

3.3 INSTRUMENTATION

3.3.1 Protection System (PS)

LCO 3.3.1 The PS sensors, manual actuation switches, signal processors, and actuation devices specified in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

----- NOTE -----
 Separate Condition entry is allowed for each sensor, manual actuation switch, signal processor, and actuation device.

----- REVIEWER'S NOTE -----
 The COL applicant may revise Condition C, Surveillance Requirements 3.3.1.4 and 3.3.1.6, and Table 3.3.1-2 to reflect the use of a Setpoint Control Program.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more sensors inoperable.	A.1 -----NOTE----- Only applicable for Table 3.3.1-1, Component A.21. -----	1 hour
	Place inoperable sensor in trip.	
	<u>AND</u>	4 hours
	A.2 -----NOTE----- Not applicable for Table 3.3.1-1, Component A.21. ----- Place inoperable sensor in lockout.	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more manual actuation switches inoperable.	B.1 Restore manual actuation switch to OPERABLE status.	48 hours
C. One or more acquisition and processing units (APUs) inoperable due to the Limiting Trip Setpoint (LTSP) for one or more Trip/Actuation Functions not met.	C.1 -----NOTE----- Only applicable for APUs associated with Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b. ----- Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown," for emergency diesel generator (EDG) made inoperable by inoperable APU.	1 hour
	<u>AND</u> C.2 -----NOTE----- Not applicable for APUs associated with Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b. ----- Place the Trip/Actuation Function in the associated APU in lockout.	24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One or more signal processors inoperable for reasons other than Condition C.</p>	<p>D.1 -----NOTE----- Only applicable for APUs and ALUs associated with Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b. ----- Enter applicable Conditions and Required Actions of LCO 3.8.1 and LCO 3.8.2 for EDG made inoperable by inoperable APU or ALU.</p> <p><u>AND</u></p> <p>D.2 Place inoperable signal processor in lockout.</p>	<p>1 hour</p> <p>4 hours</p>
<p>E. One or more actuation devices inoperable.</p>	<p>E.1 Restore actuation device to OPERABLE status.</p>	<p>48 hours</p>
<p>F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.</p> <p><u>OR</u></p> <p>Minimum functional capability specified in Table 3.3.1-1 not maintained.</p>	<p>F.1 Enter the Condition referenced in Table 3.3.1-1.</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action F.1 and referenced in Table 3.3.1-1.	G.1 Reduce THERMAL POWER to < 70% RTP.	2 hours
H. As required by Required Action F.1 and referenced in Table 3.3.1-1.	H.1 Reduce THERMAL POWER to < 10% RTP.	6 hours
I. As required by Required Action F.1 and referenced in Table 3.3.1-1.	I.1 Be in MODE 2.	6 hours
J. As required by Required Action F.1 and referenced in Table 3.3.1-1.	J.1 Be in MODE 3.	6 hours
K. As required by Required Action F.1 and referenced in Table 3.3.1-1.	K.1 Be in MODE 3.	6 hours
	<u>AND</u> K.2 Open the reactor trip breakers.	6 hours
L. As required by Required Action F.1 and referenced in Table 3.3.1-1.	L.1 Be in MODE 3.	6 hours
	<u>AND</u> L.2 Reduce pressurizer pressure to < 2005 psia.	12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. As required by Required Action F.1 and referenced in Table 3.3.1-1.	M.1 Be in MODE 3. <u>AND</u> M.2 Be in MODE 4.	6 hours 12 hours
N. As required by Required Action F.1 and referenced in Table 3.3.1-1.	N.1 Be in MODE 3. <u>AND</u> N.2 Be in MODE 5.	6 hours 36 hours
O. As required by Required Action F.1 and referenced in Table 3.3.1-1.	O.1 Declare associated EDG inoperable. Enter applicable Conditions and Required Actions of LCOs 3.8.1, "AC Sources – Operating," and 3.8.2, "AC Sources – Shutdown".	Immediately
P. As required by Required Action F.1 and referenced in Table 3.3.1-1.	P.1 Declare associated Chemical and Volume Control System isolation valve(s) inoperable. Enter applicable Conditions and Required Actions of LCO 3.4.9, "Pressurizer".	Immediately
Q. As required by Required Action F.1 and referenced in Table 3.3.1-1.	Q.1 Declare associated Pressurizer Safety Relief Valve(s) inoperable. Enter applicable Conditions and Required Actions of LCO 3.4.11, "Low Temperature Overpressure Protection (LTOP)".	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
R. As required by Required Action F.1 and referenced in Table 3.3.1-1.	R.1 Declare both Control Room Emergency Filtration trains inoperable. Enter applicable Conditions and Required Actions of LCO 3.7.10, "Control Room Emergency Filtration (CREF)".	Immediately
S. As required by Required Action F.1 and referenced in Table 3.3.1-1.	S.1 Open reactor trip breakers.	1 hour
T. As required by Required Action F.1 and referenced in Table 3.3.1-1.	T.1 Declare functions on associated Actuation Logic Units inoperable.	Immediately
	<p><u>AND</u></p> T.2 Open reactor trip breakers.	1 hour

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1-1 to determine which SRs apply for each sensor, manual actuation switch, signal processor, or actuation device.
 2. When a sensor, manual actuation switch, signal processor, or actuation device 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 Trip/Actuation Function maintains functional capability.
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SURVEILLANCE		FREQUENCY
SR 3.3.1.1	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after THERMAL POWER \geq 20% RTP.</p> <p>-----</p> <p>Compare results of calorimetric heat balance calculation to power range division output. Adjust power range division output if calorimetric heat balance calculations results exceed power range division output by more than +2% RTP.</p>	24 hours
SR 3.3.1.2	<p>-----NOTE-----</p> <p>Not required to be performed until 12 hours after THERMAL POWER \geq 20% RTP.</p> <p>-----</p> <p>Perform CALIBRATION.</p>	15 effective full power days
SR 3.3.1.3	Perform ACTUATION DEVICE OPERATIONAL TEST.	31 days
SR 3.3.1.4	Perform CALIBRATION.	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.5	Perform a SENSOR OPERATIONAL TEST.	24 months
	<p>-----NOTE----- Neutron detectors are excluded from CALIBRATION. -----</p>	
SR 3.3.1.6	Perform a CALIBRATION.	24 months
SR 3.3.1.7	Perform EXTENDED SELF TESTS.	24 months
SR 3.3.1.8	Perform ACTUATION DEVICE OPERATIONAL TEST.	24 months
SR 3.3.1.9	Verify setpoints properly loaded in APUs.	24 months
SR 3.3.1.10	<p>-----NOTE----- Neutron detectors are excluded from response time testing. -----</p> <p>Verify PS RESPONSE TIME is within limits.</p>	24 months on a STAGGERED TEST BASIS

Table 3.3.1-1 (page 1 of 4)
Protection System Sensors, Manual Actuation Switches,
Signal Processors, and Actuation Devices

COMPONENT	REQUIRED NUMBER OF SENSORS, SWITCHES, SIGNAL PROCESSORS, OR ACTUATION DEVICES	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY	CONDITION	SURVEILLANCE REQUIREMENTS
A. Sensors					
1. 6.9 kV Bus Voltage	3 per EDG	1,2,3,4,(a)	2 per EDG	O	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
2. Boron Concentration - Chemical and Volume Control System (CVCS) Charging Line	4	3 ^(b) ,4 ^(b) ,5,6	2	P	SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.10
3. Boron Temperature - CVCS Charging Line	4	3 ^(b) ,4 ^(b) ,5,6	2	P	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
4. CVCS Charging Line Flow	4	3 ^(b) ,4 ^(b) ,5 ^(b)	2	P	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
5. Cold Leg Temperature (Narrow Range)	4	≥ 10% RTP	3	H	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
6. Cold Leg Temperature (Wide Range)	4	1,2 ^(c)	3	J	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
	4	3,4,5,6 ^(b)	2	P	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
7. Containment Pressure	4 per area	1,2,3	3 per area	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
8. Hot Leg Pressure (Wide Range)	4	1,2,3	3	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
	4	(d)	2	Q	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(a) When associated EDG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

(b) With three or more reactor coolant pumps (RCPs) in operation.

(c) ≥ 10-5% power on the intermediate range detectors.

(d) When Pressurizer Safety Relief Valves (PSRVs) are required to be OPERABLE per LCO 3.4.11, "Low Temperature Overpressure Protection (LTOP)."

Table 3.3.1-1 (page 2 of 4)
Protection System Sensors, Manual Actuation Switches,
Signal Processors, and Actuation Devices

COMPONENT	REQUIRED NUMBER OF SENSORS, SWITCHES, SIGNAL PROCESSORS, OR ACTUATION DEVICES	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY	CONDITION	SURVEILLANCE REQUIREMENTS
9. Hot Leg Temperature (Narrow Range)	4 per division, 4 divisions	1,2 ^(c)	3 per division, 3 divisions	J	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
10. Hot Leg Temperature (Wide Range)	4	3 ^(e)	3	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
11. Intermediate Range	4	1 ^(f) ,2,3 ^(g)	3	K	SR 3.3.1.5 SR 3.3.1.6
12. Power Range	2 per division, 4 divisions	1,2,3 ^(g)	2 per division, 3 divisions	K	SR 3.3.1.1 SR 3.3.1.5 SR 3.3.1.6
13. Pressurizer Level (Narrow Range)	4	1,2,3	3	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
14. Pressurizer Pressure (Narrow Range)	4	1,2,3 ^(h)	3	L	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
15. Radiation Monitor - Containment High Range	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
16. Radiation Monitor - Control Room HVAC Intake Activity	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
	4	5,6,(i)	3	R	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(c) ≥ 10-5 % power on the intermediate range detectors.

(e) When Table 3.3.1-2, Trip/Actuation Function B.3.a is disabled.

(f) ≤ 10% RTP.

(g) With the Reactor Control, Surveillance and Limitation (RCSL) System capable of withdrawing a Rod Cluster Control Assembly (RCCA) or one or more RCCAs not fully inserted.

(h) With pressurizer pressure ≥ 2005 psia.

(i) During movement of irradiated fuel assemblies.

Table 3.3.1-1 (page 3 of 4)
Protection System Sensors, Manual Actuation Switches,
Signal Processors, and Actuation Devices

COMPONENT	REQUIRED NUMBER OF SENSORS, SWITCHES, SIGNAL PROCESSORS, OR ACTUATION DEVICES	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY	CONDITION	SURVEILLANCE REQUIREMENTS
17. RCP Current	3 per RCP	1,2,3	2 per RCP	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
18. RCP Delta P Sensors	2 per RCP	1,2,3	1 per RCP	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
19. RCP Speed	4	≥ 10% RTP	3	H	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
20. Reactor Coolant System (RCS) Loop Flow	4 per loop	1,2 ^(c)	3 per loop	J	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
21. Reactor Trip Circuit Breaker Position Indication	4	1,2 ^(g) ,3 ^(g)	3	M	SR 3.3.1.5 SR 3.3.1.8 SR 3.3.1.10
22. Self-Powered Neutron Detectors	72	≥ 10% RTP	67	H	SR 3.3.1.2 SR 3.3.1.5
23. Steam Generator (SG) Level (Narrow Range)	4 per SG	1,2 ⁽ⁱ⁾ ,3 ⁽ⁱ⁾	3 per SG	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
24. SG Level (Wide Range)	4 per SG	1,2,3	3 per SG	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
25. SG Pressure	4 per SG	1,2,3	3 per SG	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
B. Manual Actuation Switches					
1. Reactor Trip	4	1,2,3 ^(g)	3	K	SR 3.3.1.8
	4	4 ^(g) ,5 ^(g)	3	S	SR 3.3.1.8
2. Safety Injection System (SIS) Actuation	4	1,2,3,4	3	N	SR 3.3.1.8
3. SG Isolation	4 per SG	1,2,3	3 per SG	M	SR 3.3.1.8

(c) ≥ 10-5 % power on the intermediate range detectors.

(g) With the RCSL capable of withdrawing a RCCA or one or more RCCAs not fully inserted.

(i) During movement of irradiated fuel assemblies.

(j) Except when all main feedwater (MFW) isolation valves are closed.

Table 3.3.1-1 (page 4 of 4)
Protection System Sensors, Manual Actuation Switches,
Signal Processors, and Actuation Devices

COMPONENT	REQUIRED NUMBER OF SENSORS, SWITCHES, SIGNAL PROCESSORS, OR ACTUATION DEVICES	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY	CONDITION	SURVEILLANCE REQUIREMENTS
C. Signal Processors					
1. Remote Acquisition Units (RAUs)	2 per division, 4 divisions	≥ 10% RTP	2 per division, 4 divisions	H	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
2. Acquisition and Processing Units (APUs)	5 per division, 4 divisions	Refer to Table 3.3.1-2	Refer to Table 3.3.1-2	Refer to Table 3.3.1-2	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.10
3. Actuation Logic Units (ALUs)	4 per division, 4 divisions	1,2,3,4	3 per division, 4 divisions	N,O,P, Q,R,T	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
	4 per division, 4 divisions	5,6,(i)	3 per division, 4 divisions	O,P,Q,R,T	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
D. Actuation Devices					
1. Reactor Coolant Pump Bus and Trip Breakers	2 per pump	1,2,3,4	1 per pump	N	SR 3.3.1.8 SR 3.3.1.10
2. Reactor Trip Circuit Breakers	4	1,2,3 ^(g)	3	K	SR 3.3.1.3 SR 3.3.1.10
3. Reactor Trip Contactors	4 per set, 23 sets	1,2,3 ^(g)	3 per set, 23 sets	K	SR 3.3.1.3 SR 3.3.1.10

(g) With the RCSL capable of withdrawing a RCCA or one or more RCCAs not fully inserted.

(i) During movement of irradiated fuel assemblies.

(j) Except when all main feedwater (MFW) isolation valves are closed.

Table 3.3.1-2 (page 1 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY ^(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
A. Reactor Trip				
1.a. Low Departure from Nucleate Boiling Ratio (DNBR)	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
1.b. Low DNBR and Imbalance or Rod Drop	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
1.c. Variable Low DNBR and Rod Drop	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
1.d. Low DNBR - High Quality	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
1.e. Low DNBR - High Quality and Imbalance or Rod Drop	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
2. High Linear Power Density	≥ 10% RTP	3 divisions	(d) ^{(b)(c)}	H
3. High Neutron Flux Rate of Change (Power Range)	1,2,3 ^(e)	3 divisions	11% RTP ^{(b)(c)}	K
4. High Core Power Level	1,2 ^(f)	3 divisions	105% RTP ^{(b)(c)}	J
5. Low Saturation Margin	1,2 ^(f)	3 divisions	30 Btu/lb ^{(b)(c)}	J
6.a. Low-Low Reactor Coolant System (RCS) Loop Flow Rate in One Loop	≥ 70% RTP	3 divisions	54% Nominal Flow ^{(b)(c)}	G
6.b. Low RCS Loop Flow Rate in Two Loops	≥ 10% RTP	3 divisions	90% Nominal Flow ^{(b)(c)}	H
7. Low Reactor Coolant Pump (RCP) Speed	≥ 10% RTP	3 divisions	93% Nominal Speed ^{(b)(c)}	H
8. High Neutron Flux (Intermediate Range)	1 ^(g) ,2,3 ^(e)	3 divisions	15% RTP ^{(b)(c)}	K

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.

(b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.

(c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.

(d) As specified in the COLR.

(e) With the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted.

(f) ≥ 10-5% power on the intermediate range detectors.

(g) ≤ 10% RTP.

Table 3.3.1-2 (page 2 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY ^(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
9. Low Doubling Time (Intermediate Range)	1 ^(g) ,2,3 ^(e)	3 divisions	20 Sec. ^{(b)(c)}	K
10. Low Pressurizer Pressure	≥ 10% RTP	3 divisions	2005 psia ^{(b)(c)}	H
11. High Pressurizer Pressure	1,2	3 divisions	2415 psia ^{(b)(c)}	J
12. High Pressurizer Level	1,2	3 divisions	75% Measuring Range ^{(b)(c)}	J
13. Low Hot Leg Pressure	1,2,3 ^{(e)(h)}	3 divisions	2005 psia ^{(b)(c)}	L
14. Steam Generator (SG) Pressure Drop	1,2	3 divisions	29 psi/min; 102 psi<steady state; Max 1088 psia ^{(b)(c)}	J
15. Low SG Pressure	1,2,3 ^{(e)(h)}	3 divisions	725 psia ^{(b)(c)}	L
16. High SG Pressure	1	3 divisions	1385 psia ^{(b)(c)}	I
17. Low SG Level	1,2	3 divisions	20% Narrow Range ^{(b)(c)}	J
18. High SG Level	1,2	3 divisions	69% Narrow Range ^{(b)(c)}	J
19. High Containment Pressure	1,2	3 divisions	18.7 psia ^{(b)(c)}	J

- (a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.
- (b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.
- (c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.
- (e) With the RCSL System capable of withdrawing a RCCA or one or more RCCAs not fully inserted.
- (g) ≤ 10% RTP.
- (h) With pressurizer pressure ≥ 2005 psia.

Table 3.3.1-2 (page 3 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY ^(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
B. Engineered Safety Features Actuation System (ESFAS) Signals				
1. Turbine Trip on Reactor Trip (RT)	1	3 divisions	RT for 1 sec.	I
2.a. Main Feedwater Full Load Closure on Reactor Trip (All SGs)	1,2 ⁽ⁱ⁾	3 divisions	NA	J
2.b. Main Feedwater Full Load Closure on High SG Level (Affected SGs)	1,2 ⁽ⁱ⁾ ,3 ⁽ⁱ⁾	3 divisions	69% Narrow Range ^{(b)(c)}	M
2.c. Startup and Shutdown Feedwater Isolation on SG Pressure Drop (All SGs)	1,2 ⁽ⁱ⁾ ,3 ⁽ⁱ⁾	3 divisions	29 psi/min; 247 psi<steady state; Max 943 psia ^{(b)(c)}	M
2.d. Startup and Shutdown Feedwater Isolation on Low SG Pressure (Affected SGs)	1,2 ⁽ⁱ⁾ ,3 ^{(h)(i)}	3 divisions	580 psia ^{(b)(c)}	L
2.e. Startup and Shutdown Feedwater Isolation on High SG Level for Period of Time (Affected SGs)	1,2 ⁽ⁱ⁾ ,3 ⁽ⁱ⁾	3 divisions	65% Narrow Range for 10 sec. ^{(b)(c)}	M
3.a. Safety Injection System (SIS) Actuation on Low Pressurizer Pressure	1,2,3 ^(h)	3 divisions	1668 psia ^{(b)(c)}	L
3.b. SIS Actuation on Low Delta Psat	3 ^(k)	3 divisions	220 psia ^{(b)(c)}	M
4. RCP Trip on Low Delta P across RCP with SIS Actuation	1,2,3	3 divisions	80% Nominal Pressure ^{(b)(c)}	M
5. Partial Cooldown Actuation on SIS Actuation	1,2,3	3 divisions	NA	M

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.

(b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.

(c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.

(h) With pressurizer pressure \geq 2005 psia.

(i) Except when all MFW full load isolation valves are closed.

(j) Except when all MFW low load isolation valves are closed.

(k) When Trip/Actuation Function B.3.a is disabled.

Table 3.3.1-2 (page 4 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY ^(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
6.a. Emergency Feedwater System (EFWS) Actuation on Low-Low SG Level (All SGs)	1,2,3	3 divisions	40% Wide Range ^{(b)(c)}	M
6.b. EFWS Actuation on Loss of Offsite Power (LOOP) and SIS Actuation (All SGs)	1,2	3 divisions	NA	J
6.c. EFWS Isolation on High SG Level (Affected SG)	1,2,3	3 divisions	89% Wide Range ^{(b)(c)}	M
7.a. Main Steam Relief Train (MSRT) Actuation on High SG Pressure	1,2,3	3 divisions	1385 psia ^{(b)(c)}	M
7.b. MSRT Isolation on Low SG Pressure	1,2,3 ^(h)	3 divisions	580 psia ^{(b)(c)}	L
8.a. Main Steam Isolation Valve (MSIV) Closure on SG Pressure Drop (All SGs)	1,2,3	3 divisions	29 psi/min; 102 psi<steady state; Max 1088 psia ^{(b)(c)}	M
8.b. MSIV Closure on Low SG Pressure (All SGs)	1,2,3 ^{(h)(l)}	3 divisions	725 psia ^{(b)(c)}	L
9.a. Containment Isolation (Stage 1) on High Containment Pressure	1,2,3	3 divisions	18.7 psia ^{(b)(c)}	M
9.b. Containment Isolation (Stage 1) on SIS Actuation	1,2,3,4	3 divisions	NA	N
9.c. Containment Isolation (Stage 2) on High-High Containment Pressure	1,2,3	3 divisions	≤ 36.3 psia	M
9.d. Containment Isolation (Stage 1) on High Containment Radiation	1,2,3,4	3 divisions	≤ 100 x background	N

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.

(b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.

(c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.

(h) With pressurizer pressure ≥ 2005 psia.

(l) Except when all MSIVs are closed.

Table 3.3.1-2 (page 5 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY ^(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
10.a. Emergency Diesel Generator (EDG) Start on Degraded Grid Voltage	1,2,3,4	4 divisions	≥ 6210 V and ≤ 6350 V;	O
	(m)	2 divisions	≥ 7 sec. and ≤ 11 sec. w/SIS; ≥ 270 sec. and ≤ 300 sec. wo/SIS	O
10.b. EDG Start on LOOP	1,2,3,4	4 divisions	≥ 4830 V and ≤ 4970 V;	O
	(m)	2 divisions	≥ 0.4 sec. and ≤ 0.6 sec.	O
11.a. Chemical and Volume Control System (CVCS) Charging Line Isolation on High-High Pressurizer Level	1,2,3	3 divisions	80% Measuring Range ^{(b)(c)}	M
11.b. CVCS Charging Line Isolation on Anti-Dilution Mitigation (ADM) at Shutdown Condition (RCP not operating)	5 ⁽ⁿ⁾ ,6	3 divisions	927 ppm ^{(b)(c)}	P
11.c. CVCS Charging Line Isolation on ADM at Standard Shutdown Conditions	3,4 ^(o) ,5 ^(o)	3 divisions	(d) ^{(b)(c)}	P

- (a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.
- (b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.
- (c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.
- (d) As specified in the COLR.
- (m) When associated EDG is required to be OPERABLE by LCO 3.8.2.
- (n) With two or less RCPs in operation.
- (o) With three or more RCPs in operation.

Table 3.3.1-2 (page 6 of 6)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP/ACTUATION FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY(a)	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
12.a. Pressurizer Safety Relief Valve (PSRV) Actuation - First Valve	(p)	3 divisions	(q) ^{(b)(c)}	Q
12.b. PSRV Actuation - Second Valve	(p)	3 divisions	(q) ^{(b)(c)}	Q
13. Control Room Heating, Ventilation, and Air Conditioning Reconfiguration to Recirculation Mode on High Intake Activity	1,2,3,4 5,6,(r)	3 divisions	≤3 x background ≤3 x background	N R

- (a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE.
- (b) If the as-found setpoint is outside its predefined as-found tolerance, then the Trip/Actuation Function shall be evaluated to verify that it is functioning as required before returning the Trip/Actuation Function to service.
- (c) The setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the Trip/Actuation Function shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and the as-left tolerances are specified in a document controlled under 10 CFR 50.59.
- (p) When the PSRVs are required to be OPERABLE by LCO 3.4.11.
- (q) The LTOP arming temperature is specified in the PTLR.
- (r) During movement of irradiated fuel assemblies.

3.3 INSTRUMENTATION

3.3.2 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.2 The PAM instrumentation for each Function shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required division inoperable.	A.1 Restore required division to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.5.	Immediately
C. One or more Functions with two required division inoperable.	C.1 Restore one division to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

This SR applies to each PAM instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CALIBRATION	24 months

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3.3 INSTRUMENTATION

3.3.3 Remote Shutdown System (RSS)

LCO 3.3.3 The RSS Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.3.1 Verify each required control circuit and transfer switch is capable of performing the intended function.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.3.2</p> <p>-----NOTE----- Neutron detectors are excluded from the CALIBRATION. -----</p> <p>Perform CALIBRATION for each required instrument division.</p>	<p>24 months</p>
<p>SR 3.3.3.3</p> <p>Perform SENSOR OPERATIONAL TEST of each required Safety Information and Control System division performing the Remote Shutdown System functions.</p>	<p>24 months</p>