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NFM TRM1 text TOC

SUSQUEHANNA STEAM ELECTRIC STATION
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SUSQUEHANNA STEAM ELECTRIC STATION
LIST OF EFFECTIVE SECTIONS (TECHNICAL REQUIREMENTS MANUAL)

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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 7)
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
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)

(a) See Figure 2.2-1

TABLE 2.2-1 (Page 2 of 7)
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	[3.3.6.1]	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 3 of 7)
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 4 of 7)
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 5 of 7)
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 6 of 7)
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 7 of 7)
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

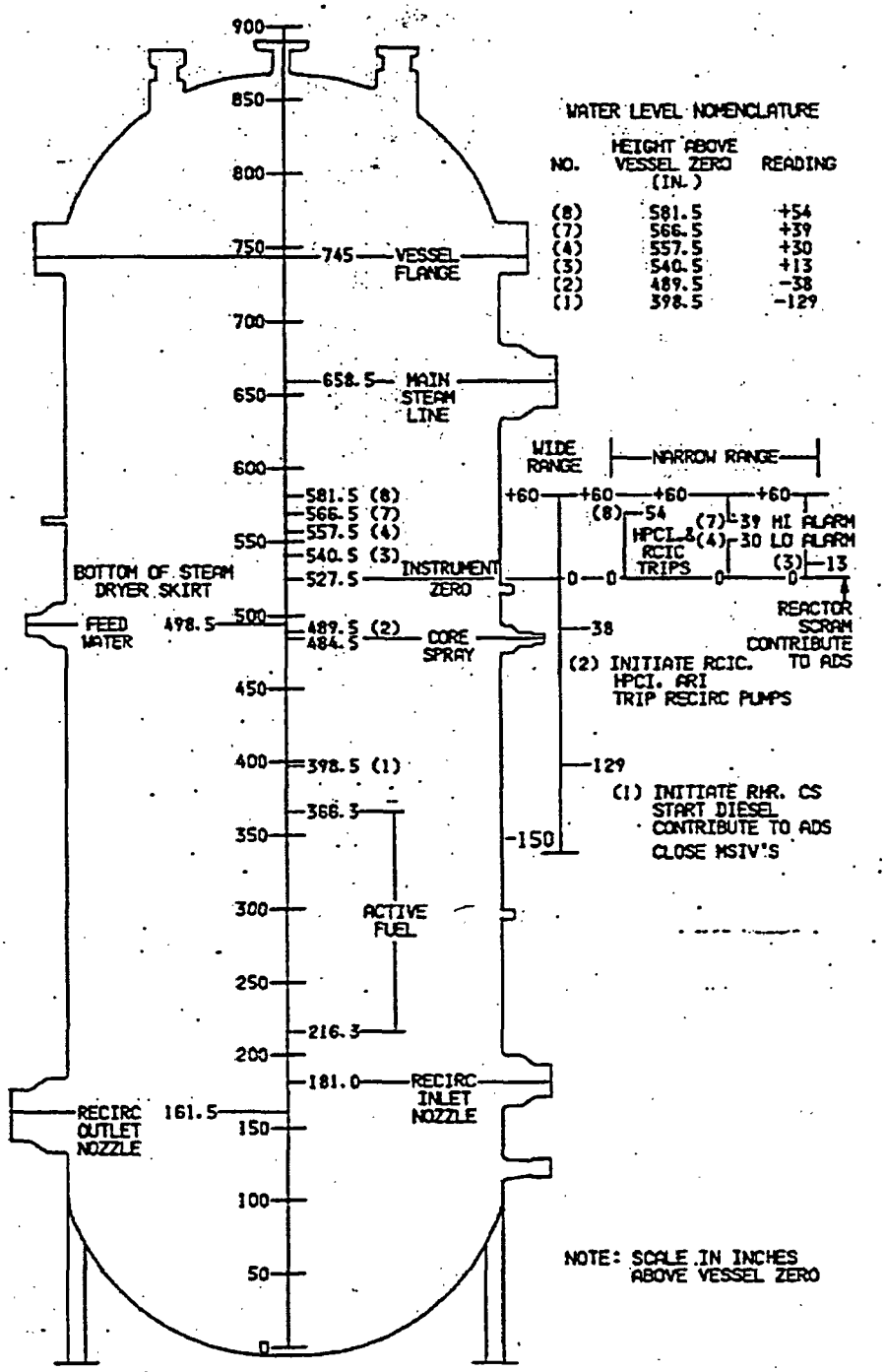

FIGURE 2.2-1
REACTOR VESSEL WATER LEVEL

CADAM ID: FIG2..2.1 . . .A

3.3 Instrumentation

3.3.6 TRM Isolation Actuation Instrumentation

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

APPLICABILITY: As specified in Table 3.3.6-1

ACTIONS

NOTES

Separate Condition entry is allowed for each channel.

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

TECHNICAL REQUIREMENT SURVEILLANCE

NOTES

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

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

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

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

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

(continued)

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

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

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

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

3.3 Instrumentation

3.3.8 Section not used

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3.3 Instrumentation

3.3.11 MVP Isolation Instrumentation

TRO 3.3.11 The MVP Isolation Instrumentation for each Function in Table 3.3.11-1 shall be OPERABLE.

APPLICABILITY: MODE 1 or 2 with one or more Main Steam Isolation Valves open and mechanical vacuum pump in service.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channel inoperable.	A.1 Place channel in trip.	12 hours
B. MVP isolation capability not maintained.	B.1 Restore MVP Isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Shut down the MVP and close the MVP suction valve.	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.3.11.1	Perform CHANNEL FUNCTIONAL TEST.	92 days
TRS 3.3.11.2	Perform CHANNEL CALIBRATION.	24 months
TRS 3.3.11.3	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

TABLE 3.3.11-1
MVP ISOLATION INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Radiation – High High	2	TRS 3.3.11.1 TRS 3.3.11.2 TRS 3.3.11.3	≤ 21 x full power background without hydrogen injection

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

Plant systems	Valve Number	Valve Description	Isolation Signal Function No. (Table 3.3.6-1)
Nuclear Boiler	HV-141F022A	MSIV	1.a, 1.b
	HV-141F022B	MSIV	1.a, 1.b
	HV-141F022C	MSIV	1.a, 1.b
	HV-141F022D	MSIV	1.a, 1.b
	HV-141F028A	MSIV	1.a, 1.b
	HV-141F028B	MSIV	1.a, 1.b
	HV-141F028C	MSIV	1.a, 1.b
	HV-141F028D	MSIV	1.a, 1.b
	HV-141F016	MSL Drain Isolation Valve	1.a, 1.b
	HV-141F019	MSL Drain Isolation Valve	1.a, 1.b
Reactor Recirculation	HV-143F019	Reactor Coolant Sample Valve	2.a
	HV-143F020	Reactor Coolant Sample Valve	2.a
HPCI	HV-155F002	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F003	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F100	HPCI Steam Supply Valve	3.a, 3.b
	HV-155F042	HPCI Suction Valve	3.a, 3.b
RCIC	HV-149F007	RCIC Steam Supply Valve	4.a, 4.b
	HV-149F008	RCIC Steam Supply Valve	4.a, 4.b
	HV-149F088	RCIC Steam Supply Valve	4.a, 4.b
RWCU	HV-144F001	RWCU Suction Valve	5.a, 5.b, 5.c
	HV-144F004	RWCU Suction Valve	5.a, 5.b, 5.c
RHR	HV-151F022	RHR - Reactor Vessel Head Spray Valve	6.a
	HV-151F023	RHR - Reactor Vessel Head Spray Valve	6.a

BASES

B 3.3.8 Section not used

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BASES (continued)

B.3.3.8 Section not used

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B 3.3.11 MVP Isolation Instrumentation

BASES

TRO

The MVP Isolation instrumentation automatically shuts down the MVP and closes its suction valve. The purpose is to limit fission product release following a postulated Design Basis Control Rod Drop Accident with the MSIV's open and the MVP System in operation. The MVP draws gases from the main condenser and discharges to the Turbine Building vent stacks, providing an unfiltered release path for fission product activity to the environment. Automatic Isolation of the MVP System in response to a Main Steam Line-High High radiation signal is part of the design basis of the units as described in the FSAR.

The Isolation Instrumentation includes the sensors, relays, and devices that are necessary to initiate the above actions. The input parameter to the isolation logic is main steam line (MSL) radiation. When the MSL Radiation – High High setpoint is reached on either MSL Radiation Monitor "A" or "B", the sensor actuates, which then generates a shutdown signal to the MVP System control logic. There is only one trip system for the MVP Isolation.

The components associated with this trip channel are identified in Table B 3.3.11-1.

ACTIONS

This TRO is only applicable when the MVP System is in service drawing or maintaining condenser vacuum with the reactor in Mode 1 or 2 and one or more MSIV's open. The time of exposure is relatively short, usually during startup from initial criticality up to a maximum of 5% reactor power. The Actions are defined to ensure that the capability to automatically isolate the MVP System is restored promptly if lost during MVP operation.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the MVP Isolation Function is OPERABLE prior to entering the applicable condition. The CHANNEL FUNCTIONAL TEST, CHANNEL CALIBRATION and LOGIC SYSTEM FUNCTIONAL TEST are performed at the same interval as the equivalent surveillance of the MSLRM channels for the Primary Containment Isolation functions.

REFERENCES

1. FSAR Section 7.3.1.1a.2.4.1.2.
2. FSAR Section 10.4.2.2.
3. FSAR Section 11.5.2.1.

Table B 3.3.11-1
MVP Isolation Components

Plant Systems	Component Number	Component Description	Isolation Signal Function No. (Table 3.3.11-1)
Vacuum Hogging	HV-10731	MVP Suction Isolation Valve	1.
	1P105	Mechanical Vacuum Pump	1.