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.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more sensors inoperable.	A.1	----------NOTE---------- Only applicable for Table 3.3.1-1, Component A.24. ---------- Place inoperable sensor in trip.	1 hour
	AND		
	A.2	----------NOTE---------- Not applicable for Table 3.3.1-1, Component A.24. ---------- Place inoperable sensor in lockout.	4 hours

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/Permissives 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. AND ----------NOTE---------- Not applicable for APUs associated with Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b. ---------- C.2.1 Place the associated APU in lockout. OR C.2.2 Enter the applicable Condition for the Trip/Actuation Function referenced in Table 3.3.1-2.	1 hour 24 hours 24 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more signal processors inoperable for reasons other than Condition C.	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.	1 hour
	AND		
	D.2	Place inoperable signal processor in lockout.	4 hours
E. One or more actuation devices inoperable.	E.1	Restore actuation device to OPERABLE status.	48 hours
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR Minimum functional capability specified in Table 3.3.1-1 not maintained.	F.1	Enter the applicable Condition referenced in Table 3.3.1-1.	Immediately

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 AND K.2	Be in MODE 3. Open the reactor trip breakers.	6 hours 6 hours
L. As required by Required Action F.1 and referenced in Table 3.3.1-1.	L.1 AND L.2	Be in MODE 3. Reduce pressurizer pressure to < 2005 psia.	6 hours 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.	6 hours
	AND		
	M.2	Be in MODE 4.	12 hours
N. As required by Required Action F.1 and referenced in Table 3.3.1-1.	N.1	Be in MODE 3.	6 hours
	AND		
	N.2	Be in MODE 5.	36 hours
O. As required by Required Action F.1 and referenced in Table 3.3.1-1.	O.1	Be in MODE 5.	36 hours
P. As required by Required Action F.1 and referenced in Table 3.3.1-1.	P.1	Declare associated EDG inoperable.	Immediately
	AND		
	P.2	Enter applicable Conditions and Required Actions of LCOs 3.8.1, "AC Sources - Operating," and 3.8.2, "AC Sources - Shutdown".	Immediately
Q. As required by Required Action F.1 and referenced in Table 3.3.1-1.	Q.1	Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	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	Suspend activities that could reduce RCS inventory.	Immediately
S. As required by Required Action F.1 and referenced in Table 3.3.1-1.	S.1	Declare associated Pressurizer Safety Relief Valve(s) inoperable.	Immediately
	AND		
	S.2	Enter applicable Conditions and Required Actions of LCO 3.4.11, "Low Temperature Overpressure Protection (LTOP)".	Immediately
T. As required by Required Action F.1 and referenced in Table 3.3.1-1.	T.1	Declare associated Control Room Emergency Filtration trains inoperable.	Immediately
	AND		
	T.2	Enter applicable Conditions and Required Actions of LCO 3.7.10, "Control Room Emergency Filtration (CREF)".	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
U. As required by Required Action F.1 and referenced in Table 3.3.1-1.	U.1	Declare associated Rod Cluster Control Assembly Analog Position Indicator inoperable.	Immediately
	AND		
	U.2	Enter applicable Conditions and Required Actions of LCO 3.1.7, "Rod Control Cluster Assembly (RCCA) Position Indication".	Immediately
V. As required by Required Action F.1 and referenced in Table 3.3.1-1.	V.1	Open associated reactor trip breaker.	1 hour
W. As required by Required Action F.1 and referenced in Table 3.3.1-1.	W.1	Open all 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.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. ---------- 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.	24 hours
SR 3.3.1.2	----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. ---------- Perform CALIBRATION.	15 effective full power days
SR 3.3.1.3	Perform ACTUATING DEVICE OPERATIONAL TEST.	31 days
SR 3.3.1.4	Perform CALIBRATION.	92 days
SR 3.3.1.5	Perform a SENSOR OPERATIONAL TEST.	24 months

SURVEILLANCE REQUIREMENTS (continued)

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

Table 3.3.1-1 (page 1 of 6)
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	1,2,3,4,5,6,(a)	2 per EDG	P	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	1,2,3,4	3	N	SR 3.3.1.4 SR 3.3.1.5
			5,6[b]	2	Q	SR 3.3.1.10
3.	Boron Temperature - CVCS Charging Line	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6
			5,6[b]	2	Q	SR 3.3.1.10
4.	CVCS Charging Line Flow	4	1,2,3[c],4[c]	3	N	SR 3.3.1.5 SR 3.3.1.6
			5[c]	2	Q	SR 3.3.1.10
5.	Cold Leg Temperature (Narrow Range)	4	1[d]	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[e],3[c],4[c][f]	3	N,S	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
		4	5[c],[f],6[f]	2	Q,S	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
7.	Containment Equipment Compartment Pressure	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(a) During movement of irradiated fuel assemblies.

(b) With Permissive P7 validated (no RCPs in Operation).

(c) With Permissive P7 inhibited (one or mor RCPs in operation).

(d) With Permissive P2 validated.

(e) With Permissive P5 validated.

(f) When Pressurizer Safety Relief Valve (PSRV) OPERABILITY is required by LCO 3.4.11.

Table 3.3.1-1 (page 2 of 6)
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
8.	Containment Service Compartment Pressure (Narrow Range)	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
9.	Containment Service Compartment Pressure (Wide Range)	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
10.	Hot Leg Pressure (Wide Range)	4	1,2,3,4	3	N,S	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
		4	5,6	2	R,S	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
11.	Hot Leg Temperature (Narrow Range)	4 per division, 4 divisions	1,2[(e)]	3 per division, 3 divisions	J	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
12.	Hot Leg Temperature (Wide Range)	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
			5,6	2	R	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
13.	Intermediate Range	4	1,2,3[(g)]	3	K	SR 3.3.1.5 SR 3.3.1.6
14.	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
15.	Pressurizer Level (Narrow Range)	4	1,2,3,4	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(e) With Permissive P5 validated.

(f) When Pressurizer Safety Relief Valve (PSRV) OPERABILITY is required by LCO 3.4.11.

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

Table 3.3.1-1 (page 3 of 6)
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
16.	Pressurizer Pressure (Narrow Range)	4	1,2,3,4[(h)]	3	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
17.	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
18.	Radiation Monitor - Control Room HVAC Intake Activity	4	1,2,3,4	3	T	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
		4	5,6,(i)	2	T	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
19.	RCP Current	3 per RCP	1,2,3,4	2 per RCP	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
			5,6		Q,R	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
20.	RCP Delta Pressure	2 per RCP	1,2,3,4	1 per RCP	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
21.	RCP Speed	4	1[(d)]	3	H	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
22.	Reactor Coolant System (RCS) Loop Flow	4 per loop	1,2[(e)]	3 per loop	J	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(d) With Permissive P2 validated.

(e) With Permissive P5 validated.

(h) With Permissive P15 inhibited.

(i) During movement of irradiated fuel assemblies.

Table 3.3.1-1 (page 4 of 6)
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
23.	RCS Loop Level	4	4[(j)]	3	O	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
			5,6	2	R	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
24.	Reactor Trip Circuit Breaker Position Indication	4	1,2[(k)],3[(k)]	3	K	SR 3.3.1.5 SR 3.3.1.10
25.	Rod Cluster Control Assembly (RCCA) Analog Position	89	1[(d)]	89	U	SR 3.3.1.5 SR 3.3.1.6
26.	RCCA Bottom Position Indicators	89	3[(c)],4[(c)],5[(c)]	89	Q	SR 3.3.1.5
27.	Self-Powered Neutron Detectors	72	1[(d)]	67	H	SR 3.3.1.2 SR 3.3.1.5
28.	Steam Generator (SG) Level (Narrow Range)	4 per SG	1,2,3[(k)]	3 per SG	M	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10
29.	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
30.	SG Pressure	4 per SG	1,2,3,4[(l)]	3 per SG	N	SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.10

(c) With Permissive P7 inhibited (one or more RCPs in operation)..

(d) With Permissive P2 validated.

(j) With Permissive P15 validated.

(k) Except when all MFW full load and low load lines are isolated.

(l) When the SGs are relied upon for heat removal.

Table 3.3.1-1 (page 5 of 6)
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
B.	MANUAL ACTUATION SWITCHES					
1.	Reactor Trip	4	1,2	3	K	SR 3.3.1.5
		4	3[(g)],4[(g)],5[(g)]	3	W	SR 3.3.1.5
2.	Safety Injection System (SIS) Actuation	4	1,2,3,4	3	N	SR 3.3.1.5
			5,6	3	R	
3.	SG Isolation	4 per SG	1,2,3,4[(l)]	3 per SG	N	SR 3.3.1.5
C.	SIGNAL PROCESSORS					
1.	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
2.	Actuation Logic Units (ALUs)	4 per division, 4 divisions	1,2,3,4	3 per division, 4 divisions	N,P,S,T, V	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
		4 per division, 4 divisions	5,6,(a)	3 per division, 4 divisions	P,Q,R,S,T,V	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
3.	Remote Acquisition Units (RAUs)	2 per division, 4 divisions	1[(d)]	1 per division, 4 divisions	H	SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10
4.	RCCA Units	4	1[(d)]	4	U	SR 3.3.1.5 SR 3.3.1.7
			3[(c)],4[(c)],5[(c)]	4	Q	

(a) During movement of irradiated fuel assemblies.

(c) With Permissive P7 inhibited (one or more RCPs in operation).

(d) With Permissive P2 validated.

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

(l) When the SGs are relied upon for heat removal.

Table 3.3.1-1 (page 6 of 6)
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
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	K	SR 3.3.1.3 SR 3.3.1.10
			3(g),4(g),5(g)		W	SR 3.3.1.3 SR 3.3.1.10
3.	Reactor Trip Contactors	4 per set, 23 sets	1,2	3 per set, 23 sets	K	SR 3.3.1.3 SR 3.3.1.10
			3(g),4(g),5(g)		W	SR 3.3.1.3 SR 3.3.1.10

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

Table 3.3.1-2 (page 1 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

----------REVIEWER'S NOTE----------
[Reviewers Note: The values specified in brackets in the Limiting Trip Setpoint column are included for reviewer information only. A plant-specific setpoint study will be conducted. The values in Limiting Trip Setpoint column will then be replaced after the completion of this study.]

TRIP / ACTUATION FUNCTION / PERMISSIVE	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)	1[d]	3 divisions	[(e) [b)(c)]]	H
1.b. Low DNBR and (Imbalance or Rod Drop (1/4))	1[d]	3 divisions	[(e)[b)(c)]]	H
1.c. Low DNBR and Rod Drop (2/4)	1[d]	3 divisions	[(e)[b)(c)]]	H
1.d. Low DNBR - High Quality	1[d]	3 divisions	[(e)[b)(c)]]	H
1.e. Low DNBR - High Quality and (Imbalance or Rod Drop (1/4))	1[d]	3 divisions	[(e)[b)(c)]]	H
2. High Linear Power Density	1[d]	3 divisions	[(e)[b)(c)]]	H
3. High Neutron Flux Rate of Change (Power Range)	1,2,3[f]	3 divisions	[11% RTP[b)(c)]]	K
4. High Core Power Level	1,2[g]	3 divisions	[105% RTP[b)(c)]]	J
5. Low Saturation Margin	1,2[g]	3 divisions	[30 Btu/lb[b)(c)]]	J
6.a. Low-Low Reactor Coolant System (RCS) Loop Flow Rate in One Loop	1[h]	3 divisions	[54% Nominal Flow[b)(c)]]	G

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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) With Permissive P2 validated.

(e) As specified in the COLR.

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

(g) With Permissive P5 validated.

(h) With Permissive P3 validated.

Table 3.3.1-2 (page 2 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP / ACTUATION FUNCTION / PERMISSIVE	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY[a]	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
6.b. Low RCS Loop Flow Rate in Two Loops	1[d]	3 divisions	[90% Nominal Flow[b][c]]	H
7. Low Reactor Coolant Pump (RCP) Speed	1[d]	3 divisions	[93% Nominal Speed[b][c]]	H
8. High Neutron Flux (Intermediate Range)	1[i],2,3[f]	3 divisions	[25% RTP[b][c]]	K
9. Low Doubling Time (Intermediate Range)	1[i],2,3[f]	3 divisions	[20 Sec.[b][c]]	K
10. Low Pressurizer Pressure	1[d]	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[f][j]	3 divisions	[2005 psia[b][c]]	L
14. Steam Generator (SG) Pressure Drop	1,2,3[f]	3 divisions	[29 psi/min; 102 psi<steady state; Max 1088 psia[b][c]]	K
15. Low SG Pressure	1,2,3[f][j]	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	1,2,3,4	3 divisions	[18.7 psia[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/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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) With Permissive P2 validated.

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

(i) Less than or equal to 10% RTP.

(j) With Permissive P12 inhibited.

Table 3.3.1-2 (page 3 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP / ACTUATION FUNCTION / PERMISSIVE	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	[Reactor Trip for 1 sec.]	I
2.a. Main Feedwater Full Load Isolation on Reactor Trip (All SGs)	1,2[(k)],3[(k)]	3 divisions	NA	M
2.b. Main Feedwater Full Load Isolation on High SG Level (Affected SGs)	1,2[(k)],3[(k)]	3 divisions	[69% Narrow Range[(b)(c)]]	M
2.c. Startup and Shutdown Feedwater Isolation on SG Pressure Drop (Affected SGs)	1,2[(l)],3[(l)]	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[(l)],3[(j)(l)]	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[(l)],3[(l)]	3 divisions	[65% Narrow Range for 10 sec.[(b)(c)]]	M
3.a. SIS Actuation on Low Pressurizer Pressure	1,2,3[(j)]	3 divisions	[1668 psia[(b)(c)]]	L
3.b. SIS Actuation on Low Delta P_{sat}	3[(m)],4[(n)]	3 divisions	[220 psi[(b)(c)]]	O

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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.

(j) With Permissive P12 inhibited.

(k) Except when all MFW full load lines are isolated.

(l) Except when all MFW full load and low load lines are isolated.

(m) With Permissive P12 validated.

(n) With Permissive P15 inhibited.

Table 3.3.1-2 (page 4 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

	TRIP / ACTUATION FUNCTION / PERMISSIVE	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY[a]	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
3.c	SIS Actuation on Low RCS Loop Level	4[o]	3 divisions	[18.9 in.[(b)(c)]]	O
		5,6	2 divisions		R
4.	RCP Trip on Low Delta Pressure across RCP with SIS Actuation	1,2,3,4	3 divisions	[80% Nominal Pressure[(b)(c)]]	N
5.	Partial Cooldown Actuation on SIS Actuation	1,2,3	3 divisions	NA	M
6.a.	Emergency Feedwater System (EFWS) Actuation on Low-Low SG Level (Affected 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
7.a.	Main Steam Relief Train (MSRT) Actuation on High SG Pressure (Affected SG)	1,2,3,4[p]	3 divisions	[1385 psia[(b)(c)]]	N
7.b.	MSRT Isolation on Low SG Pressure (Affected SG)	1,2,3[j]	3 divisions	[580 psia[(b)(c)]]	L
8.a.	Main Steam Isolation Valve (MSIV) Isolation on SG Pressure Drop (All SGs)	1,2,3[q]	3 divisions	[29 psi/min; 102 psi<steady state; Max 1088 psia[(b)(c)]]	M
8.b.	MSIV Isolation on Low SG Pressure (All SGs)	1,2,3[j][q]	3 divisions	[725 psia[(b)(c)]]	L

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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.

(j) With Permissive P12 inhibited.

(o) With Permissive P15 validated.

(p) When the SGs are relied upon for heat removal.

(q) Except when all MSIVs are closed.

Table 3.3.1-2 (page 5 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP / ACTUATION FUNCTION / PERMISSIVE	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY[a]	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
9.a. Containment Isolation (Stage 1) on High Containment Pressure	1,2,3,4	3 divisions	[18.7 psia[b)(c)]]	N
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	1,2,3,4	3 divisions	[≤ 36.3 psia[b)(c)]]	N
9.d. Containment Isolation (Stage 1) on High Containment Radiation	1,2,3,4	3 divisions	[≤ 100 x background[b)(c)]]	N
10.a. Emergency Diesel Generator (EDG) Start on Degraded Grid Voltage	1,2,3,4	4 divisions	[≥ 6210 V and ≤ 6350 V; ≥ 7 sec. and ≤ 11 sec. w/SIS, ≥ 270 sec. and ≤ 300 sec. wo/SIS[b)(c)]]	P
	5,6,(r)	2 divisions		P
10.b. EDG Start on LOOP	1,2,3,4	4 divisions	[≥ 4830 V and ≤ 4970 V; ≥ 0.4 sec. and ≤ 0.6 sec.[b)(c)]]	P
	5,6,(r)	2 divisions		P
11.a. Chemical and Volume Control System (CVCS) Charging Line Isolation on High-High Pressurizer Level	1,2,3,4[(s)]	3 divisions	[80% Measuring Range[b)(c)]]	N
11.b. CVCS Isolation on Anti-Dilution Mitigation (ADM) at Shutdown Conditions (RCP not operating)	3[(t)],4[(t)]	3 divisions	[927 ppm[b)(c)]]	O
	5[(t)],6	2 divisions		Q

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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.

(r) During movement of irradiated fuel assemblies.

(s) With permissive P17 inhibited.

(t) With Permissive P7 validated (no RCPs in operation).

Table 3.3.1-2 (page 6 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP / ACTUATION FUNCTION / PERMISSIVE	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY[(a)]	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
11.c. CVCS Isolation on ADM at Standard Shutdown Conditions	3[(u)],4[(u)]	3 divisions	[(e)[(b)(c)]]	O
	5[(u)]	2 divisions		Q
11.d CVCS Isolation on ADM at Power	1,2	3 divisions	[(e)[(b)(c)]]	J
12.a. Pressurizer Safety Relief Valve (PSRV) Actuation - First Valve	4[(v)]	3 divisions	[(w)]	S
	5[(v)],6 [(v)]	2 divisions		S
12.b. PSRV Actuation - Second Valve	4[(v)]	3 divisions	[(w)]	S
	5[(v)],6[(v)]	2 divisions		S
13. Control Room Heating, Ventilation, and Air Conditioning Reconfiguration to Recirculation Mode on High Intake Activity	1,2,3,4	3 divisions	[≤ 3 x background[(b)(c)]]	T
	5,6,(r)	2 divisions		T
C. PERMISSIVES				
P2 - Flux (Power Range) Measurement Higher than First Threshold	1 (≥ 10% RTP)	3 divisions	[10% RTP]	H
P3 - Flux (Power Range) Measurement Higher than Second Threshold	1 (≥ 70% RTP)	3 divisions	[70% RTP]	G
P5 - Flux (Intermediate Range) Measurement Higher than Threshold	1,2 (≥ 10^{-5}% RTP)	3 divisions	[10^{-5}% RTP]	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/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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) As specified in the COLR.

(r) During movement of irradiated fuel assemblies.

(u) With Permissive P7 inhibited (one or more RCPs in operation).

(v) When PSRV OPERABILITY is required by LCO 3.4.11.

(w) As specified in the Pressure Temperature Limits Report.

Table 3.3.1-2 (page 7 of 7)
Acquisition and Processing Unit Requirements Referenced from Table 3.3.1-1

TRIP / ACTUATION FUNCTION / PERMISSIVE	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	MINIMUM REQUIRED FOR FUNCTIONAL CAPABILITY[(a)]	LIMITING TRIP SETPOINT / DESIGN LIMIT	CONDITION
P7 - RCP Not in Operation	3[(t)],4[(t)]	3 divisions	[50% no load current]	O
	5[(t)],6[(t)]	2 divisions		Q
P8 - Shutdown Rod Cluster Control Assembly Position Lower than Threshold	3[(u)],4[(u)]	3 divisions	[All rods in]	O
	5[(u)]	2 divisions		Q
P12 - Pressurizer Pressure Lower than Threshold	3 (RCS < 2005 psia),4[(n)]	3 divisions	[2005 psia]	O
P14 - Hot Leg Pressure and Hot Leg Temperature Lower than Thresholds	1,2,3,4[(p)]	3 divisions	[350ºF and 464 psia]	N
P15 - Hot Leg Pressure and Hot Leg Temperature Lower than Thresholds and RCPs Shutdown	4	3 divisions	[350ºF, 464 psia, and 50% no load current]	O
	5, 6	2 divisions		R
P16 - Hot Leg Pressure and Delta P_{sat} Lower than Thresholds, RCP Not in Operation, and Time Elapsed since Safety Injection start	1, 2, 3, 4	3 divisions	[290 psia, P_{sat} 73 psi, 50% no load current, and 1.5 hrs post-SI]	N
P17 - Cold Leg Temperature Lower than Threshold	4[(v)]	3 divisions	[248ºF]	S
	5[(v)],6[(v)]	2 divisions		S

(a) A division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function/Permissive are OPERABLE; and b) the associated signal processors are 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 Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the division 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.

(n) With Permissive P15 inhibited.

(p) When the SGs are relied upon for heat removal.

(t) With Permissive P7 validated (no RCPs in operation).

(u) With Permissive P7 inhibited (one or more RCPs in operation).

(v) When PSRV OPERABILITY required by LCO 3.4.11.

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 divisions 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 Enter the Condition referenced in Table 3.3.2-1 for the division.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action D.1 and referenced in Table 3.3.2-1.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.2-1.	F.1 Initiate action in accordance with Specification 5.6.5.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
This SR applies to each PAM instrumentation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	----------NOTE---------- Neutron detectors are excluded from CALIBRATION. ---------- Perform CALIBRATION	 24 months

Table 3.3.2-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED DIVISIONS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
1.	Cold Leg Temperature (Wide Range)	2	E
2.	Containment Isolation Valve Position Indication	2[(a)(b)]	E
3.	Containment Service Compartment Pressure (Wide Range)	2[(c)]	E[(c)]
4.	Core Outlet Thermocouples (Wide Range)	2 per quadrant	F
5.	Emergency Feedwater System Flow	2 per loop	E
6.	Hot Leg Pressure (Wide Range)	2[(c)]	E[(c)]
7.	Hot Leg Temperature (Wide Range)	2[(c)]	E[(c)]
8.	Intermediate Range	2[(c)]	E[(c)]
9.	Low Head Safety Injection Flow (Wide Range)	2 per loop	F
10.	Medium Head Safety Injection Flow (Wide Range)	2 per loop	F
11.	Pressurizer Level	2	E
12.	Radiation Monitor - Annulus Ventilation System Gamma Activity	2	E
13.	Radiation Monitor - Containment High Range	2[(c)]	E[(c)]
14.	Radiation Monitor - Main Steam Line	2 per loop	E
15.	Steam Generator Level (Wide Range)	2[(c)]	F[(c)]
16.	Steam Generator Pressure	2[(c)]	E[(c)]
17.	Source Range	2	E
18.	Subcooling Margin	2	E

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication division is required for penetration flow paths with only one installed control room indication division.

(c) Note that more restrictive operability requirements for the associated components are contained in LCO 3.3.1, "Protection System."

3.3 INSTRUMENTATION

3.3.3 Remote Shutdown Station (RSS)

LCO 3.3.3 The RSS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RSS inoperable.	A.1 Restore to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 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
SR 3.3.3.2	----------NOTE---------- Neutron detectors are excluded from the CALIBRATION. ---------- Perform CALIBRATION for each required instrument division.	24 months
SR 3.3.3.3	Verify the OPERABILITY of the RSS hardware and software.	24 months