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TRM2 - TECHNICAL REQUIREMENTS MANUAL UNIT 2

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SSSES MANUAL

Manual Name: TRM2

Manual Title: TECHNICAL REQUIREMENTS MANUAL UNIT 2

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3.3.11	MVP Isolation Instrumentation	10/22/2003
3.3.12	Water Monitoring Instrumentation	02/19/2015
3.4	REACTOR COOLANT SYSTEM	
3.4.1	Reactor Coolant System Chemistry	03/31/2006
3.4.2	Section Not Used	04/02/2009
3.4.3	High/Low Pressure Interface Leakage Monitors	10/31/2007
3.4.4	Reactor Recirculation Flow and Rod Line Limit	04/17/2009
3.4.5	Reactor Vessel Materials	03/31/2006
3.4.6	Reactor Recirculation Single Loop Operation (SLO) Flow Rate Restriction	04/24/2013

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3.5	EMERGENCY CORE COOLING AND RCIC	
3.5.1	ADS Manual Inhibit	01/28/2005
3.5.2	ECCS and RCIC System Monitoring Instrumentation	10/31/2007
3.5.3	Long Term Nitrogen Supply to ADS	08/31/1998
3.6	CONTAINMENT	
3.6.1	Venting or Purging	08/31/1998
3.6.2	Suppression Chamber-to-Drywell Vacuum Breaker Position Indication	04/16/2014
3.6.3	Suppression Pool Alarm Instrumentation	01/07/2002
3.6.4	Primary Containment Closed System Boundaries	12/31/2002
3.7	PLANT SYSTEMS	
3.7.1	Emergency Service Water System (ESW) Shutdown	07/29/1999
3.7.2	Ultimate Heat Sink (UHS) and Ground Water Level	08/31/1998
3.7.3.1	Fire Suppression Water Supply System	01/26/2017
3.7.3.2	Spray and Sprinkler Systems	04/07/2009
3.7.3.3	CO ₂ Systems	05/09/2016
3.7.3.4	Halon Systems	08/02/1999
3.7.3.5	Fire Hose Station	08/02/1999
3.7.3.6	Yard Fire Hydrants and Hydrant Hose Houses	08/02/1999
3.7.3.7	Fire Rated Assemblies	03/31/2006
3.7.3.8	Fire Detection Instrumentation	12/15/2017
3.7.4	Solid Radwaste System	03/31/2006
3.7.5.1	Main Condenser Offgas Hydrogen Monitor	02/19/2015
3.7.5.2	Main Condenser Offgas Explosive Gas Mixture	08/31/1998
3.7.5.3	Liquid Holdup Tanks	03/31/2006
3.7.6	ESSW Pumphouse Ventilation	05/24/2012
3.7.7	Main Condenser Offgas Pretreatment Logarithmic Radiation Monitoring Instrumentation	09/04/2008
3.7.8	Snubbers	02/19/2015
3.7.9	Control Structure HVAC	08/16/2006
3.7.10	Spent Fuel Storage Pools (SFSPs)	12/03/2004
3.7.11	Structural Integrity	09/25/2009

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3.8	ELECTRICAL POWER	
3.8.1	Primary Containment Penetration Conductor Overcurrent Protective Devices	06/12/2012
3.8.2.1	Motor Operated Valves (MOV) Thermal Overload Protection - Continuous	10/31/2007
3.8.2.2	Motor Operated Valves (MOV) Thermal Overload Protection - Automatic	12/03/2004
3.8.3	Diesel Generator (DG) Maintenance Activities	06/12/2012
3.8.4	24 VDC Electrical Power Subsystem	01/28/2005
3.8.5	Degraded Voltage Protection	11/07/2013
3.8.6	Emergency Switchgear Room Cooling	06/11/2012
3.8.7	Battery Monitoring and Maintenance Program	10/20/2009
3.9	REFUELING OPERATIONS	
3.9.1	Decay Time	08/31/1998
3.9.2	Communications	08/31/1998
3.9.3	Refueling Platform	08/31/1998
3.10	MISCELLANEOUS	
3.10.1	Sealed Source Contamination	03/31/2006
3.10.2	Shutdown Margin Test RPS Instrumentation	03/27/2007
3.10.3	Independent Spent Fuel Storage Installation (ISFSI)	06/10/2010
3.11	RADIOACTIVE EFFLUENTS	
3.11.1.1	Liquid Effluents Concentration	03/31/2006
3.11.1.2	Liquid Effluents Dose	03/31/2006
3.11.1.3	Liquid Waste Treatment System	03/31/2006
3.11.1.4	Liquid Radwaste Effluent Monitoring Instrumentation	10/09/2012
3.11.1.5	Radioactive Liquid Process Monitoring Instrumentation	02/19/2015
3.11.2.1	Radioactive Effluents Dose Rate	03/21/2006
3.11.2.2	Dose - Noble Gases	03/31/2006
3.11.2.3	Dose - Iodine, Tritium, and Radionuclides in Particulate Form	03/31/2006
3.11.2.4	Gaseous Radwaste Treatment System	04/02/2002
3.11.2.5	Ventilation Exhaust Treatment System	06/18/2013
3.11.2.6	Radioactive Gaseous Effluent Monitoring Instrumentation	07/20/2017
3.11.3	Total Dose	03/31/2006
3.11.4.1	Monitoring Program	02/19/2015
3.11.4.2	Land Use Census	03/31/2006
3.11.4.3	Interlaboratory Comparison Program	03/31/2006

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3.12	LOADS CONTROL PROGRAM	
3.12.1	Crane Travel - Spent Fuel Storage Pool	02/05/1999
3.12.2	Heavy Loads Requirements	03/14/2008
3.12.3	Light Loads Requirements	02/05/1999
4.0	ADMINISTRATIVE CONTROLS	
4.1	Organization Controls Organization	08/31/1998
4.2	Reportable Event Action	08/31/1998
4.3	Safety Limit Violation	08/31/1997
4.4	Procedures and Programs	12/11/2008
4.5	Reporting Requirements	08/31/1998
4.5.1	Startup Reports	08/31/1998
4.5.2	Annual Reports	08/31/1998
4.5.3	Special Reports	08/31/1998
4.6	Radiation Protection Program	08/31/1998
4.7	Training	08/31/1998

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B 3.0	APPLICABILITY BASES	
B 3.0	Technical Requirement Surveillance (TRS)	02/09/2015
B3.1	REACTIVITY CONTROL SYSTEMS BASES	
B 3.1.1	Anticipated Transient Without Scram Alternate Rod Injection (ATWS-ARI) Instrumentation	04/16/2014
B 3.1.2	Control Rod Drive (CRD) Housing Support	08/31/1998
B 3.1.3	Control Rod Block Instrumentation	12/15/2017
B 3.1.4	Control Rod Scram Accumulators Instrumentation and Check Valve	02/18/1999
B3.2	CORE OPERATING LIMITS BASES	
B 3.2.1	Core Operating Limits Report (COLR)	08/31/1999
B 3.3	INSTRUMENT BASES	
B 3.3.1	Radiation Monitoring Instrumentation	01/21/2014
B 3.3.2	Seismic Monitoring Instrumentation	03/10/2011
B 3.3.3	Meteorological Monitoring Instrumentation	10/31/2007
B 3.3.4	TRM Post-Accident Monitoring Instrumentation	07/20/2017
B 3.3.5	Section Not Used	10/31/2007
B 3.3.6	TRM Isolation Actuation Instrumentation	02/21/2014
B 3.3.7	Turbine Overspeed Protection System	11/04/2015
B 3.3.8	Section Not Used	10/22/2003
B 3.3.9	OPRM Instrumentation	04/17/2009
B 3.3.10	Reactor Recirculation Pump MG Set Stops	02/16/2012
B 3.3.11	MVP Isolation Instrumentation	10/22/2003
B 3.3.12	Water Monitoring Instrumentation	04/07/2009
B 3.4	REACTOR COOLANT SYSTEM BASES	
B 3.4.1	Reactor Coolant System Chemistry	08/31/1998
B 3.4.2	Section Not Used	04/01/2009
B 3.4.3	High/Low Pressure Interface Leakage Monitor	10/31/2007
B 3.4.4	Reactor Recirculation Flow and Rod Line Limit	10/15/1999
B 3.4.5	Reactor Vessel Materials	08/31/1999
B 3.4.6	Reactor Recirculation Single Loop Operation (SLO) Flow Rate Restriction	04/25/2013
B 3.5	ECCS AND RCIC BASES	
B 3.5.1	ADS Manual Inhibit	08/31/1998
B 3.5.2	ECCS and RCIC System Monitoring Instrumentation	10/31/2007
B 3.5.3	Long Term Nitrogen Supply to ADS	10/31/2007

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B 3.6.2	Suppression Chamber-to-Drywell Vacuum Breaker Position Indication	08/31/1998
B 3.6.3	Suppression Pool Alarm Instrumentation	04/04/2007
B 3.6.4	Primary Containment Closed System Boundaries	12/03/2004
B 3.7	PLANT SYSTEMS BASES	
B 3.7.1	Emergency Service Water System (Shutdown)	08/31/1998
B 3.7.2	Ultimate Heat Sink (UHS) Ground Water Level	08/31/1998
B 3.7.3.1	Fire Suppression Water Supply System	01/26/2017
B 3.7.3.2	Spray and Sprinkler Systems	03/31/2006
B 3.7.3.3	CO ₂ Systems	08/02/1999
B 3.7.3.4	Halon Systems	04/11/2014
B 3.7.3.5	Fire Hose Stations	03/31/2006
B 3.7.3.6	Yard Fire Hydrants and Hydrant Hose Houses	08/02/1999
B 3.7.3.7	Fire Rated Assemblies	09/25/2012
B 3.7.3.8	Fire Detection Instrumentation	09/25/2012
B 3.7.4	Solid Radwaste System	02/01/1999
B 3.7.5.1	Main Condenser Offgas Hydrogen Monitor	08/31/1998
B 3.7.5.2	Main Condenser Offgas Explosive Gas Mixture	08/31/1998
B 3.7.5.3	Liquid Holdup Tanks	08/31/1998
B 3.7.6	ESSW Pumphouse Ventilation	05/29/2013
B 3.7.7	Main Condenser Offgas Pretreatment Logarithmic Radiation Monitoring Instrumentation	01/30/2008
B 3.7.8	Snubbers	01/21/2014
B 3.7.9	Control Structure HVAC	11/30/2011
B 3.7.10	Spent Fuel Storage Pools	12/03/2004
B 3.7.11	Structural Integrity	04/08/2010
B 3.8	ELECTRICAL POWER BASES	
B 3.8.1	Primary Containment Penetration Conductor Overcurrent Protective Devices	03/10/2010
B 3.8.2.1	Motor Operated Valves (MOV) Thermal Overload Protection - Continuous	04/02/2002
B 3.8.2.2	Motor Operated Valves (MOV) Thermal Overload Protection - Automatic	09/03/2004
B 3.8.3	Diesel Generator (DG) Maintenance Activities	08/31/1998
B 3.8.4	24 VDC Electrical Power Subsystem	04/02/2002
B 3.8.5	Degraded Voltage Protection	11/07/2013
B 3.8.6	Emergency Switchgear Room Cooling	06/11/2012
B 3.8.7	Battery Monitoring and Maintenance Program	05/29/2013

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<u>Section</u>	<u>Title</u>	<u>Effective Date</u>
B.3.9	REFUELING OPERATIONS BASES	
B 3.9.1	Decay Time	08/31/1998
B 3.9.2	Communications	08/31/1998
B 3.9.3	Refueling Platform	10/23/1998
B 3.10	MISCELLANEOUS BASES	
B 3.10.1	Sealed Source Contamination	08/31/1998
B 3.10.2	Shutdown Margin Test RPS Instrumentation	03/27/2007
B 3.10.3	Independent Spent Fuel Storage Installation (ISFSI)	08/23/1999
B 3.11	RADIOACTIVE EFFLUENTS BASES	
B 3.11.1.1	Liquid Effluents Concentration	04/28/2016
B 3.11.1.2	Liquid Effluents Dose	08/31/1998
B 3.11.1.3	Liquid Waste Treatment System	08/31/1998
B 3.11.1.4	Liquid Radwaste Effluent Monitoring Instrumentation	08/31/1998
B 3.11.1.5	Radioactive Liquid Process Monitoring Instrumentation	04/07/2000
B 3.11.2.1	Dose Rate	02/01/1999
B 3.11.2.2	Dose - Noble Gases	08/31/1998
B 3.11.2.3	Dose - Iodine, Tritium, and Radionuclides in Particulate Form	08/31/1998
B 3.11.2.4	Gaseous Radwaste Treatment System	04/02/2002
B 3.11.2.5	Ventilation Exhaust Treatment System	06/18/2013
B 3.11.2.6	Radioactive Gaseous Effluent Monitoring Instrumentation	08/11/2016
B 3.11.3	Total Dose	08/31/1998
B 3.11.4.1	Monitoring Program	02/19/2015
B 3.11.4.2	Land Use Census	08/31/1998
B 3.11.4.3	Interlaboratory Comparison Program	02/02/1999
B.3.12	LOADS CONTROL PROGRAM BASES	
B 3.12.1	Crane Travel - Spent Fuel Storage Pool	09/19/2007
B 3.12.2	Heavy Loads Requirements	11/29/2010
B 3.12.3	Light Loads Requirements	02/05/1999

3.1 Reactivity Control Systems

3.1.3 Control Rod Block Instrumentation

TRO 3.1.3 The control rod block instrumentation for each function in Table 3.1.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.1.3-1

ACTIONS

-----NOTE-----

Separate condition entry is allowed for each channel

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Enter the Condition referenced in Table 3.1.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.1.3-1.	B.1 Place at least one inoperable channel in the tripped condition.	1 hour from discovery of loss of trip capability
	<u>AND</u> B.2 Place the inoperable channel in the tripped condition.	7 days
C. As required by Required Action A.1 and referenced in Table 3.1.3-1.	C.1 Place the inoperable channel in the tripped condition.	12 hours
D. Required Actions and Completion Time of Conditions B or C not met.	D.1 Suspend Control Rod withdrawal.	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

-----NOTES-----

1. Refer to Table 3.1.3-1 to determine which TRSs apply for each Control Rod Block Function.
2. Neutron detectors may be excluded from CHANNEL CALIBRATION.
3. 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 at least one other OPERABLE channel in the same trip system is monitoring that parameter.

SURVEILLANCE		FREQUENCY
TRS 3.1.3.1	Perform CHANNEL CHECK	12 hours
TRS 3.1.3.2	<p>-----NOTE----- For Function 1.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</p> <p>-----</p> <p>Perform CHANNEL FUNCTIONAL TEST</p>	184 days
TRS 3.1.3.3	Perform CHANNEL FUNCTIONAL TEST	31 days
TRS 3.1.3.4	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.1.3.5	Perform CHANNEL CALIBRATION	184 days
TRS 3.1.3.6	<p>-----NOTE----- Neutron Detectors are excluded.</p> <p>-----</p> <p>Perform CHANNEL CALIBRATION</p>	24 months
TRS 3.1.3.7	Perform LOGIC SYSTEM FUNCTIONAL TEST	24 months

TABLE 3.1.3-1 (Page 1 of 2)
CONTROL ROD BLOCK INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. APRM					
a. Neutron Flux - High (Setdown)	2, 5 ^(a)	3	B	TRS 3.1.3.2 TRS 3.1.3.6	≤ 14% RTP
b. Simulated Thermal Power - High	1	3	B	TRS 3.1.3.2 TRS 3.1.3.6	0.55 W + 56.2% ^(b)
c. Downscale	1	3	B	TRS 3.1.3.2 TRS 3.1.3.6	≥ 3% RTP
d. Inop	1, 2	3	B	TRS 3.1.3.2	NA
	5 ^(a)	3	B	TRS 3.1.3.2	NA
2. Source Range Monitors					
a. Detector not full in	2 ^(c)	3	B	TRS 3.1.3.3 TRS 3.1.3.7	NA
	5 ^(j)	2	B	TRS 3.1.3.3 TRS 3.1.3.7	NA
b. Upscale	2 ^(d)	3	B	TRS 3.1.3.3 TRS 3.1.3.6 TRS 3.1.3.7	≤ 3.3E5 cps
	5 ^(j)	2	B	TRS 3.1.3.3 TRS 3.1.3.6 TRS 3.1.3.7	≤ 3.3E5 cps
c. Inop	2 ^(d)	3	B	TRS 3.1.3.3 TRS 3.1.3.7	NA
	5 ^(j)	2	B	TRS 3.1.3.3 TRS 3.1.3.7	NA

(continued)

^(a) When performing Shutdown Margin Demonstration per Technical Specification 3.10.8.^(b) 0.55 (W - ΔW) + 56.2% when reset for single loop operation per LCO 3.4.1, "Recirculation Loops Operating." For single loop operation, the value of ΔW = 8.7.^(c) When not automatically bypassed with SRM counts ≥ 100 cps or the IRM channels on range 3 or higher.^(d) When not automatically bypassed with IRM channels on range 8 or higher.^(j) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

TABLE 3.1.3-1 (Page 2 of 2)
CONTROL ROD BLOCK INSTRUMENTATION

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
d. Downscale	2 ^(e)	3	B	TRS 3.1.3.3 TRS 3.1.3.6 TRS 3.1.3.7	≥ 1.8 cps ^(f)
	5 ^{(g) (i)}	2	B	TRS 3.1.3.3 TRS 3.1.3.6 TRS 3.1.3.7	≥ 1.8 cps ^(f)
3. Intermediate Range Monitors					
a. Detector not full in	2, 5 ^(f)	6	B	TRS 3.1.3.3 TRS 3.1.3.7	NA
b. Neutron Flux - High	2, 5 ^(f)	6	B	TRS 3.1.3.1 TRS 3.1.3.3 TRS 3.1.3.5 TRS 3.1.3.7	≤ 110/125 divisions of full scale
c. Inop	2, 5 ^(f)	6	B	TRS 3.1.3.3 TRS 3.1.3.7	NA
d. Downscale	2 ^(g) 5 ^(f)	6	B	TRS 3.1.3.1 TRS 3.1.3.3 TRS 3.1.3.5 TRS 3.1.3.7	3/125 divisions of full scale
4. Scram Discharge Volume Water Level-High	1, 2, 5 ^(h)	2	C	TRS 3.1.3.4 TRS 3.1.3.6	≤ 36.5 gallons
5. Reactor Coolant System Recirculation Flow					
a. Upscale	1	3	C	TRS 3.1.3.2 TRS 3.1.3.6	≤ 117/125 divisions of full scale

(e) When not automatically bypassed with IRMs on range 3 or higher.

(f) With a signal-to-noise ratio ≥ 2, or within the limits of TS Figure 3.3.1.2-1.

(g) When not automatically bypassed with IRM channels on range 1.

(h) When more than one control rod is withdrawn. Not applicable to control rods removed per Technical Specification 3.10.5 or 3.10.6.

(i) Not required when eight or fewer fuel assemblies (adjacent to the SRMs) are in the core.

(j) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

3.7.3 Fire Protection

3.7.3.8 Fire Detection Instrumentation

TRO 3.7.3.8 The fire detection instrumentation for each fire detection zone shown in Table 3.7.3.8-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the fire detection instrument is required to be OPERABLE.

ACTIONS

NOTE

1. Separate condition entry is allowed for each instrument.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The number of OPERABLE fire detection instruments less than the Minimum Instruments Operable requirement of Table 3.7.3.8-1	A.1 Establish an hourly fire watch patrol	1 hour
	<u>AND</u>	
	A.2.1 Inspect the accessible zone(s) with inoperable instrument(s)	Once per hour
B. Communication between Control Room and a Local Control Panel with local monitoring capability is not operable.	<u>OR</u>	
	A.2.2 Inspect the affected area surrounding any inaccessible zones	Once per hour
	B. Establish an hourly fire watch for Local Control Panel Monitoring	1 hour
	<u>AND</u>	
	B.2.1 Monitor status for the instruments reporting to the Local Control Panel.	Once per hour

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
<p>-----NOTE-----</p> <p>When a detector 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 15 minutes to allow for the individual detector trip to clear.</p> <p>-----</p>		
TRS 3.7.3.8.1	Perform CHANNEL FUNCTIONAL TEST on accessible fire detection instruments.	12 months
TRS 3.7.3.8.2	Verify that the supervised circuits supervision associated with the detector alarms of each of the fire detection instruments listed in Table 3.7.3.8-1 are OPERABLE.	12 months
TRS 3.7.3.8.3	Perform CHANNEL FUNCTIONAL TEST on inaccessible fire detection instruments.	Prior to startup from each COLD SHUTDOWN exceeding 48 hours unless performed in the previous 12 months
TRS 3.7.3.8.4	Perform CHANNEL FUNCTIONAL TEST on heat detectors fixed-temperature, non-restorable line type fire detection instrument.	18 months

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION		ELEV.	INSTRUMENT OPERABLE			
FIRE ZONE	ROOM OR AREA		HEAT		SMOKE	
			TOTAL	MIN.	TOTAL	MIN.
<i>a.</i>	<i>Control Building</i>					
0-21A	Common Equipment Room Elevator Lobby	656'-0"	NA	NA	1	1
0-22A	Above Ceiling/Filter Area	687'-8"	NA	NA	10	5
0-22A	Elevator Lobby	676'-0"	NA	NA	1	1
0-22A	Chem Lab 0F135 High Temp. Alarm	687'-10"	2	1	NA	NA
	Chem Lab DS-021	687'-10"	2	1	NA	NA
	Chem Lab 0F138 High Temp. Alarm	687'-10"	2	1	NA	NA
	Chem Lab DS-022	687'-10"	2	1	NA	NA
	Chem Lab 0F141 High Temp. Alarm	687'-10"	2	1	NA	NA
	Chem Lab DS-023	687'-10"	2	1	NA	NA
	Chem Lab 0F144 High Temp. Alarm	687'-10"	2	1	NA	NA
	Chem Lab DS-024	687'-10"	2	1	NA	NA
0-23	Egress Corridor to South Stairwell	686'-6"	NA	NA	1	1
	C-134 Storage (HCVS ROS Area)	686'-6"	NA	NA	1	1
0-24A	UPS Panel Room U-2	698'-0"	4	2	2	1
0-24B	Corridor	698'-0"	NA	NA	3	2
0-24B	Corridor Elevator Lobby	698'-0"	NA	NA	1	1
0-24D	U1 Lower Relay Room	698'-0"	4	2	4	2
0-24E	Computer Room	698'-0"	NA	NA	6	3
0-24E	Computer Room (Above Ceiling)	698'-0"	12	6	4	2
0-24E	Computer Room 1U720	697'-0"	NA	NA	4	2
	PGCC Underfloor 1U722	697'-0"	NA	NA	4	2
	1U724	697'-0"	NA	NA	4	2
	1U726	697'-0"	NA	NA	4	2
	2U721	697'-0"	NA	NA	4	2
	2U723	697'-0"	NA	NA	4	2
	2U725	697'-0"	NA	NA	4	2
	2U727	697'-0"	NA	NA	4	2
0-24F	Computer Maintenance Rm and Office	698'-0"	NA	NA	2	1
0-24G	U2 Lower Relay Room	698'-0"	4	2	4	2
0-24G	U-2 Lower Relay Room 2U704	697'-0"	11	6	6	3
	PGCC Halon Panel 2U705	697'-0"	11	6	6	3
	Division II 2U706	697'-0"	11	6	6	3
	2U731	697'-0"	10	5	6	3
	2U732	697'-0"	11	6	6	3

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION			INSTRUMENT OPERABLE			
FIRE ZONE	ROOM OR AREA	ELEV.	HEAT		SMOKE	
			TOTAL	MIN.	TOTAL	MIN.
0-24J	South Cable Chase	698'-0"	1	1	NA	NA
0-24L	Center Cable Chase	698'-0"	1	1	NA	NA
0-24M	North Cable Chase	698'-0"	1	1	NA	NA
0-25A	U-2 Lower Cable Spreading Room	714'-0"	20	10	6	3
0-25B	South Cable Chase	714'-0"	1	1	NA	NA
0-25C	Center Cable Chase	714'-0"	1	1	NA	NA
0-25D	North Cable Chase	714'-0"	1	1	NA	NA
0-25E	U-1 Lower Cable Spreading Room	714'-0"	26	13	5	3
0-25E	U-1 Lower Cable Spreading Room Elevator Lobby	714'-0"	NA	NA	1	1
0-26A	Copy Room	729'-1"	NA	NA	1	1
0-26B	South Cable Chase	729'-1"	NA	NA	1	1
0-26C	Center Cable Chase	729'-1"	NA	NA	1	1
0-26D	North Cable Chase	729'-1"	NA	NA	1	1
0-26E	Locker Room	729'-1"	NA	NA	1	1
0-26F	Vestibule Elevator Lobby	729'-1"	NA	NA	1	1
0-26F	Vestibule (Under Floor)	728'-1"	NA	NA	1	1
0-26G	Shift Office	729'-1"	NA	NA	1	1
0-26G	Shift Office (Under Floor)	728'-1"	NA	NA	2	1
0-26H	Control Room (Under Floor Unit 1)	728'-1"	NA	NA	15	8
0-26H	Control Room (Under Floor Unit 2)	728'-1"	NA	NA	12	6
0-26H	Control Room	729'-1"	NA	NA	10	5
0-26H	Control Room (Above Ceiling)	729'-1"	NA	NA	9	5
0-26I	Operational Support Center	729'-1"	NA	NA	1	1
0-26I	Operational Support Center (Under Floor)	728'-1"	NA	NA	2	1
0-26J	Vestibule	729'-1"	NA	NA	1	1
0-26J	Vestibule (Under Floor)	728'-1"	NA	NA	1	1
0-26K	Technical Support Center	741'-1"	NA	NA	10	5
0-26K	Technical Support Center Elevator Lobby	741'-1"	NA	NA	1	1
0-26K	Technical Support Center (Above Ceiling)	741'-1"	NA	NA	5	3
0-26L	Conference Room	741'-1"	NA	NA	6	3
0-26L	Conference Room (Above Ceiling)	741'-1"	NA	NA	2	1
0-26M	U-1 TSC Soffit	729'-1"	NA	NA	2	1
0-26M	U-1 TSC Soffit	741'-1"	NA	NA	2	1
0-26N	U-1 Control Room Soffit	741'-1"	NA	NA	2	1
0-26P	U-2 Control Room Soffit	741'-1"	NA	NA	2	1
0-26R	U-2 TSC Soffit	729'-1"	NA	NA	2	1
0-26R	U-2 TSC Soffit	741'-1"	NA	NA	2	1

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION			INSTRUMENT OPERABLE				
FIRE ZONE	ROOM OR AREA	ELEV.	HEAT		SMOKE		
			TOTAL	MIN.	TOTAL	MIN.	
0-26S	South Cable Chase	741'-1"	1	1	NA	NA	
0-26T	Center Cable Chase	741'-1"	1	1	NA	NA	
0-26V	North Cable Chase	741'-1"	1	1	NA	NA	
0-27A	U-2 Upper Relay Room	754'-0"	4	2	3	2	
0-27A	U-2 Upper Relay Room	2U700	753'-0"	11	6	6	3
	PGCC Halon Panel	2U701	753'-0"	11	6	6	3
	Division I	2U702	753'-0"	11	6	6	3
		2U703	753'-0"	11	6	6	3
		2U730	753'-0"	11	6	6	3
0-27B	U-2 Upper Cable Spreading Room	753'-0"	24	12	5	3	
0-27C	U-1 Upper Cable Spreading Room	753'-0"	23	12	7	4	
0-27C	U-1 Upper Cable Spreading Room Elevator Lobby	754'-0"	NA	NA	1	1	
0-27D	Electrician's Office	754'-0"	2	1	1	1	
0-27E	U-1 Upper Relay Room	754'-0"	4	2	2	1	
0-27F	South Cable Chase	754'-0"	1	1	NA	NA	
0-27G	Center Cable Chase	754'-0"	1	1	NA	NA	
0-27H	North Cable Chase	754'-0"	1	1	NA	NA	
0-28A-I	Equipment Room	771'-0"	NA	NA	1	1	
0-28A-II	Equipment Room	771'-0"	NA	NA	3	2	
0-28B-I	Equipment Room	771'-0"	NA	NA	1	1	
0-28B-II	Equipment Room	771'-0"	NA	NA	2	1	
0-28B-III	Equipment Room Elevator Lobby	771'-0"	NA	NA	1	1	
0-28C	Battery Room	771'-0"	NA	NA	1	1	
0-28D	Battery Room	771'-0"	NA	NA	1	1	
0-28E	Battery Room	771'-0"	NA	NA	1	1	
0-28F	Battery Room	771'-0"	NA	NA	1	1	
0-28G	Battery Room	771'-0"	NA	NA	1	1	
0-28H	Repair Shop	771'-0"	NA	NA	2	1	
0-28I	Battery Room	771'-0"	NA	NA	1	1	
0-28J	Battery Room	771'-0"	NA	NA	1	1	
0-28K	Battery Room	771'-0"	NA	NA	1	1	
0-28L	Battery Room	771'-0"	NA	NA	1	1	
0-28M	Battery Room	771'-0"	NA	NA	1	1	

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION		ELEV.	INSTRUMENT OPERABLE			
FIRE ZONE	ROOM OR AREA		HEAT		SMOKE	
			TOTAL	MIN.	TOTAL	MIN.
0-28N	Battery Room	771'-0"	NA	NA	1	1
0-28P	South Cable Chase	771'-0"	1	1	NA	NA
0-28Q	Center Cable Chase	771'-0"	1	1	NA	NA
0-28R	North Cable Chase	771'-0"	1	1	NA	NA
0-28T	Battery Room	771'-0"	NA	NA	1	1
0-29A	Elevator Vestibule	783'-0"	NA	NA	1	1
0-29B	H&V Equipment Room	783'-0"	NA	NA	10	5
0-30A	HVAC Equipment Room	806'-0"	NA	NA	19	10
0-30A	Freight Elevator Lobby	806'-0"	NA	NA	1	1
0-30A	CREOASS 0F125A High Temp. Alarm	806'-0"	7	4	NA	NA
0-30A	CREOASS DS-091	806'-0"	7	4	NA	NA
0-30A	CREOASS 0F125B High Temp. Alarm	806'-0"	7	4	NA	NA
0-30A	CREOASS DS-092	806'-0"	7	4	NA	NA
0-30A	SGTS - 0F169A High Temp. Alarm	806'-0"	1	1	NA	NA
0-30A	SGTS - DS-093	806'-0"	1	1	NA	NA
0-30A	SGTS - 0F169B High Temp. Alarm	806'-0"	1	1	NA	NA
0-30A	SGTS - DS-094	806'-0"	1	1	NA	NA
D.	Reactor Building					
2-1A	Core Spray Pump Room	645'-0"	NA	NA	8	4
2-1B	Core Spray Pump Room	645'-0"	NA	NA	6	3
2-1B	Elevator Lobby	645'-0"	NA	NA	1	1
2-1C	HPCI Pump Room	645'-0"	2	1	7	4
2-1D	RCIC Pump Room	645'-0"	2	1	5	3
2-1E	RHR Pump Room	645'-0"	NA	NA	13	7
2-1F	RHR Pump Room	645'-0"	NA	NA	15	8
2-1G	Sump Room	645'-0"	NA	NA	2	1
2-1I	Stairwell 202	645'-818'	NA	NA	2	1
2-2A	Access Area and Remote Shutdown Panel Room	670'-0"	NA	NA	5	3
2-2A	Elevator Lobby	670'-0"	NA	NA	1	1
2-2B	Core Spray Pump Room	670'-0"	NA	NA	11	6
2-3A	Access Area	683'-0"	NA	NA	4	2
2-3A	Access Area Elevator Lobby	683'-0"	NA	NA	1	1
2-3B-N	Equipment Removal Area - North	683'-0"	NA	NA	13	7
2-3B-S	Equipment Removal Area - South	683'-0"	NA	NA	1	1
2-3B-W	Equipment Removal Area - Wraparound	683'-0"	NA	NA	2	1
2-3C-N	Equipment Access Area - North	683'-0"	NA	NA	4	2

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION			INSTRUMENT OPERABLE					
FIRE ZONE	ROOM OR AREA	ELEV.	HEAT		SMOKE			
			TOTAL	MIN.	TOTAL	MIN.		
2-3C-S	Equipment Access Area - South	683'-0"	NA	NA	4	2		
2-3C-W	Equipment Access Area - Wraparound	683'-0"	NA	NA	5	3		
					IONIZATION		PHOTO ELECTRIC	
					TOTAL	MIN.	TOTAL	MIN.
2-4A-N	Containment Access Area - North	719'-0"	NA	NA	11	6	3	2
					SMOKE			
					TOTAL	MIN.		
2-4A-S	Containment Access Area - South	719'-0"	NA	NA	10	5		
2-4A-S	Containment Access Area Elevator Lobby	719'-0"	NA	NA	1	1		
2-4A-W	Containment Access Area - Wraparound	719'-0"	NA	NA	5	3		
2-4B	Pipe Penetration Room	719'-1"	NA	NA	1	1		
2-4C	Switchgear Room	719'-1"	NA	NA	2	1		
2-4D	Switchgear Room	719'-1"	NA	NA	2	1		
2-4G	Main Steam Pipeway	719'-1"	4	2	NA	NA		
2-4G	Exhaust Fan Room (Note: these detectors also cover el. 749'-1")	799'-1"	2	1	NA	NA		
					IONIZATION		PHOTO ELECTRIC	
					TOTAL	MIN.	TOTAL	MIN.
2-5A-N	Standby Control Systems Area	749'-0"	NA	NA	16	8	7	4
2-5A-S	General Access Area - South	749'-0"	NA	NA	5	3	2	1
2-5A-S	General Access Area Elevator Lobby	749'-0"	NA	NA	1	1	NA	NA
2-5A-W	Access Corridor - Wraparound	749'-0"	NA	NA	3	2	2	1
					SMOKE			
					TOTAL	MIN.		
2-5B	Valve Access Area	761'-10"	4	2	NA	NA		
2-5C	RWCU Backwash Tank	749'-1"	NA	NA	1	1		
2-5D	RWCU Pumps & Heat Exchangers	749'-1"	NA	NA	8	4		
2-5E	Penetration Room	749'-1"	NA	NA	2	1		
2-5F	Load Center Room	749'-1"	NA	NA	2	1		
2-5G	Load Center Room	749'-1"	NA	NA	2	1		
2-5H	Instrument Repair Room	749'-1"	NA	NA	2	1		
2-6A	Access Area	779'-1"	NA	NA	11	6		
2-6B	Load Center Room	779'-1"	NA	NA	4	2		
2-6C	Electrical Equipment Room	779'-1"	NA	NA	2	1		
2-6D	H&V Equipment Room	779'-1"	NA	NA	12	6		
2-6E	Hatch and Laydown Area	779'-1"	NA	NA	2	1		
2-7A	H&V Fan & Filter Rooms	799'-1"	NA	NA	14	7		
2-7A	HVAC Filter 2F257A High Temp. Alarm	799'-0"	7	4	NA	NA		

* Inaccessible

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EFFECTIVE DATE 07/20/2017

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION		ELEV.	INSTRUMENT OPERABLE			
FIRE ZONE	ROOM OR AREA		HEAT		SMOKE	
			TOTAL	MIN.	TOTAL	MIN.
2-7A	HVAC Filter 2F257A DS-281	799'-0"	7	4	NA	NA
2-7A	HVAC Filter 2F257B High Temp. Alarm	799'-0"	7	4	NA	NA
2-7A	HVAC Filter 2F257B DS-282	799'-0"	7	4	NA	NA
2-7A	HVAC Filter 2F217A High Temp. Alarm	799'-0"	5	3	NA	NA
2-7A	HVAC Filter 2F217A DS-283	799'-0"	5	3	NA	NA
2-7A	HVAC Filter 2F217B High Temp. Alarm	799'-0"	5	3	NA	NA

TABLE 3.7.3.8-1
FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION			INSTRUMENT OPERABLE					
FIRE ZONE	ROOM OR AREA	ELEV.	HEAT		SMOKE			
			TOTAL	MIN.	TOTAL	MIN.		
2-7A	HVAC Filter 2F217B DS-284	799'-0"	5	3	NA	NA		
0-6G	Surge Tank Vault	779'-4"	NA	NA	2	1		
0-8A	Refueling Floor	818'-1"	NA	NA	60	30		
0-8A	Refueling Floor Elevators	818'-1"	NA	NA	2	1		
c.	ESW Pumphouse							
0-51	Pump Room	685'-6"	NA	NA	6	3		
0-52	Pump Room	685'-6"	NA	NA	6	3		
g.	ESW Pumphouse							
0-51	Pump Room	685'-6"	NA	NA	6	3		
0-52	Pump Room	685'-6"	NA	NA	6	3		
d.	Diesel Generator Building		HEAT		INFRA-RED		SMOKE	
0-41A	Diesel Generator "A" Bay	660'-0" & 677'-0"	22	11	2	1	15	9
		710'-9"	N/A	N/A	N/A	N/A	8	4
0-41B	Diesel Generator "B" Bay	660'-0" & 677'-0"	23	12	2	1	15	8
		710'-9"	N/A	N/A	N/A	N/A	9	5
0-41C	Diesel Generator "C" Bay	660'-0" & 677'-0"	22	11	2	1	15	8
		710'-9"	N/A	N/A	N/A	N/A	8	4
0-41D	Diesel Generator "D" Bay	660'-0" & 677'-0"	22	11	2	1	15	8
		710'-9"	N/A	N/A	N/A	N/A	8	4
e.	Diesel Generator E Building		HEAT		INFRA-RED		SMOKE	
0-41E	Diesel Generator Rooms	656'-6" &	1	1	NA	NA	21	11
		675'-6" &	NA	NA	6	3	3	2
		708'-0"	NA	NA	4	2	NA	NA
f.	Outside Area		HEAT		SMOKE			
0-00	Startup Transformer (OX103) DS-014	NA	10	5	NA	NA		
0-00	Startup Transformer (OX104) DS-015	NA	12	6	NA	NA		
0-00	ESS Transformer – DS-016							
	OX201	NA	6	3	NA	NA		
	OX 213	NA	6	3	NA	NA		
0-00	ESS Transformer – DS-017							
	OX203	NA	6	3	NA	NA		
	OX211	NA	6	3	NA	NA		

B 3.1.3 Control Rod Block Instrumentation

BASES

TRO

The Control Rod Block Instrumentation is a portion of the Reactor Manual Control System (RMCS), which upon receipt of input signals from other systems and subsystems, inhibits movement or selection of control rods (Reference 1). The purpose of the Control Rod Block function is to avoid conditions that would require Reactor Protection System (RPS) action if allowed to proceed.

The specific Functions associated with the TRM Control Rod Block Instrumentation are identified in Table 3.1.3-1 and are discussed below.

1. Average Power Range Monitors (APRM)
2. Source Range Monitors (SRM)
3. Intermediate Range Monitors (IRM)

The same grouping of neutron monitoring equipment (SRM and IRM) that is used in the RPS is also used in the rod block circuitry. Half of the total monitors (SRM and IRM) provide inputs to one of the two RMCS rod block logic circuits and the remaining half provide inputs to the other RMCS rod block circuit.

Reference APRM Flux level input to the RMCS is through the rod block monitor. A signal from one of the four redundant APRM channels supplies a reference signal for one of the RBM channels and a signal from another of the APRM channels supplies the reference signal to the second RBM channel. The RBM interfaces to the RMCS to determine rod selection conditions.

The APRM rod block settings are varied as a function of Reactor Coolant System (RCS) recirculation flow. The settings are selected so that all the neutron monitoring rod blocks are sufficient to avoid an RPS action. Mechanical switches in the SRM and IRM detector drive systems provide the position signals used to indicate that a detector is not fully inserted.

The SRM minimum count rate Allowable Value is discussed in the TS Bases for SR 3.3.1.2.4.

4. Scram Discharge Volume Water Level - High

Scram Discharge Volume Water Level – High signals are provided as inputs into both rod block logic circuits. Both rod block logic circuits sense when the high water level scram trip for the Scram Discharge Volume is bypassed. The rod block from Scram Discharge Volume Water Level – High comes from one of two float type level switches installed in each of two scram discharge instrument volumes. The second float switch in each instrument volume provides a control room annunciation of increasing level below the level at which a rod block occurs.

(continued)

B 3.1.3 Control Rod Block Instrumentation

BASES

TRO
(continued)5. RCS Recirculation Flow

The recirculation flow system consists of four separate transmitters on each of two recirculation loops (eight total). The transmitter output signal from one flow channel is routed to one of four APRM channels. Each APRM processes and sums the transmitters signals. Each APRM then sends its total flow signal to both RBMs. Each RBM then compares the four flows and issues Alarms based on user entered values. Both RBM channels are identical, but are configured to support either RBM channel A or channel B.

With the NUMAC PRNMS system, the Upscale flow function is performed within the APRM and sent on to the reactor manual control system. Flow comparison is performed within the RBM but is processed as an alarm only since the RBM rod block functions are power and not flow dependent. Recirculation flow inputs for system 'inop' functions are processed as part of the APRM 'Upscale/Inop' function.

ACTIONS

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

TRS

The TRSs are performed at the specified Frequency to ensure that the Control Rod Block Function is maintained OPERABLE.

TRS 3.1.3.1, TRS 3.1.3.2, TRS 3.1.3.3, TRS 3.1.3.4, TRS 3.1.3.5, TRS 3.1.3.6, and TRS 3.1.3.7

Control Rod Block Instrumentation surveillances are performed consistent with the Bases for the comparable channels in LCO 3.3.1.1 and LCO 3.3.1.2.

(continued)

B 3.1.3 Control Rod Block Instrumentation

BASES (continued)

- REFERENCE
1. FSAR Section 7.7.1
 2. NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function"
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