primary containment (Primary Containment Closed System) as the two isolation barriers, as identified in Technical Specification (TS) Bases, Table B 3.6.1.3-1. For a given containment penetration that relies upon a closed system as the redundant containment isolation barrier, the closed system boundary is essentially equivalent to the ASME Class 2 boundary for the system/loop which contains the penetration. The closed system boundaries are defined by the Leakage Rate Test Program.

As a special case, the containment penetrations for the H_2O_2 analyzer lines also rely upon a closed system as the redundant containment isolation barrier, even though two PCIVs are provided for each of these penetrations. The PCIVs associated with these penetrations are identified in TS Bases Table B 3.6.1.3-1. The PCIVs in each H_2O_2 analyzer penetration are redundant to each other with regard to mechanical operation, but are not redundant with regard to electrical operation. Both PCIVs in each of these penetrations are powered from the same electrical division in order to prevent a single electrical failure from resulting in a loss of both divisions of H_2O_2 analyzers. This results in the valves being susceptible to a single electrical failure which could result in both valves failing open or failing to remain closed. Because of this unique design consideration, the H_2O_2 penetrations are equivalent to penetrations having a single PCIV, with the closed system providing the redundant isolation barrier.

Each division of the H_2O_2 analyzer piping has multiple flowpaths (e.g., upper drywell, lower drywell, drywell return). These multiple flowpaths are interrelated and make up one closed system for each division. The tested closed system for each division is shown in the Leakage Rate Test Program.

For penetrations with a single PCIV, alteration of the corresponding closed system boundary during power operation is permitted provided that alteration does not impact the containment isolation function of the PCIV, [i.e., able to be closed (automatically or manually) or remain closed, <u>and</u> maintain leakage within that assumed in the design basis loss of coolant accident dose analysis.] Conversely, if a PCIV is in a configuration where it is not capable of performing its containment isolation function (e.g., stuck open), then closed system integrity must be maintained in order to have at least one containment isolation barrier operable. These requirements also apply to the H_2O_2 analyzer penetrations.

B 3.6.4 Primary Containment Closed System Boundaries

BASES (continued)

TRO (continued)

The APPLICABILITY is modified by a Note allowing Primary Containment Closed System boundaries to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communications with the control room. In this way, the Primary Containment Closed System can be rapidly isolated when a need for primary containment isolation is indicated.

Opening of closed system boundary valve periodically for specific activities that require the valve to be opened (e.g., testing, venting) is not considered a breach of a closed system, provided the valve is operated under administrative control. Examples include the opening of a high point vent in the Core Spray system to verify that the system is filled with water or the opening of a H_2O_2 analyzer boundary valve to perform a functional test of the Post Accident Sampling System. Similarly, stroking of a boundary valve as part of restoration from maintenance activities associated with that valve does not constitute a breach of the closed system. Examples of this would be the stroking of a valve where the work that was done was replacement of the motor actuator, or other work where the pressure boundary of the valve was not violated. Also, the opening of a valve as a result of normal system operation/testing does not constitute a breach of the closed system.

B 3.6.4 Primary Containment Closed System Boundaries

BASES (continued)

ACTIONS

These ACTIONS are provided to address Conditions where Primary Containment Closed System boundaries are inoperable. When the Primary Containment Closed System boundaries are OPERABLE, but the associated PCIV(s) is inoperable, LCO 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," Condition C or Condition D would apply.

Note 1 has been added to provide clarification that, for the purpose of the TRO, separate Condition entry is allowed for each closed system. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable closed system. Complying with Required Actions may allow for continued operation, and subsequent inoperable PCIVs or closed systems are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are modified by Notes 2 and 5. Note 2 ensures that appropriate remedial actions are taken, if necessary, if the affected system(s) are rendered inoperable by an inoperable closed system (e.g., an Emergency Core Cooling System subsystem is inoperable due to a failed open drain valve). Note 5 ensures appropriate remedial actions are taken when the primary containment leakage limits are exceeded. Pursuant to TRO 3.0.6, these actions are not required even when the associated TRO is not met. Therefore, Notes 2 and 5 are added to require the proper actions be taken when Primary Containment Closed System boundaries are inoperable.

Note 3 has been added to provide clarification that failing to complete the Required Actions results in a condition that could compromise Primary Containment Integrity and thus, place the plant in an unanalysed condition.

The ACTIONS are modified by Note 4 allowing penetration flow path(s) to be unisolated intermittently under administrative controls. This note applies to a condition where the closed system is inoperable. It does not apply to a situation where a penetration flowpath is normally open and the closed system is OPERABLE (such as the RHR and Core Spray minimum flow return lines), since that represents the normal design configuration. Administrative controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

B 3.6.4 Primary Containment Closed System Boundaries

BASES (continued)

ACTION (continued)

A.1.1, A.1.2, A.2.1, and A.2.2

With one or more penetration flow paths with its Primary Containment Closed System boundary inoperable, the affected portion of the closed system piping must be isolated from the rest of the closed system and the primary containment. This Condition only applies when the associated PCIV for the penetration flow path is OPERABLE. For the penetration flow paths associated with the H_2O_2 analyzers, both PCIVs must be OPERABLE. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. Closing an intervening valve between the breach in the closed system and the open penetration is permitted when the penetration PCIV is OPERABLE. If no intervening valve exists between the closed system breach and the PCIV, then the PCIV must be closed and deactivated to ensure compliance with LCO 3.6.1.1, "Primary Containment." For the penetration flow paths associated with the H_2O_2 analyzers, one PCIV must be closed and deactivated. Deactivation of the H_2O_2 analyzer PCIVs is discussed in the TS Bases for LCO 3.6.1.3, Condition D.

The Required Actions to isolate the closed system breach, or the penetration, must be completed within the 4 hour Completion Time. The Completion Time of 4 hours is consistent with LCO 3.6.1.3, Condition A, which applies to penetration flow paths with two PCIVs. The Primary Containment Closed System boundary is considered to be the functional equivalent to the ASME Class 2 boundary for the system/loop which contains the penetration. Because this boundary serves as the second barrier required by General Design Criteria 55 and 56 (Ref. 3) in lieu of a second isolation valve, the same Required Actions and associated Completion Times are appropriate.

For inoperable closed system boundaries where the breach has been isolated from the rest of the closed system and primary containment (Required Action A.1.1), or where the penetration has been isolated by a closed and deactivated PCIV (Required Action A.1.2), the affected penetration flow path(s) must be verified to be isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident, and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those devices outside containment and capable of potentially being mispositioned are in the correct position. The Completion Time of "once per 31 days" is consistent with LCO 3.6.1.3, Condition A, and is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low.

B 3.6.4 Primary Containment Closed System Boundaries

BASES (continued)

ACTION (continued)

B.1 and B.2

With one or more penetration flow paths with its Primary Containment Closed System boundary inoperable, the affected penetration flow path must be isolated within 1 hour when the corresponding PCIV for the penetration flow path is also inoperable. For the penetration flow paths associated with the H_2O_2 analyzers, this Condition applies when one or both PCIVs are inoperable. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the LCO 3.6.1.3, Condition B, which applies to penetration flow paths with two PCIVs, both of which are inoperable. Alternatively, immediate entry into the applicable Conditions and Required Actions of LCO 3.6.1.1 is permitted.

C.1

If the Required Actions and associated Completion Times of Conditions A or B cannot be met, immediate entry into LCO 3.6.1.3, Condition G or H, is directed. The appropriate Condition to enter is determined by the operating MODE of the unit at the time of entry.

TRS

TRS 3.6.4.1

The boundaries for water filled closed systems are verified to be intact by direct observation, during operator rounds, of the lack of leakage from the system (which is under pressure from the keepfill system), or by observed integrity during functional testing as required by the applicable LCO; and by the system boundary administrative controls (i.e., by procedure and checkoff lists for evolutions that affect the system boundary). The integrity of a closed system boundary, verified in accordance with the methodologies described above, is not compromised throughout the effective surveillance period by the subsequent isolation of the keepfill system and/or depressurization of a closed system.

The boundaries for air filled closed systems are verified to be intact by verification that no work has been performed since the last leak rate test in accordance with TRS 3.6.4.2, and by the system boundary administrative controls (i.e., procedure and checkoff lists for evolutions that affect the system boundary).

The Frequency corresponds to the Inservice Testing Program requirements for performing valve testing at least once every 92 days.

B 3.6.4 Primary Containment Closed System Boundaries

BASES (continued)

TRS (continued)

TRS 3.6.4.2

When restoring a closed system, testing must be performed to verify system integrity. Explicit quantification of the leakage is not required for water filled closed systems. However, testing must be sufficient to assure that an essentially leaktight barrier exists (no gross leakage). For air filled closed systems, explicit leakage quantification is required, and is performed in accordance with the Leakage Rate Test Program.

The Frequency of testing is in accordance with the Leakage Rate Test Program.

REFERENCES

1. NUREG-75/087, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants", September 1975.
2. FSAR Section 6.2.4, "Containment Isolation System."
3. 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."

B 3.7.8 Snubbers

BASES

TRO

All snubbers are required to be OPERABLE to ensure that the structural integrity of the reactor coolant system and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on non-safety-related systems and then only if their failure or failure of the system on which they are installed would have no adverse effect on any safety-related system.

Snubbers are required to be OPERABLE whenever they are considered necessary to support equipment for the systems on which they are installed.

"Type" of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity. For example, mechanical snubbers utilizing the same design features of the 2-kip, and 100-kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured by company "B" for the purposes of this Technical Requirement would be of a different type, as would hydraulic snubbers from either manufacturer.

A list of individual snubbers with detailed information of snubber location and size and of system affected shall be available at the plant in accordance with Section 50.71(c) of 10 CFR part 50. The controlled list of plant snubbers is maintained in by the ISI Program. The addition or deletion of any snubber shall be made in accordance with Section 50.59 of 10 CFR Part 50.

(continued)

B 3.7.8 Snubbers

BASES (continued)

ACTIONS

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

Condition A

The removal or inoperability of one or more snubbers or one or more sets of parallel pair snubbers on an OPERABLE system requires the supported system to be immediately declared inoperable.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

If prior to the removal or inoperability of one snubber or one set of parallel pair snubbers on an OPERABLE system, an engineering evaluation has been performed on the system to which the snubber is attached and the engineering evaluation determines that there are no adverse affects on the system with the snubber either removed or inoperable, then the removed or inoperable snubber must be repaired or replaced within 72 hours.

Replacement snubbers and snubbers which have repairs which might affect the functional test shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom of motion test must have been performed within 12 months before being installed in the unit.

Condition D

Potentially damaging transients are determined from a review of operational data and a visual inspection of the systems.

(continued)

B 3.7.8 Snubbers

BASES (continued)

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the snubbers are maintained OPERABLE. Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubbers for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted shall be listed in the list of individual snubbers indicating the extent of the exemptions.

TRS 3.7.8.1

The visual inspection frequency is based upon maintaining a constant level of snubber protection to systems. Therefore, the required inspection varies inversely with the observed snubber failures and is determined by the number of inoperable snubbers found during an inspection. Generic Letter 90-09 provides a method for determining the next interval for the visual inspection of snubbers based upon the number of unacceptable snubbers found during the previous inspection, the total population or category size for each snubber type, and the previous inspection interval.

The visual inspection interval for a snubber population shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers are categorized as inaccessible or accessible during reactor operation. Each of these categories (inaccessible and accessible) may be inspected independently according to the schedule determined by Table 3.7.8-1. The visual inspection interval for each type of snubber shall be determined based upon the criteria provided in Table 3.7.8-1.

(continued)

B 3.7.8 Snubbers

BASES (continued)

TRS (continued)

Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible, and are inspected on that basis: The snubber population, for the purpose of visual inspection, is determined either separately or jointly for accessible and inaccessible units. The results of snubber examinations are judged, per Table 3.7.8-2, in accordance with that population. The decision whether to combine the category populations or keep them separate must be documented before any inspection, and that decision shall be used as the basis upon which to determine the subsequent inspection interval for that category.

The accessibility of each snubber shall be determined and approved by the Plant Operations Review Committee. The determination shall be based upon the existing radiation levels and the expected time to perform a visual inspection upon the existing radiation levels and the expected time to perform a visual inspection in each snubber location as well as other factors associated with accessibility during plant operations (e.g. temperature, atmosphere, location, etc.), and the recommendations of Regulatory Guides 8.8 and 8.10.

Visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired OPERABILITY, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component, and to the snubber anchorage are functional.

(continued)

B 3.7.8 Snubbers

BASES (continued)

TRS (continued)

Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per TRS 3.7.8.2. A review and evaluation shall be performed and documented to justify continued operation with an unacceptable snubber. If continued operation cannot be justified, the snubber shall be declared inoperable and the ACTION requirements shall be met.

TRS 3.7.8.2

A representative sample of snubbers shall be tested for each type of snubber. The representative sample selected for the functional test sample plans shall be randomly selected from the snubbers of each type and reviewed before beginning the testing. The review shall ensure as far as practical that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers of each type.

Functional Test Acceptance Criteria

The snubber functional test shall verify that:

1. Activation (restraining action) is achieved within the specified range in both tension and compression;

2. Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;

(continued)

B 3.7.8 Snubbers

BASES (continued)

TRS (continued)

3. Where required, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel; and

4. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

TRS 3.7.8.3

The maximum expected service life for various seals, springs, and other critical parts shall be determined and established based on engineering information and shall be extended or shortened based on monitored test results and failure history. Critical parts shall be replaced so that the maximum service life will not be exceeded during a period when the snubber is required to be OPERABLE. The parts replacements shall be documented and the documentation shall be retained in accordance with FSAR 17.2.17.

The service life of a snubber is evaluated via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

(continued)

B 3.7.8 Snubbers

BASES (continued)

TRS (continued)

TRS 3.7.8.5

The required inspection consists of the following elements:

1. Perform a visual inspection of all affected snubbers.

2. Verify freedom of motion of mechanical snubbers by manually induced snubber movement, or

3. Verify freedom of motion of mechanical snubbers by evaluation of in-place snubber piston setting, or

Verify freedom of motion of mechanical snubbers by stroking the mechanical snubber through its full range of travel.

REFERENCES

1. Generic Letter 90-09

B 3.7.9 Control Structure HVAC

BASES

TRO

Control structure HVAC systems have safety related functions to maintain the required air pressure control in the building and maintain the heating and cooling of support equipment required to mitigate a Loss of Coolant Accident. The Control Structure and Computer Room ventilation fans are required to maintain the habitability envelope at a positive pressure (i.e., > 0" wc) and also to perform a heating and/or cooling function. The operation and surveillance requirements of the ventilation fans to maintain the habitability envelope at a positive pressure during CREOAS operation are discussed in TS 3.7.3. The heating and/or cooling function is addressed in this TRO. At least one train of each system is required for these purposes.

Technical Specification LCOs 3.7.3 and 3.7.4 address operating and surveillance requirements for the Control Room Emergency Outside Air Supply System and the Control Room Floor Cooling System.

The SGTS Room Cooling and Heating systems are essential to maintain the normal and post accident environment of the Control Structure Elevation 806 within acceptable design temperature limits. CREOASS, SGTS, and Control Structure Chilled Water equipment is located on Control Structure Elevation 806.

The Computer Room Floor Cooling System's function is to maintain the computer room environment within acceptable design temperature limits. The system also maintains the habitability envelope pressure within limits. The Computer Room Floor Cooling System consists of two independent, redundant subsystems that provides cooling of recirculated computer room air. Each subsystem consists of cooling coils, fans, chillers, compressors, ductwork, dampers and instrumentation and controls to provide computer room temperature control.

The Control Structure Heating and Ventilation System serves all elevations of the control structure except the control room, TSC, and elevation 697'. The system's function is to maintain temperature and habitability envelope pressure within acceptable limits. The Control Structure Heating and Ventilation System consists of two independent, redundant subsystems that provides cooling of recirculated control structure air. Each subsystem consists of cooling coils, fans, chillers, compressors, ductwork, dampers and instrumentation and controls to provide temperature control.

(continued)

B 3.7.9 Control Structure HVAC

BASES (continued)

TRO (continued)	The Control Structure Chilled Water System functions to transfer heat from the Control Room Floor Cooling System, Computer Room Floor Cooling System, Control Structure Heating and Ventilation System, and the Unit 1 ESGRC units to the ESW system. The Control Structure Chilled Water System consists of two independent, redundant subsystems consisting of a centrifugal compressor, a chilled water pump, one emergency condenser water pump, cooling coils, closed expansion tank, air separator, interconnecting piping, valves and instrumentation and controls. The Battery Room Exhaust System functions to maintain the battery room design temperature, design pressure, and hydrogen concentration within limits. The Battery Room Exhaust System consists of two independent, redundant subsystems consisting of fans, ductwork, dampers and instrumentation and controls.
ACTIONS	The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components. With one of the HVAC subsystems inoperable, the inoperable HVAC subsystem must be restored to OPERABLE status within 30 days. With the unit in this condition, the remaining OPERABLE HVAC subsystem is adequate to perform the cooling and/or heating function. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem results in the loss of the HVAC function. The 30 day Completion Time is based on the consideration that the remaining subsystem can provide the required protection, and the availability of alternate nonsafety cooling methods.
TRS	The TRS assures sufficient system functionality to ensure operation when called upon to perform its safety related function.
REFERENCES	1. FSAR Section 9.4.1 2. FSAR Section 9.2.12.1

B 3.7.10 Spent Fuel Storage Pools

BASES

TRO

The design and licensing basis of SSES assumes that the Unit 1 and Unit 2 Spent Fuel Storage Pools (SFSP) are cross-connected through the Cask Storage Pit. This allows either Unit's Fuel Pool Cooling system and RHR Fuel Pool Cooling subsystem to provide cooling to the spent fuel stored in both units SFSP. In addition, cross-connected SFSP's allow make up water to be added to either unit's SFSP. If the SFSP are not cross-connected through the Cask Storage Pit, certain conditions must be maintained to assure the fuel pools remain within analyzed conditions. This TRO defines the required conditions and the actions required should the conditions not be met. The conditions applicable to SFSP's that are not cross-connected are:

a. The Unit 2 SFSP water temperature is less than or equal to 115 °F. The Fuel Pool Cooling system analyses assume the fuel pool temperature is less than or equal to 115 °F. Normally, the Fuel Pool Cooling system is used to maintain the fuel pool temperature less than or equal to 115 °F.

b. Both subsystems of the ESW system must have at least one pump and the respective flow path to the SFSP to be considered OPERABLE for the ESW system fuel pool supply function. The ESW system provides the only safety-related source of make-up water to the SFSP.

c. The RHR Fuel Pool Cooling subsystem provides a safety-related source of cooling to the SFSP. The RHR Fuel Pool Cooling subsystem is considered OPERABLE when one of the pumps, one of the heat exchangers, associated piping, valves, instrumentation and controls are OPERABLE. Note that this cannot be the same set of equipment (pump, heat exchanger, piping, valves etc.) credited for an OPERABLE RHR Suppression Pool Cooling subsystem.

(continued)

B 3.7.10 Spent Fuel Storage Pools

BASES (continued)

TRO (continued)

d. RHR must have one subsystem of Suppression Pool Cooling OPERABLE. One subsystem of RHR Suppression Pool Cooling is considered OPERABLE when one of the pumps, one of the heat exchangers, associated piping, valves, instrumentation and controls are OPERABLE. Note that this cannot be the same set of equipment (pumps, heat exchanger, piping, valves etc.) credited for an OPERABLE RHR Fuel Pool Cooling subsystem. A subsystem of RHR Suppression Pool Cooling is required to be available post accident to provide cooling for the reactor vessel while RHR Fuel Pool Cooling is providing cooling to the fuel pool.

e. Zone II is capable of being aligned to the Recirculation Plenum. Alignment of the Unit 2 Reactor Building to the recirculation plenum is assumed in the analyses. This assures adequate distribution of the refueling floor environment should the fuel pool temperature exceed 115 °F.

APPLICABILITY

The APPLICABILITY is modified to permit isolating SFSPs from the cask storage pit when the analyzed nominal decay heat in one SFSP is $\leq 5.1 \times 10^6$ Btu/hr, concurrent with a nominal decay heat of $\leq 4.0 \times 10^6$ Btu/hr in the other SFSP. For example, if the Unit 1 SFSP analyzed nominal decay heat is 4.5×10^6 Btu/hr, then the Unit 2 SFSP analyzed nominal decay heat must be $\leq 4.0 \times 10^6$ Btu/hr in order for the SFSPs to not be cross-connected through the cask storage pit. The manner in which this value is determined is specified in Reference 1, and is consistent with the SSES design and licensing basis. With a SFSP nominal decay heat less than this value, sufficient time will exist to implement the actions required to cross-connect the SFSPs and prevent boiling in the event of a Design Basis Loss of SFP Cooling event. This also ensures compliance with licensing bases requirements regarding the evaluation of this event prior to isolating the SFSPs.

(continued)

B 3.7.10 Spent Fuel Storage Pools

BASES (continued)

ACTIONS	The listed ACTIONS ensure that should the required conditions not be maintained, the required conditions be restored in sufficient time to preclude fuel pool boiling and to minimize the impact of a fuel pool with water temperatures greater than 115 °F. The completion time for Condition A of 12 hours is a reasonable time to restore adequate cooling to the SFSP and restore the fuel pool temperature less than or equal to the 115 °F limit. This 12 hour completion time takes into account the low probability of an event occurring during this period that could prevent reestablishing adequate fuel pool cooling. The completion times specified for the Conditions B, C, D, and E account for the low probability of an event occurring during the period that could cause the loss of adequate fuel pool cooling. The completion time for Condition B is more restrictive since ESW is required to raise fuel pool level so that cooling systems can be operated.
ACTIONS (continued)	Action F is required to be taken to cross-connect the SFSP's so that cooling can be provided should an event result in loss of fuel pool cooling.
TRS	The TRS's are defined to be performed at the specified frequency to ensure that the required conditions are maintained while the SFSP's are not cross-connected.
REFERENCES	1. Safety Evaluation NL-00-029 2. FSAR Section 9.1.3

B 3.11.2.1 Dose Rate

BASES

TRO

This requirement provides reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a Member of the Public either within or outside the Site Boundary, in excess of the design objectives of Appendix I to 10CFR50. It provides operational flexibility for releasing gaseous effluents while satisfying section II.B and II.C design objectives of Appendix I. For individuals who may at times be within the Site Boundary, the occupancy of the individual will usually be sufficiently low to compensate for any increase in atmospheric diffusion factor above that for the Site Boundary. The specified release rate limits restrict, at all times, the corresponding dose rates above background to a Member of the Public at or beyond the Site Boundary to less than or equal to 500 mrem/yr to the total body or to less than or equal to 3000 mrem/yr to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an individual via the inhalation pathway to less than or equal to 1500 mrem/yr. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC either within or outside the SITE BOUNDARY, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20. (Reference 3)

This Requirement applies to the release of gaseous effluents from all reactors at the site.

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

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

Actions — The Actions are defined to ensure proper corrective measures are taken in response to the limits being exceeded.

TRS — The TRSs are defined to be performed at the specified Frequency to ensure that the dose rates are maintained within limits. Dose rates are determined in accordance with the methodology and parameters of the ODCM.

Table 3.11.2.1-1 defines Radioactive Gaseous Waste Sampling and Analysis Program. The lower limit of detection (LLD) is defined, for purposes of these requirement, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 s_b}{E \bullet V \bullet 2.22E6 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

Where:

LLD is the *a priori* lower limit of detection as defined above (as microcuries per unit mass or volume),
s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency, as counts per disintegration,
V is the sample size, in units of mass or volume,
2.22 E6 is the number of disintegrations per minute per microcurie,
Y is the fractional radiochemical yield, when applicable,
λ is the radioactive decay constant for the particular radionuclide, and
Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting (for plant effluents, not environmental samples).

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

TRS (continued)

The value of s_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. Typical values of E, V, Y, and Δt shall be used in the calculation.

The principal gamma emitters for which the LLD specification applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-135m and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be considered. Other gamma peaks which are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Radioactive Effluent Release Report.

The design of the systems for the sampling of particulates and iodines provide for sample nozzle entry velocities which are approximately isokinetic with instack air velocities. Gaseous particulate and iodine samples are gathered continuously, with the sample size proportional to the stack emissions; a composite gaseous sample is a combination of all the particulate filters gathered in a sampling period.

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 time period not to exceed 1 hour per sampling period. For particulate and iodine sampling, this is a small fraction of the normal minimum analysis frequency.

The minimum Analysis Frequency as listed for the Composite Samples shall mean the minimum frequency for initiation of the required analyses, not completion of the analysis and evaluation of the results. Since the analysis involves sending the samples to an offsite laboratory and performance of involved sample preparation and wet chemical analyses, there will be a delay. between initiation of the analysis and receipt of the results. The analysis initiation shall normally be done on a calendar quarter for a 92 day frequency.

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

REFERENCES

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

B 3.11.4.1 Monitoring Program

BASES

TRO

The radiological environmental monitoring program required by this Requirement provides representative measurements of radiation and of radioactive materials in those environmental exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Changes to the radiological environmental monitoring program specified in Table 3.11.4.1-1 may be made based on expected SSES operation and the results of radiological environmental monitoring during SSES operation.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 3.11.4.1-3 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in HASL Procedures Manual, HASL-300 (revised annually); Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975). (Reference 1)

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 when requirements are not met.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

ACTIONS (continued)

Per Action A.1, the Annual Radiological Environmental Operating Report shall provide a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

The Special Report submitted per Action B.1 shall identify the cause(s) for exceeding the limit(s) and define the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of Requirements 3.11.1.2, 3.11.2.2 and 3.11.2.3.

Include revised figure(s) and table for the ODCM reflecting the new locations for obtaining samples per Action F.1 in the next Radioactive Effluent Release Report.

TRS

The TRSs are defined to be performed at the specified frequency to ensure that the requirements are implemented. Monitoring samples collected per TRS 3.11.4.1.1 shall be from the specific locations given in the table and figure in the ODCM. (Reference 2)

Table 3.11.4.1-1

Sample Locations Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in this Table and in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. (Reference 3) Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued)

period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time.

In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. Identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

Direct Radiation One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation.

Radioiodine and Particulates - Sampling and Collection Frequency
The charcoal cartridges used in the airborne radioiodine sampling conducted as part of the radiological environmental monitoring program are designed and tested by the manufacturer to assure a high efficiency in the capture of radioiodine. Certificates from the manufacturer of the cartridges are provided with each batch of cartridges certifying the percent retention of the radiodine for stated air flows.

Radioiodine and Particulates - Particulate Sample; Waterborne -Surface, Ground, Sediment; Food Products Gamma isotopic analysis means the identification and quantification of gamma- emitting radionuclides that may be attributable to the effluents from the facility.

Waterborne - Surface The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in the discharge line.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued)

Waterborne - Drinking - Sampling and Collection Frequency A composite sample is one in which the quantity (aliquot) of liquid sampled is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow. In this program composite samples shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

Waterborne - Ground - Samples and Sample Locations Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

Drinking Water - I-131 Analyses Calculation of the dose projected from I-131 in drinking water to determine if I-131 analyses of the water are required shall be performed for the maximum organ and age group using the methodology and parameters of the ODCM.

Food Products - Sampling and Collection Frequency If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuborous and root food products.

Table 3.11.4.1-3

This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable at 95% confidence level together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating report.

Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13. (Reference 4)

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued)

The LLD is defined, for purpose of these Requirements, as the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \bullet V \bullet 2.22 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

Where:

LLD is the *a priori* lower limit of detection as defined above (as picrocuries per unit mass or volume),
s_b is the standard deviation of the background counting rate or of the countingrate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency, as counts per disintegration,
V is the sample size, in units of mass or volume,
2.22 is the number of disintegrations per minute per picrocurie,
Y is the fractional radiochemical yield, when applicable,
λ is the radioactive decay constant for the particular radionuclide, and
Δt for environmental samples is the elapsed time between sample collection (or end of the sample collection period) and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued

It should be recognized that the LLD is defined as *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDS unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report.

REFERENCES

1. HASL Procedures Manual, HASL-300 (revised annually); Currie, L.A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975) Offsite Dose Calculation Manual.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979
4. Regulatory Guide 4.13