

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 or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately
B. One channel or train inoperable.	B.1 Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u>	
	B.2.1 Be in MODE 3.	54 hours
	<u>AND</u>	
	B.2.2 Be in MODE 5.	84 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	<p>C.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>C.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2.2 Be in MODE 5.</p>	<p>24 hours</p> <p>30 hours</p> <p>60 hours</p>
D. One channel inoperable.	<p>D.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----</p> <p>Place channel in trip.</p> <p><u>OR</u></p> <p>D.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2.2 Be in MODE 4.</p>	<p>72 hours</p> <p>78 hours</p> <p>84 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One Containment Pressure channel inoperable.</p>	<p>E.1 -----NOTE----- One additional channel may be bypassed for up to 12 hours for surveillance testing. ----- Place channel in bypass.</p> <p><u>OR</u></p> <p>E.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>E.2.2 Be in MODE 4.</p>	<p>72 hours</p> <p>78 hours</p> <p>84 hours</p>
<p>F. One channel or train inoperable.</p>	<p>F.1 Restore channel or train to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>F.2.2 Be in MODE 4.</p>	<p>48 hours</p> <p>54 hours</p> <p>60 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One train inoperable.	<p>G.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>G.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>G.2.2 Be in MODE 4.</p>	<p>24 hours</p> <p>30 hours</p> <p>36 hours</p>
H. One Main Feedwater Pumps trip channel inoperable.	<p>H.1 Restore channel to OPERABLE status.</p> <p><u>OR</u></p> <p>H.2 Be in MODE 3.</p>	<p>48 hours</p> <p>54 hours</p>
I. One channel inoperable.	<p>I.1 -----NOTE----- One additional channel may be bypassed for up to 12 hours for surveillance testing. -----</p> <p>Place channel in bypass.</p> <p><u>OR</u></p> <p>I.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>I.2.2 Be in MODE 5.</p>	<p>72 hours</p> <p>78 hours</p> <p>108 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. One or more channels inoperable.	J.1 Verify interlock is in required state for existing unit condition.	1 hour
	<u>OR</u>	
	J.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	J.2.2 Be in MODE 4.	13 hours

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 ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS
SR 3.3.2.3 Perform MASTER RELAY TEST.	31 days on a STAGGERED TEST BASIS
SR 3.3.2.4 Perform COT	92 days

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.5 -----NOTE----- Not required to be performed for SLAVE RELAYS if testing would:</p> <ol style="list-style-type: none"> 1. Result in an inadvertent Reactor Trip System or ESFAS Actuation if accompanied by a single failure in the Safeguard Test Cabinet; 2. Adversely affect two or more components in one or more ESFAS system(s); or 3. Create a reactivity, thermal, or hydraulic transient condition in the Reactor Coolant System. <p>-----</p> <p>Perform SLAVE RELAY TEST.</p>	92 days
<p>SR 3.3.2.6 -----NOTE----- Verification of relay setpoints not required.</p> <p>-----</p> <p>Perform TADOT.</p>	92 days
<p>SR 3.3.2.7 -----NOTE----- Verification of setpoint not required for manual initiation functions.</p> <p>-----</p> <p>Perform TADOT.</p>	18 months
<p>SR 3.3.2.8 -----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values.</p> <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>	18 months

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.9 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is \geq 1005 psig. -----</p> <p>Verify ESFAS RESPONSE TIMES are within limit.</p>	<p>18 months on a STAGGERED TEST BASIS</p>
<p>SR 3.3.2.10 -----NOTE----- Verification of setpoint not required. -----</p> <p>Perform TADOT.</p>	<p>Once per reactor trip breaker cycle</p>

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Safety Injection					
a. Manual Initiation	1, 2, 3, 4	2	B	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure-High	1, 2, 3	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 17.7 psia
d. Pressurizer Pressure-Low-Low	1, 2, 3 ^(a)	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 1770 psig
e. High Differential Pressure Between Steam Lines	1, 2, 3	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 112 psid
f. High Steam Flow in Two Steam Lines	1, 2, 3 ^(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with T _{avg} -Low Low	1, 2, 3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 542°F
g. High Steam Flow in Two Steam Lines	1, 2, 3 ^(b)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with Steam Line Pressure-Low	1, 2, 3 ^(b)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 585 psig

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Above the P-12 (T_{avg}-Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load.

Table 3.3.2-1 (page 2 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Containment Spray					
a. Manual Initiation	1, 2, 3, 4	2 per train, 2 trains	B	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure					
High High	1, 2, 3	4	E	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 28.45 psia
3. Containment Isolation					
a. Phase A Isolation					
(1) Manual Initiation	1, 2, 3, 4	2	B	SR 3.3.2.7	NA
(2) Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
b. Phase B Isolation					
(1) Manual Initiation	Refer to Function 2.a (Containment Spray–Manual Initiation) for all functions and requirements.				
(2) Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
(3) Containment Pressure					
High High	Refer to Function 2.c (Containment Spray–Containment Pressure High High) for all functions and requirements.				

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Steam Line Isolation					
a. Manual Initiation	1, 2 ^(d) , 3 ^(d)	2 per steam line	F	SR 3.3.2.7	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2 ^(d) , 3 ^(d)	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
c. Containment Pressure-Intermediate High High	1, 2 ^(d) , 3 ^(d)	3	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 18.5 psia
d. High Steam Flow in Two Steam Lines	1, 2 ^(d) , 3 ^(d)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with T _{avg} -Low Low	1, 2 ^(d) , 3 ^{(b)(d)}	1 per loop	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 542°F
e. High Steam Flow in Two Steam Lines	1, 2 ^(d) , 3 ^(d)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	(c)
Coincident with Steam Line Pressure-Low	1, 2, ^(d) 3 ^(d)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 585 psig
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1, 2 ^(e) , 3 ^(e)	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level-High High (P-14)	1, 2 ^(e) , 3 ^(e)	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≤ 76%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				

(b) Above the P-12 (T_{avg}-Low Low) interlock.

(c) Less than or equal to a function defined as ΔP corresponding to 42% full steam flow below 20% load, and ΔP increasing linearly from 42% full steam flow at 20% load to 111% full steam flow at 100% load, and ΔP corresponding to 111% full steam flow above 100% load.

(d) Except when all MSTVs are closed and de-activated.

(e) Except when all Main Feedwater Pump Discharge Valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. SG Water Level—Low Low	1, 2, 3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 17%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
d. Loss of Offsite Power	1, 2, 3	1 per bus, 2 buses	F	SR 3.3.2.6 SR 3.3.2.8 SR 3.3.2.9	≥ 2184 V
e. Trip of all Main Feedwater Pumps	1, 2	2 per pump	H	SR 3.3.2.7 SR 3.3.2.9	NA
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA
b. Refueling Water Storage Tank (RWST) Level—Low Low	1, 2, 3, 4	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.8 SR 3.3.2.9	≥ 18.4% and ≤ 20.4%
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1, 2, 3	1 per train, 2 trains	F	SR 3.3.2.10	NA
b. Pressurizer Pressure, P-11	1, 2, 3	3	J	SR 3.3.2.1 SR 3.3.2.8	≤ 2010 psig
c. T _{avg} —Low Low, P-12	1, 2, 3	1 per loop	J	SR 3.3.2.1 SR 3.3.2.8	≤ 545°F

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3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LC0 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required 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 5.6.6.	Immediately
C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

----- NOTE -----

SR 3.3.3.1 and SR 3.3.3.3 apply to each PAM instrumentation Function in Table 3.3.3-1 except SR 3.3.3.3 does not apply to Items 10 and 12. SR 3.3.3.2 applies only to Item 12. SR 3.3.3.4 applies only to Item 10.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2	Perform CHANNEL CALIBRATION.	92 days
SR 3.3.3.3	-----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION.	18 months
SR 3.3.3.4	Perform TADOT.	18 months

Table 3.3.3-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS
1. Power Range Neutron Flux	2
2. Source Range Neutron Flux	2
3. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2
4. RCS Cold Leg Temperature (Wide Range)	2
5. RCS Pressure (Wide Range)	2
6. Inadequate Core Cooling Monitoring (ICCM) System	
6.a. Reactor Vessel Level Instrumentation System (RVLIS)	2
6.b. RCS Subcooling Margin Monitor	2
6.c.1 Core Exit Temperature-Quadrant 1	2(c)
6.c.2 Core Exit Temperature-Quadrant 2	2(c)
6.c.3 Core Exit Temperature-Quadrant 3	2(c)
6.c.4 Core Exit Temperature-Quadrant 4	2(c)
7. Containment Sump Water Level (Wide Range)	2
8. Containment Pressure	2
9. Containment Pressure (Wide Range)	2
10. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path ^{(a)(b)}
11. Containment Area Radiation (High Range)	2
12. Containment Hydrogen Analyzers	2
13. Pressurizer Level	2
14. Steam Generator (SG) Water Level (Wide Range)	2
15. SG Water Level (Narrow Range)	2 per SG
16. Emergency Condensate Storage Tank Level	2
17. SG Pressure	2 per SG
18. High Head Safety Injection Flow	2

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

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

(c) A channel consists of two core exit thermocouples (CETs).

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3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.4.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.4.2 Verify each required control circuit and transfer switch is capable of performing the intended function.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.4.3 Perform CHANNEL CALIBRATION for each required instrumentation channel.	18 months

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation

LC0 3.3.5 Three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function for the following 4160 VAC buses shall be OPERABLE:

- a. The Train H and Train J buses; and
- b. One bus on the other unit for each required shared component.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated EDG is required to be OPERABLE by LC0 3.8.2, "AC Sources-Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per bus inoperable.	A.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----- Place channel in trip.	72 hours
B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated EDG made inoperable by LOP EDG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.5.1 -----NOTE----- Verification of setpoint is not required. ----- Perform TADOT for LCO 3.3.5.a and LCO 3.3.5.b Functions.	92 days
SR 3.3.5.2 Perform CHANNEL CALIBRATION with Allowable Values as follows: a. Loss of voltage Allowable Values ≥ 2935 V and ≤ 3225 V with a time delay of 2 ± 1 seconds for LCO 3.3.5.a and LCO 3.3.5.b Functions. b. Degraded voltage Allowable Values ≥ 3720 V and ≤ 3772 V with: 1. A time delay of 7.5 ± 1.5 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Function; and 2. A time delay of 56 ± 7 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions.	18 months
SR 3.3.5.3 Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions.	18 months on a STAGGERED TEST BASIS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified below:

- a. Pressurizer pressure is greater than or equal to the limit specified in the COLR;
- b. RCS average temperature is less than or equal to the limit specified in the COLR; and
- c. RCS total flow rate $\geq 295,000$ gpm and is greater than or equal to the limit specified in the COLR.

APPLICABILITY: MODE 1.

----- NOTE -----
 Pressurizer pressure limit does not apply during:
 a. THERMAL POWER ramp > 5% RTP per minute; or
 b. THERMAL POWER step > 10% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

RCS Pressure, Temperature, and Flow DNB Limits
3.4.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.2 Verify RCS average temperature is less than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.3 Verify RCS total flow rate is $\geq 295,000$ gpm and is greater than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.4 -----NOTE----- Not required to be performed until 30 days after $\geq 90\%$ RTP. ----- Verify by precision heat balance that RCS total flow rate is $\geq 295,000$ gpm and is greater than or equal to the limit specified in the COLR.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be $\geq 541^{\circ}\text{F}$.

APPLICABILITY: MODE 1,
MODE 2 with $k_{eff} \geq 1.0$.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. T_{avg} in one or more RCS loops not within limit.	A.1 Be in MODE 2 with $k_{eff} < 1.0$.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify RCS T_{avg} in each loop $\geq 541^{\circ}\text{F}$.	12 hours

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

- LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in Figures 3.4.3-1 and 3.4.3-2 (Unit 1) and Figures 3.4.3-3 and 3.4.3-4 (Unit 2) with:
- a. A maximum heatup of 60°F in any one hour period;
 - b. A maximum cooldown of 100°F in any one hour period; and
 - c. A maximum temperature change of 10°F in any one hour period during inservice hydrostatic and leak testing operations above the heatup and cooldown limit curves.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Required Action A.2 shall be completed whenever this Condition is entered. ----- Requirements of LCO not met in MODE 1, 2, 3, or 4.</p>	<p>A.1 Restore parameter(s) to within limits. <u>AND</u> A.2 Determine RCS is acceptable for continued operation.</p>	<p>30 minutes 72 hours</p>
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5 with RCS pressure < 500 psig.</p>	<p>6 hours 36 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Required Action C.2 shall be completed whenever this Condition is entered. ----- Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.</p>	<p>C.1 Initiate action to restore parameter(s) to within limits. <u>AND</u> C.2 Determine RCS is acceptable for continued operation.</p>	<p>Immediately Prior to entering MODE 4</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.3.1 -----NOTE----- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ----- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within limits.</p>	<p>30 minutes</p>

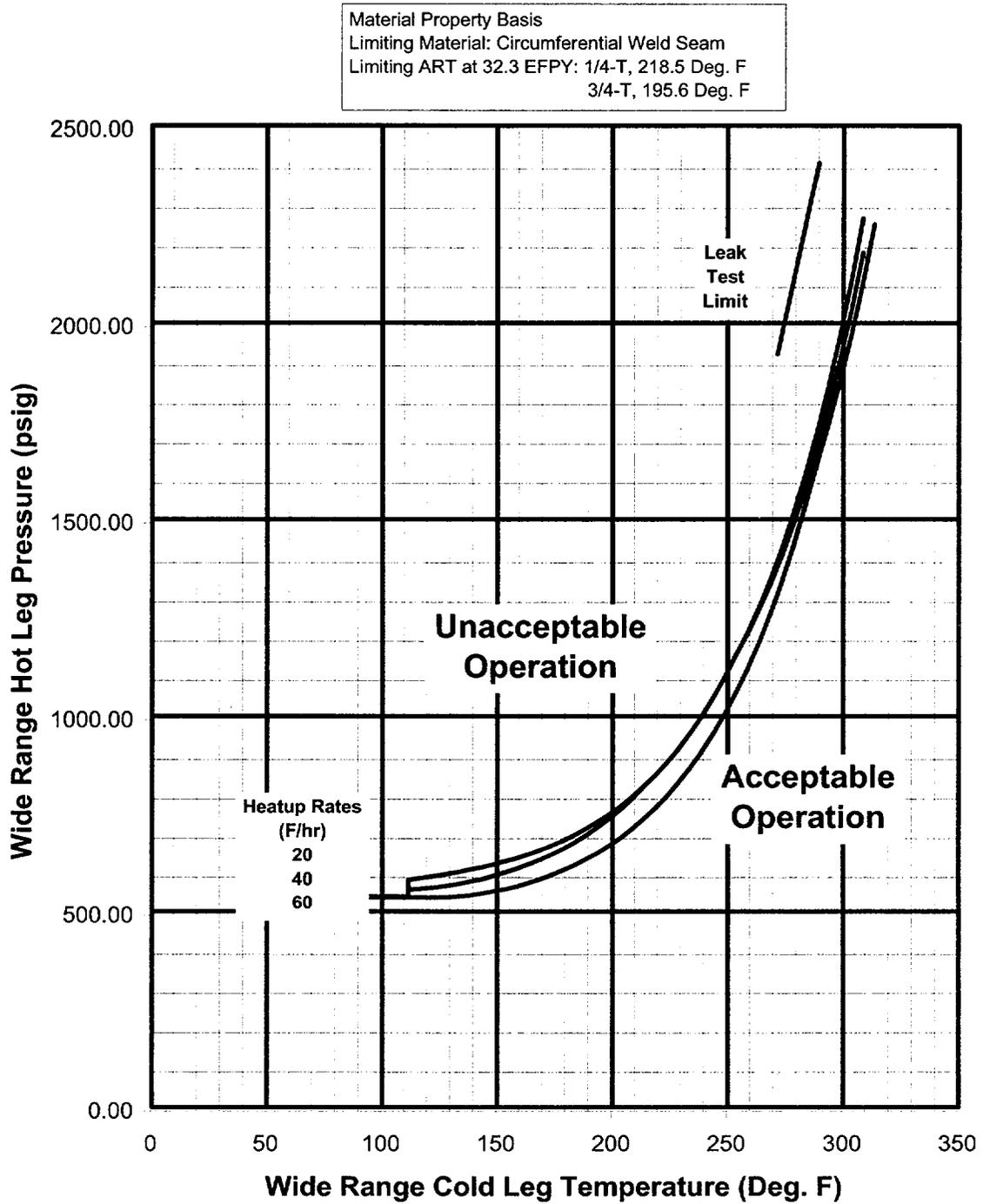


Figure 3.4.3-1 (page 1 of 1)
 Unit 1 RCS Heatup Limitations
 Heatup Rates up to 60°F/hr, Applicable for the first 32.3 EFPY,
 Including Margins for Instrumentation Errors

Material Property Basis
Limiting Material: Circumferential Weld Seam
Limiting ART at 32.3 EFPY: 1/4-T, 218.5 Deg. F
3/4-T, 195.6 Deg. F

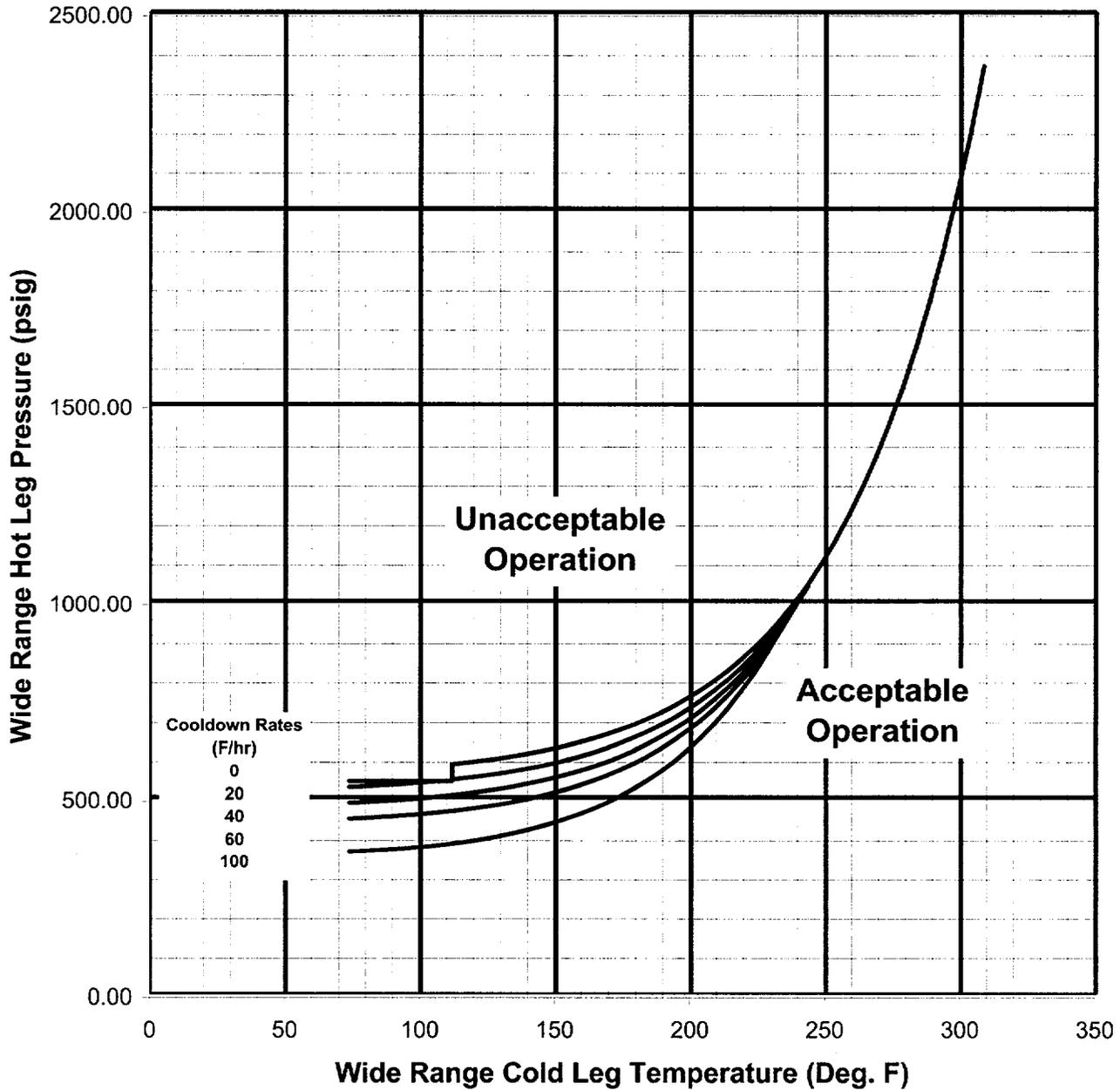


Figure 3.4.3-2 (page 1 of 1)
Unit 1 RCS Cooldown Limitations
Cooldown Rates up to 100°F/hr, Applicable for the first 32.3 EFPY,
Including Margins for Instrumentation Errors

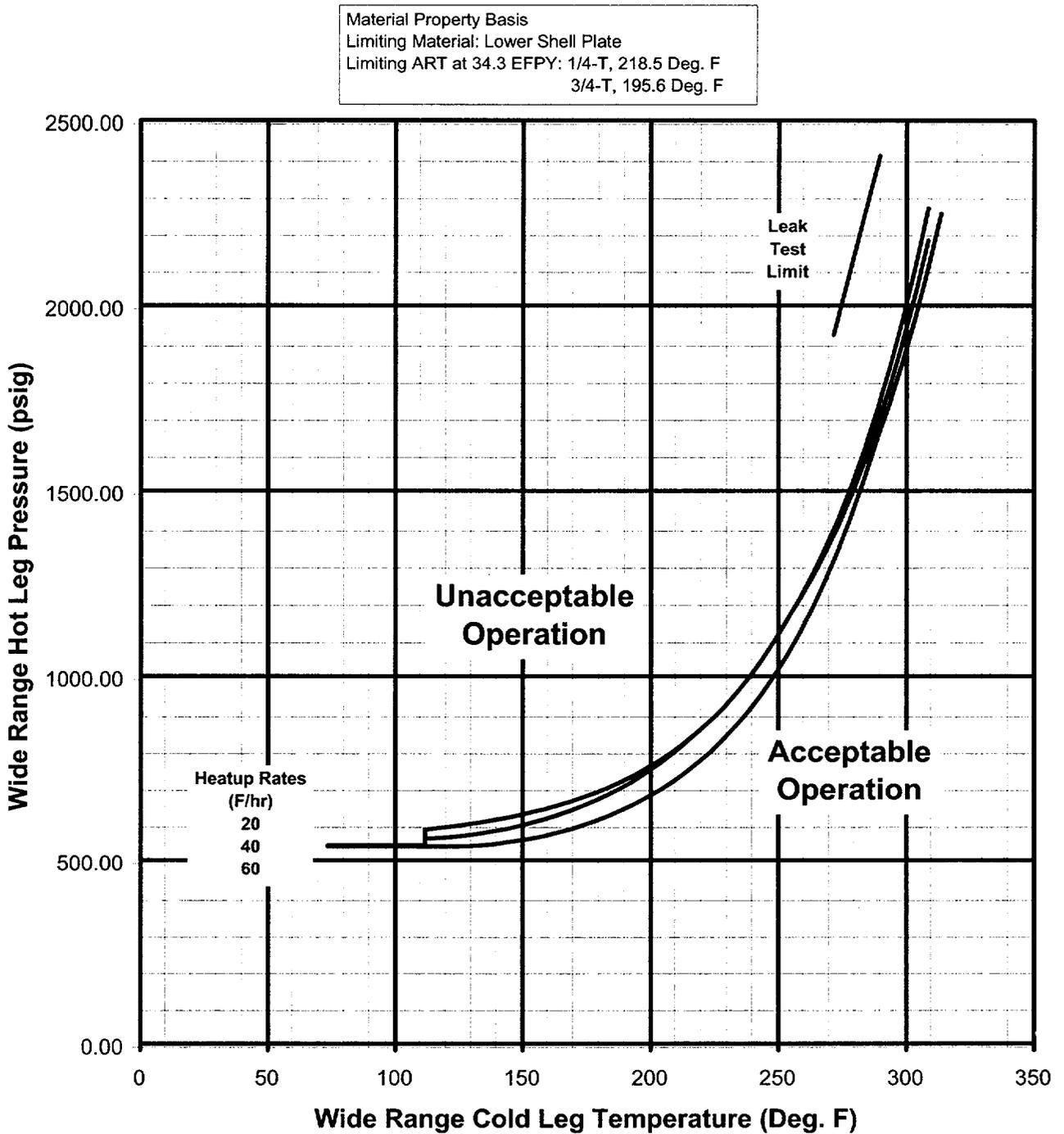


Figure 3.4.3-3 (page 1 of 1)
 Unit 2 RCS Heatup Limitations
 Heatup Rates up to 60°F/hr, Applicable for the first 34.3 EFPY,
 Including Margins for Instrumentation Errors

Material Property Basis
 Limiting Material: Lower Shell Plate
 Limiting ART at 34.3 EFPY: 1/4-T, 218.5 Deg. F
 3/4-T, 195.6 Deg. F

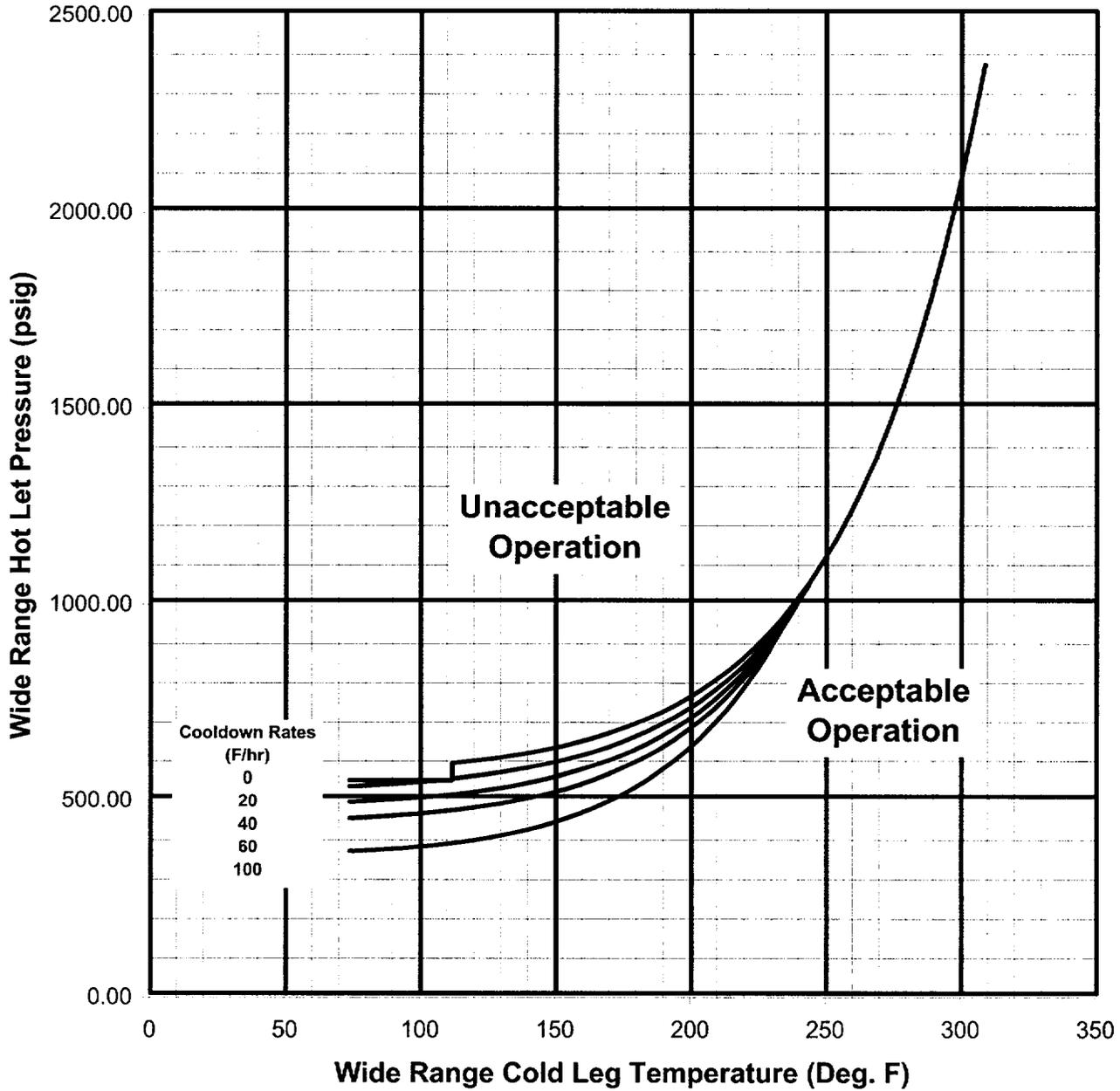


Figure 3.4.3-4 (page 1 of 1)
 Unit 2 RCS Cooldown Limitations
 Cooldown Rates up to 100°F/hr, Applicable for the first 34.3 EFPY,
 Including Margins for Instrumentation Errors

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops—MODES 1 and 2

LCO 3.4.4 Three RCS loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.4.1 Verify each RCS loop is in operation.	12 hours

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops—MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and one RCS loop shall be in operation.

----- NOTE -----

All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

- a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
-

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two required RCS loops inoperable. <u>OR</u> Required RCS loop not in operation.	C.1 Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
	<u>AND</u> C.2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u> C.3 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.5.1 Verify required RCS loops are in operation.	12 hours
SR 3.4.5.2 Verify steam generator secondary side water levels are $\geq 17\%$ for required RCS loops.	12 hours
SR 3.4.5.3 -----NOTE----- Not required to be performed until 24 hours after a required pump is not in operation. ----- Verify correct breaker alignment and indicated power are available to the required pump not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops—MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

----- NOTE -----

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature $\leq 235^\circ\text{F}$ (Unit 1), 270°F (Unit 2) unless the secondary side water temperature of each steam generator (SG) is $\leq 50^\circ\text{F}$ above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status.	Immediately
	AND A.2 -----NOTE----- Only required if RHR loop is OPERABLE. ----- Be in MODE 5.	

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two required loops inoperable. <u>OR</u> Required loop not in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u> B.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.6.1 Verify required RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2 Verify SG secondary side water levels are $\geq 17\%$ for required RCS loops.	12 hours
SR 3.4.6.3 -----NOTE----- Not required to be performed until 24 hours after a required pump is not in operation. ----- Verify correct breaker alignment and indicated power are available to the required pump not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops—MODE 5, Loops Filled

- LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:
- a. One additional RHR loop shall be OPERABLE; or
 - b. The secondary side water level of one steam generator (SG) shall be $\geq 17\%$.

----- NOTE -----

1. The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures $\leq 235^{\circ}\text{F}$ (Unit 1), 270°F (Unit 2) unless the secondary side water temperature of each SG is $\leq 50^{\circ}\text{F}$ above each of the RCS cold leg temperatures.
4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One required RHR loop inoperable.</p> <p><u>AND</u></p> <p>One RHR loop OPERABLE.</p>	<p>A.1 Initiate action to restore a second RHR loop to OPERABLE status.</p>	Immediately
	<p><u>OR</u></p> <p>A.2 Initiate action to restore required SG secondary side water level to within limits.</p>	Immediately
<p>B. Required SG with secondary side water level not within limits.</p> <p><u>AND</u></p> <p>One RHR loop OPERABLE.</p>	<p>B.1 Initiate action to restore a second RHR loop to OPERABLE status.</p>	Immediately
	<p><u>OR</u></p> <p>B.2 Initiate action to restore required SG secondary side water level to within limits.</p>	Immediately
<p>C. No required RHR loops OPERABLE.</p> <p><u>OR</u></p> <p>Required RHR loop not in operation.</p>	<p>C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.</p>	Immediately
	<p><u>AND</u></p> <p>C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify required RHR loop is in operation.	12 hours
SR 3.4.7.2	Verify SG secondary side water level is $\geq 17\%$ in required SG.	12 hours
SR 3.4.7.3	<p>-----NOTE----- Not required to be performed until 24 hours after a required pump is not in operation. -----</p> <p>Verify correct breaker alignment and indicated power are available to the required RHR pump not in operation.</p>	7 days

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops—MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

----- NOTES -----

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one loop to another provided:
 - a. The core outlet temperature is maintained $> 10^{\circ}\text{F}$ below saturation temperature;
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1; and
 - c. No draining operations to further reduce the RCS water volume are permitted.
2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No required RHR loop OPERABLE. <u>OR</u> Required RHR loop not in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	<u>AND</u> B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.8.1 Verify required RHR loop is in operation.	12 hours
SR 3.4.8.2 -----NOTE----- Not required to be performed until 24 hours after a required pump is not in operation. ----- Verify correct breaker alignment and indicated power are available to the required RHR pump not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

- LCO 3.4.9 The pressurizer shall be OPERABLE with:
- a. Pressurizer water level \leq 93%; and
 - b. Two groups of pressurizer heaters OPERABLE with the capacity of each group \geq 125 kW and capable of being powered from an emergency bus.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3. <u>AND</u>	6 hours
	A.2 Fully insert all rods. <u>AND</u>	6 hours
	A.3 Place Rod Control System in a condition incapable of rod withdrawal. <u>AND</u>	6 hours
	A.4 Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3. <u>AND</u>	6 hours
	C.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.9.1 Verify pressurizer water level is \leq 93%.	12 hours
SR 3.4.9.2 Verify capacity of each required group of pressurizer heaters is \geq 125 kW.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings of 2485 psig, +2%/-3% average with no single valve outside ±3%.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 235°F (Unit 1),
270°F (Unit 2).

----- NOTE -----

The lift settings are not required to be within the LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
<u>OR</u>	<u>AND</u>	
Two or more pressurizer safety valves inoperable.	B.2 Be in MODE 4 with any RCS cold leg temperatures ≤ 235°F (Unit 1), 270°F (Unit 2).	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.10.1 Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within $\pm 1\%$.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----- NOTE -----
Separate Condition entry is allowed for each PORV and each block valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable due to inoperable backup nitrogen supply and capable of being manually cycled.	A.1 Restore backup nitrogen supply to OPERABLE status.	14 days
B. One or more PORVs inoperable for reason other than Condition A and capable of being manually cycled.	B.1 Close and maintain power to associated block valve.	1 hour
C. One PORV inoperable and not capable of being manually cycled.	C.1 Close associated block valve.	1 hour
	<u>AND</u>	
	C.2 Remove power from associated block valve.	1 hour
	<u>AND</u>	
	C.3 Restore PORV to OPERABLE status.	72 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One block valve inoperable.</p>	<p>-----NOTE----- Required Action D.1 and D.2 do not apply when block valve is inoperable solely as a result of complying with Required Action C.2. -----</p> <p>D.1 Place associated PORV in manual control.</p> <p><u>AND</u></p> <p>D.2 Restore block valve to OPERABLE status.</p>	<p>1 hour</p> <p>72 hours</p>
<p>E. Required Action and associated Completion Time of Condition A, B, C, or D not met.</p>	<p>E.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>E.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>
<p>F. Two PORVs inoperable and not capable of being manually cycled.</p>	<p>F.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>F.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Two block valves inoperable.	G.1 -----NOTE----- Required Action G.1 does not apply when block valve is inoperable solely as a result of complying with Required Action C.2. ----- Restore one block valve to OPERABLE status.	2 hours
H. Required Action and associated Completion Time of Condition G not met.	H.1 Be in MODE 3. <u>AND</u> H.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.11.1 Verify PORV backup nitrogen supply pressure is within limit.	7 days
SR 3.4.11.2 -----NOTES----- 1. Not required to be performed with block valve closed in accordance with the Required Actions of this LCO. 2. Only required to be performed in MODES 1 and 2. ----- Perform a complete cycle of each block valve.	92 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.3	<p>-----NOTE----- Only required to be performed in MODES 1 and 2. -----</p> <p>Perform a complete cycle of each PORV.</p>	18 months
SR 3.4.11.4	Perform a complete cycle of each solenoid control valve and check valve on the accumulators in PORV control systems.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of one charging pump and one low head safety injection (LHSI) pump capable of injecting into the RCS and the accumulators isolated, with power removed from the isolation valve operators, and one of the following pressure relief capabilities:

- a. Two power operated relief valves (PORVs) with lift settings of:
 - 1. ≤ 500 psig (Unit 1), 415 psig (Unit 2) when any RCS cold leg temperature $\leq 235^\circ\text{F}$ (Unit 1), 270°F (Unit 2); and
 - 2. ≤ 395 psig (Unit 1), 375 psig (Unit 2) when any RCS cold leg temperature $\leq 150^\circ\text{F}$ (Unit 1), 130°F (Unit 2).
- b. The RCS depressurized and an RCS vent of ≥ 2.07 square inches.

----- NOTES-----

- 1. Two charging pumps may be made capable of injecting for ≤ 1 hour for pump swapping operations.
- 2. Accumulator isolation with power removed from the isolation valve operators is only required when accumulator pressure is greater than the PORV lift setting.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is $\leq 235^\circ\text{F}$ (Unit 1), 270°F (Unit 2),
MODE 5,
MODE 6 when the reactor vessel head is on.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two LHSI pumps capable of injecting into the RCS.	A.1 Initiate action to verify a maximum of one LHSI pump is capable of injecting into the RCS.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>G. Two required PORVs inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A, B, D, E, or F not met.</p> <p><u>OR</u></p> <p>LTOP System inoperable for any reason other than Condition A, B, C, D, E, or F.</p>	<p>G.1 Depressurize RCS and establish RCS vent of ≥ 2.07 square inches.</p>	<p>12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.12.1 Verify a maximum of one LHSI pump is capable of injecting into the RCS.</p>	<p>12 hours</p>
<p>SR 3.4.12.2 Verify a maximum of one charging pump is capable of injecting into the RCS.</p>	<p>12 hours</p>
<p>SR 3.4.12.3 -----NOTE----- Only required to be met if accumulator pressure is greater than PORV lift setting. ----- Verify each accumulator is isolated and power is removed from the accumulator isolation valve operator.</p>	<p>12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.4	Verify required RCS vent ≥ 2.07 square inches open.	12 hours for unlocked open vent valve(s) <u>AND</u> 31 days for other vent paths
SR 3.4.12.5	Verify PORV block valve is open for each required PORV and PORV keyswitch is in AUTO.	72 hours
SR 3.4.12.6	Verify required PORV backup nitrogen supply pressure is within limit.	7 days
SR 3.4.12.7	-----NOTE----- Not required to be met until 12 hours after decreasing RCS cold leg temperature to $\leq 235^{\circ}\text{F}$ (Unit 1), 270°F (Unit 2). ----- Perform a COT on each required PORV, excluding actuation.	31 days
SR 3.4.12.8	Perform CHANNEL CALIBRATION for each required PORV actuation channel.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE;
- d. 1 gpm total primary to secondary LEAKAGE through all steam generators (SGs); and
- e. 500 gallons per day primary to secondary LEAKAGE through any one SG.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.13.1 -----NOTE----- Not required to be performed until 12 hours after establishment of steady state operation. ----- Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.	72 hours
SR 3.4.13.2 Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.14 Leakage from each RCS PIV required to be tested shall be within limit.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except any required valves in the residual heat removal (RHR) flow path when in, or during the transition to or from, the RHR mode of operation.

ACTIONS

- NOTES -----
1. Separate Condition entry is allowed for each flow path.
 2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with leakage from one or more required RCS PIVs not within limit.	A.1 Restore RCS PIV leakage to within limit.	4 hours
B. Required Action and associated Completion Time for Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.14.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on any RCS PIVs required to be tested located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. <p>-----</p> <p>Verify leakage from each RCS PIV required to be tested is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.</p>	<p>In accordance with the Inservice Testing Program, and 18 months</p> <p><u>AND</u></p> <p>Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months</p> <p><u>AND</u></p> <p>Within 24 hours following valve actuation due to automatic or manual action or flow through the valve</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LC0 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

- a. One containment sump (level or discharge flow) monitor; and
- b. One containment atmosphere radioactivity monitor (gaseous or particulate).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	A.1 -----NOTE----- Not required until 12 hours after establishment of steady state operation. ----- Perform SR 3.4.13.1.	Once per 24 hours
	<u>AND</u> A.2 Restore required containment sump monitor to OPERABLE status.	

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the containment atmosphere.	Once per 24 hours
	<u>OR</u>	
	B.1.2 -----NOTE----- Not required until 12 hours after establishment of steady state operation. -----	Once per 24 hours
	Perform SR 3.4.13.1.	
<u>AND</u>	B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	30 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u>	C.2 Be in MODE 5.
D. All required monitors inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitor.	92 days
SR 3.4.15.3	Perform CHANNEL CALIBRATION of the required containment sump monitor.	18 months
SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	18 months

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature (T_{avg}) \geq 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μ Ci/gm.	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1.	Once per 4 hours
	<u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours
B. Gross specific activity of the reactor coolant not within limit.	B.1 Be in MODE 3 with T_{avg} < 500°F.	6 hours
C. Required Action and associated Completion Time of Condition A not met. <u>OR</u> DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.	C.1 Be in MODE 3 with T_{avg} < 500°F.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.16.1 Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ $\mu\text{Ci/gm}$.	7 days
SR 3.4.16.2 -----NOTE----- Only required to be performed in MODE 1. ----- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity $\leq 1.0 \mu\text{Ci/gm}$.	14 days <u>AND</u> Between 2 and 6 hours after a THERMAL POWER change of $\geq 15\%$ RTP within a 1 hour period
SR 3.4.16.3 -----NOTE----- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ----- Determine \bar{E} from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

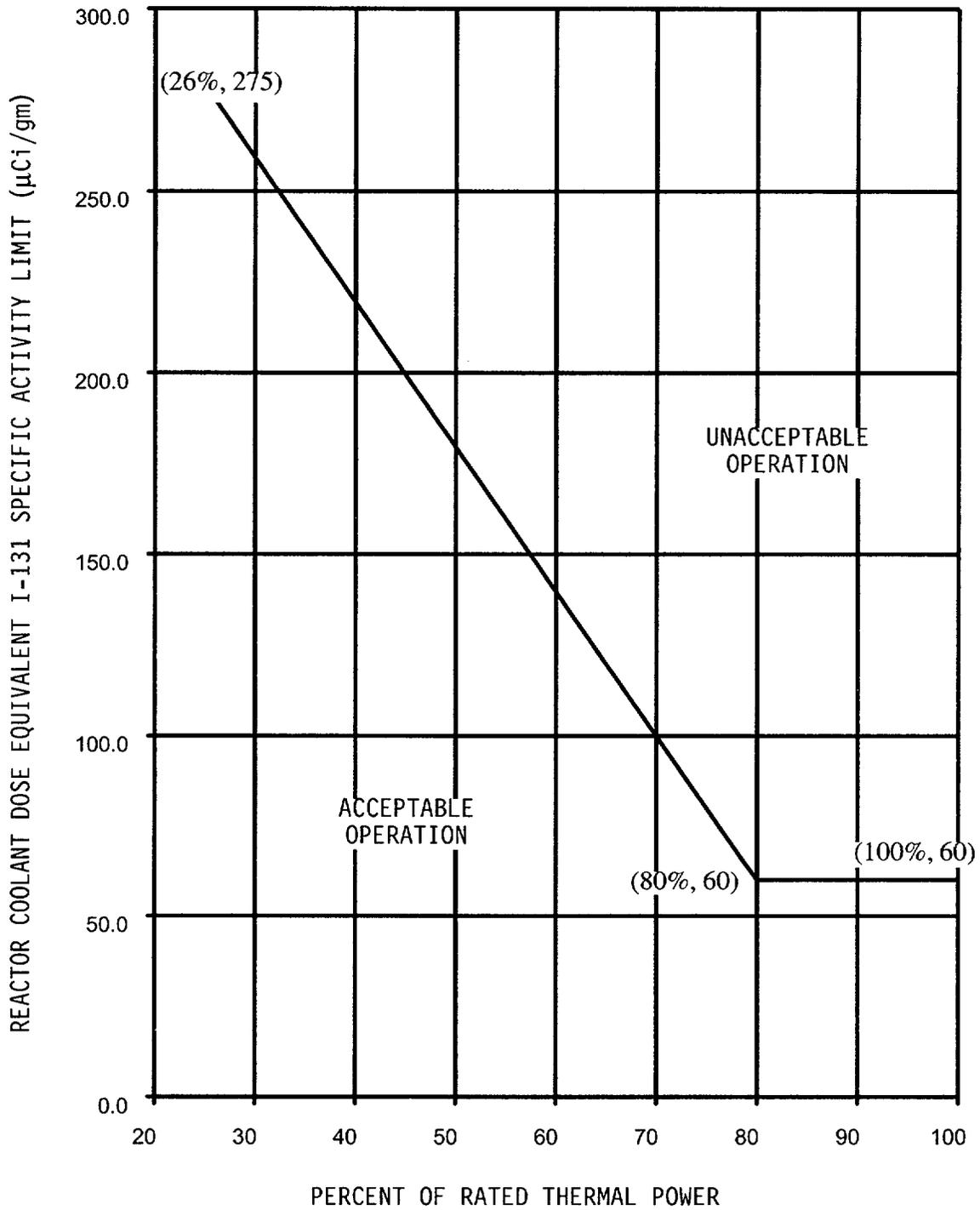


Figure 3.4.16-1 (page 1 of 1)
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity
Limit Versus Percent of RATED THERMAL POWER

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Loop Isolation Valves

LCO 3.4.17 Each RCS hot and cold leg loop isolation valve shall be open with power removed from each isolation valve operator.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

----- NOTE -----
Separate Condition entry is allowed for each RCS loop isolation valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Power available to one or more loop isolation valve operators.	A.1 Remove power from loop isolation valve operators.	30 minutes
B. -----NOTE----- All Required Actions shall be completed whenever this Condition is entered. ----- One or more RCS loop isolation valves closed.	B.1 Maintain valve(s) closed.	Immediately
	<u>AND</u> B.2 Be in MODE 3.	6 hours
	<u>AND</u> B.3 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.17.1 Verify each RCS loop isolation valve is open.	Once prior to removing power to the valve operator

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.17.2 Verify power removed from each RCS loop isolation valve.	31 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 RCS Isolated Loop Startup

LCO 3.4.18 Each RCS isolated loop shall remain isolated with both loop isolation valves closed and power removed from the valve operators unless:

- a. The isolated loop is filled and:
 1. The boron concentration of the isolated loop is \geq the boron concentration required to meet SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1 prior to opening the hot leg isolation valve;
 2. The hot leg isolation valve has been open with recirculation line flow of \geq 125 gpm for \geq 90 minutes prior to opening the cold leg isolation valve; and
 3. The cold leg temperature of the isolated loop is \leq 20°F below the highest cold leg temperature of the operating loops prior to opening the cold leg isolation valve; or
- b. The isolated loop is drained and:

----- NOTE -----
Seal injection may be initiated to the RCP in the isolated, drained loop and continued during filling of the isolated loop from the active RCS volume provided:

- 1) The isolated loop is initially drained; and
- 2) The boron concentration of the seal injection source is \geq the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.

-
1. Pressurizer water level is maintained \geq 32% prior to and during the opening of the hot or cold leg isolation valves; and
 2. The hot and cold leg isolation valves are fully open within 2 hours after the loop is filled.

----- NOTE -----
 A hot or cold leg isolation valve may be closed for up to two hours for valve maintenance or testing. If the isolation valve is not opened within 2 hours, the loop shall be isolated.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Isolated, filled loop boron concentration requirement not met when performing isolated loop startup in accordance with LCO 3.4.18.a.	A.1 Close hot and cold leg isolation valves.	Immediately
B. Isolated, filled loop recirculation line flow ≥ 125 gpm for ≥ 90 minutes with hot leg isolation valve open not established when performing isolated loop startup in accordance with LCO 3.4.18.a.	B.1 Close cold leg isolation valve.	Immediately
C. Isolated, filled loop temperature requirement not met when performing isolated loop startup in accordance with LCO 3.4.18.a.	C.1 Close cold leg isolation valve.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Pressurizer level requirement not met during filling of an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b.</p> <p><u>OR</u></p> <p>Seal injection boron concentration requirements not met during filling of an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b.</p>	<p>D.1 Close hot and cold leg isolation valves.</p>	<p>Immediately</p>
<p>E. Hot and cold leg isolation valves not fully open within 2 hours after filling an initially drained loop when performing isolated loop startup in accordance with LCO 3.4.18.b.</p>	<p>E.1 Close hot and cold leg isolation valves.</p> <p><u>OR</u></p> <p>E.2 Verify the boron concentration is \geq the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.</p>	<p>Immediately</p> <p>Immediately</p>
<p>F. Power available to one or more loop isolation valve operators of closed hot or cold isolation valve(s) with LCO 3.4.18.a.1 or LCO 3.4.18.b.1 not met.</p>	<p>F.1 Remove power from the loop isolation valve operator(s).</p>	<p>30 minutes</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.18.1 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.a. -----</p> <p>Verify cold leg temperature of a filled, isolated loop is $\leq 20^{\circ}\text{F}$ below the highest cold leg temperature of the operating loops.</p>	<p>Within 30 minutes prior to opening the cold leg isolation valve in isolated loop</p>
<p>SR 3.4.18.2 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.a. -----</p> <p>Verify boron concentration of a filled, isolated loop is greater than or equal to boron concentration required to meet SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.</p>	<p>Within 1 hour prior to opening the hot or cold leg isolation valve in isolated loop</p>
<p>SR 3.4.18.3 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.a. -----</p> <p>Verify that hot leg isolation valve is open with recirculation line flow ≥ 125 gpm for ≥ 90 minutes.</p>	<p>Within 30 minutes prior to opening the cold leg isolation valve in filled, isolated loop</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.18.4 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.b. ----- Verify that isolated loop is drained.</p>	<p>Within 2 hours prior to filling an initially drained loop from the active RCS volume <u>OR</u> Within 2 hours prior to initiating seal injection to the RCP in a drained loop</p>
<p>SR 3.4.18.5 -----NOTES----- 1. Only required to be met when utilizing the requirements of LCO 3.4.18.b. 2. Only required to be met when using blended makeup flow as the source for RCP seal injection. ----- Verify the boron concentration of the source for RCP seal injection is \geq the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.</p>	<p>Within 1 hour prior to initiating RCP seal injection in the isolated loop <u>AND</u> Once per hour during filling of an initially drained loop from the active RCS volume</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.4.18.6 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.b. -----</p> <p>Verify that the pressurizer level is $\geq 32\%$.</p>	<p>Prior to filling an initially drained loop from the active RCS volume</p> <p><u>AND</u></p> <p>Once per 15 minutes during the filling of an initially drained loop from the active RCS volume</p>
<p>SR 3.4.18.7 -----NOTE----- Only required to be met when utilizing the requirements of LCO 3.4.18.b. -----</p> <p>Verify the boron concentration of the isolated loop is \geq the boron concentration required to meet the SDM of LCO 3.1.1 or the boron concentration of LCO 3.9.1.</p>	<p>Within 1 hour prior to fully opening the cold leg isolation valve or opening the hot leg isolation valve</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.19 RCS Loops–Test Exceptions

LCO 3.4.19 The requirements of LCO 3.4.4, "RCS Loops–MODES 1 and 2," may be suspended, with THERMAL POWER < P-7.

APPLICABILITY: MODES 1 and 2 during startup and PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. THERMAL POWER \geq P-7.	A.1 Open reactor trip breakers.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.19.1 Verify THERMAL POWER is < P-7.	1 hour
SR 3.4.19.2 Perform a COT for each power range neutron flux–low channel, intermediate range neutron flux channel, P-10, and P-13.	Prior to initiation of startup and PHYSICS TESTS
SR 3.4.19.3 Perform an ACTUATION LOGIC TEST on P-7.	Prior to initiation of startup and PHYSICS TESTS

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Three ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Reduce RCS pressure to ≤ 1000 psig.	12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.1.1 Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2 Verify borated water volume in each accumulator is ≥ 7580 gallons and ≤ 7756 gallons.	12 hours
SR 3.5.1.3 Verify nitrogen cover pressure in each accumulator is ≥ 599 psig and ≤ 667 psig.	12 hours
<p>SR 3.5.1.4 -----NOTE----- For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be ≥ 2200 ppm and ≤ 2400 ppm. -----</p> <p>Verify boron concentration in each accumulator is ≥ 2500 ppm and ≤ 2800 ppm.</p>	<p>31 days</p> <p><u>AND</u></p> <p>-----NOTE----- Only required to be performed for affected accumulators -----</p> <p>Once within 6 hours after each solution volume increase of $\geq 50\%$ of indicated level that is not the result of addition from the refueling water storage tank</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.1.5 Verify power is removed from each accumulator isolation valve operator when RCS pressure is \geq 2000 psig.	31 days

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS-Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

----- NOTE -----
 In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours
C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY																																				
SR 3.5.2.1	<p>Verify the following valves are in the listed position with power to the valve operator removed.</p> <p>Unit 1</p> <table border="1"> <thead> <tr> <th>Number</th> <th>Position</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1-SI-MOV-1890A</td> <td>Closed</td> <td>LHSI to Hot Leg</td> </tr> <tr> <td>1-SI-MOV-1890B</td> <td>Closed</td> <td>LHSI to Hot Leg</td> </tr> <tr> <td>1-SI-MOV-1836</td> <td>Closed</td> <td>HHSI Pump to Cold Leg</td> </tr> <tr> <td>1-SI-MOV-1869A</td> <td>Closed</td> <td>HHSI Pump to Hot Leg</td> </tr> <tr> <td>1-SI-MOV-1869B</td> <td>Closed</td> <td>HHSI Pump to Hot Leg</td> </tr> </tbody> </table> <p>Unit 2</p> <table border="1"> <thead> <tr> <th>Number</th> <th>Position</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>2-SI-MOV-2890A</td> <td>Closed</td> <td>LHSI to Hot Leg</td> </tr> <tr> <td>2-SI-MOV-2890B</td> <td>Closed</td> <td>LHSI to Hot Leg</td> </tr> <tr> <td>2-SI-MOV-2836</td> <td>Closed</td> <td>HHSI Pump to Cold Leg</td> </tr> <tr> <td>2-SI-MOV-2869A</td> <td>Closed</td> <td>HHSI Pump to Hot Leg</td> </tr> <tr> <td>2-SI-MOV-2869B</td> <td>Closed</td> <td>HHSI Pump to Hot Leg</td> </tr> </tbody> </table>	Number	Position	Function	1-SI-MOV-1890A	Closed	LHSI to Hot Leg	1-SI-MOV-1890B	Closed	LHSI to Hot Leg	1-SI-MOV-1836	Closed	HHSI Pump to Cold Leg	1-SI-MOV-1869A	Closed	HHSI Pump to Hot Leg	1-SI-MOV-1869B	Closed	HHSI Pump to Hot Leg	Number	Position	Function	2-SI-MOV-2890A	Closed	LHSI to Hot Leg	2-SI-MOV-2890B	Closed	LHSI to Hot Leg	2-SI-MOV-2836	Closed	HHSI Pump to Cold Leg	2-SI-MOV-2869A	Closed	HHSI Pump to Hot Leg	2-SI-MOV-2869B	Closed	HHSI Pump to Hot Leg	12 hours
Number	Position	Function																																				
1-SI-MOV-1890A	Closed	LHSI to Hot Leg																																				
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1-SI-MOV-1836	Closed	HHSI Pump to Cold Leg																																				
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2-SI-MOV-2890B	Closed	LHSI to Hot Leg																																				
2-SI-MOV-2836	Closed	HHSI Pump to Cold Leg																																				
2-SI-MOV-2869A	Closed	HHSI Pump to Hot Leg																																				
2-SI-MOV-2869B	Closed	HHSI Pump to Hot Leg																																				
SR 3.5.2.2	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days																																				
SR 3.5.2.3	Verify ECCS piping is sufficiently full of water.	92 days																																				
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program																																				

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY														
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months														
SR 3.5.2.6	Verify each ECCS pump capable of starting automatically starts automatically on an actual or simulated actuation signal.	18 months														
SR 3.5.2.7	<p>Verify each ECCS throttle valve listed below is secured in the correct position.</p> <table border="0"> <thead> <tr> <th><u>Unit 1 Valve Number</u></th> <th><u>Unit 2 Valve Number</u></th> </tr> </thead> <tbody> <tr> <td>1-SI-188</td> <td>2-SI-89</td> </tr> <tr> <td>1-SI-191</td> <td>2-SI-97</td> </tr> <tr> <td>1-SI-193</td> <td>2-SI-103</td> </tr> <tr> <td>1-SI-203</td> <td>2-SI-116</td> </tr> <tr> <td>1-SI-204</td> <td>2-SI-111</td> </tr> <tr> <td>1-SI-205</td> <td>2-SI-123</td> </tr> </tbody> </table>	<u>Unit 1 Valve Number</u>	<u>Unit 2 Valve Number</u>	1-SI-188	2-SI-89	1-SI-191	2-SI-97	1-SI-193	2-SI-103	1-SI-203	2-SI-116	1-SI-204	2-SI-111	1-SI-205	2-SI-123	18 months
<u>Unit 1 Valve Number</u>	<u>Unit 2 Valve Number</u>															
1-SI-188	2-SI-89															
1-SI-191	2-SI-97															
1-SI-193	2-SI-103															
1-SI-203	2-SI-116															
1-SI-204	2-SI-111															
1-SI-205	2-SI-123															
SR 3.5.2.8	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	18 months														

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS-Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS train inoperable.	A.1 Restore required ECCS train to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.1 SR 3.5.2.7 SR 3.5.2.3 SR 3.5.2.8 SR 3.5.2.4	In accordance with applicable SRs

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. RWST boron concentration not within limits.</p> <p><u>OR</u></p> <p>RWST borated water temperature not within limits.</p>	<p>A.1 Restore RWST to OPERABLE status.</p>	<p>8 hours</p>
<p>B. RWST inoperable for reasons other than Condition A.</p>	<p>B.1 Restore RWST to OPERABLE status.</p>	<p>1 hour</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	Verify RWST borated water temperature is $\geq 40^{\circ}\text{F}$ and $\leq 50^{\circ}\text{F}$.	24 hours
SR 3.5.4.2	Verify RWST borated water volume is $\geq 466,200$ gallons and $\leq 487,000$ gallons.	7 days
SR 3.5.4.3	<p>-----NOTE-----</p> <p>For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm.</p> <p>-----</p> <p>Verify RWST boron concentration is ≥ 2600 ppm and ≤ 2800 ppm.</p>	7 days

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Seal Injection Flow

LCO 3.5.5 Reactor coolant pump seal injection flow shall be ≤ 30 gpm with RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand control valve full open.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Seal injection flow not within limit.	A.1 Adjust manual seal injection throttle valves to give a flow within limit with RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand control valve full open.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.5.5.1 -----NOTE----- Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. -----</p> <p>Verify manual seal injection throttle valves are adjusted to give a flow within limit with RCS pressure ≥ 2215 psig and ≤ 2255 psig and the seal injection hand control valve full open.</p>	<p>31 days</p>

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.6 Boron Injection Tank (BIT)

LCO 3.5.6 The BIT shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. BIT inoperable.	A.1 Restore BIT to OPERABLE status.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	B.2 Borate to an SDM within the limit provided in the COLR.	6 hours
C. Required Action and associated Completion Time of Condition B not met.	<u>AND</u>	
	B.3 Restore BIT to OPERABLE status.	7 days
	C.1 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.6.1	Verify BIT borated water temperature is $\geq 115^{\circ}\text{F}$.	24 hours
SR 3.5.6.2	Verify BIT borated water volume is ≥ 900 gallons.	7 days
SR 3.5.6.3	Verify BIT boron concentration is $\geq 12,950$ ppm and $\leq 15,750$ ppm.	7 days

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1 Containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.1 Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program

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3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks

LCO 3.6.2 Two containment air locks shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTES -----
1. Entry and exit is permissible to perform repairs on the affected air lock components.
 2. Separate Condition entry is allowed for each air lock.
 3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more containment air locks with one containment air lock door inoperable.</p>	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls. <p>-----</p>	<p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.1 Verify the OPERABLE door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	A.2 Lock the OPERABLE door closed in the affected air lock.	24 hours
	<u>AND</u>	
	A.3 -----NOTE----- Air lock doors in high radiation areas may be verified locked closed by administrative means. -----	
	Verify the OPERABLE door is locked closed in the affected air lock.	Once per 31 days

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One or more containment air locks with containment air lock interlock mechanism inoperable.</p>	<p>-----NOTES----- 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual. -----</p> <p>B.1 Verify an OPERABLE door is closed in the affected air lock. <u>AND</u> B.2 Lock an OPERABLE door closed in the affected air lock. <u>AND</u> B.3 -----NOTE----- Air lock doors in high radiation areas may be verified locked closed by administrative means. -----</p> <p>Verify an OPERABLE door is locked closed in the affected air lock.</p>	<p>1 hour</p> <p>24 hours</p> <p>Once per 31 days</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	<u>AND</u>	
	C.2 Verify a door is closed in the affected air lock.	1 hour
D. Required Action and associated Completion Time not met.	<u>AND</u>	
	C.3 Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p>	<p>In accordance with the Containment Leakage Rate Testing Program</p>
<p>SR 3.6.2.2 Verify only one door in the air lock can be opened at a time.</p>	<p>24 months</p>

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3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTES -----
1. Penetration flow path(s) except for 36 inch purge and exhaust valves, 18 inch containment vacuum breaking valve, 8 inch purge bypass valve, and steam jet air ejector suction flow paths may be unisolated intermittently under administrative controls.
 2. Separate Condition entry is allowed for each penetration flow path.
 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.
 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when leakage for a penetration flow path results in exceeding the overall containment leakage rate acceptance criteria.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Only applicable to penetration flow paths with two or more containment isolation valves. ----- One or more penetration flow paths with one containment isolation valve inoperable for reasons other than Condition D.</p>	<p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p style="text-align: center;"><u>AND</u></p>	<p>4 hours</p> <p style="text-align: right;">(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. <p>-----</p> <p>Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. ----- One or more penetration flow paths with two containment isolation valves inoperable for reasons other than Condition D.</p>	<p>B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.</p>	<p>1 hour</p>
<p>C. -----NOTE----- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ----- One or more penetration flow paths with one containment isolation valve inoperable.</p>	<p>C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.</p> <p><u>AND</u></p>	<p>72 hours</p> <p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	<p>C.2 -----NOTES----- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ----- Verify the affected penetration flow path is isolated.</p>	Once per 31 days
D. Purge valve penetration leakage not within limit.	D.1 Restore leakage within limit.	24 hours
E. Required Action and associated Completion Time not met.	<p>E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 5.</p>	<p>6 hours 36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.3.1 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. -----</p> <p>Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p>	<p>31 days</p>
<p>SR 3.6.3.2 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative means. -----</p> <p>Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p>	<p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days</p>
<p>SR 3.6.3.3 Verify the isolation time of each automatic power operated containment isolation valve is within limits.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.6.3.4 Perform leakage rate testing for containment purge valves with resilient seals.</p>	<p>Prior to entering MODE 4 from MODE 5 after containment vacuum has been broken</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.5 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	18 months
SR 3.6.3.6 Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is < 1.2 psid and opens when the differential pressure in the direction of flow is ≥ 1.2 psid and < 5.0 psid.	18 months

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment air partial pressure shall be ≥ 9.0 psia and within the acceptable operation range shown on Figure 3.6.4-1.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment air partial pressure not within limits.	A.1 Restore containment air partial pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.1 Verify containment air partial pressure is within limits.	12 hours

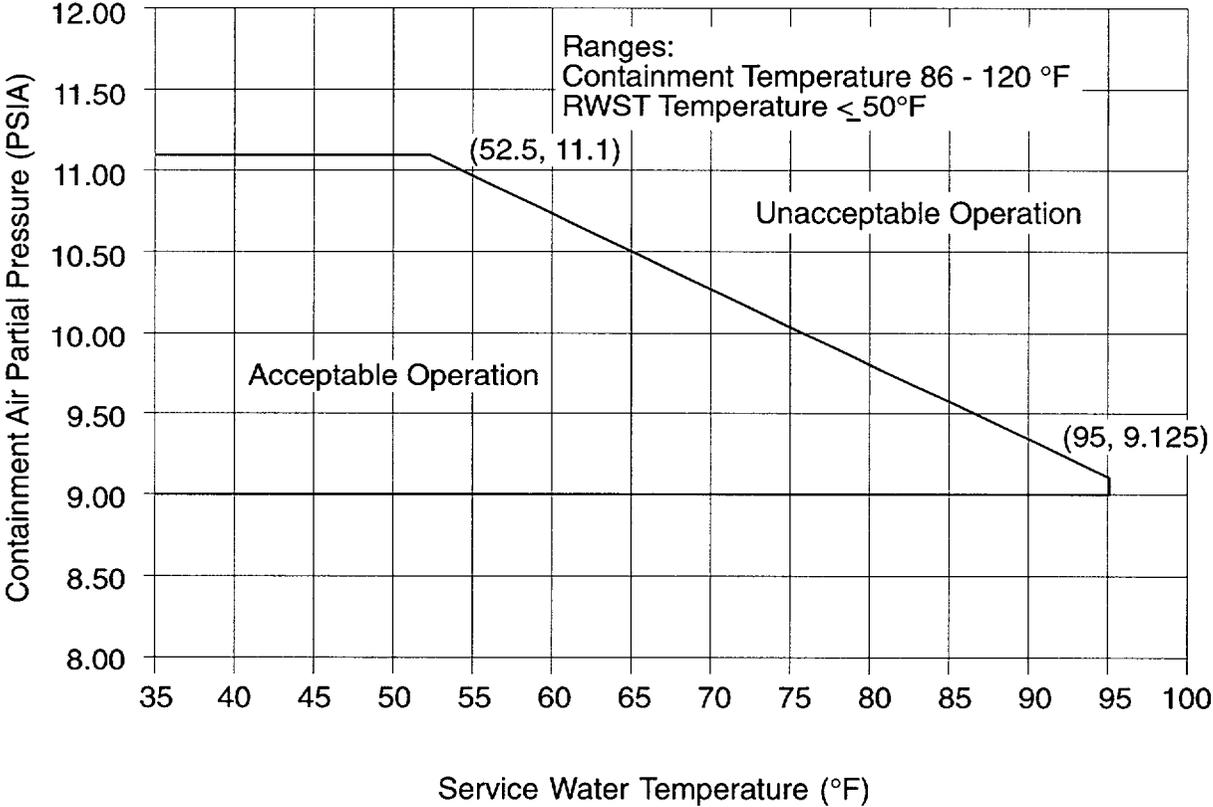


Figure 3.6.4-1 (page 1 of 1)
Containment Air Partial Pressure Versus
Service Water Temperature

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment air partial pressure shall be ≥ 9.0 psia and within the acceptable operation range shown on Figure 3.6.4-1.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment air partial pressure not within limits.	A.1 Restore containment air partial pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.1 Verify containment air partial pressure is within limits.	12 hours

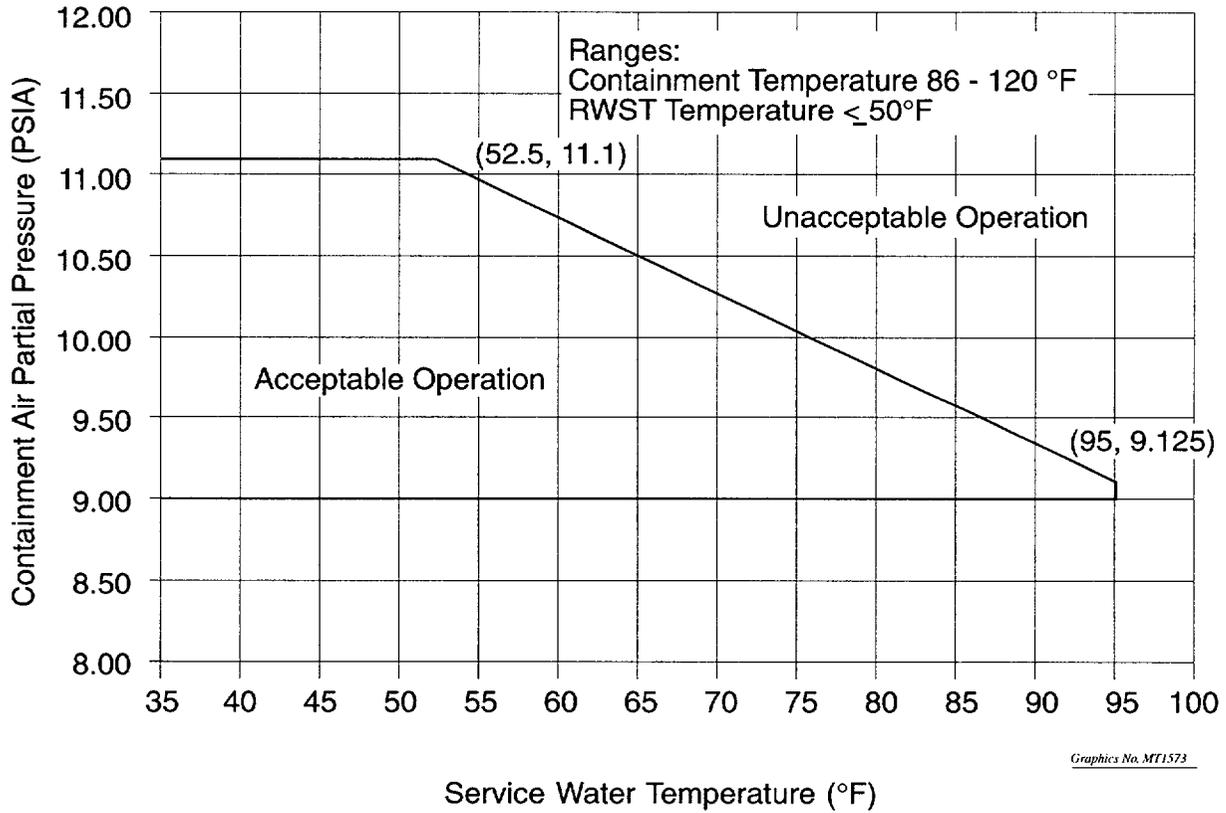


Figure 3.6.4-1 (page 1 of 1)
Containment Air Partial Pressure Versus
Service Water Temperature

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be $\geq 86^{\circ}\text{F}$ and $\leq 120^{\circ}\text{F}$.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment average air temperature not within limits.	A.1 Restore containment average air temperature to within limits.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.1 Verify containment average air temperature is within limits.	24 hours

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3.6 CONTAINMENT SYSTEMS

3.6.6 Quench Spray (QS) System

LCO 3.6.6 Two QS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One QS train inoperable.	A.1 Restore QS train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.6.1 Verify each QS manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.6.2 Verify each QS pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6.3	Verify each QS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.6.6.4	Verify each QS pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.6.5	Verify each spray nozzle is unobstructed.	10 years

3.6 CONTAINMENT SYSTEMS

3.6.7 Recirculation Spray (RS) System

LC0 3.6.7 Four RS subsystems and a casing cooling tank shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RS subsystem inoperable.	A.1 Restore RS subsystem to OPERABLE status.	7 days
B. Two RS subsystems inoperable in one train.	B.1 Restore one RS subsystem to OPERABLE status.	72 hours
C. Two inside RS subsystems inoperable.	C.1 Restore one RS subsystem to OPERABLE status.	72 hours
D. Casing cooling tank inoperable.	D.1 Restore casing cooling tank to OPERABLE status.	72 hours
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 5.	84 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. One outside RS subsystem and one inside RS subsystem inoperable and not in the same train.</p> <p><u>OR</u></p> <p>Three or more RS subsystems inoperable.</p> <p><u>OR</u></p> <p>Two outside RS subsystems inoperable.</p>	<p>F.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.7.1 Verify casing cooling tank temperature is $\geq 35^{\circ}\text{F}$ and $\leq 50^{\circ}\text{F}$.</p>	<p>24 hours</p>
<p>SR 3.6.7.2 Verify casing cooling tank contained borated water volume is $\geq 116,500$ gal.</p>	<p>7 days</p>
<p>SR 3.6.7.3 -----NOTE----- For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm. ----- Verify casing cooling tank boron concentration is ≥ 2600 ppm and ≤ 2800 ppm.</p>	<p>7 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.7.4 Verify each RS and casing cooling manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.7.5 Verify each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.6.7.6 Verify on an actual or simulated actuation signal(s): <ul style="list-style-type: none"> a. Each RS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position; b. Each RS pump starts automatically; and c. Each casing cooling pump starts automatically. 	18 months
SR 3.6.7.7 Verify each spray nozzle is unobstructed.	10 years

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3.6 CONTAINMENT SYSTEMS

3.6.8 Chemical Addition System

LCO 3.6.8 The Chemical Addition System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Chemical Addition System inoperable.	A.1 Restore Chemical Addition System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.8.1 Verify each Chemical Addition System manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.8.2 Verify chemical addition tank solution volume is ≥ 4800 gal and ≤ 5500 gal.	184 days
SR 3.6.8.3 Verify chemical addition tank NaOH solution concentration is $\geq 12\%$ and $\leq 13\%$ by weight.	184 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.8.4	Verify each Chemical Addition System automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.6.8.5	Verify Chemical Addition System flow from each solution's flow path.	5 years

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Recombiners

LCO 3.6.9 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 Restore hydrogen recombiner to OPERABLE status.	30 days
B. Two hydrogen recombiners inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained.	1 hour <u>AND</u> Once per 12 hours thereafter
	<u>AND</u> B.2 Restore one hydrogen recombiner to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Perform a system functional test for each hydrogen recombiner.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.2	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	18 months
SR 3.6.9.3	Perform a resistance to ground test for each heater phase.	18 months

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2 -----NOTE----- Only required in MODE 1. -----</p> <p>Reduce the Power Range Neutron Flux-High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.</p>	36 hours
<p>C. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more steam generators with greater than or equal to 4 MSSVs inoperable.</p>	<p>C.1 Be in MODE 3. <u>AND</u></p> <p>C.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1 -----NOTE----- Only required to be performed in MODES 1 and 2. -----</p> <p>Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within ±1%.</p>	<p>In accordance with the Inservice Testing Program</p>

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Maximum Allowable Power

NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM ALLOWABLE POWER % RTP
4	52
3	37
2	21

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

STEAM GENERATOR			LIFT SETTING (psig ± 3%)
#1	#2	#3	
Unit 1 VALVE NUMBER			
MS-SV-101A	MS-SV-101B	MS-SV-101C	1085
MS-SV-102A	MS-SV-102B	MS-SV-102C	1095
MS-SV-103A	MS-SV-103B	MS-SV-103C	1110
MS-SV-104A	MS-SV-104B	MS-SV-104C	1120
MS-SV-105A	MS-SV-105B	MS-SV-105C	1135
Unit 2 VALVE NUMBER			
MS-SV-201A	MS-SV-201B	MS-SV-201C	1085
MS-SV-202A	MS-SV-202B	MS-SV-202C	1095
MS-SV-203A	MS-SV-203B	MS-SV-203C	1110
MS-SV-204A	MS-SV-204B	MS-SV-204C	1120
MS-SV-205A	MS-SV-205B	MS-SV-205C	1135

3.7 PLANT SYSTEMS

3.7.2 Main Steam Trip Valves (MSTVs)

LCO 3.7.2 Three MSTVs shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSTVs are closed and
de-activated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSTV inoperable in MODE 1.	A.1 Restore MSTV to OPERABLE status.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
C. -----NOTE----- Separate Condition entry is allowed for each MSTV. ----- One or more MSTVs inoperable in MODE 2 or 3.	C.1 Close MSTV. <u>AND</u> C.2 Verify MSTV is closed.	8 hours Once per 7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.2.1 -----NOTE----- Only required to be performed in MODES 1 and 2. ----- Verify isolation time of each MSTV is ≤ 5 seconds.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.7.2.2 -----NOTE----- Only required to be performed in MODES 1 and 2. ----- Verify each MSTV actuates to the isolation position on an actual or simulated actuation signal.</p>	<p>18 months</p>

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater Pump Discharge Valves (MFPDVs), Main Feedwater Regulating Valves (MFRVs), and Main Feedwater Regulating Bypass Valves (MFRBVs)

LCO 3.7.3 Three MFIVs, three MFPDVs, three MFRVs, and three MFRBVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when MFIV, MFPDV, MFRV, or MFRBV is closed and de-activated or isolated by a closed manual valve.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more MFIVs inoperable.	A.1 Close or isolate MFIV.	72 hours
	<u>AND</u> A.2 Verify MFIV is closed or isolated.	Once per 7 days
B. One or more MFRVs inoperable.	B.1 Close or isolate MFRV.	72 hours
	<u>AND</u> B.2 Verify MFRV is closed or isolated.	Once per 7 days
C. One or more MFRBVs inoperable.	C.1 Close or isolate MFRBV.	72 hours
	<u>AND</u> C.2 Verify MFRBV is closed or isolated.	Once per 7 days

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more MFPDV inoperable.	D.1 Close or isolate MFPDV.	72 hours
	<u>AND</u> D.2 Verify MFPDV is closed or isolated.	Once per 7 days
E. Two valves in the same flow path inoperable.	E.1 Isolate affected flow path.	8 hours
F. Required Action and associated Completion Time not met.	F.1 Be in MODE 3.	6 hours
	<u>AND</u> F.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 Verify the isolation time of each MFIV, MFRV, and MFRBV is ≤ 6.98 seconds and the isolation time of each MFPDV is ≤ 60 seconds.	In accordance with the Inservice Testing Program
SR 3.7.3.2 Verify each MFIV, MFPDV, MFRV, and MFRBV actuates to the isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.4 Steam Generator Power Operated Relief Valves (SG PORVs)

LCO 3.7.4 Three SG PORV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SG PORV line inoperable.	A.1 Restore required SG PORV line to OPERABLE status.	7 days
B. Two or more required SG PORV lines inoperable.	B.1 Restore all but one SG PORV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u>	6 hours
	C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.4.1 Verify one complete cycle of each SG PORV.	18 months
SR 3.7.4.2 Verify one complete cycle of each SG PORV manual isolation valve.	18 months

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3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

----- NOTE -----
Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One steam supply to turbine driven AFW pump inoperable.</p> <p><u>OR</u></p> <p>-----NOTE----- Only applicable if MODE 2 has not been entered following refueling. -----</p> <p>One turbine driven AFW pump inoperable in MODE 3 following refueling.</p>	<p>A.1 Restore affected equipment to OPERABLE status.</p>	<p>7 days</p> <p><u>AND</u></p> <p>10 days from discovery of failure to meet the LCO</p>
<p>B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.</p>	<p>B.1 Restore AFW train to OPERABLE status.</p>	<p>72 hours</p> <p><u>AND</u></p> <p>10 days from discovery of failure to meet the LCO</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. Required Action and associated Completion Time for Condition A or B not met.</p> <p><u>OR</u></p> <p>Two AFW trains inoperable in MODE 1, 2, or 3.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 4.</p>	<p>6 hours</p> <p>18 hours</p>
<p>D. Three AFW trains inoperable in MODE 1, 2, or 3.</p>	<p>D.1 -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. -----</p> <p>Initiate action to restore one AFW train to OPERABLE status.</p>	<p>Immediately</p>
<p>E. Required AFW train inoperable in MODE 4.</p>	<p>E.1 Initiate action to restore AFW train to OPERABLE status.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.1 Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	<p>31 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.5.2 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. -----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.7.5.3 -----NOTE----- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	<p>18 months</p>
<p>SR 3.7.5.4 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 1005 psig in the steam generator. 2. Not applicable in MODE 4 when steam generator is relied upon for heat removal. <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p>	<p>18 months</p>
<p>SR 3.7.5.5</p> <p>Verify proper alignment of the required AFW flow paths by verifying flow from the emergency condensate storage tank to each steam generator.</p>	<p>Prior to entering MODE 3, whenever unit has been in MODE 5, 6, or defueled for a cumulative period > 30 days</p>

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3.7 PLANT SYSTEMS

3.7.6 Emergency Condensate Storage Tank (ECST)

LCO 3.7.6 The ECST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ECST inoperable.	A.1 Verify by administrative means OPERABILITY of Condensate Storage Tank.	4 hours <u>AND</u> Once per 12 hours thereafter
	<u>AND</u> A.2 Restore ECST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4, without reliance on steam generator for heat removal.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.6.1 Verify the ECST contains \geq 110,000 gal.	12 hours

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3.7 PLANT SYSTEMS

3.7.7 Secondary Specific Activity

LCO 3.7.7 The specific activity of the secondary coolant shall be
 $\leq 0.10 \mu\text{Ci/gm DOSE EQUIVALENT I-131}$.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	A.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.7.1 Verify the specific activity of the secondary coolant is $\leq 0.10 \mu\text{Ci/gm DOSE EQUIVALENT I-131}$.	31 days

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3.7 PLANT SYSTEMS

3.7.8 Service Water (SW) System

LCO 3.7.8 Two SW System loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SW pump inoperable.	A.1 Throttle SW System flow to Component Cooling (CC) heat exchangers.	72 hours
B. Two SW pumps inoperable.	B.1 Throttle SW System flow to CC heat exchangers.	1 hour
	<u>AND</u> B.2 Restore one SW pump to OPERABLE status.	72 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One SW System loop inoperable for reasons other than Condition A.</p>	<p>C.1 Restore SW System loop to OPERABLE status.</p>	<p>-----NOTE----- 72 hour Completion Time only required if criteria allowing 7 day Completion Time are not met. -----</p> <p>72 hours</p> <p><u>AND</u></p> <p>-----NOTE----- Only applicable if: 1. SW loop inoperability is part of SW System upgrades, and 2. Three SW pumps are OPERABLE from initial Condition entry (one SW pump allowed to not have automatic start capability), and 3. Two auxiliary SW pumps are OPERABLE from initial Condition entry. -----</p> <p>7 days</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Actions and associated Completion Times of Conditions A, B or C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 5.	36 hours
E. Two SW System loops inoperable for reasons other than only two SW pumps being OPERABLE.	E.1 Be in MODE 4.	12 hours
	<u>AND</u> E.2 Initiate actions to be in MODE 5.	13 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.8.1 -----NOTE----- Isolation of SW flow to individual components does not render the SW System inoperable. ----- Verify each SW System manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.8.2 Verify each SW System automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.8.3 Verify each SW pump starts automatically on an actual or simulated actuation signal.	18 months

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3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. UHS inoperable.	A.1 Be in MODE 3.	6 hours
	<u>AND</u> A.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of the Service Water Reservoir is \geq 313 ft mean sea level.	24 hours
SR 3.7.9.2	Verify average water temperature of the Service Water Reservoir is \leq 95°F.	24 hours

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