

3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. -----NOTE----- Not applicable to Functions 13. ----- One or more required channels inoperable.	A.1 Place channel in trip. <u>OR</u> A.2-----NOTE----- Not applicable to Functions 2.a,2.b,2c,2d or 2.f. ----- Place associated trip system in trip.	12 hours 12 hours
B. -----NOTE----- Not applicable to Functions 2.a, 2.b, 2c,2d , 2.f or 13. ----- One or more Functions with one or more required channels inoperable in both trip systems.	B.1 Place channel in one trip system in trip. <u>OR</u> B.2 Place one trip system in trip.	6 hours 6 hours
C. One or more Functions with RPS trip capability not maintained.	C.1 Restore RPS trip capability.	1 hour
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1 Reduce THERMAL POWER to < 30% RTP.	4 hours
F. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1 Be in MODE 2.	6 hours
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate alternate method to detect thermal hydraulic instability oscillations.	12 hours
J. Required Action and associated Completion Time of Condition I not met.	J.1 Reduce THERMAL POWER to <25% RTP.	4 hours
K. -----NOTE----- Only applicable to Functions 13. ----- One required channel inoperable.	K.1 Place channel in trip. <u>OR</u> K.2 Be in MODE 3.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains RPS trip capability.

SURVEILLANCE	FREQUENCY
SR 3.3.1.1.1 Perform CHANNEL CHECK.	24 hours for APRM 12 hours for all other RPS functions
SR 3.3.1.1.2 -----NOTE----- Not required to be performed until 12 hours after THERMAL POWER \geq 25% RTP. Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power is \leq 2% RTP while operating at \geq 25% RTP.	7 days
SR 3.3.1.1.3 Not used.	
SR 3.3.1.1.4 -----NOTE----- Not required to be performed when entering MODE 2 from Mode 1 until 12 hours after entering MODE 2. Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.1.1.5 Perform CHANNEL FUNCTIONAL TEST.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.1.6 -----NOTE----- Required to be met prior to entry into MODE 2 from MODE 1. ----- Verify the WRNM and APRM channels overlap within at least 1/2 decade.	7 days
SR 3.3.1.1.7 Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.1.1.8 Calibrate the local power range monitors.	1000 MWD/T average core exposure
SR 3.3.1.1.9 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.1.1.10 Calibrate the trip units.	92 days
SR 3.3.1.1.11 -----NOTE----- 1. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Function 2.b and 2.f, the CHANNEL FUNCTION TEST includes the recirculation flow input processing, excluding the flow transmitters. ----- Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.1.1.12 Perform CHANNEL FUNCTIONAL TEST.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.1.13 -----NOTE-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 3. For Function 2.b and 2.f, the recirculation flow transmitters that feed the APRM are included. <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	<p>18 months</p>
<p>SR 3.3.1.1.14 Not used.</p>	
<p>SR 3.3.1.1.15 Perform LOGIC SYSTEM FUNCTIONAL TEST.</p>	<p>18 months</p>
<p>SR 3.3.1.1.16 Verify Turbine Stop Valve—Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is $\geq 30\%$ RTP.</p>	<p>18 months</p>
<p>SR 3.3.1.1.17 -----NOTE-----</p> <ol style="list-style-type: none"> 1. Neutron detectors are excluded. 2. For Function 5 "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. 3. For Function 2.e "n" equals 8 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. Testing of APRM and OPRM outputs shall alternate. <p>-----</p> <p>Verify the RPS RESPONSE TIME is within limits.</p>	<p>18 months on a STAGGERED TEST BASIS</p>
<p>SR 3.3.1.1.18 Verify OPRM is not bypassed when APRM Simulated Thermal Power is $\geq 25\%$ and recirculation drive flow is $\leq 60\%$.</p>	<p>18 months</p>

Table 3.3.1.1-1 (page 1 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Wide Range Neutron Monitors					
a. WRNM Neutron Flux Period-Short	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.6 SR 3.3.1.1.13 SR 3.3.1.1.15	≥ 13 Seconds at RC time constant = 40 Seconds
	5 ^(a)	3	H	SR 3.3.1.1.1 SR 3.3.1.1.7 SR 3.3.1.1.13 SR 3.3.1.1.15	≥ 13 Seconds at RC time constant = 40 Seconds
b. Inoperative (Fatal)	2	3	G	SR 3.3.1.1.4 SR 3.3.1.1.15	NA
	5 ^(a)	3	H	SR 3.3.1.1.7 SR 3.3.1.1.15	NA
2. Average Power Range Monitors					
a. Neutron Flux-High (Setdown)	2	3 ^(b)	G	SR 3.3.1.1.1 SR 3.3.1.1.6 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.13	≤ 15% RTP
b. Simulated Thermal Power-High	1	3 ^(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.13	≤ 0.64W+72.4% RTP and ≤ 117%
c. Neutron Flux—High	1	3 ^(b)	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.13	≤ 120% RTP
d. Inop	1,2	3 ^(b)	G	SR 3.3.1.1.11	NA

(continued)

- (a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(b) Each APRM channel provides inputs to both trip systems.

Table 3.3.1.1-1 (page 2 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
e. 2-out-of-4 Voter	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.11 SR 3.3.1.1.15 SR 3.3.1.1.17	NA
f. OPRM Upscale	≥25% RTP	3 ^(b)	I	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.11 SR 3.3.1.1.13 SR 3.3.1.1.18	NA ^(c)
3. Reactor Vessel Steam Dome Pressure—High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤74.2 kg/cm ² (1055 psig)
4. Reactor Vessel Water Level—Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≥31.0 cm (12.2 in) indicated level
5. Main Steam Isolation Valve—Closure	1	8	F	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.17	≤10% closed
6. Drywell Pressure—High	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤0.14 kg/cm ² (2 psig)
7. Scram Discharge Volume Water Level—High					
a. Level Transmitter	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤14.96M (49'-1") Plant Elevation
	5 ^(a)	2	H	SR 3.3.1.1.1 SR 3.3.1.1.9 SR 3.3.1.1.10 SR 3.3.1.1.13 SR 3.3.1.1.15	≤14.96M (49'-1") Plant Elevation
b. Float Switch	1,2	2	G	SR 3.3.1.1.9 SR 3.3.1.1.15	≤14.96M (49'-1") Plant Elevation
	5 ^(a)	2	H	SR 3.3.1.1.9 SR 3.3.1.1.15	≤14.96M (49'-1") Plant Elevation

(continued)

- (a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(b) Each APRM/OPRM channel provides inputs to both trip systems.
(c) See COLR for OPRM period based detection algorithm (PBDA) setpoint limits

Table 3.3.1.1-1 (page 3 of 3)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
8. Turbine Stop Valve—Closure	≥ 30% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≤ 10% closed
9. Turbine Control Valve Fast Closure, Trip Oil Pressure—Low	≥ 30% RTP	2	E	SR 3.3.1.1.9 SR 3.3.1.1.13 SR 3.3.1.1.15 SR 3.3.1.1.16 SR 3.3.1.1.17	≥ 70.3 kg/cm ² (1000 psig)
10. Reactor Mode Switch—Shutdown Position	1,2	1	G	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
	5 ^(a)	1	H	SR 3.3.1.1.12 SR 3.3.1.1.15	NA
11. Manual Scram	1,2	1	G	SR 3.3.1.1.9 SR 3.3.1.1.15	NA
	5 ^(a)	1	H	SR 3.3.1.1.9 SR 3.3.1.1.15	NA
12. Automatic Scram Relay	1,2	2	G	SR 3.3.1.1.5 SR 3.3.1.1.15	
	5 ^(a)	2	H	SR 3.3.1.1.5 SR 3.3.1.1.15	
13. Automatic Seismic Trip System.	1,2	2 ^(b)	(c)	SR 3.3.1.1.12	<u>C/S Bldg</u> <u>EL-0.83 ft</u> <u>Horiz/Verti</u> ≤ 0.233g/ ≤ 0.202g (OBE)
				SR 3.3.1.1.13 SR 3.3.1.1.15	

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(b) Refer to BASE 3.3.1.1 item 13 Automatic Seismic Trip System
(c) Refer to CONDITION K

3.3 INSTRUMENTATION

3.3.1.2 Wide Range Neutron Monitor (WRNM) Instrumentation

LCO 3.3.1.2 The WRNM instrumentation in Table 3.3.1.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required channel inoperable in one or more trip system.</p>	<p>-----NOTE----- LCO 3.0.4 is not applicable -----</p> <p>A.1 Place channel in bypass</p> <p><u>OR</u></p> <p>A.2 Place channel in trip</p>	<p>1 hour</p>
<p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>Three or more required channels inoperable.</p>	<p>B.1 Be in MODE 3.</p>	<p>12 hours</p>
<p>C. One or more required WRNMs inoperable in MODE 3 or 4.</p>	<p>C.1 Fully insert all insertable control rods.</p> <p><u>AND</u></p> <p>C.2 Place reactor mode switch in the shutdown position.</p>	<p>1 hour</p> <p>1 hour</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One required WRNM inoperable in MODE 5.</p>	<p>D.1 Suspend CORE ALTERATIONS except for control rod insertion.</p> <p><u>AND</u></p> <p>D.2 Initiate action to insert all insertable control rods in core cells containing one or more fuel assemblies.</p> <p><u>AND</u></p> <p>D.3 Initiate action to restore required WRNM to OPERABLE status.</p>	<p>Immediately</p> <p>Immediately</p> <p>7 days</p>
<p>E. Two required WRNMs inoperable in MODE 5.</p>	<p>E.1 Initiate action to restore one required WRNM to OPERABLE status.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE	FREQUENCY
SR 3.3.1.2.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.1.2.2 -----NOTE----- 1. Only required to be met during CORE ALTERATIONS. 2. Only part a. is required under the conditions specified in footnote (a) of Table 3.3.1.2-1. 3. One WRNM may be used to satisfy more than one of the following. ----- Verify an OPERABLE WRNM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed when the associated WRNM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated WRNM is included in the fueled region.	12 hours <u>AND</u> Following a change in the core quadrant where CORE ALTERATIONS are being performed.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.2.3 -----NOTE----- Not required to be met with four or less fuel assemblies adjacent to the WRNM and no other fuel assemblies in the associated core quadrant. ----- Verify count rate is ≥ 3.0 CPS</p>	<p>12 hours during CORE ALTERATIONS <u>AND</u> 24 hours</p>
<p>SR 3.3.1.2.4 Determination of signal to noise ratio</p>	<p>24 hours prior to CORE ALTERATIONS <u>AND</u> 7 days</p>
<p>SR 3.3.1.2.5 Perform CHANNEL FUNCTIONAL TEST.</p>	<p>31 days</p>
<p>SR 3.3.1.2.6 -----NOTE----- Neutron detectors are excluded. ----- Perform CHANNEL CALIBRATION.</p>	<p>18 moths</p>

Table 3.3.1.2-1 (page 1 of 1)
Wide Range Neutron Monitor Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS
1. Wide Range Neutron Monitor	2	3 per trip system	SR 3.3.1.2.1 SR 3.3.1.2.3 SR 3.3.1.2.5 SR 3.3.1.2.6
	3,4	2	SR 3.3.1.2.1 SR 3.3.1.2.3 SR 3.3.1.2.5 SR 3.3.1.2.6
	5	2 ^{(a), (b)}	SR 3.3.1.2.1 SR 3.3.1.2.2 SR 3.3.1.2.3 SR 3.3.1.2.4 SR 3.3.1.2.5 SR 3.3.1.2.6

- (a) Only one WRNM channel is required to be OPERABLE during spiral ~~offload or~~ reload when the fueled region includes only that WRNM detector.
- (b) Special movable detectors may be used in place of WRNMs if connected to normal WRNM circuits.

3.3 INSTRUMENTATION

3.3.2.1 Control Rod Block Instrumentation

LCO 3.3.2.1 The control rod block instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One rod block monitor (RBM) channel inoperable.	A.1 Restore RBM channel to OPERABLE status.	24 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Two RBM channels inoperable.	B.1 Place one RBM channel in trip.	1 hour
C. Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 Suspend control rod movement except by scram. <u>OR</u>	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1.1 Verify ≥ 12 rods withdrawn.	Immediately
	<u>OR</u>	
	C.2.1.2 Verify by administrative methods that startup with RWM inoperable has not been performed in the last calendar year.	Immediately
	<u>AND</u>	
	C.2.2 Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.	During control rod movement
D. RWM inoperable during reactor shutdown.	D.1 Verify movement of control rods is in accordance with BPWS by a second licensed operator or other qualified member of the technical staff.	During control rod movement
E. One or more Reactor Mode Switch—Shutdown Position channels inoperable.	E.1 Suspend control rod withdrawal.	Immediately
	<u>AND</u>	
	E.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.
2. When a RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1 Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.2.1.2 -----NOTE----- Not Required to be performed until 1 hour after any control rod is withdrawn at $\leq 10\%$ RTP in MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.3 -----NOTE----- Not Required to be performed until 1 hour after THERMAL POWER is $\leq 10\%$ RTP in MODE 1. ----- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.4 Verify the RBM: a. Low Power Range-Upscale Function is not bypassed when THERMAL POWER is \geq LPSP (LPRS) and \leq IPSP (IPRS) specified in the COLR. b. Intermediate Power Range—Upscale Function is not bypassed when THERMAL POWER is $>$ IPSP (IPRS) and \leq HPSP (HPRS) specified in the COLR. c. High Power Range—Upscale Function is not bypassed when THERMAL POWER is $>$ HPSP (HPRS) specified in the COLR.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.2.1.5 Verify the RWM is not bypassed when THERMAL POWER is \leq 10% RTP.	18 months
SR 3.3.2.1.6 -----NOTE----- Not Required to be performed until 1 hour after reactor mode switch is in the shutdown position. ----- Perform CHANNEL FUNCTIONAL TEST.	18 months
SR 3.3.2.1.7 -----NOTE----- Neutron detectors are excluded. ----- Perform CHANNEL CALIBRATION.	18 months
SR 3.3.2.1.8 Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Low Power Range — Upscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	Allowable value specified in the COLR.
b. Intermediate Power Range — Upscale	(b)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	Allowable value specified in the COLR.
c. High Power Range — Upscale	(c), (d)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	Allowable value specified in the COLR.
d. Inop	(d), (e)	2	SR 3.3.2.1.1	NA
2. Rod Worth Minimizer				
	1 ^(f) , 2 ^(f)	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.5 SR 3.3.2.1.8	NA
3. Reactor Mode Switch — Shutdown Position				
	(g)	2	SR 3.3.2.1.6	NA

- (a) THERMAL POWER \geq LPSP (LPRS) and \leq IPSP (IPRS) specified in the COLR and MCPR < 1.70 .
 (b) THERMAL POWER $>$ IPSP (IPRS) and \leq HPSP (HPRS) specified in the COLR and MCPR < 1.70 .
 (c) THERMAL POWER $>$ HPSP (HPRS) specified in the COLR and $< 90\%$ RTP and MCPR < 1.70 .
 (d) THERMAL POWER $\geq 90\%$ RTP and MCPR < 1.40 .
 (e) THERMAL POWER \geq LPSP (LPRS) specified in the COLR and $< 90\%$ RTP and MCPR < 1.70 .
 (f) With THERMAL POWER $\leq 10\%$ RTP.
 (g) Reactor Mode Switch in the shutdown position.
 (h) Allowable value specified in the COLR.

Note:

- LPSP: Low Power Setpoint
- LPRS: Low Power Range Setpoint
- IPSP: Intermediate Power Setpoint
- IPRS: Intermediate Power Range Setpoint
- HPSP: High Power Setpoint
- HPRS: High Power Range Setpoint

3.3 INSTRUMENTATION

3.3.2.2 Feedwater Pumps and Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Three channels of feedwater pumps and main turbine high water level trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER \geq 25% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One feedwater pumps and main turbine high water level trip channel inoperable.	A.1 Place channel in trip.	7 days
B. Two or more feedwater pumps and main turbine high water level trip channels inoperable.	B.1 Restore feedwater pumps and main turbine high water level trip capability	2 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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 feedwater pumps and main turbine high water level trip capability is maintained.

SURVEILLANCE	FREQUENCY
SR 3.3.2.2.1 Perform CHANNEL CHECK.	24 hours
SR 3.3.2.2.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.2.3 Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 143.5 cm (56.5 in).	18 months
SR 3.3.2.2.4 Perform LOGIC SYSTEM FUNCTIONAL TEST including valve actuation.	18 months

3.3 INSTRUMENTATION

3.3.3.1 Post Accident Monitoring (PAM) Instrumentation (DELETED 改列入 TRM 並納入 MODE 5 適用狀況)

LCO 3.3.3.1 The PAM instrumentation for each Function in Table 3.3.3.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTES-----

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel 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 16.6.9.3.3	Immediately
C. -----NOTE----- Not applicable to hydrogen / oxygen monitor channels. ----- One or more Functions with two required channels inoperable.	C.1 Restore one required channel to OPERABLE status.	7 days
D. Two required hydrogen / oxygen monitor channels inoperable.	D.1 Restore one required hydrogen / oxygen monitor channel to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Enter the Condition referenced in Table 3.3.3.1-1 for the channel.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.3.1-1.	F.1 Be in MODE 3.	12 hours
G. As required by Required Action E.1 and referenced in Table 3.3.3.1-1.	G.1 Initiate action in accordance with Specification 16.6.9.3.3	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

These SRs apply to each Function in Table 3.3.3.1-1.

SURVEILLANCE	FREQUENCY
SR 3.3.3.1.1 Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2 Perform CHANNEL CALIBRATION.	18 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION E.1
1. Reactor Pressure	2	F
2. Reactor Vessel Water Level	2	F
3. Torus Level	2	F
4. Drywell Radiation	2	G
5. Suppression Pool Radiation	2	G
6. Drywell Level	2	F
7. PCIIV Position	2 per penetration flow path ^{(a)(b)}	F
8. Containment H ₂ & O ₂ Monitor	2	F
9. Primary Containment (Drywell, Torus) Pressure	2	F
10. Suppression Pool average Water Temperature	2	F
11. WRNM	2	F

- (a) Not required for isolation valves whose associated penetration flow path 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 channel is required for penetration flow paths with only one installed control room indication channel.

3.3 INSTRUMENTATION

3.3.3.2 Remote Shutdown System (DELETED 改列入 TRM 並納入 MODE 5 適用狀況)

LCO 3.3.3.2 The Remote Shutdown System Functions in Table 3.3.3.2-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTES-----

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.3.2.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2.2 Verify each required control circuit and transfer switch is capable of performing the intended function.	18 months
SR 3.3.3.2.3 Perform CHANNEL CALIBRATION for each required instrumentation channel.	18 months

Table 3.3.3.2-1 (page 1 of 1)
Remote Shutdown System Instrumentation

FUNCTION (INSTRUMENT OR CONTROL PARAMETER)	REQUIRED NUMBER OF DIVISIONS
1. Reactor Vessel Pressure	1
2. Reactor Vessel Water Level	1
3. Safety/Relief Valve Position, 2 valves ^(a)	1/Valve
4. Suppression Pool Water Level	1
5. Suppression Pool Water Temperature	1
6. RHR System Flow (A)	1
7. RHR Hx. A Inlet Temperature	1
8. RCIC System Flow	1
9. RCIC Turbine Speed	1

(a) Not applicable for CHANNEL CALIBRATION.

3.3 INSTRUMENTATION

3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

LCO 3.3.4.1 a. Two channels per trip system for each EOC-RPT instrumentation Function listed below shall be OPERABLE:

1. Turbine Stop Valve (TSV) -- Closure; and
2. Turbine Control Valve (TCV) Fast Closure, Trip Oil Pressure -- Low.

OR

b. LCO 3.2.2, “MINIMUM CRITICAL POWER RATIO (MCPR)”, limits for inoperable EOC-RPT as specified in the COLR are made applicable.

APPLICABILITY: THERMAL POWER > 30% RTP.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
	<p><u>OR</u></p> <p>A.2 -----NOTE----- Not applicable if inoperable channel is the result of an inoperable breaker. ----- Place channel in trip.</p>	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One or more Functions with EOC-RPT trip capability not maintained.</p> <p><u>AND</u></p> <p>MCPR limit for inoperable EOC-RPT not made applicable.</p>	<p>B.1 Restore EOC-RPT trip capability.</p> <p><u>OR</u></p>	2 hours
	<p>B.2 Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.</p>	2 hours
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Remove the associated recirculation pump from service.</p> <p><u>OR</u></p>	4 hours
	<p>C.2 Reduce THERMAL POWER to < 30% RTP.</p>	4 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

SURVEILLANCE	FREQUENCY
SR 3.3.4.1.1 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.4.1.2 Perform CHANNEL CALIBRATION. The Allowable Values shall be: TSV—Closure: ≤ 10% of closure from full open; and TCV Fast Closure, Trip Oil Pressure—Low: ≥ 70.3kg/cm ² (1000 psig)	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.4.1.3 Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.	18 months
SR 3.3.4.1.4 Verify TSV—Closure and TCV Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is $\geq 30\%$ RTP.	18 months
SR 3.3.4.1.5 -----NOTE----- Breaker interruption time may be assumed from the most recent performance of SR 3.3.4.1.6. ----- Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.	18 months on a STAGGERED TEST BASIS
SR 3.3.4.1.6 Determine RPT breaker interruption time.	60 months

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

- LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:
- a. Reactor Vessel Water Level—Low-Low, Level 2; and
 - b. Reactor Steam Dome Pressure-High

APPLICABILITY: MODE 1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Restore channel to OPERABLE status.	14 days
	<p><u>OR</u></p> <p>A.2 -----NOTE----- Not applicable if inoperable channel is the result of an inoperable breaker. ----- Place channel in trip.</p>	14 days
B. One Function with ATWS-RPT trip capability not maintained.	B.1 Restore ATWS-RPT trip capability.	72 hours
C. Both Functions with ATWS-RPT trip capability not maintained.	C.1 Restore ATWS-RPT trip capability for one Function.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Remove the associated recirculation pump from service.	6 hours
	<u>OR</u>	
	D.2 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

SURVEILLANCE	FREQUENCY
SR 3.3.4.2.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.4.2.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.4.2.3 Calibrate the trip units.	92 days
SR 3.3.4.2.4 Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level—Low-Low, Level 2: ≥ -110.5 cm (-43.5 in) ; and b. Reactor Steam Dome Pressure—High: ≤ 75.8 kg/cm ² (1078 psig)	18 months
SR 3.3.4.2.5 Perform LOGIC SYSTEM FUNCTIONAL TEST including breaker actuation.	18 months

3.3 INSTRUMENTATION

3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation

LCO 3.3.5.1 The ECCS instrumentation for each Function in Table 3.3.5.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.1-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1 -----NOTES----- 1. Only applicable in MODES 1, 2, and 3. 2. Only applicable for Functions 1.a, 1.b, 2.a, and 2.b. ----- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	<u>AND</u> B.2 -----NOTE----- Only applicable for Functions 3.a and 3.b. ----- Declare High Pressure Coolant Injection (HPCI) System inoperable.	
	<u>AND</u> B.3 Place channel in trip.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p>	<p>C.1 -----NOTES----- 1. Only applicable in MODES 1, 2, and 3. 2. Only applicable for Functions 1.c, 1.e, 2.c, 2.d, 2.e, 2.f, 2.g and 2.i ----- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable. <u>AND</u></p>	<p>1 hour from discovery of loss of initiation capability for feature(s) in both divisions</p> <p>24 hours</p>
	<p>C.2 Restore channel to OPERABLE status.</p>	
<p>D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p>	<p>D.1 -----NOTE----- Only applicable if HPCI pump suction is not aligned to the suppression pool. ----- Declare HPCI System inoperable. <u>AND</u></p>	<p>1 hour from discovery of loss of HPCI initiation capability</p> <p>24 hours</p>
	<p>D.2.1 Place channel in trip.</p>	
	<p><u>OR</u> D.2.2 Align the HPCI pump suction to the suppression pool.</p>	<p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. As required by Required Action A.1 and referenced in Table 3.3.5.1-1</p>	<p>E.1 -----NOTES----- 1. Only applicable in MODES 1, 2, and 3. 2. Only applicable for Functions 1.d and 2.j. ----- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable. <u>AND</u></p> <p>E.2 Restore channel to OPERABLE status.</p>	<p>1 hour from discovery of loss of initiation capability for subsystems in both divisions</p> <p>7 days</p>
<p>F. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p>	<p>F.1 Declare Automatic Depressurization System (ADS) valves inoperable. <u>AND</u></p> <p>F.2 Place channel in trip.</p>	<p>1 hour from discovery of loss of ADS initiation capability in both trip systems</p> <p>96 hours from discovery of inoperable channel concurrent with HPCI or reactor core isolation cooling (RCIC) inoperable</p> <p><u>AND</u></p> <p>8 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.</p>	<p>G.1 -----NOTE----- Only applicable for Functions 4.c, 4.e, 4.f, 5.c, 5.e, and 5.f. ----- Declare ADS valves inoperable.</p> <p><u>AND</u></p> <p>G.2 Restore channel to OPERABLE status.</p>	<p>1 hour from discovery of loss of ADS initiation capability in both trip systems</p> <p>96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable</p> <p><u>AND</u></p> <p>8 days</p>
<p>H. Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.</p>	<p>H.1 Declare associated supported feature(s) inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 3.c, and 3.f; and (b) for up to 6 hours for Functions other than 3.c, and 3.f provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.5.1.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.5.1.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.5.1.3 Calibrate the trip unit.	92 days
SR 3.3.5.1.4 Perform CHANNEL CALIBRATION.	*
SR 3.3.5.1.5 Perform CHANNEL CALIBRATION	18 months
SR 3.3.5.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

* When a functional test shows the setpoints to be outside limits

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Core Spray System					
a. Reactor Vessel Water Level—Low Low Low, Level 1	1,2,3, 4 ^(a) , 5 ^(a)	4 ^(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥-378.5 cm (-149 in) indicated level
b. Drywell Pressure—High	1,2,3	4 ^(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤0.14 kg/cm ² (2 psig)
c. Reactor Steam Dome Pressure—Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥34.1 kg/cm ² and ≤36.3 kg/cm ²
	4 ^(a) , 5 ^(a)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥34.1 kg/cm ² and ≤36.3 kg/cm ²
d. Core Spray Pump Discharge Flow—Low (Bypass)	1,2,3, 4 ^(a) , 5 ^(a)	2 1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥21.0 l/s (333 gpm) and ≤25.7 l/s (407 gpm)
e. Core spray pump start time Delay Relay	1,2,3, 4 ^(a) , 5 ^(a)	2 1 per pump	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥4 seconds ≤6 seconds
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Vessel Water Level—Low Low Low, Level 1	1,2,3, 4 ^(a) , 5 ^(a)	4 ^(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 ^(d) SR 3.3.5.1.6 ^(d)	≥-378.5 cm (-149 in) indicated level

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(b) Also required to initiate the associated diesel generator (EDG) and trip Drywell air handling units.

(d) Refer to the statements in the BASES.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System (continued)					
b. Drywell Pressure—High	1,2,3	4 ^(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤0.14 kg/cm ² (2 psig)
c. Reactor Steam Dome Pressure—Low (Injection Permissive)	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥34.1 kg/cm ² and ≤36.3 kg/cm ²
	4 ^(a) , 5 ^(a)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 ^(d) SR 3.3.5.1.6 ^(d)	≥34.1 kg/cm ² and ≤36.3 kg/cm ²
d. Reactor Steam Dome Pressure—Low Break Detection	1 ^(c) , 2 ^(c) 3 ^(c)	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥62.2 kg/cm ² and ≤64.4 kg/cm ²
e. Recirculation Pump A d/p — Break Detection Logic	1,2,3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥0.13 kg/cm ² and ≤0.15 kg/cm ²
f. Recirculation Pump B d/p. — Break Detection Logic	1,2,3	4	C	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥0.13 kg/cm ² and ≤0.15 kg/cm ²
g. Recirculation Pump d/p A>B — Break Detection Logic	1,2,3	4	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥0.065 kg/cm ² and ≤0.075 kg/cm ²
h. Reactor Vessel Shroud Level—Level 0	1,2,3	2	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥782.3 cm (308 in) above vessel zero

(continued)

- (a) When associated subsystem(s) are required to be OPERABLE.
- (b) Also required to initiate the associated diesel generator (EDG) and trip Drywell air handling units.
- (c) With associated recirculation pump discharge valve open.
- (d) Refer to the statements in the BASES.

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI System (continued)					
i. Low Pressure Coolant Injection Pump Start—Time Delay Relay	1,2,3 4 ^(a) , 5 ^(a)	4 1 per pump	C	SR 3.3.5.1.5 ^(e) SR 3.3.5.1.6 ^(e)	
Pumps A, B,					≥9 Second and ≤ 11 Seconds
Pump C, D					≥ 14 Seconds and ≤ 16 Seconds
j. Low Pressure Coolant Injection Pump Discharge Flow—Low (Bypass)	1,2,3 4 ^(a) , 5 ^(a)	2 1 per subsystem	E	SR 3.3.5.1.2 SR 3.3.5.1.5 ^(e) SR 3.3.5.1.6 ^(e)	≥67.6 l/s (1073 gpm) and ≤83.3 l/s (1323 gpm)
3. High Pressure Coolant Injection (HPCI) System					
a. Reactor Vessel Water Level—Low Low, Level 2	1, 2 ^(d) , 3 ^(d)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -110.5 cm (-43.5 in) indicated level
b. Drywell Pressure—High	1, 2 ^(d) , 3 ^(d)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤0.14 kg/cm ² (2 psig)
c. Reactor Vessel Water Level—High, Level 8	1, 2 ^(d) , 3 ^(d)	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 143.5 cm (56.5 in) indicated level
d. Condensate Storage Tank Level—Low	1, 2 ^(d) , 3 ^(d)	2	D	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1.5 m (5 ft) above tank bottom
e. Suppression Pool Water Level—High	1, 2 ^(d) , 3 ^(d)	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 12.7 cm (5 in) above normal water level.

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(d) With reactor steam dome pressure > 10.5 kg/cm² (150 psig)

(e) Refer to the statements in the BASES.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. HPCI System (continued)					
f. High Pressure Coolant Injection Pump Discharge Flow—Low (Bypass)	1, 2 ^(d) , 3 ^(d)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 28 lps (444 gpm) and ≤ 50 lps (793 gpm)
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level—Low Low Low, Level 1	1, 2 ^(d) , 3 ^(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -378.5 cm (-149 in) indicated level
b. Drywell Pressure—High	1, 2 ^(d) , 3 ^(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 0.14 kg/cm ² (2 psig)
c. Automatic Depressurization System Initiation Timer	1, 2 ^(d) , 3 ^(d)	1	G	SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 120 seconds
d. Reactor Vessel Water Level—Low, Level 3 (Confirmatory)	1, 2 ^(d) , 3 ^(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 16.5 cm (6.5 in) indicated level
e. Core Spray Pump Discharge Pressure—High	1, 2 ^(d) , 3 ^(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 5.2 kg/cm ² and ≤ 8.8 kg/cm ²
f. Low Pressure Coolant Injection Pump Discharge Pressure—High	1, 2 ^(d) , 3 ^(d)	4	G	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 5.2 kg/cm ² and ≤ 8.8 kg/cm ²
5. ADS Trip System B					
a. Reactor Vessel Water Level—Low Low Low, Level 1	1, 2 ^(d) , 3 ^(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -378.5 cm (-149 in) indicated level

(continued)

(d) With reactor steam dome pressure > 10.5 kg/cm² (150 psig)

Table 3.3.5.1-1 (page 5 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B (continued)					
b. Drywell Pressure—High	1, 2 ^(d) , 3 ^(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤0.14 kg/cm ² (2 psig)
c. Automatic Depressurization System Initiation Timer	1, 2 ^(d) , 3 ^(d)	1	G	SR 3.3.5.1.5 SR 3.3.5.1.6	≤120 seconds
d. Reactor Vessel Water Level—Low, Level 3 (Confirmatory)	1, 2 ^(d) , 3 ^(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 16.5 cm (6.5in) indicated level
e. Core Spray Pump Discharge Pressure—High	1, 2 ^(d) , 3 ^(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥5.2 kg/cm ² and ≤ 8.8 kg/cm ²
f. Low Pressure Coolant Injection Pump Discharge Pressure—High	1, 2 ^(d) , 3 ^(d)	4	G	SR 3.3.5.1.2 SR 3.3.5.1.5 SR 3.3.5.1.6	≥5.2 kg/cm ² and ≤ 8.8 kg/cm ²

(d) With reactor steam dome pressure > 10.5kg/cm² (150 psig)

3.3 INSTRUMENTATION

3.3.5.2 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.2 The RCIC System instrumentation for each Function in Table 3.3.5.2-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 10.5kg/cm²
(150 psig)

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.2-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1 Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	<u>AND</u>	
	B.2 Place channel in trip.	24 hours
C. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1 Restore channel to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1 -----NOTE----- Only applicable if RCIC pump suction is not aligned to the suppression pool. ----- Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	<u>AND</u>	
	D.2.1 Place channel in trip.	24 hours
	<u>OR</u>	
	D.2.2 Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Declare RCIC System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.5.2.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.5.2.3 Calibrate the trip units.	92 days
SR 3.3.5.2.4 Perform CHANNEL CALIBRATION.	*
SR 3.3.5.2.5 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.5.2.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

* When a functional test shows the setpoint to be outside limits.

Table 3.3.5.2-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level—Low Low, Level 2	4	B	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.5 SR 3.3.5.2.6	≥ -110.5 cm (-43.5in) indicated level
2. Reactor Vessel Water Level—High, Level 8	2	C	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.5 SR 3.3.5.2.6	≤ 143.5 cm (56.5 in) indicated level
3. Condensate Storage Tank Level—Low	2	D	SR 3.3.5.2.2 SR 3.3.5.2.5 SR 3.3.5.2.6	≥ 1.5 m (5 ft) above tank bottom

3.3 INSTRUMENTATION

3.3.6.1 Primary Containment Isolation Instrumentation

LCO 3.3.6.1 The primary containment isolation instrumentation for each Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	12 hours for Functions 2.a, 2.b, 6.b and 6.c <u>AND</u> 24 hours for Functions other than Functions 2.a, 2.b, 6.b and 6.c
B. One or more automatic Functions with isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter the Condition referenced in Table 3.3.6.1-1 for the channel.	Immediately

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	D.1 Isolate associated main steam line (MSL).	12 hours
	<u>OR</u>	
	D.2.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	D.2.2 Be in MODE 4.	36 hours
E. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	E.1 Be in MODE 2.	6 hours
F. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	F.1 Isolate the affected penetration flow path(s).	1 hour
G. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	G.1 Be in MODE 3.	12 hours
	<u>AND</u>	
<u>OR</u>	G.2 Be in MODE 4.	36 hours
Required Action and associated Completion Time for Condition F not met.		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	H.1 Declare associated standby liquid control subsystem (SBLC) inoperable.	1 hour
	<u>OR</u>	
	H.2 Isolate the Reactor Water Cleanup System.	1 hour
I. As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	I.1 Initiate action to restore channel to OPERABLE status.	Immediately
	<u>OR</u>	
	I.2 Initiate action to isolate the Residual Heat Removal (RHR) Shutdown Cooling System.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains isolation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.6.1.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.6.1.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.1.3 Calibrate the trip unit.	92 days
SR 3.3.6.1.4 Perform CHANNEL CALIBRATION.	*
SR 3.3.6.1.5 Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 3.3.6.1.6 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.1.7 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

* When a channel functional test shows the setpoints to be outside limits

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 1 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Main Steam Line Isolation					
a. Reactor Vessel Water Level—Low Low, Level 2	1,2,3	2	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -110.5 cm (-43.5 in) indicated level
b. Main Steam Line Pressure — Low	1	2	E	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 59.9 kg/cm ² (850 psig)
c. Main Steam Line Flow — High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 140% of rated steam flow
d. Main Steam line Area Temperature -- High	1,2,3	8	D	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 93.3 °C (200°F)
2. Primary Containment Isolation					
a. Reactor Vessel Water Level — Low, Level 3	1,2,3	2	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 31.0 cm (12.2 in) indicated level
b. Drywell Pressure — High	1,2,3	2	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 0.14 kg/cm ² (2 psig)
c. Reactor Building Exhaust Radiation — High	1,2,3	1	G	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 1mSv/hr (100 mR/hr)

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 2 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Coolant Injection (HPCI) System Isolation					
a. HPCI Steam Line Flow — High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤401.5/1046 cmH ₂ O d/p (Unit1) ≤328/427 cmH ₂ O d/p (Unit2)
b. HPCI Steam Supply Line Pressure — Low	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 7.03 kg/cm ² (100 psig)
c. HPCI Turbine Exhaust Diaphragm Pressure — High	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤0.7 kg/cm ² (10 psig)
d. HPCI Room Ventilation differential Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤27.8°C (50°F)
e. Suppression Pool Area Ambient Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤93.3°C (200°F)
f. Suppression Pool Area Temperature — Time Delay Relays	1,2,3	1	F	SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 13.5 minutes and ≤16.5 minutes
g. Suppression Pool Area Differential Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤27.8°C (50 °F)
h. Emergency Area Cooler Temperature — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤79.4°C (175°F)

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 3 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. RCIC Steam Line Flow—High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤1288 cm H ₂ O d/p
b. RCIC Steam Supply Line Pressure—Low	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≥3.5 kg/cm ² (50 psig) and ≤4.2 kg/cm ² (60 psig)
c. RCIC Turbine Exhaust Diaphragm Pressure—High	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤0.7 kg/cm ² (10 psig)
d. RCIC Suppression Pool Ambient Area Temperature—High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤93.3°C (200°F)
e. Suppression Pool Area Temperature—Time Delay Relays	1,2,3	1	F	SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≥27minutes and ≤33minutes
f. RCIC Suppression Pool Area Differential Temperature—High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤27.8°C (50°F)
g. Emergency Area Cooler Temperature—High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤79.4°C (175°F)
h. RCIC Equipment Room Differential Temperature—High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤27.8°C (50°F)

(continued)

Primary Containment Isolation Instrumentation
3.3.6.1

Table 3.3.6.1-1 (page 4 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Differential Flow—High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤5 lps (80 gpm)
b. Area Temperature—High	1,2,3	3 1 per room	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤60°C (140°F)
c. Area Ventilation Differential Temperature—High	1,2,3	3 1 per room	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤27.8°C (50°F)
d. SBLC System Initiation	1,2,5	1	H	SR 3.3.6.1.7	NA
e. Reactor Vessel Water Level—Low Low, Level 2	1,2,3,5	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥-110.5cm (-43.5 in) indicated level
6. Shutdown Cooling System Isolation					
a. Reactor Steam Dome Pressure—High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.6 SR 3.3.6.1.7	≤9.5 kg/cm ² (135 psig) + cold water head at flood level.
b. Reactor Vessel Water Level—Low, Level 3	3,4,5	2 ^(b)	I	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≥31.0 cm (12.2 in) indicated level
c. Drywell Pressure—High	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.3 SR 3.3.6.1.6 SR 3.3.6.1.7	≤0.14 kg/cm ² (2psig)

(a) Deleted

(b) Only one trip system required in MODES 4 and 5 when RHR Shutdown Cooling System integrity maintained.

3.3 INSTRUMENTATION

3.3.6.2 Secondary Containment Isolation Instrumentation

LCO 3.3.6.2 The secondary containment isolation instrumentation for each Function in Table 3.3.6.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Place channel in trip.	12 hours for Function 2 <u>AND</u> 24 hours for Functions other than Function 2
B. One or more automatic Functions with secondary containment isolation capability not maintained.	B.1 Restore secondary containment isolation capability.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1.1 Isolate the associated zone(s). <u>OR</u> C.1.2 Declare associated secondary containment isolation valves inoperable. <u>AND</u>	1 hour 1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Place the associated standby gas treatment (SBGT) subsystem(s) in operation.	1 hour
	<u>OR</u>	
	C.2.2 Declare associated SBGT subsystem(s) inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.6.2-1 to determine which SRs apply for each Secondary Containment Isolation Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains secondary containment isolation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.6.2.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.2.3 Calibrate the trip unit.	92 days
SR 3.3.6.2.4 Perform CHANNEL CALIBRATION.	*
SR 3.3.6.2.5 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.2.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

* When a functional test shows the setpoint to be outside limits.

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level—Low, Level 3	1,2,3,5,(a)	2	SR 3.3.6.21 SR 3.3.6.22 SR 3.3.6.23 SR 3.3.6.25 SR 3.3.6.26	≥ 31 cm (12.2in) indicated level
2. Drywell Pressure—High	1,2,3	2	SR 3.3.6.21 SR 3.3.6.22 SR 3.3.6.23 SR 3.3.6.25 SR 3.3.6.26	≤ 0.14 kg/cm ² (2 psig)
3. Reactor Building Exhaust Radiation—High	1,2,3,5,(a),(b),(c)	1	SR 3.3.6.21 SR 3.3.6.22 SR 3.3.6.25 SR 3.3.6.26	≤ 1mSv/hr (100mR/hr)

- (a) During operations with a potential for draining the reactor vessel.
- (b) During CORE ALTERATIONS and during movement of irradiated fuel assemblies in secondary containment.
- (c) During movement of heavy loads (the weight more than the combined weight of a single spent fuel assembly and its handling tool) over irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.7.1 Control Room Emergency Filtration (CREF) Units Instrumentation

LCO 3.3.7.1 The CREF Units instrumentation for each Function in Table 3.3.7.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7.1-1.

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 3.3.7.1-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.7.1-1.	B.1 Declare associated CREF unit inoperable.	1 hour from discovery of loss of CREF Unit initiation capability in both trip systems
	<u>AND</u>	
	B.2 Place channel in trip.	24 hours
C. As required by Required Action A.1 and referenced in Table 3.3.7.1-1	C.1 Declare associated CREF Unit inoperable.	1 hour from discovery of loss of CREF Unit initiation capability in both trip systems
	<u>AND</u>	
	C.2 Place channel in trip	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition B or C not met.	D.1 Place the associated CREF Unit in the operation	1 hour
	<u>OR</u>	
	D.2 Declare associated CREF Unit inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each CREF Unit Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains CREF Unit initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.7.1.1 Perform CHANNEL CHECK.	12 hours
SR 3.3.7.1.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.7.1.3 Calibrate the trip units.	92 days
SR 3.3.7.1.4 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.7.1.5 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Filtration Units Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level—Low Low, Level 2	1,2,3,5, (a)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5	≥ -110.5 cm (-43.5 in) indicated level
2. Drywell Pressure—High	1,2,3	2	B	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5	≤ 0.14 kg/cm ² (2 psig)
3. Control Room Air Inlet Radiation—High	1,2,3,5,(a),(b),(c)	1	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.5	≤ 2E-6 μCi/cc
4. Reactor Building Exhaust Radiation – High	1,2,3,5,(a),(b),(c)	1	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.4 SR 3.3.7.1.5	≤ 1 mSv/hr (100 mR/hr)

- (a) During operations with a potential for draining the reactor vessel.
 (b) During CORE ALTERATIONS and during movement of irradiated fuel assemblies in the secondary containment.
 (c) During movement of heavy loads (the weight more than the combined weight of a single spent fuel assembly and its handling tool) over irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When the associated diesel generator is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Place channel in trip.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Declare associated diesel generator (EDG) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.
2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 2 hours provided the associated Function maintains EDG initiation capability.

SURVEILLANCE	FREQUENCY
SR 3.3.8.1.1 Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.8.1.2 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.8.1.3 Perform LOGIC SYSTEM FUNCTIONAL TEST.	18 months

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER BUS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)			
a. Bus Undervoltage	3	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	$\geq 2870V$
b. Time Delay	3	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	≤ 0.5 seconds
2. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)			
a. Bus Undervoltage	3	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	$\geq 3703V$
b. Time Delay, LOCA	3	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	≤ 15 seconds
c. Time Delay, No LOCA	3	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.3	≤ 60 seconds

3.3 INSTRUMENTATION

3.3.8.2 Reactor Protection System (RPS) Electrical Protection Assembly (EPA)

LCO 3.3.8.2 Two RPS electrical protection assemblies shall be OPERABLE for each inservice RPS motor generator set or alternate power supply.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies or with both residual heat removal (RHR) shutdown cooling isolation valves open.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both inservice power supplies with one electrical protection assembly inoperable.	A.1 Remove associated inservice power supply(s) from service.	72 hours
B. One or both inservice power supplies with both electrical protection assemblies inoperable.	B.1 Remove associated inservice power supply(s) from service.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours
D. Required Action and associated Completion Time of Condition A or B not met in MODE 4 or 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies.	D.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

When a RPS electrical protection assembly (EPA) is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the other RPS electrical protection assembly (EPA) for the associated power supply maintains trip capability.

SURVEILLANCE	FREQUENCY
<p>SR 3.3.8.2.1 -----NOTE----- Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for ≥ 24 hours. ----- Perform CHANNEL FUNCTIONAL TEST.</p>	184 days
<p>SR 3.3.8.2.2 Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage ≤ 132 V. With time delay set to ≤ 3.6 Seconds. b. Undervoltage ≥ 108 V, with time delay set to ≤ 3.6 Seconds. c. Underfrequency ≥ 57 Hz, with time delay set to ≤ 3.6 Seconds.</p>	18 months
<p>SR 3.3.8.2.3 Perform a system functional test.</p>	18 months