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TRM1 - TECHNICAL REQUIREMENTS MANUAL UNIT 1

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A001
NRR

CATEGORY: DOCUMENTS TYPE: TRM1
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Manual Title: TECHNICAL REQUIREMENTS MANUAL UNIT 1

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	Page TRM / 3.11-35	03/31/2006
	Pages TRM / 3.11-36 through TRM / 3.11-39	11/30/2005
	Pages 3.11-40 through 3.11-43	08/31/1998
	Page TRM / 3.11-44	08/01/2006
	Page TRM / 3.11-45	03/31/2006
	Page 3.11-46	08/31/1998
	Page TRM / 3.11-47	03/31/2006
3.12	LOADS CONTROL PROGRAM	
	Pages TRM / 3.12-1 through TRM / 3.12-3	02/05/1999
	Page TRM / 3.12-4	03/14/2008
	Page TRM / 3.12-5	02/05/1999
4.0	ADMINISTRATIVE CONTROLS	
	Pages TRM / 4.0-1 through TRM / 4.0-3	08/31/1998
	Page TRM / 4.0-4	12/11/2008
	Pages TRM / 4.0-5 through TRM / 4.0-8	08/31/1998

Section	Title	Effective Date
B 3.0	APPLICABILITY BASES	
	Pages TRM / B 3.0-1 through TRM / B 3.0-3	08/31/1998
	Page TRM / B 3.0-4	01/10/2007
	Page TRM / B 3.0-5	04/14/2008
	Page TRM / B 3.0-6	08/31/1998
	Page TRM / B 3.0-7	04/12/2007
	Pages TRM / B 3.0-8 through TRM / B 3.0-10	08/31/1998
	Pages TRM / B 3.0-11 and TRM / B 3.0-12	03/15/2002
	Pages TRM / B 3.0-13 and TRM / B 3.0-14	11/30/2005
	Page TRM / B 3.0-15	03/15/2002
B 3.1	REACTIVITY CONTROL SYSTEMS BASES	
	Page TRM / B 3.1-1	07/13/1999
	Pages TRM / B 3.1-2 and TRM / B 3.1-3	10/31/2007
	Page B 3.1-4	08/31/1998
	Page TRM / B 3.1-5	11/15/2005
	Pages TRM / B 3.1-6 and TRM / B 3.1-7	03/22/2006
	Page TRM / B 3.1-8	02/18/1999
B 3.2	CORE OPERATING LIMITS BASES	
	Page B 3.2-1	08/31/1998
B 3.3	INSTRUMENTATION BASES	
	Page TRM / B 3.3-1	04/07/2000
	Pages TRM / B 3.3-2 and TRM / B 3.3-2a	10/31/2007
	Page TRM / B 3.3-3	12/11/2008
	Page TRM / B 3.3-3a	10/31/2007
	Page TRM / B 3.3-4	06/30/2010
	Page TRM / B 3.3-5	05/30/2006
	Page TRM / B 3.3-6	06/30/2010
	Page TRM / B 3.3-7	10/30/2007
	Page TRM / B. 3.3-8	06/30/2010
	Page TRM / B 3.3-9	10/31/2007
	Pages TRM / B 3.3-10 through TRM / B 3.3-13	01/07/2011
	Page TRM / B 3.3-14	06/25/2002
	Page TRM / B 3.3-14a	10/31/2007
	Page TRM / B 3.3-14b	10/31/2007
	Pages TRM / B 3.3-15 and TRM / B 3.3-16	10/22/2003
	Page TRM / B 3.3-17	03/22/2006
	Pages TRM / B 3.3-17a through TRM / B 3.3-17c	03/22/2006
	Page TRM / B 3.3-17d	03/27/2008

Section	Title	Effective Date
	Pages TRM / B 3.3-17e and TRM / B 3.3-17f	03/22/2006
	Pages TRM / B 3.3-18 and TRM / B 3.3-19	08/03/2010
	Page TRM / B 3.3-20	10/22/2003
	Page TRM / B 3.3-21	05/16/2003
	Pages TRM / B 3.3-22 and TRM / B 3.3-23	04/07/2009
B 3.4	REACTOR COOLANT SYSTEM BASES	
	Page B 3.4-1	08/31/1998
	Pages TRM / B 3.4-2 and TRM / B 3.4-3	04/01/2009
	Pages TRM / B 3.4-4 and TRM / B 3.4-4a	10/31/2007
	Page TRM / B 3.4-5	10/15/1999
	Page B 3.4-6	08/31/1998
	Pages TRM / B 3.4-7 and TRM / B 3.4-8	06/10/2010
B 3.5	ECCS AND RCIC BASES	
	Pages B 3.5-1 and B 3.5-2	08/31/1998
	Pages TRM / B 3.5-3 through TRM / B 3.5-5	10/31/2007
B 3.6	CONTAINMENT BASES	
	Page TRM / B 3.6-1	07/26/2001
	Page TRM / B 3.6-2	02/01/1999
	Page B 3.6-3	08/31/1998
	Page TRM / B 3.6-4	03/27/2008
	Page TRM / B 3.6-5	04/04/2007
	Page TRM / B 3.6-6	12/03/2004
	Pages B.3.6-7 through TRM / B 3.6-11	12/31/2002
B 3.7	PLANT SYSTEMS BASES	
	Pages B 3.7-1 and B 3.7-2	08/31/1998
	Page TRM / B 3.7-3	06/10/2010
	Page TRM / B 3.7-3a	12/27/2007
	Page TRM / B 3.7-4	03/31/2006
	Page TRM / B 3.7-5	08/02/1999
	Page TRM / B 3.7-6	03/31/2006
	Pages TRM / B 3.7-7 and TRM / B 3.7-7a	08/02/1999
	Page TRM / B 3.7-8	08/02/1999
	Page TRM / B 3.7-9	03/31/2006
	Page TRM / B 3.7-10	08/02/1999
	Page TRM / B 3.7-10a	03/31/2006
	Page TRM / B 3.7-11	08/02/1999
	Page TRM / B 3.7-11a	03/31/2006
	Pages TRM / B 3.7-12 through TRM / B 3.7-14	08/02/1999
	Page TRM / B 3.7-14a	08/02/1999

Section	Title	Effective Date
	Page TRM / B 3.7-14b	01/09/2004
	Pages TRM / B 3.7-15 and TRM / B 3.7-16	02/01/1999
	Pages B 3.7-17 through B 3.7-20	08/31/1998
	Page TRM / B 3.7-21	02/14/2005
	Page TRM / B 3.7-21a	06/20/2008
	Page TRM / B 3.7-22 and TRM / B 3.7-23	01/30/2008
	Pages TRM / B 3.7-24 through TRM / B 3.7-28	10/05/2006
	Pages TRM / B 3.7-29 and TRM / B 3.7-30	06/07/2007
	Pages TRM / B 3.7-30a and TRM / B 3.7-30b	10/05/2006
	Page TRM / B 3.7-31	12/03/2004
	Page TRM / B 3.7-32	03/09/2001
	Page TRM / B 3.7-33	04/15/2003
	Page TRM / B 3.7-34	12/03/2004
	Page TRM / B 3.7-35	07/05/2000
	Pages TRM / B 3.7-36 through TRM / B 3.7-39	04/01/2009
	Page TRM / B 3.7-40	04/08/2010
B 3.8	ELECTRICAL POWER BASES	
	Page TRM / B 3.8-1	04/02/2002
	Pages TRM / B 3.8-2 and TRM / B 3.8-2	01/28/2005
	Page TRM / B 3.8-2a	03/01/2010
	Page TRM / B 3.8-3	04/02/2002
	Page TRM / B 3.8-3a	04/02/2002
	Page TRM / B 3.8-4	08/10/2004
	Page TRM / B 3.8-4a	04/02/2002
	Page TRM / B 3.8-5	08/31/1998
	Pages TRM / B 3.8-6 through TRM / B 3.8-16	04/02/2002
	Page TRM / B 3.8-17	01/28/2005
	Pages TRM / B 3.8-18 through TRM / B 3.8-20	11/29/2006
	Pages TRM / B 3.8-21 through TRM / B 3.8-24	05/28/2009
B.3.9	REFUELING OPERATIONS BASES	
	Pages B 3.9-1 through B 3.9-7	08/31/1998
B 3.10	MISCELLANEOUS BASES	
	Page B 3.10-1	08/31/1998
	Pages TRM / B 3.10-2 and TRM / B 3.10-3	03/22/2006
	Pages TRM / B 3.10-4 and TRM / B 3.10-5	08/23/1999

Section	Title	Effective Date
B 3.11	RADIOACTIVE EFFLUENTS BASES	
	Pages B 3.11-1 through B 3.11-9	08/30/1998
	Page TRM / B 3.11-10	02/01/1999
	Pages TRM/B 3.11-11 and TRM/B 3.11-11a	04/07/2000
	Pages TRM/B 3.11-12 and TRM/B 3.11-13	02/01/1999
	Page TRM / B 3.11-14	12/03/2004
	Page TRM / B 3.11-15	02/01/1999
	Pages B 3.11-16 through B 3.11-19	08/30/1998
	Page TRM / B 3.11-20	04/02/2002
	Page TRM / B 3.11-20a	04/02/2002
	Page TRM / B 3.11-21	05/13/2005
	Pages TRM / B 3.11-22 and TRM / B 3.11.23	11/14/2006
	Page TRM / B 3.11.23a	05/13/2005
	Pages TRM / B 3.11-24 and TRM / B 3.11-25	01/21/2004
	Pages B 3.11-26 and B 3.11-27	08/30/1998
	Pages TRM / B 3.11-28 and TRM / B 3.11-29	11/30/2005
	Page TRM / B 3.11-30	06/30/2010
	Pages B 3.11-31 and B 3.11-32	08/30/1998
	Page TRM / B 3.11-33	06/30/2010
	Pages TRM / B 3.11-34 and TRM / B 3.11-35	08/30/1998
	Page TRM / B 3.11-36	02/12/1999
B.3.12	LOADS CONTROL PROGRAM BASES	
	Page TRM / B 3.12-1	09/19/2007
	Page TRM / B 3.12-2	11/29/2010
	Page TRM / B 3.12-3	02/05/1999

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1/12/2011

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)	≤ 18% of RATED THERMAL POWER
2.2.1.3	3.3.1.1	Average Power Range Monitor, Simulated Thermal Power – High, Two Loop Operation	0.55 W + 58.7%
2.2.1.4	3.3.1.1	Average Power Range Monitor, Simulated Thermal Power – High, Single Loop Operation	0.55 (W- ΔW) + 58.7%[b]
2.2.1.5	3.3.1.1	Average Power Range Monitor, Simulated Thermal Power – High, Clamp	≤ 113.5% of RATED THERMAL POWER
2.2.1.6	3.3.1.1	Average Power Range Monitor, 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
[b] For Single loop operation, the value of ΔW = 8.7

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	3.3.1.1	Sp PBA Amplitude Trip	See COLR – TRO 3.2
2.2.1.16.2	3.3.1.1	Np P̃BA Successive Confirmation Count Trip	See COLR – TRO 3.2
2.2.1.16.3	[3.3.9]	TOL (ε) Period Tolerance	0.10 sec
2.2.1.16.4	[3.3.9]	fc Conditioning Filter Cutoff Frequency	1.50 Hz
2.2.1.16.5	[3.3.9]	Tmin Oscillation Period Lower Time Limit	1.00 sec
2.2.1.16.6	[3.3.9]	Tmax Oscillation Period Upper Time Limit	3.50 sec
2.2.1.16.7	[3.3.9]	LPRMmin Minimum LRPMs/Cell Required for Cell Operability	2
2.2.1.16.8	[3.3.9]	S1 Peak Threshold Setpoint/ABA & GRBA	1.20
2.2.1.16.9	[3.3.9]	S2 Valley Threshold Setpoint/ABA & GRBA	0.85
2.2.1.16.10	[3.3.9]	Smax Amplitude Trip Setpoint/ABA	1.50
2.2.1.16.11	[3.3.9]	DR3 Growth Rate Factor Setpoint/GRBA	1.60
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	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 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	≤ 173 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		This Section is not used.	
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		This Section is not used.	
2.2.2.4.6	3.3.6.1	RWCU Pump Area Temperature - High	≤ 147°F
2.2.2.4.7		This Section is not used.	
2.2.2.4.8	3.3.6.1	RWCU Heat Exchanger Area Temperature - High	≤ 147°F
2.2.2.4.9		This Section is not used.	

(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		This section is not used.	
2.2.2.5.9		This section is not used.	
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		This section is not used.	
2.2.2.6.9		This section is not used.	
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	≥ 40.5 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	See COLR TRO 3.2
	3.3.2	Intermediate Power Range - Upscale	See COLR TRO 3.2
	3.3.2	High Power Range - Upscale	See COLR TRO 3.2
2.2.7.1.2	3.3.2	Low Power Range Setpoint	See COLR TRO 3.2
	3.3.2	Intermediate Power Range Setpoint	See COLR TRO 3.2
	3.3.2	High Power Range Setpoint	See COLR TRO 3.2
2.2.7.2	APRM		
2.2.7.2.1	[3.1.3]	Simulated Thermal Power-High - Two Loop Operation	0.55W + 54.2%
2.2.7.2.2	[3.1.3]	Simulated Thermal Power-High - Single Loop Operation	0.55 (W-ΔW) + 54.2% [c]
2.2.7.2.3	[3.1.3]	Simulated Thermal Power-High - Clamp	≤ 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	≥ 3.0 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%

(continued)

[b] With a signal-to-noise ratio ≥ 2, or within the limits of Figure 2.2-2.

[c] For single loop operation, the value of ΔW = 8.7

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

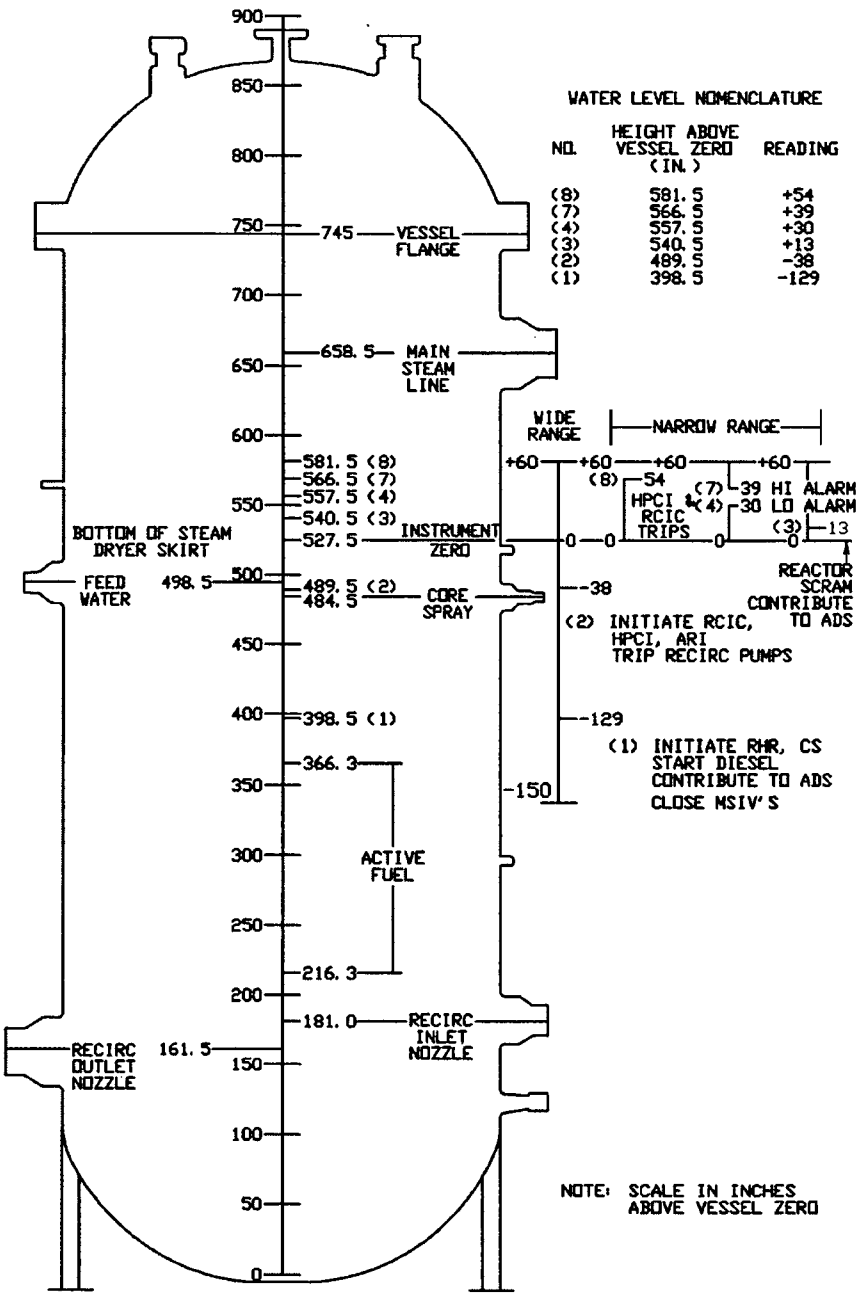

FIGURE 2.2-1
REACTOR VESSEL WATER LEVEL

Instrument Trip Setpoint Table 2.2

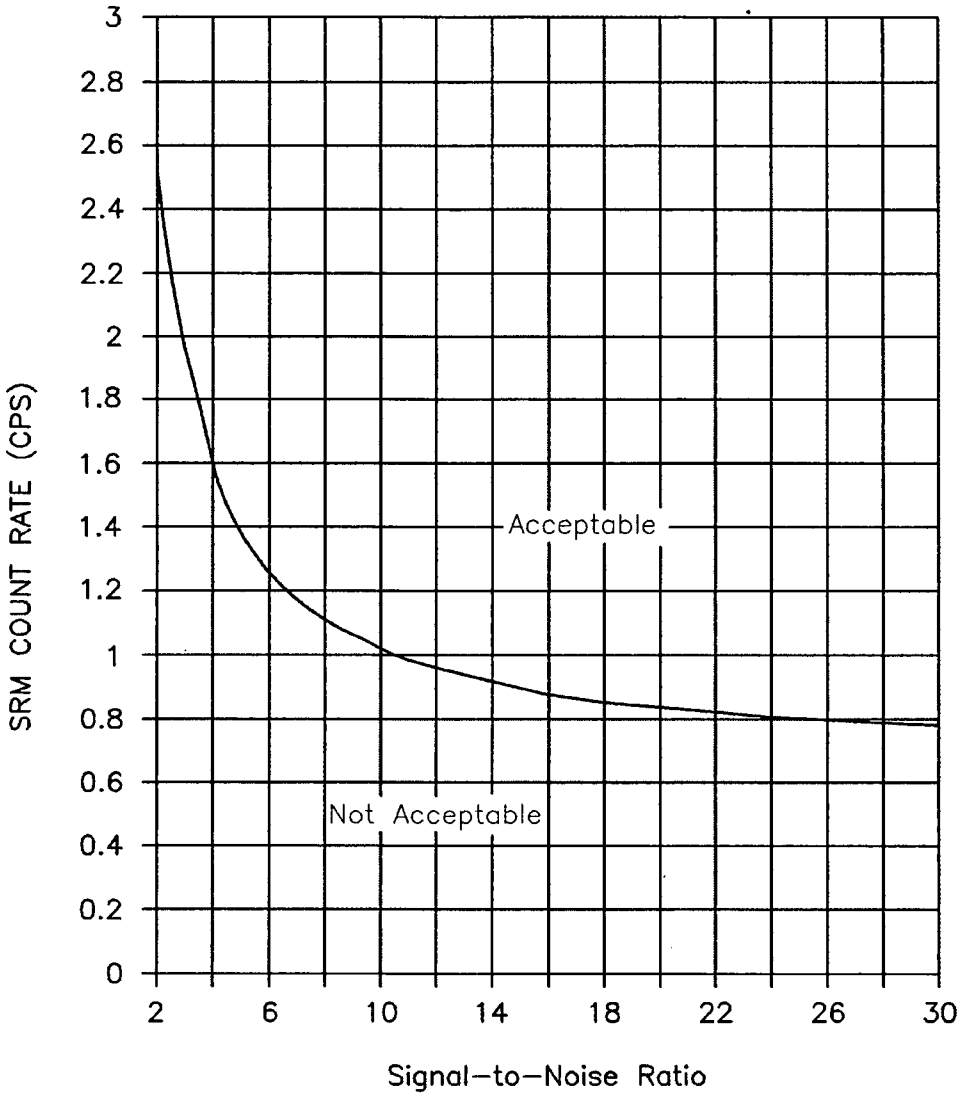

Figure 2.2–2
Minimum SRM Trip Setpoint Versus Signal–to–Noise Ratio

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 ----------

1. Penetration flow paths isolated to comply with Action C may be unisolated intermittently under administrative controls.
2. 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 2.a AND 24 hours for Functions other than Function 2.a
B. One or more Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Initiate appropriate compensatory measures for the degraded condition.	24 hours

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. 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. Shutdown Cooling System Isolation (b)				
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) Radiation detectors are exempt from response time testing.

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

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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) Turbine Building Main Steam Line Tunnel Temperature - High, and

(c) 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.

The 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 two Notes. Note 1 allows penetration flow path(s) 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 communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated. Note 2 is provided to modify the ACTIONS for separate Condition entry, consistent with similar Note in the TS 3.3.6.1 Actions.

Condition C applies if the channel is not restored to OPERABLE status or placed in trip, or isolation capability is not restored, within the allowed Completion Time. If inoperable channels should not be placed in trip (e.g., might result in a undesirable transient) Action C may be intentionally entered as a result of not meeting Required Action A.1 in its required Completion Time. Required Action C.1 requires appropriate compensatory measures be in place within the following 24 hours. Examples of appropriate compensatory measures may consist of verifying that diverse isolation functions remain OPERABLE. Furthermore, isolating the penetration (e.g., as may be required by TS Actions for an inoperability affecting both the TRM Function and a required TS Function) also provides adequate compensatory actions since isolating the affected penetration flow path(s) accomplishes the safety function of the inoperable channels. If it is not desired to isolate the affected penetration flow path(s) (e.g., as in the case where isolating the penetration flow path(s) could result in a reactor scram or disabling RHR-SDC), alternate compensatory measures should be pursued. The 24 hour Completion Time is acceptable due to the fact that these Functions are not assumed in any accident or transient analysis in the FSAR.

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."

(continued)

B 3.3.6 TRM Isolation Actuation Instrumentation

BASES (continued)

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

The response time testing of Function 2.a is per FSAR Table 7.3-29.

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-141F022A	MSIV	1.a
	HV-141F022B	MSIV	1.a
	HV-141F022C	MSIV	1.a
	HV-141F022D	MSIV	1.a
	HV-141F028A	MSIV	1.a
	HV-141F028B	MSIV	1.a
	HV-141F028C	MSIV	1.a
	HV-141F028D	MSIV	1.a
	HV-141F016	MSL Drain Isolation Valve	1.a
	HV-141F019	MSL Drain Isolation Valve	1.a
Reactor Recirculation	HV-143F019	Reactor Coolant Sample Valve	2.a
	HV-143F020	Reactor Coolant Sample Valve	2.a
RHR	HV-151F022	RHR - Reactor Vessel Head Spray Valve	3.a
RHR	HV-151F022	RHR - Reactor Vessel Head Spray Valve	3.a
	HV-151F023	RHR - Reactor Vessel Head Spray Valve	3.a
	HV-151F008	RHR Shutdown Cooling Valve	3.a
	HV-151F009	RHR Shutdown Cooling Valve	3.a