

2.0 SAFETY LIMITS (SLs)

2.0 SLs and SL Violations

2.1 SLs

2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR; and the following SLs shall not be exceeded:

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained ≥ 1.17 for the WRB-1 correlation.

2.1.1.2 The peak fuel centerline temperature shall be maintained $< 5080^{\circ}\text{F}$, decreasing by 58°F per 10,000 MWD/MTU of burnup.

2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained ≤ 2735 psig.

2.2 SL Violations

2.2.1 If SL 2.1.1 is violated, restore compliance and be in MODE 3 within 1 hour.

2.2.2 If SL 2.1.2 is violated:

2.2.2.1 In MODE 1 or 2, restore compliance and be in MODE 3 within 1 hour.

2.2.2.2 In MODE 3, 4, or 5, restore compliance within 5 minutes.

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1 The RTS instrumentation for each Function 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 Function.

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One or more Functions with one channel inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s).	Immediately
	<u>OR</u> Two source range channels inoperable.		
B.	As required by Required Action A.1 and referenced by Table 3.3.1-1: -	B.1 Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours
		<u>AND</u>	
		C.2 Initiate action to fully insert all rods.	6 hours
		<u>AND</u>	
		C.3 Place Control Rod Drive System in a condition incapable of rod withdrawal.	7 hours

[illegible]

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Required Action and associated Completion Time of Condition D, E, or F is not met.	G.1 Be in MODE 3.	6 hours
H. As required by Required Action A.1 and referenced by Table 3.3.1-1.	H.1 Restore at least one channel to OPERABLE status upon discovery of two inoperable channels.	1 hour from discovery of two inoperable channels
	<u>AND</u>	
	H.2 Suspend operations involving positive reactivity additions.	Immediately
I. Required Action and associated Completion Time of Condition H not met.	H.3 Restore channel to OPERABLE status.	48 hours
	<u>AND</u>	
	I.1 Initiate action to fully insert all rods.	Immediately
J. As required by Required Action A.1 and referenced by Table 3.3.1-1.	I.2 Place the Control Rod Drive System in a condition incapable of rod withdrawal.	1 hour
	<u>AND</u>	
	J.1 Suspend operations involving positive reactivity additions.	Immediately
	J.2 Perform SR 3.1.1.1.	12 hours
	<u>AND</u>	Once per 12 hours thereafter

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>K.1</p> <p>----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p>	6 hours
L. Required Action and associated Completion Time of Condition K not met.	<p>L.1</p> <p>Reduce THERMAL POWER to < 8.5% RTP.</p>	6 hours
M. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>M.1</p> <p>----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p>	6 hours
N. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>N.1</p> <p>Restore channel to OPERABLE status.</p>	6 hours
O. Required Action and associated Completion Time of Condition M or N not met.	<p>O.1</p> <p>Reduce THERMAL POWER to < 50% RTP.</p>	6 hours
P. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>P.1</p> <p>----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p>	6 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
Q. Required Action and Associated Completion Time of Condition P not met.	Q.1 Reduce THERMAL POWER to < 50% RTP.	6 hours
	<u>AND</u>	
	Q.2.1 Verify Steam Dump System is OPERABLE.	7 hours
	<u>OR</u>	
	Q.2.2 Reduce THERMAL POWER to < 8% RTP.	7 hours
R. As required by Required Action A.1 and referenced by Table 3.3.1-1.	R.1 ----- - NOTE - One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----- Restore train to OPERABLE status.	6 hours
S. As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1 Verify interlock is in required state for existing plant conditions.	1 hour
	<u>OR</u> S.2 Declare associated RTS Function channel(s) inoperable.	1 hour

CONDITION	REQUIRED ACTION	COMPLETION TIME
T. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>T.1</p> <p>-----</p> <p>- NOTE -</p> <p>1. One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE.</p> <p>2. One RTB may be bypassed for up to 6 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE.</p> <p>-----</p> <p>Restore train to OPERABLE status.</p>	1 hour
U. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>U.1 Restore at least one trip mechanism to OPERABLE status upon discovery of two RTBs with inoperable trip mechanisms.</p> <p><u>AND</u></p> <p>U.2 Restore trip mechanism to OPERABLE status.</p>	<p>1 hour from discovery of two inoperable trip mechanisms</p> <p>48 hours</p>
V. Required Action and associated Completion Time of Condition R, S, T, or U not met.	V.1 Be in MODE 3.	6 hours
W. As required by Required Action A.1 and referenced by Table 3.3.1-1.	<p>W.1 Restore at least one trip mechanism to OPERABLE status upon discovery of two RTBs with inoperable trip mechanisms.</p> <p><u>AND</u></p>	1 hour from discovery of two inoperable trip mechanisms

CONDITION	REQUIRED ACTION	COMPLETION TIME
	W.2 Restore trip mechanism or train to OPERABLE status.	48 hours
X. Required Action and associated Completion Time of Condition W not met.	X.1 Initiate action to fully insert all rods.	Immediately
	<u>AND</u>	
	X.2 Place the Control Rod Drive System in a Condition incapable of rod withdrawal.	

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.1.2	<p>- NOTE -</p> <p>Required to be performed within 12 hours after THERMAL POWER is $\geq 50\%$ RTP.</p> <p>Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output and adjust if calorimetric power is $> 2\%$ higher than indicated NIS power.</p>	24 hours
SR 3.3.1.3	<p>- NOTE -</p> <ol style="list-style-type: none"> Required to be performed within 7 days after THERMAL POWER is $\geq 50\%$ RTP but prior to exceeding 90% RTP following each refueling and if the Surveillance has not been performed within the last 31 EFPD. Performance of SR 3.3.1.6 satisfies this SR. <p>Compare results of the incore detector measurements to NIS AFD and adjust if absolute difference is $\geq 3\%$.</p>	31 effective full power days (EFPD)
SR 3.3.1.4	Perform TADOT.	31 days on a STAGGERED TEST BASIS
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS
SR 3.3.1.6	<p>- NOTE -</p> <p>Not required to be performed until 7 days after THERMAL POWER is $\geq 50\%$ RTP, but prior to exceeding 90% RTP following each refueling.</p> <p>Calibrate excore channels to agree with incore detector measurements.</p>	92 EFPD

SURVEILLANCE		FREQUENCY
SR 3.3.1.7	<p>----- - NOTE - -----</p> <p>Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entering MODE 3.</p> <p>-----</p> <p>Perform COT.</p>	92 days
SR 3.3.1.8	<p>----- - NOTE - -----</p> <p>1. Not required for power range and intermediate range instrumentation until 4 hours after reducing power < 6% RTP.</p> <p>2. Not required for source range instrumentation until 4 hours after reducing power < 5E-11 amps.</p> <p>-----</p> <p>Perform COT.</p>	92 days
SR 3.3.1.9	<p>----- - NOTE - -----</p> <p>Setpoint verification is not required.</p> <p>-----</p> <p>Perform TADOT.</p>	92 days
SR 3.3.1.10	<p>----- - NOTE - -----</p> <p>Neutron detectors are excluded.</p> <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	24 months
SR 3.3.1.11	Perform TADOT.	24 months
SR 3.3.1.12	<p>----- - NOTE - -----</p> <p>Setpoint verification is not required.</p> <p>-----</p> <p>Perform TADOT.</p>	Prior to reactor startup if not performed within previous 31 days
SR 3.3.1.13	Perform COT.	24 months

Table 3.3.1-1
Reactor Trip System Instrumentation

FUNCTION		APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
1.	Manual Reactor Trip	1, 2, 3 ^(b) , 4 ^(b) , 5 ^(b)	2	B,C	SR 3.3.1.11	NA
2.	Power Range Neutron Flux					
	a. High	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.10	≤ 112.27% RTP
	b. Low	1 ^(c) , 2	4	D,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	≤ 29.28% RTP
3.	Intermediate Range Neutron Flux	1 ^(c) , 2	2	E,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
4.	Source Range Neutron Flux	2 ^(e)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.10	(d)
		3 ^(b) , 4 ^(b) , 5 ^(b)	2	H,I	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	(d)
		3 ^(f) , 4 ^(f) , 5 ^(f)	1	J	SR 3.3.1.1 SR 3.3.1.10	NA
5.	Overtemperature ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 1

Table 3.3.1-1
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
6. Overpower ΔT	1, 2	4	D,G	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10	Refer to Note 2
7. Pressurizer Pressure					
a. Low	1(g)	4	K,L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 1791.3 psig
b. High	1, 2	3	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 2396.2 psig
8. Pressurizer Water Level-High	1, 2	3	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\leq 96.47\%$
9. Reactor Coolant Flow-Low					
a. Single Loop	1(h)	3 per loop	M,O	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\geq 89.86\%$
b. Two Loops	1(i)	3 per loop	K,L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\geq 89.86\%$
10. Reactor Coolant Pump (RCP) Breaker Position					
a. Single Loop	1(h)	1 per RCP	N,O	SR 3.3.1.11	NA
b. Two Loops	1(i)	1 per RCP	K,L	SR 3.3.1.11	NA

Table 3.3.1-1
Reactor Trip System Instrumentation

FUNCTION		APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
11.	Undervoltage- Bus 11A and 11B	1(g)	2 per bus	K,L	SR 3.3.1.9 SR 3.3.1.10	(d)
12.	Underfrequency- Bus 11A and 11B	1(g)	2 per bus	K,L	SR 3.3.1.9 SR 3.3.1.10	≥ 57.5 HZ
13.	Steam Generator (SG) Water Level- Low Low	1, 2	3 per SG	D,G	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≥ 13.88%
14.	Turbine Trip					
a.	Low Autostop Oil Pressure	1(k)(l)	3	P,Q	SR 3.3.1.10 SR 3.3.1.12	(d)
b.	Turbine Stop Valve Closure	1(k)(l)	2	P,Q	SR 3.3.1.12	NA
15.	Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1, 2	2	R,V	SR 3.3.1.11	NA

Table 3.3.1-1
Reactor Trip System Instrumentation

FUNCTION		APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
16.	Reactor Trip System Interlocks					
I	a. Intermediate Range Neutron Flux, P-6	2 ^(e)	2	S,V	SR 3.3.1.10 SR 3.3.1.13	≥ 5E-11 amp
I	b. Low Power Reactor Trips Block, P-7	1 ^(g)	4 (power range only)	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 8.0% RTP
I	c. Power Range Neutron Flux, P-8	1 ^(h)	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 49.0% RTP
I	d. Power Range Neutron Flux, P-9	1 ⁽ⁱ⁾	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 50.0% RTP
I		1 ^(k)	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≤ 8.0% RTP
I	e. Power Range Neutron Flux, P-10	1 ^(c) , 2	4	S,V	SR 3.3.1.10 SR 3.3.1.13	≥ 6.0% RTP
17.	Reactor Trip Breakers ^(m)	1, 2 3 ^(b) , 4 ^(b) , 5 ^(b)	2 trains 2 trains	T,V W,X	SR 3.3.1.4 SR 3.3.1.4	NA NA
18.	Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1, 2 3 ^(b) , 4 ^(b) , 5 ^(b)	1 each per RTB 1 each per RTB	U,V W,X	SR 3.3.1.4 SR 3.3.1.4	NA NA
19.	Automatic Trip Logic	1, 2 3 ^(b) , 4 ^(b) , 5 ^(b)	2 trains 2 trains	R,V W,X	SR 3.3.1.5 SR 3.3.1.5	NA NA

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the COT Acceptance Criteria. The COT Acceptance Criteria is defined as:

$$|\text{as-found TSP} - \text{previous as-left TSP}| \leq \text{COT uncertainty}$$

The COT uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the Limiting Safety System Setting (LSSS). The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

- (b) With Control Rod Drive (CRD) System capable of rod withdrawal or all rods not fully inserted.
- (c) THERMAL POWER < 6% RTP.
- (d) UFSAR Table 7.2-3.
- (e) Both Intermediate Range channels < 5E-11 amps.
- (f) With CRD System incapable of withdrawal and all rods fully inserted. In this condition, the Source Range Neutron Flux function does not provide a reactor trip, only indication.
- (g) THERMAL POWER \geq 8.5% RTP.
- (h) THERMAL POWER \geq 50% RTP.
- (i) THERMAL POWER \geq 8.5% RTP and Reactor Coolant Flow-Low (Single Loop) trip Function blocked.
- (j) THERMAL POWER \geq 8.5% RTP and RCP Breaker Position (Single Loop) trip Function blocked.
- (k) THERMAL POWER > 8% RTP, and either no circulating water pump breakers closed, or condenser vacuum \leq 20".
- (l) THERMAL POWER \geq 50% RTP, 1 of 2 circulating water pump breakers closed, and condenser vacuum > 20".
- (m) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

Table 3.3.1-1 (Note 1)
Overtemperature ΔT

- NOTE -

The Overtemperature ΔT Function Limiting Safety System Setting is defined by:

$$\text{Overtemperature } \Delta T \leq \Delta T_0 \{K_1 + K_2 (P-P') - K_3 (T-T') [(1+\tau_1 s) / (1+\tau_2 s)] - f(\Delta I)\}$$

Where:

ΔT is measured RCS ΔT , °F.

ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T' is the nominal T_{avg} at RTP, °F.

P is the measured pressurizer pressure, psig.

P' is the nominal RCS operating pressure, psig.

K_1 is the Overtemperature ΔT reactor trip setpoint, [*].

K_2 is the Overtemperature ΔT reactor trip depressurization setpoint penalty coefficient, [*]/psi.

K_3 is the Overtemperature ΔT reactor trip heatup setpoint penalty coefficient, [*]/°F.

τ_1 is the measured lead time constant, [*] seconds.

τ_2 is the measured lag time constant, [*] seconds.

$f(\Delta I)$ is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

$$f(\Delta I) = 0 \quad \text{when } q_t - q_b \text{ is } \leq [*]\% \text{ RTP}$$

$$f(\Delta I) = [*] \{(q_t - q_b) - [*]\} \quad \text{when } q_t - q_b \text{ is } > [*]\% \text{ RTP}$$

* These values denoted with [*] are specified in the COLR.

Table 3.3.1-1 (Note 2)
Overpower ΔT

- NOTE -

The Overpower ΔT Function Limiting Safety System Setting is defined by:

$$\text{Overpower } \Delta T \leq \Delta T_0 \{K_4 - K_5 (T - T') - K_6 [(\tau_3 s T) / (\tau_3 s + 1)] - f(\Delta I)\}$$

Where:

ΔT is measured RCS ΔT , °F.

ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T' is the nominal T_{avg} at RTP, °F.

K_4 is the Overpower ΔT reactor trip setpoint, [*].

K_5 is the Overpower ΔT reactor trip heatup setpoint penalty coefficient which is:

[*]/°F for $T < T'$ and;

[*]/°F for $T \geq T'$.

K_6 is the Overpower ΔT reactor trip thermal time delay setpoint penalty which is:

[*]/°F for increasing T and;

[*]/°F for decreasing T .

τ_3 is the measured impulse/lag time constant, [*] seconds.

$f(\Delta I)$ is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

$$f(\Delta I) = [*] \quad \text{when } q_t - q_b \text{ is } \leq [*]\% \text{ RTP}$$

$$f(\Delta I) = [*] \{(q_t - q_b) - [*]\} \quad \text{when } q_t - q_b \text{ is } > [*]\% \text{ RTP}$$

* These values denoted with [*] are specified in the COLR.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One or more Functions with one channel or train inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel or train.	Immediately
B.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	B.1 Restore channel to OPERABLE status.	48 hours
C.	Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 2.	6 hours
D.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	D.1 Restore channel to OPERABLE status.	48 hours
E.	As required by Required Action A.1 and referenced by Table 3.3.2-1.	E.1 Restore train to OPERABLE status.	6 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. As required by Required Action A.1 and referenced by Table 3.3.2-1.	F.1 ----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. ----- Place channel in trip.	6 hours
G. Required Action and associated Completion Time of Condition D, E, or F not met.	G.1 Be in MODE 3. <u>AND</u> G.2 Be in MODE 4.	6 hours 12 hours
H. As required by Required Action A.1 and referenced by Table 3.3.2-1.	H.1 Restore channel to OPERABLE status.	48 hours
I. As required by Required Action A.1 and referenced by Table 3.3.2-1.	I.1 Restore train to OPERABLE status.	6 hours
J. As required by Required Action A.1 and referenced by Table 3.3.2-1.	J.1 ----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. ----- Place channel in trip.	6 hours
K. Required Action and associated Completion Time of Condition H, I, or J not met.	K.1 Be in MODE 3. <u>AND</u> K.2 Be in MODE 5.	6 hours 36 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. As required by Required Action A.1 and referenced by Table 3.3.2-1.	L.1 ----- - NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of the other channels. ----- Place channel in trip.	6 hours
M. Required Action and associated Completion Time of Condition L not met.	M.1 Be in MODE 3.	6 hours
	<u>AND</u> M.2 Reduce pressurizer pressure to < 2000 psig.	12 hours
N. As required by Required Action A.1 and referenced by Table 3.3.2-1.	N.1 Declare associated Auxiliary Feedwater pump inoperable and enter applicable condition(s) of LCO 3.7.5, "Auxiliary Feedwater (AFW) System."	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.2.2	Perform COT.	92 days
SR 3.3.2.3	- NOTE - Verification of relay setpoints not required.	92 days
	Perform TADOT.	
SR 3.3.2.4	- NOTE - Verification of relay setpoints not required.	24 months
	Perform TADOT.	
SR 3.3.2.5	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.6	Verify the Pressurizer Pressure-Low and Steam Line Pressure-Low Functions are not bypassed when pressurizer pressure > 2000 psig.	24 months
SR 3.3.2.7	Perform ACTUATION LOGIC TEST.	24 months

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
1. Safety Injection					
a. Manual Initiation	1,2,3,4	2	D,G	SR 3.3.2.4	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c. Containment Pressure-High	1,2,3,4	3	J,K	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 4.61 psig
d. Pressurizer Pressure-Low	1,2,3 ^(b)	3	L,M	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5 SR 3.3.2.6	≥ 1744.8 psig
e. Steam Line Pressure-Low	1,2,3 ^(b)	3 per steam line	L,M	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5 SR 3.3.2.6	≥ 393.8 psig

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
2. Containment Spray					
a. Manual Initiation					
Left pushbutton	1,2,3,4	1	H,K	SR 3.3.2.4	NA
Right pushbutton	1,2,3,4	1	H,K	SR 3.3.2.4	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c. Containment Pressure-High High	1,2,3,4	3 per set	J,K	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 31.11 psig (narrow range) ≤ 28.6 psig (wide range)
3. Containment Isolation					
a. Manual Initiation	1,2,3,4, ^(c)	2	H,K	SR 3.3.2.4	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	I,K	SR 3.3.2.7	NA
c. Safety Injection	Refer to Function 1 (Safety Injection) for all automatic initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
4. Steam Line Isolation					
a. Manual Initiation	1,2 ^(d) ,3 ^(d)	1 per loop	D,G	SR 3.3.2.4	NA
b. Automatic Actuation Logic and Actuation Relays	1,2 ^(d) ,3 ^(d)	2 trains	E,G	SR 3.3.2.7	NA
c. Containment Pressure-High High	1,2 ^(d) ,3 ^(d)	3	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 18.0 psig
d. High Steam Flow	1,2 ^(d) ,3 ^(d)	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 0.42E6 lbm/hr @ 1005 psig
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
and					
Coincident with T _{avg} -Low	1,2 ^(d) ,3 ^(d)	2 per loop	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≥ 544.98°F
e. High-High Steam Flow	1,2 ^(d) ,3 ^(d)	2 per steam line	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 3.63E6 lbm/hr @ 755 psig
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
5. Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2 ^(e) ,3 ^(e)	2 trains	E,G	SR 3.3.2.7	NA
b. SG Water Level-High	1,2 ^(e) ,3 ^(e)	3 per SG	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≤ 91.15%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

Table 3.3.2-1
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
6. Auxiliary Feedwater (AFW)					
a. Manual Initiation					
AFW	1,2,3	1 per pump	N	SR 3.3.2.4	NA
Standby AFW	1,2,3	1 per pump	N	SR 3.3.2.4	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	E,G	SR 3.3.2.7	NA
I c. SG Water Level-Low Low	1,2,3	3 per SG	F,G	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.5	≥ 13.88%
d. Safety Injection (Motor driven pumps only)	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
I e. Undervoltage - Bus 11A and 11B (Turbine driven pump only)	1,2,3	2 per bus	D,G	SR 3.3.2.3 SR 3.3.2.5	≥ 2597 V with ≤ 3.6 sec time delay
f. Trip of Both Main Feedwater Pumps (Motor driven pumps only)	1	2 per MFW pump	B,C	SR 3.3.2.4	NA

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the COT Acceptance Criteria. The COT Acceptance Criteria is defined as:

$$|\text{as-found TSP} - \text{previous as-left TSP}| \leq \text{COT uncertainty}$$

The COT uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the Limiting Safety System Setting (LSSS). The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

(b) Pressurizer Pressure \geq 2000 psig.

(c) During CORE ALTERATIONS and movement of irradiated fuel assemblies within containment.

(d) Except when both MSIVs are closed and de-activated.

(e) Except when all Main Feedwater Regulating and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

3.3 INSTRUMENTATION

3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.4 Each 480 V safeguards bus shall have two OPERABLE channels of LOP DG Start Instrumentation.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - MODES 5 and 6."

ACTIONS

- NOTE -

Separate Condition entry is allowed for each 480 V safeguards bus.

CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	One or more 480 V bus(es) with one channel inoperable.	A.1 Place channel(s) in trip.	6 hours
B.	Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more 480 V bus(es) with two channels inoperable.	B.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

- NOTE -

When a channel is placed in an inoperable status solely for the performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 4 hours provided the second channel maintains LOP DG start capability.

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform TADOT.	31 days
SR 3.3.4.2	Perform CHANNEL CALIBRATION with Limiting Safety System Settings (LSSS) ^(a) for each 480 V bus as follows: <ul style="list-style-type: none"> a. Loss of voltage LSSS ≥ 371.6 V and ≤ 378.0 V with a time delay of ≥ 1.64 seconds and ≤ 2.61 seconds. b. Degraded voltage LSSS ≥ 419.6 V and ≤ 424.4 V with a time delay of ≥ 30.7 seconds and ≤ 1589 seconds (@ 416.8 V) and ≥ 25.1 seconds and ≤ 494.9 seconds (@ 368 V). 	24 months

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the CHANNEL CALIBRATION Acceptance Criteria. The CHANNEL CALIBRATION Acceptance Criteria is defined as:

$$|\text{as-found TSP} - \text{previous as-left TSP}| \leq \text{CHANNEL CALIBRATION uncertainty}$$

The CHANNEL CALIBRATION uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the LSSS. The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.

3.3 INSTRUMENTATION

3.3.5 Containment Ventilation Isolation Instrumentation

LCO 3.3.5 The Containment Ventilation Isolation instrumentation for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One radiation monitoring channel inoperable.	A.1 Restore the affected channel to OPERABLE status.	4 hours
B. ----- - NOTE - Only applicable in MODE 1, 2, 3, or 4. ----- One or more Functions with one or more manual or automatic actuation trains inoperable. <u>OR</u> Both radiation monitoring channels inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A not met.	B.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Boundaries," for containment mini-purge isolation valves made inoperable by isolation instrumentation.	Immediately

Containment Ventilation Isolation Instrumentation 3.3.5

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C.</p> <p>-----</p> <p>- NOTE -</p> <p>Only applicable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment.</p> <p>-----</p> <p>One or more Functions with one or more manual or automatic actuation trains inoperable.</p> <p><u>OR</u></p> <p>Both radiation monitoring channels inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time for Condition A not met.</p>	<p>C.1 Place and maintain containment purge and exhaust valves in closed position.</p> <p><u>OR</u></p> <p>C.2 Enter applicable Conditions and Required Actions of LCO 3.9.3, "Containment Penetrations," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.5-1 to determine which SRs apply for each Containment Ventilation Isolation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform CHANNEL CHECK.	24 hours
SR 3.3.5.2	Perform COT.	92 days
SR 3.3.5.3	Perform ACTUATION LOGIC TEST.	24 months
SR 3.3.5.4	Perform CHANNEL CALIBRATION.	24 months

Table 3.3.5-1
Containment Ventilation Isolation Instrumentation

FUNCTION	APPLICABLE MODES AND OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	LIMITING SAFETY SYSTEM SETTINGS ^(a)
1. Automatic Actuation Logic and Actuation Relays	1,2,3,4, ^(b)	2 trains	SR 3.3.5.3	NA
2. Containment Radiation				
a. Gaseous	1,2,3,4, ^(b)	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	^(c)
b. Particulate	1,2,3,4, ^(b)	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	^(c)
3. Containment Isolation - Manual Initiation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a, for all initiation functions and requirements.			
4. Containment Spray - Manual Initiation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 2.a, for all initiation functions and requirements.			
5. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements.			

(a)

A channel is OPERABLE when both of the following conditions are met:

1. The absolute difference between the as-found Trip Setpoint (TSP) and the previous as-left TSP is within the COT Acceptance Criteria. The COT Acceptance Criteria is defined as:

$$|\text{as-found TSP} - \text{previous as-left TSP}| \leq \text{COT uncertainty}$$

The COT uncertainty shall not include the calibration tolerance.

2. The as-left TSP is within the established calibration tolerance band about the nominal TSP. The nominal TSP is the desired setting and shall not exceed the Limiting Safety System Setting (LSSS). The LSSS and the established calibration tolerance band are defined in accordance with the Ginna Instrument Setpoint Methodology. The channel is considered operable even if the as-left TSP is non-conservative with respect to the LSSS provided that the as-left TSP is within the established calibration tolerance band.
- (b) During CORE ALTERATIONS and movement of irradiated fuel assemblies within containment.
- (c) Per Radiological Effluent Controls Program.

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 Occupational Radiation Exposure Report

A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures > 100 mrem/yr and their associated man rem exposure according to work and job functions (e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance, waste processing, and refueling). This tabulation supplements the requirements of 10 CFR 20.2206. The dose assignments to various duty functions may be estimated based on pocket dosimeter, thermoluminescent dosimeter (TLD), or film badge measurements. Small exposures totalling < 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources should be assigned to specific major work functions. The report shall be submitted on or before April 30 of each year.

5.6.2 Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the plant during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring activities for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.3 Radioactive Effluent Release Report

The Radioactive Effluent Release Report covering the operation of the plant shall be submitted in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the plant. The material provided shall be consistent with the objectives outlined in the ODCM and in conformance with 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

5.6.4 Monthly Operating Reports

Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the pressurizer power operated relief valves or pressurizer safety valves, shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report.

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

The following administrative requirements apply to the COLR:

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

- | | |
|------------|---|
| 2.1, | "Safety Limits (SLs)"; |
| LCO 3.1.1, | "SHUTDOWN MARGIN (SDM)"; |
| LCO 3.1.3, | "MODERATOR TEMPERATURE COEFFICIENT (MTC)"; |
| LCO 3.1.5, | "Shutdown Bank Insertion Limit"; |
| LCO 3.1.6, | "Control Bank Insertion Limits"; |
| LCO 3.2.1, | "Heat Flux Hot Channel Factor ($F_Q(Z)$)"; |
| LCO 3.2.2, | "Nuclear Enthalpy Rise Hot Channel Factor ($F_{\Delta H}^N$)"; |
| LCO 3.2.3, | "AXIAL FLUX DIFFERENCE (AFD)"; |
| LCO 3.3.1, | "Reactor Protection System (RPS) Instrumentation"; |
| LCO 3.4.1, | "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits"; and |
| LCO 3.9.1, | "Boron Concentration." |

- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985.
(Methodology for 2.1, LCO 3.1.1, LCO 3.1.3, LCO 3.1.5, LCO 3.1.6, LCO 3.2.1, LCO 3.2.2, LCO 3.2.3, and LCO 3.9.1.)
 2. WCAP-13677-P-A, "10 CFR 50.46 Evaluation Model Report: WCOBRA/TRAC Two-Loop Upper Plenum Injection Model Updates to Support ZIRLO™ Cladding Option," February 1994.
(Methodology for LCO 3.2.1.)
 3. WCAP-8385, "Power Distribution Control and Load Following Procedures - Topical Report," September 1974.
(Methodology for LCO 3.2.3.)
 4. WCAP-12610-P-A, "VANTAGE + Fuel Assembly Reference Core Report," April 1995.
(Methodology for LCO 3.2.1.)
 5. WCAP 11397-P-A, "Revised Thermal Design Procedure," April 1989.
(Methodology for LCO 3.4.1 when using RTDP.)
 6. WCAP-10054-P-A and WCAP-10081-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," August 1985.
(Methodology for LCO 3.2.1.)
 7. WCAP-10924-P-A, Volume 1, Revision 1, "Westinghouse Large-Break LOCA Best-Estimate Methodology, Volume 1: Model Description and Validation Responses to NRC Questions," and Addenda 1,2,3, December 1988.
(Methodology for LCO 3.2.1.)
 8. WCAP-10924-P-A, Volume 2, Revision 2, "Westinghouse Large-Break LOCA Best-Estimate Methodology, Volume 2: Application to Two-Loop PWRs Equipped with Upper Plenum Injection," and Addendum 1, December 1988.
(Methodology for LCO 3.2.1.)
 9. WCAP-10924-P-A, Volume 1, Revision 1, Addendum 4, "Westinghouse Large-Break LOCA Best-Estimate Methodology, Volume 1: Model Description and Validation, Addendum 4: Model Revisions," March 1991.
(Methodology for LCO 3.2.1.)

10. WCAP-8745, "Design Basis for the Thermal Overpower Delta T and Thermal Overtemperature Delta T Trip Functions," March 1977.
(Methodology for LCO 3.3.1.)

- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6

Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

The following administrative requirements apply to the PTLR:

- a. RCS pressure and temperature limits for heatup, cooldown, criticality, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits"

- b. The power operated relief valve lift settings required to support the Low Temperature Overpressure Protection (LTOP) System, and the LTOP enable temperature shall be established and documented in the PTLR for the following:

LCO 3.4.6, "RCS Loops - MODE 4";

LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";

LCO 3.4.10, "Pressurizer Safety Valves"; and

LCO 3.4.12, "LTOP System."

- c. The analytical methods used to determine the RCS pressure and temperature and LTOP limits shall be those previously reviewed and approved by the NRC in NRC letter, "R.E. Ginna - Acceptance for Referencing of Pressure Temperature Limits Report, Revision 2 (TAC No. M96529)," dated November 28, 1997. Specifically, the methodology is described in the following documents:

1. Letter from R.C. Mecredy, Rochester Gas and Electric Corporation (RG&E), to Document Control Desk, NRC, Attention: Guy S. Vissing, "Application for Facility Operating License, Revision to Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR) Administrative Controls Requirements," Attachment VI, September 29, 1997, as supplemented by letter from R.C. Mecredy, RG&E, to Guy S. Vissing, NRC, "Corrections to Proposed Low Temperature Overpressure Protection System Technical Specification," October 8, 1997.
 2. WCAP-14040-NP-A, "Methodology used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves," Sections 1 and 2, January, 1996.
- d. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for revisions or supplement thereto.
-