VOLUME 8

CNP UNITS 1 AND 2
IMPROVED TECHNICAL
SPECIFICATIONS CONVERSION

ITS SECTION 3.3
INSTRUMENTATION

Revision 0

LIST OF ATTACHMENTS

1. ITS 3.3.1
2. ITS 3.3.2
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9. Relocated/Deleted Current Technical Specifications (CTS)
10. Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ATTACHMENT 1

ITS 3.3.1, Reactor Trip System (RTS) Instrumentation

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS 3.3.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.1 — 3.3.1.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

Add proposed ACTIONS Note — A.2

ACTION A — As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR Table Note — 4.3.1.1.1 Each reactor trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-1.

A.20 — 92 days on a STAGGERED TEST BASIS — M.8

SR 3.3.1.5; SR 3.3.1.13, SR 3.3.1.14, SR 3.3.1.16 — 4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

L.1 — 24 — L.2

24 — L.3

SR 3.3.1.19 — 4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.*

A.17

on a STAGGERED TEST BASIS — A.4

SR 3.3.1.19 Note — * Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

LA.1

A.1

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ITS 3.3.1

ITS

Table 3.3.1-1

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1	1. Manual Reactor Trip	2	1	2	1, 2 and * Note a	12 B, P, Q
2.a 2.b	2. Power Range, Neutron Flux	4	2	3	1, 2 and *	2 C, D
3.a	3. Power Range, Neutron Flux, High Positive Rate	4	2	3	1, 2	2 D
3.b	4. Power Range, Neutron Flux, High Negative Rate	4	2	3	1, 2	2 D
4	5. Intermediate Range, Neutron Flux	2	1	2	1, 2 and *	3 E, F
5	6. Source Range, Neutron Flux A. Startup	2	1	2	2## and * Note a	4 G, I, Q
	B. Shutdown	2	0	1	3, 4 and 5	5
6	7. Overtemperature ΔT Four Loop Operation	4	2	3	1, 2	6 D
7	8. Overpower ΔT Four Loop Operation	4	2	3	1, 2	6 D

A.1 A.5 A.6 A.7 A.8 A.9 L.5 LA.2 REQUIRED 4 See ITS 3.3.8

ITS 3.3.1

ITS

Table 3.3.1-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8.a	9. Pressurizer Pressure-Low	4	2	3	1, 2	6 D
8.b	10. Pressurizer Pressure--High	4	2	3	1, 2	6 D
9	11. Pressurizer Water Level--High	3	2	2	1, 2	7 D
10	12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	7 D
10, Footnote (e)	13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	7 D
14	14. Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2	7 D
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch in same loop	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	7 D

LA.2 A.5 A.10 A.6 A.5 A.6 A.6 A.1 A.5 LA.6 REQUIRED 4 3 3 3 2

D. C. COOK - UNIT 1 3/4 3-4 AMENDMENT NO. 74, 120

A.1

ITS 3.3.1

ITS

TABLE 3.3-1 (Continued)

Table 3.3.1-1

REACTOR TRIP SYSTEM INSTRUMENTATION

LA.2 A.5 A.5 A.10 A.6 A.5 A.10 A.6 A.5 A.5 A.12

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE (REQUIRED)	APPLICABLE MODES	ACTION
12	16. Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3 (1 per bus)	1	6# D
13	17. Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6# D
	18. Turbine Trip					
16.a	A. Low Fluid Oil Pressure	3	2	2 (3)	1	7# D
16.b	B. Turbine Stop Valve Closure	4	4	4	1	7# D
17	19. Safety Injection Input from ESF	2	1	2 (per train)	1, 2	1 J, P
11	20. Reactor Coolant Pump Breaker Position Trip					
Footnote (e)	Above P-7	1/breaker	2	1/breaker per operating loop	1	11 D
19, 20	21. Reactor Trip Breakers	2	1	2	1, 2	M, P 13, 15 K, P
					3*, 4*, 5*	14 B, Q
21	22. Automatic Trip Logic	2	1	2	1, 2	1 J, P
					3*, 4*, 5*	14 B, Q

A.1

ITS 3.3.1

ITS

A.18 LA.3 M.1 A.6 A.9 LA.4 L.6 L.6 A.11 L.4 A.11 M.4

Table 3.3.1-1

TABLE 3.3-1 (Continued)

MODES 3, 4, and 5

TABLE NOTATION

or one or more rods not fully inserted

Footnote (a) * With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

The provisions of Specification 3.0.4 are not applicable.

Footnote (d) ## High voltage to detector may be de-energized above P-6.

ACTION STATEMENTS

Add proposed Required Action J.1

ACTION J ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6

ACTION D hours; however, one channel may be bypassed for up to 2 hours for

ACTION J Note surveillance testing per Specification 4.3.1.1.1.

ACTIONS C and D ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied.

Required Actions C.1 and D.1 a. The inoperable channel is placed in tripped condition within 6 hours.

4

ACTIONS C and D Note b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of the other channels per Specification 4.3.1.1.1.

c. Either THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range, Neutron Flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.c.

Add proposed ACTION P

ACTION E ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

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A.1

ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-1 (Continued)

Function 4 Applicability

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint. A.8

M.5

ACTION E

b. Above P-6 but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER. L.9

Add proposed Required Actions E.1 and E.2

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue. M.5

Add proposed ACTION F M.11

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level: M.2

ACTIONS G, I, Q

Add proposed Required Action G.1 for MODE 2 below P-6

Add proposed Required Actions I.1, Q.1, and Q.2 for MODES 3[(a)], 4[(a)], 5[(a)]

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

Add proposed ACTION H M.6

Function 5 Applicability

b. Above P-6, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement:

a. Immediately suspend operations involving positive reactivity changes except addition of water from the RWST, provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.8.b.2 (MODES 3 or 4) or 3.1.2.7.b.2 (MODE 5), and

b. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter, and

c. Close the isolation valves for unborated water sources to the chemical and volume control system within 1 hour. In MODE 5, if the RWST boron concentration is less than the reactor coolant system boron concentration and less than the boron concentration required by Specification 3.1.2.7.b.2, isolate the RWST from the reactor coolant system within 1 hour.

See ITS 3.3.8

ACTION D

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied: L.6

a. The inoperable channel is placed in the tripped condition within [1] hour. 6

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to [2] hours for surveillance testing of the other channels per Specification 4.3.1.1.1. 4

Add proposed ACTIONS N and P M.7

ACTION D

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within [1] hour. L.7 6

Add proposed ACTIONS N and P M.7

Add proposed NOTE to ACTION D L.6

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ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-1 (Continued)

ACTION 8 - (Deleted.)

ACTION 9 - (Deleted.)

ACTION 10 - (Deleted.)

ACTION D — ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour. [6] (L.6) [Add proposed ACTION O] (M.7)

ACTION B — ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or ACTION P — be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers. ACTION Q — [Add proposed Required Actions Q.1 and Q.2] (L.12)

ACTION M — ACTION 13 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 1. ACTION P — The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status. (M.9)

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE ACTION B — requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the ACTION Q — reactor trip breakers within the next hour. [Add proposed Required Actions Q.1 and Q.2] (L.13)

ACTION K — ACTION 15 - With the number of OPERABLE Reactor Trip Breaker channels one less than required by the Minimum Channels OPERABLE requirement for reasons other than an inoperable diverse trip feature, restore the inoperable channel to OPERABLE status within 24 hours or be in HOT ACTION P — STANDBY within the following 6 hours. ACTION K Note — One channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1, provided the other channel is OPERABLE.

REACTOR TRIP SYSTEM INTERLOCKS

	DESIGNATION	CONDITION AND SETPOINT	FUNCTION
Table 3.3.1-1 Function 18.a	P-6	With 2 of 2 Intermediate Range Neutron Flux Channels less than 6x10^{-11} amps.	P-6 prevents or defeats the manual block of source range reactor trip.

[1 per train] (LA.5)

[Add proposed Applicability] (A.19)

[Add proposed ACTIONS L, P, and Q] (L.8)

A.1

ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

A.21

TABLE 3.3-1 (Continued)

ITS	DESIGNATION	CONDITION AND SETPOINT	FUNCTION
Table 3.3.1-1 Functions 18.b, 18.d, 18.e	P-7	With 2 of 4 Power Range Neutron Flux Channels greater than or equal to 11% of RATED THERMAL POWER or 1 of 2 Turbine First Stage Pressure channels greater than or equal to 37 psig.	P-7 prevents or defeats the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump under-voltage and under-frequency, turbine trip, pressurizer low pressure, and pressurizer high level. Low flow in a particular loop can be evidenced by either a detected low flow or by the opening of the reactor coolant pump breaker.
Table 3.3.1-1 Function 18.c	P-8	With 2 of 4 Power Range Neutron Flux channels greater than or equal to 31% of RATED THERMAL POWER	P-8 prevents or defeats the automatic block of reactor trip caused by a low coolant flow condition in a single loop.
Table 3.3.1-1 Function 18.d	P-10	With 3 of 4 Power range neutron flux channels less than 9% of RATED THERMAL POWER.	P-10 prevents or defeats the manual block of: Power range low setpoint reactor trip, Intermediate range reactor trip, and intermediate range rod stops. Provides input to P-7.

1 per train

LA.5

Add proposed Applicability

A.19

Add proposed Applicability

A.19

Add proposed ACTIONS L, O, and P

L.8

A.1

ITS 3.3.1

TABLE 3.3-2

Table Intentionally Deleted

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A.1

TABLE 3.3-2 (Continued)

Table Intentionally Deleted

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A.1

ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.1-1

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODE IN WHICH SURVEILLANCE REQUIRED
1	1. Manual Reactor Trip	SR 3.3.1.1	SR 3.3.1.2, SR 3.3.1.3, SR 3.3.1.9, SR 3.3.1.13 SR 3.3.1.14, SR 3.3.1.15	SR 3.3.1.8, SR 3.3.1.10, SR 3.3.1.17	24 months
	A. Shunt Trip Function	N.A.	N.A.	S/U(1)(10) -17	1, 2, 3*, 4*, 5*
	B. Undervoltage Trip Function	N.A.	N.A.	S/U(1)(10) -17	1, 2, 3*, 4*, 5*
2.a 2.b	2. Power Range, Neutron Flux	S-1 31 effective full power days	2- D(2,8), M(3,8), -3 and Q(6,8) -9	Q and S/U(1) -8	1, 2 and *
3.a	3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6) -14	Q -8 24 months	1, 2
3.b	4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6)-14	Q -8 Add proposed SR 3.3.1.10 Note 1	1, 2 184 days
4	5. Intermediate Range, Neutron Flux	S -1	R(6,8)-14	S/U(1/7) -10 24 months	1, 2, and *
5	6. Source Range, Neutron Flux	S -1 Add proposed SR 3.3.1.7	R(6,14)-14 184 days	10- M(14) and S/U(1)	2(7), 3(7), 4 and 5
6	7. Overtemperature delta T	S -1	R(9) -15	SA -10	1, 2 Add proposed Note 1 to SR 3.3.1.15
7	8. Overpower delta T	S -1	R(9)-15	SA -10 24 months	1, 2
8.a	9. Pressurizer Pressure -- Low	S -1	R -13	SA -10	1, 2
8.b	10. Pressurizer Pressure -- High	S -1	R -13	SA -10 24 months	1, 2
9	11. Pressurizer Water Level -- High	S -1	R -13	SA -10	1, 2
10	12. Loss of Flow-Single Loop	S -1	R(8) -13	SA -10	1

LA.9 M.13 M.15 M.15 L.15 A.20 L.14 LA.9 L.16 L.5 A.7 L.2 M.12 L.5 A.8 L.2 L.16 A.18 L.18 A.16 L.2 A.10 L.2 A.22 LA.6

A.1

ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.1-1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT (LA.6)	CHANNEL CHECK (SR 3.3.1.1)	CHANNEL CALIBRATION (SR 3.3.1.12, SR 3.3.1.13)	CHANNEL FUNCTIONAL TEST (SR 3.3.1.4, SR 3.3.1.5, SR 3.3.1.6, SR 3.3.1.10, SR 3.3.1.11, SR 3.3.1.17, SR 3.3.1.18)	MODE IN WHICH SURVEILLANCE REQUIRED
10	13. Loss of Flow-Two Loops	S-1	R(8)-13	N.A. 24 months	1
14	14. Steam Generator Water Level -- Low-Low	S-1	R-13	SA-10	1, 2
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S-1 (184 days)	R-13	SA-10 (184 days)	1, 2
12	16. Undervoltage-Reactor Coolant Pumps	N.A.	R-12	M-11	1
13	17. Underfrequency-Reactor Coolant Pumps	N.A.	R-13	M-11	1
	18. Turbine Trip				
16.a	A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)-18	1, 2
16.b	B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)-18	1, 2
17	19. Safety Injection Input from ESF	N.A.	N.A.	6- Q (4)(15) -17	1, 2
11	20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R-17 (24 months)	N.A.
19	21. Reactor Trip Breaker				
19, 20	A. Shunt Trip Function	N.A.	N.A.	4- 2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
19, 20	B. Undervoltage Trip Function	N.A.	N.A.	4- 2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
21	22. Automatic Trip Logic	N.A	N.A.	Q(15)-5	1, 2, 3*, 4*, 5*
19 Footnote (g)	23. Reactor Trip Bypass Breaker	N.A.	N.A.	4- 2 Months (5)(12) 17- and S/U(1)(13) (24 months)	1, 2, 3*, 4*, 5*

Annotations: Add proposed Note to SR 3.3.1.11; Add proposed SR 3.3.1.13; Add proposed Note to SR 3.3.1.18; A.20, A.22, L.2, L.18, A.3, A.10, M.14, A.3, L.10, A.15, A.10, L.11, A.12, LA.9, L.16, LA.9, L.16, A.13, LA.9, L.14, A.13, M.15, M.16

A.1

ITS 3.3.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 4.3-1 (Continued)

NOTATION

ITS			
Table 3.3.1-1 Footnote (a)	*	-	With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. [or one or more rods not fully inserted]
SR 3.3.1.18	(1)	-	If not performed in previous 7 [31] days.
SR 3.3.1.2	(2)	-	Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
SR 3.3.1.3	(3)	-	Compare incore to excore axial imbalance above 15% of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.
SR 3.3.1.17	(4)	-	Manual ESF functional input check every 18 [24 months] months.
SR 3.3.1.4	(5)	-	Each train tested at least every other 62 days.
SR 3.3.1.9, SR 3.3.1.14	(6)	-	Neutron detectors may be excluded from CHANNEL CALIBRATION.
Table 3.3.1-1 Function 5 Applicability Footnote (d)	(7)	-	Below P-6 (BLOCK OF SOURCE RANGE REACTOR TRIP) setpoint.
Note 2 for SR 3.3.1.2 and SR 3.3.1.3	(8)	-	The provisions of Specification 4.0.4 are not applicable.
SR 3.3.1.15 Note 2	(9)	-	The provisions of Specification 4.0.4 are not applicable for f, (delta I) and f, (delta I) penalties, or for measurement of delta T. (See also Table 2.2-1).
	(10)	-	The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).
	(11)	-	The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.
SR 3.3.1.4	(12)	-	Local manual shunt trip prior to placing breaker in service.
	(13)	-	Automatic Undervoltage Trip.
SR 3.3.1.10 Note 2	(14)	-	The provisions of Specification 4.0.4 are not applicable when leaving MODE 1. In such an event, the calibration and/or functional test shall be performed within 24 hours after leaving MODE 1.
SR 3.3.1.5 SR 3.3.1.6	(15)	-	Each train tested at least every other 92 days.
	(16)	-	Not Used.
SR 3.3.1.10	(17)	-	If not performed in previous 184 days.

LA.3 M.1 L.10 L.16 L.14 L.11 M.15 M.3 M.13 A.14 M.10 LA.9 LA.9 LA.9 L.17 M.15 M.12

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A.1

ITS 3.3.1

ITS

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

LCO 3.3.1

2.2.1 The reactor trip system instrumentation setpoints shall be set consistent with the ~~Trip Setpoint~~ values shown in Table 2.2-1.

Allowable Value LA.10

APPLICABILITY: As shown for each channel in Table 3.3-1.

ACTION:

ACTION A

With a reactor trip system instrumentation setpoint less conservative than the value shown in the Allowable Values column of Table 2.2-1, declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1.1 until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the ~~Trip Setpoint~~ value.

Allowable Value LA.10

A.1

ITS 3.3.1

ITS

2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

Table 3.3.1-1

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.10

ITS		FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
1	1.	Manual Reactor Trip	Not Applicable	Not Applicable	
2.a, 2.b	2.	Power Range, Neutron Flux	Low Setpoint - less than or equal to 25% of RATED THERMAL POWER High Setpoint - less than or equal to 109% of RATED THERMAL POWER	Low Setpoint - less than or equal to 26% of RATED THERMAL POWER High Setpoint - less than or equal to 110% of RATED THERMAL POWER	
3.a	3.	Power Range, Neutron Flux, High Positive Rate	Less than or equal to 5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	Less than or equal to 5.5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	
3.b	4.	Power Range, Neutron Flux, High Negative Rate	Less than or equal to 5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	Less than or equal to 5.5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	
4	5.	Intermediate Range, Neutron Flux	Less than or equal to 25% of RATED THERMAL POWER	Less than or equal to 30% of RATED THERMAL POWER	
5	6.	Source Range, Neutron Flux	Less than or equal to 10^5 counts per second	Less than or equal to 1.3 x 10^5 counts per second	M.17
6, including Note 1	7.	Overtemperature Delta T	See Note 1	See Note 3	
7, including Note 2	8.	Overpower Delta T	See Note 2	See Note 4	L.19
8.a	9.	Pressurizer Pressure -- Low	Greater than or equal to 1875 psig	Greater than or equal to 1865 psig (1868)	
8.b	10.	Pressurizer Pressure -- High	Less than or equal to 2385 psig	Less than or equal to 2395 psig (2398)	LA.11
9	11.	Pressurizer Water Level - - High	Less than or equal to 92% of instrument span	Less than or equal to 93% of instrument span (93.4)	M.17
10	12.	Loss of Flow	Greater than or equal to 90% of design flow per loop*	Greater than or equal to 89.1% of design flow per loop* (89.6)	LA.11

LA.10

*Design flow is 1/4 Reactor Coolant System total flow rate from Table 3.2.-1.

LA.11

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A.1

ITS 3.3.1

ITS

2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.10

ITS		FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
14	13.	Steam Generator Water Level -- Low-Low	Greater than or equal to 17% of narrow range instrument span - each steam generator	Greater than or equal to 16% of narrow range instrument span - each steam generator (4.0, L.19, LA.11)
15	14.	Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	Less than or equal to 0.71 x 10^6 lb/hr of steam flow at RATED THERMAL POWER coincident with steam generator water level greater than or equal to 25% of narrow range instrument span - each steam generator	Less than or equal to 0.73 x 10^6 lb/hr of steam flow at RATED THERMAL POWER coincident with steam generator water level greater than or equal to 24% of narrow range instrument span - each steam generator (L.19, 9.7, LA.11)
12	15.	Undervoltage - Reactor Coolant Pumps	Greater than or equal to 2750 volts - each bus	Greater than or equal to 2725 volts - each bus
13	16.	Underfrequency - Reactor Coolant Pumps	Greater than or equal to 57.5 Hz - each bus	Greater than or equal to 57.4 Hz - each bus (58.22, M.17)
	17.	Turbine Trip		
16.a		A. Low Fluid Oil Pressure	Greater than or equal to 800 psig	Greater than or equal to 750 psig
16.b		B. Turbine Stop Valve Closure	Greater than or equal to 1% open	Greater than or equal to 1% open
17	18.	Safety Injection Input from ESF	Not Applicable	Not Applicable
11	19.	Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable

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A.1

ITS 3.3.1

ITS

Table 3.3.1-1
Note 1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

Note 1: Overtemperature $\Delta T \leq \Delta T_o \; [K_1 - K_2 \left[\frac{1+\tau_1 s}{1+\tau_2 s}\right] (T-T') + K_3 (P-P') - f_1 (\Delta I)]$

Where:	ΔT_o	=	Indicated ΔT at RATED THERMAL POWER
	T	=	Average temperature, °F
	T'	=	Indicated T_{avg} at RATED THERMAL POWER (≤ 574.0 °F)
	P	=	Pressurizer pressure, psig
	P'	=	Indicated RCS nominal operating pressure (2235 psig or 2085 psig)
	$\frac{1+\tau_1 s}{1+\tau_2 s}$	=	The function generated by the lead-lag controller for T_{avg} dynamic compensation
	τ_1, τ_2	=	Time constants utilized in the lead-lag controller for T_{avg} τ_1 = 22 secs. τ_2 = 4 secs.
	S	=	Laplace transform operator

LA.8 LA.8 LA.7 LA.8

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A.1

ITS 3.3.1

ITS

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATIONS (Continued)

Operation with 4 Loops

K_1 = 1.17
K_2 = 0.0230
K_3 = 0.00110

LA.8

Table 3.3.1-1 Note 1

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) For q_t - q_b between -37 percent and +3 percent, $f_1(\Delta I)=0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

LA.8

(ii) For each percent that the magnitude of $(q_t - q_b)$ exceeds -37 percent, the ΔT trip setpoint shall be automatically reduced by 0.33 percent of its value at RATED THERMAL POWER.

LA.8

(iii) For each percent that the magnitude of $(q_t - q_b)$ exceeds +3 percent, the ΔT trip setpoint shall be automatically reduced by 2.34 percent of its value at RATED THERMAL POWER.

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A.1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

Note 2: Overpower $\Delta T \leq \Delta T_0$ $[K_4 - K_5 \left[\frac{\tau_3 S}{1+\tau_3 S}\right] T - K_6 (T - T'') - f_2(\Delta I)]$

Where:	ΔT_0	=	Indicated ΔT at RATED THERMAL POWER
	T	=	Average temperature, °F
	T''	=	Indicated T_{avg} at RATED THERMAL POWER (≤ ~~562.1~~ °F)
	K_4	=	~~1.083~~
	K_5	=	~~0.0177~~/°F for increasing average temperature and ~~0~~ for decreasing average temperature
	K_6	=	~~0.0015~~ for $T > T''$; K_6 = ~~0~~ for $T \leq T''$
	$\frac{\tau_3 S}{1+\tau_3 S}$	=	The function generated by the rate lag controller for T_{avg} dynamic compensation
	τ_3	=	Time constants utilized in the rate lag controller for T_{avg} τ_3 = ~~10~~ secs.
	S	=	Laplace transform operator
	$f_2(\Delta I)$	=	~~0~~

Note 3: The channel's maximum trip point shall not exceed its computed trip point by more than ~~3.4~~ 0.008 percent ΔT span.

Note 4: The channel's maximum trip point shall not exceed its computed trip point by more than ~~2.5~~ 0.037 percent ΔT span.

LA.8 LA.8 LA.7 LA.8 L.19

ITS

Table 3.3.1-1 Note 2

Table 3.3.1-1 Note 1

Table 3.3.1-1 Note 2

ITS 3.3.1

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.1 3.3.1.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

Add proposed ACTIONS Note — A.2

ACTION A As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR Table Note 4.3.1.1.1 Each reactor trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

A.20; 92 days on a STAGGERED TEST BASIS — M.8

SR 3.3.1.5 4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

SR 3.3.1.13, SR 3.3.1.14, SR 3.3.1.16

L.1; 24 — L.2

SR 3.3.1.19 4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.*

24 — L.3; A.17

on a STAGGERED TEST BASIS — A.4

SR 3.3.1.19 Note * Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

LA.1

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ITS

Table 3.3.1-1

A.1

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

ITS		FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE (REQUIRED)	APPLICABLE MODES	ACTION
1	1.	Manual Reactor Trip	2	1	2	1, 2 and * Note a	12 B, P, Q
2.a, 2.b	2.	Power Range, Neutron Flux	4	2	3 (4)	1, 2 and *	2 C, D
3.a	3.	Power Range, Neutron Flux High Positive Rate	4	2	3 (4)	1, 2	2 D
3.b	4.	Power Range, Neutron Flux High Negative Rate	4	2	3 (4)	1, 2	2 D
4	5.	Intermediate Range, Neutron Flux	2	1	2	1, 2 and *	3 E, F
5	6.	Source Range, Neutron Flux A. Startup	2	1	2	2# and * Note a	4 G, I, Q
		B. Shutdown	2	0	1	3, 4 and 5	5
6	7.	Overtemperature ΔT Four Loop Operation	4	2	3 (4)	1, 2	6 D
7	8.	Overpower ΔT Four Loop Operation	4	2	3 (4)	1, 2	6 D

LA.2 A.5 A.7 L.5 A.6 A.7 A.6 L.5 A.8 A.9 See ITS 3.3.8 A.6 A.5 LA.2

ITS 3.3.1

A.1

ITS
Table 3.3.1-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8.a	9. Pressurizer Pressure-Low	4	2	3	1, 2	6 D
8.b	10. Pressurizer Pressure--High	4	2	3	1, 2	6 D
9	11. Pressurizer Water Level--High	3	2	2	1, 2	7 D
10	12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any opera-ting loop	2/loop in each opera-ting loop	1	7 D
10 Footnote (e)	13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two opera-ting loops	2/loop in each opera-ting loop	1	7 D
14	14. Steam Generator Water Level--Low-Low	3/loop	2/loop in any opera-ting loop	2/loop in each opera-ting loop	1, 2	7 D
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch in same loop	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	7 D

LA.2 A.5 REQUIRED A.10 A.6 A.5 A.6 A.6 A.5 LA.6 4 3 3 3 2

ITS 3.3.1

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.1-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

ITS		FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM [REQUIRED] CHANNELS OPERABLE	APPLICABLE MODES	ACTION
12	16.	Undervoltage-Reactor Coolant Pumps	4-1/bus	2	~~3~~ [1 per bus]	1	6~~#~~ D
13	17.	Underfrequency-Reactor Coolant Pumps	4-1/bus	2	~~3~~ [1 per bus]	1	6~~#~~ D
	18.	Turbine Trip					
16.a		A. Low Fluid Oil Pressure	3	2	~~4~~ 3	1	7~~#~~ D
16.b		B. Turbine Stop Valve Closure	4	4	~~3~~ 4 per train	1	6~~#~~ D
17	19.	Safety Injection Input from ESF	2	1	2	1, 2	1 J, P
11	20.	Reactor Coolant Pump Breaker Position Trip					
Footnote (e)		Above P-7	1/breaker	2	1/breaker ~~per operating loop~~	1	11 D
19, 20	21.	Reactor Trip Breakers	2	1	2	1, 2	M, P ~~13, 15~~ K, P
						3*, 4*, 5*	14 B, Q
21	22.	Automatic Trip Logic	2	1	2	1, 2	1 J, P
						3*, 4*, 5*	14 B, Q

LA.2 A.5 A.6 A.10 A.6 A.10 A.6 A.5 A.5 A.12

ITS 3.3.1

A.1

ITS

Table 3.3.1-1

TABLE 3.3-1 (Continued)

TABLE NOTATION

MODES 3, 4, and 5

A.18

LA.3

or one or more rods not fully inserted

M.1

Footnote (a)

* With the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

A.6

The provisions of Specification 3.0.4 are not applicable.

A.9

Footnote (d)

High voltage to detector may be de-energized above P-6.

LA.4

ACTION STATEMENTS

Add proposed Required Action J.1

L.6

ACTION J

ACTION P

ACTION J Note

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing PER Specification 4.3.1.1.1.

L.6

ACTIONS C and D

ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

Required Actions C.1 and D.1

a. The inoperable channel is placed in the tripped condition within 6 hours.

4

ACTIONS C and D Note

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of the other channels per Specification 4.3.1.1.1.

A.11

L.4

c. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the Power Range, Neutron Flux trip setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.c.

A.11

Add proposed ACTION P

M.4

ACTION E

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

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ITS 3.3.1

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-1 (Continued)

Function 4 Applicability

ACTION E

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6 but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

A.8 — Add proposed Required Actions E.1 and E.2 — L.9 — M.5 — M.11 — Add proposed ACTION F

ACTIONS G, I, Q

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

Add proposed Required Action G.1 for MODE 2 below P-6 — Add proposed Required Actions I.1, Q.1 and Q.2 for MODES 3[(a)], 4[(a)], 5[(a)] — M.2

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

Function 5 Applicability

b. Above P-6, operation may continue.

Add proposed ACTION H — M.6

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement:

a. Immediately suspend operations involving positive reactivity changes except addition of water from the RWST, provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.8.b.2 (MODES 3 or 4) or 3.1.2.7.b.2 (MODE 5), and

b. Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter, and

c. Close the isolation valves for unborated water sources to the chemical and volume control system within 1 hour. In MODE 5, if the RWST boron concentration is less than the reactor coolant system boron concentration and less than the boron concentration required by Specification 3.1.2.7.b.2, isolate the RWST from the reactor coolant system within 1 hour.

See ITS 3.3.8

ACTION D

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 1 hour. (6 — L.6)

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable CHANNEL may be bypassed for up to 2 hours for surveillance testing of the other channels per Specification 4.3.1.1.1. (4)

Add proposed ACTIONS N and P — M.7

ACTION D

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

L.7 — 6 — Add proposed ACTIONS N and P — M.7 — Add proposed Note to ACTION D — L.6

ITS 3.3.1

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-1(Continued)

ACTION D — ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within ~~1~~ 6 hours. [L.6] [Add proposed ACTION O] [M.7]

ACTION B, ACTION P, ACTION Q — ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers. [Add proposed Required Actions Q.1 and Q.2] [L.12]

ACTION M, ACTION P — ACTION 13 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 1. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status. [M.9]

ACTION B, ACTION Q — ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or ~~open the reactor trip breakers within the next hour.~~ [Add proposed Required Actions Q.1 and Q.2] [L.13]

ACTION K, ACTION P, ACTION K Note — ACTION 15 - With the number of OPERABLE Reactor Trip Breaker channels one less than required by the Minimum Channels OPERABLE requirement for reasons other than an inoperable diverse trip feature, restore the inoperable channel to OPERABLE status within 24 hours or be in HOT STANDBY within the following 6 hours. One channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1, provided the other channel is OPERABLE.

REACTOR TRIP SYSTEM INTERLOCKS

	DESIGNATION	CONDITION AND SETPOINT	FUNCTION
Table 3.3.1-1 Function 18.a	P-6	With ~~2 of 2~~ [1 per train] Intermediate Range Neutron Flux Channels < 6 X 10^{-11} amps.	~~P-6 prevents or defeats the manual block of source range reactor trip.~~ [LA.5]

[Add proposed Applicability] [A.19]

[Add proposed ACTIONS L, P, and Q] [L.8]

ITS 3.3.1

ITS

A.1

A.21

TABLE 3.3-1 (Continued)

1 per train

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
Table 3.3.1-1 Functions 18.b, 18.d, 18.e — P-7	With 2 of 4 Power Range Neutron Flux Channels ≥ 11% of RATED THERMAL POWER or 1 of 2 Pressure before the First Stage channels ≥ 51 psig.	P-7 prevents or defeats the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump under-voltage and under-frequency, turbine trip, pressurizer low pressure, and pressurizer high level. Low flow in a particular loop can be evidenced by either a detected low flow or by the opening of the reactor coolant pump breaker.
Table 3.3.1-1 Function 18.c — P-8	With 2 of 4 Power Range Neutron Flux channels ≥ 31% of RATED THERMAL POWER.	P-8 prevents or defeats the automatic block of reactor trip caused by a low coolant flow condition in a single loop.
Table 3.3.1-1 Function 18.d — P-10	With 3 of 4 Power Range Neutron flux channels < 9% of RATED THERMAL POWER.	P-10 prevents or defeats the manual block of: Power range low setpoint reactor trip, Intermediate range reactor trip, and intermediate range rod stops. Provides input to P-7.

Add proposed Applicability

A.19

LA.5

Add proposed Applicability

A.19

Add proposed ACTIONS L, O, and P

L.8

A.1

TABLE 3.3-2

Table Intentionally Deleted

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A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-2 (Continued)

Table Intentionally Deleted

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A.1

ITS

Table 3.3.1-1

TABLE 4.3-1

SR 3.3.1.2, SR 3.3.1.3, SR 3.3.1.9, SR 3.3.1.13, SR 3.3.1.14, SR 3.3.1.15

SR 3.3.1.8, SR 3.3.1.10, SR 3.3.1.17

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

L.15 · A.20 · L.14 · LA.9 · L.5 · A.7 · L.16 · M.12 · L.5 · A.8 · L.16 · A.18 · L.18 · M.15 · A.10 · A.22 · A.16 · L.2 · LA.9 · M.13 · LA.6

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.1.1)	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1	1. Manual Reactor Trip				
	A. Shunt Trip Function	N.A.	N.A.	S/U(1)(10) -17	1, 2, 3*, 4*, 5*
	B. Undervoltage Trip Function	N.A.	N.A.	S/U(1)(10) -17	1, 2, 3*, 4*, 5*
2.a, 2.b	2. Power Range, Neutron Flux	S -1	2-D(2,8), M(3,8), -3 and Q(6,8) -9	8 Q and S/U(1)	1, 2 and *
3.a	3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6) -14	Q -8	1, 2
3.b	4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6) -14	Q -8	1, 2
4	5. Intermediate Range, Neutron Flux	S -1	R(6,8) -14	S/U(17) -10	1, 2, and *
5	6. Source Range, Neutron Flux	S -1	R(6,14) -14	10 M(14) and S/U(1)	2(7), 3(7), 4 and 5
6	7. Overtemperature ΔT	S -1	R(9) -15	SA -10	1, 2
7	8. Overpower ΔT	S -1	R(9) -15	SA -10	1, 2
8.a	9. Pressurizer Pressure -- Low	S -1	R -13	SA -10	1, 2
8.b	10. Pressurizer Pressure -- High	S -1	R -13	SA -10	1, 2
9	11. Pressurizer Water Level -- High	S -1	R -13	SA -10	1, 2
10	12. Loss of Flow-Single Loop	S -1	R(8) -13	SA -10	1

31effective full power days

Add proposed SR 3.3.1.7

24 months

Add proposed SR 3.3.1.10 Note 1

184 days

184 days

24 months

Add proposed Note 1 to SR 3.3.1.15

ITS

Table 3.3.1-1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.1.1)	CHANNEL CALIBRATION (SR 3.3.1.12, SR 3.3.1.13)	CHANNEL FUNCTIONAL TEST (SR 3.3.1.4, SR 3.3.1.5, SR 3.3.1.6, SR 3.3.1.10, SR 3.3.1.11, SR 3.3.1.17, SR 3.3.1.18)	MODES IN WHICH SURVEILLANCE REQUIRED
10	13. Loss of Flow-~~Two Loops~~	S -1	R(8) -13	N.A.	1
14	14. Steam Generator Water Level -- Low-Low	S -1	R -13	SA -10	1, 2
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S -1	R -13	SA -10	1, 2
12	16. Undervoltage-Reactor Coolant Pumps	N.A.	R -12	M -11	1
13	17. Underfrequency-Reactor Coolant Pumps	N.A.	R -13	M -11	1
	18. Turbine Trip				
16.a	A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1) -18	1, 2
16.b	B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1) -18	1, 2
17	19. Safety Injection Input from EFS	N.A.	N.A.	6- Q (4)(15) -17	1, 2
11	20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R -17	N.A.
19	21. Reactor Trip Breaker				
19, 20	A. Shunt Trip Function	N.A.	N.A.	4- 2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
19, 20	B. Undervoltage Trip Function	N.A.	N.A.	4- 2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
21	22. Automatic Trip Logic	N.A	N.A.	Q (15) -5	1, 2, 3*, 4*, 5*
19 Footnote (g)	23. Reactor Trip Bypass Breaker	N.A.	N.A.	4- 2 Months (5)(12) and 17- S/U(1)(13)	1, 2, 3*, 4*, 5*

Annotations: A.1; A.20; A.22; L.18 (184 days); A.3 (Add proposed Note to SR 3.3.1.11); A.10; A.3; M.14 (Add proposed Note to SR 3.3.1.18); A.15; A.10; L.10; L.11 (24 months); LA.9; A.13; L.16; LA.9; L.14 (24 months); L.2 (24 months); M.15; M.16 (184 days); Add proposed SR 3.3.1.13; LA.6; A.12; A.13

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ITS 3.3.1

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3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 4.3-1 (Continued)

NOTATION

Table 3.3.1-1 Footnote (a) — * - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. [LA.3] [M.1: or one or more rods not fully inserted] [L.10]

SR 3.3.1.18 — (1) - If not performed in previous 7 [31] days. [L.16] [L.14]

SR 3.3.1.2 — (2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.

SR 3.3.1.3 — (3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.

SR 3.3.1.17 — (4) - Manual ESF functional input check every 18 [24 months] months. [L.11]

SR 3.3.1.4 — (5) - Each train tested at least every other 62 days.

SR 3.3.1.9, SR 3.3.1.14 — (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION. [M.15]

Table 3.3.1-1 Function 5 Applicability Footnote (d) — (7) - Below P-6 (BLOCK OF SOURCE RANGE REACTOR TRIP) setpoint. [M.3]

Note 2 for SR 3.3.1.2 and SR 3.3.1.3 — (8) - The provisions of Specification 4.0.4 are not applicable. [M.13]

SR 3.3.1.15 Note 2 — (9) - The provisions of Specification 4.0.4 are not applicable for f_1 (delta I) and f_2 (delta I) penalties, or for measurement of delta T. (See also Table 2.2-1). [A.14] [M.10]

(10) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s). [LA.9]

(11) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers. [LA.9]

SR 3.3.1.4 — (12) - Local manual shunt trip prior to placing breaker in service. [LA.9]

(13) - Automatic Undervoltage Trip.

SR 3.3.1.10 Note 2 — (14) - The provisions of Specification 4.0.4 are not applicable when leaving MODE 1. In such an event, the calibration and/or functional test shall be performed within 24 hours after leaving MODE 1. [L.17] [M.15]

SR 3.3.1.5, SR 3.3.1.6 — (15) - Each train tested at least every other 92 days.

(16) - Not Used.

SR 3.3.1.10 — (17) - If not performed in previous 184 days. [M.12]

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A.1

ITS 3.3.1

ITS

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

LCO 3.3.1

2.2.1 The reactor trip system instrumentation setpoints shall be set consistent with the ~~Trip Setpoint~~ values shown in Table 2.2-1.

Allowable Value — LA.10

APPLICABILITY: As shown for each channel in Table 3.3-1.

ACTION:

ACTION A

With a reactor trip system instrumentation setpoint less conservative than the value shown in the Allowable Values column of Table 2.2-1, declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1.1 until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the ~~Trip Setpoint~~ value.

Allowable Value — LA.10

A.1

ITS 3.3.1

ITS

Table 3.3.1-1

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.10

	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1	1. Manual Reactor Trip	Not Applicable	Not Applicable
2.a, 2.b	2. Power Range, Neutron Flux	Low Setpoint - Less than or equal to 25% of RATED THERMAL POWER	Low Setpoint - Less than or equal to 26% of RATED THERMAL POWER
		High Setpoint - Less than or equal to 109% of RATED THERMAL POWER	High Setpoint - Less than or equal to 110% of RATED THERMAL POWER
3.a	3. Power Range, Neutron Flux, High Positive Rate	Less than or equal to 5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	Less than or equal to 5.5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds
3.b	4. Power Range, Neutron Flux, High Negative Rate	Less than or equal to 5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds	Less than or equal to 5.5% of RATED THERMAL POWER with a time constant greater than or equal to 2 seconds
4	5. Intermediate Range, Neutron Flux	Less than or equal to 25% of RATED THERMAL POWER	Less than or equal to 30% of RATED THERMAL POWER
5	6. Source Range, Neutron Flux	Less than or equal to 10^5 counts per second	Less than or equal to 1.3 x 10^5 counts per second
6, including Note 1	7. Overtemperature Delta T	See Note 1	See Note 3
7, including Note 2	8. Overpower Delta T	See Note 2	See Note 4
8.a	9. Pressurizer Pressure -- Low	Greater than or equal to 1950 psig	Greater than or equal to 1940 psig (1930)
8.b	10. Pressurizer Pressure -- High	Less than or equal to 2385 psig	Less than or equal to 2395 psig (2406)
9	11. Pressurizer Water Level -- High	Less than or equal to 92% of instrument span	Less than or equal to 93% (93.3) of instrument span
10	12. Loss of Flow	Greater than or equal to 90% of design flow per loop*	Greater than or equal to 89.1% (89.6) of design flow per loop*

L.19 LA.11 M.17 LA.11

* Design flow is 91,600 gpm per loop.

LA.10 LA.11

A.1

ITS 3.3.1

ITS

TABLE 2.2-1 (Continued)

Table 3.3.1-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.10

	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
14	13. Steam Generator Water Level-Low-Low	Greater than or equal to 21% of narrow range instrument span - each steam generator	Greater than or equal to 19.2% of narrow range instrument span - each steam generator (20.8; M.17; LA.11)
15	14. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	Less than or equal to 1.47 x 10^6 lbs/hr of steam flow at RATED THERMAL POWER coincident with steam generator water level greater than or equal to 25% of narrow range instrument span - each steam generator	Less than or equal to 1.56 x 10^6 lbs/hr of steam flow at RATED THERMAL POWER coincident with steam generator water level greater than or equal to 24% of narrow range instrument span - each steam generator (LA.11; 25.0; M.17)
12	15. Undervoltage - Reactor Coolant Pumps	Greater than or equal to 2905 volts - each bus	Greater than or equal to 2870 volts - each bus
13	16. Underfrequency - Reactor Coolant Pumps	Greater than or equal to 57.5 Hz - each bus	Greater than or equal to 57.4 Hz - each bus (57.02; L.19)
	17. Turbine Trip		
16.a	A. Low Fluid Oil Pressure	Greater than or equal to 58 psig	Greater than or equal to 57 psig
16.b	B. Turbine Stop Valve Closure	Greater than or equal to 1% open	Greater than or equal to 1% open
17	18. Safety Injection Input from ESF	Not Applicable	Not Applicable
11	19. Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable

A.1

ITS 3.3.1

ITS

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

Table 3.3.1-1 Note 1

Note 1:
Overtemperature $\Delta T \leq \Delta T_o [K_1 - K_2[(1 + \tau_1 S)/(1 + \tau_2 S)](T - T') + K_3(P - P') - f_1(\Delta I)]$

Where:	ΔT_o	= Indicated ΔT at RATED THERMAL POWER
	T	= Average temperature, °F
	T'	= Indicated T_{avg} at RATED THERMAL POWER less than or equal to 576.0 °F
	P	= Pressurizer Pressure, psig
	P'	= 2235 psig (indicated RCS nominal operating pressure)
	$\frac{1 + \tau_1 S}{1 + \tau_2 S}$	= The function generated by the lead-lag controller for T_{avg} dynamic compensation
	τ_1, τ_2	= Time constants utilized in the lead-lag controller for T_{avg}; τ_1 = 28 secs, τ_2 = 4 secs.
	S	= Laplace transform operator

LA.8

LA.7

LA.8

COOK NUCLEAR PLANT - UNIT 2 2-7 AMENDMENT NO. 82, 134

A.1

ITS 3.3.1

ITS

Table 3.3.1-1
Note 1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

4 Loops in Operation

K1 = 1.09

K2 = 0.01331

K3 = 0.00058

LA.8

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

LA.8

(i) for $q_t - q_b$ between -33 percent and +6 percent, $f_1(\Delta I)=0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

LA.8

(ii) for each percent that the magnitude of $(q_t - q_b)$ exceeds -33 percent, the ΔT trip setpoint shall be automatically reduced by 3.5 percent of its value at RATED THERMAL POWER.

LA.8

(iii) For each percent that the magnitude of $(q_t - q_b)$ exceeds +6 percent, the ΔT trip setpoint shall be automatically reduced by 1.0 percent of its value at RATED THERMAL POWER.

A.1

ITS 3.3.1

ITS

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATIONS (Continued)

Table 3.3.1-1 Note 2

Note 2: Overpower $\Delta T \leq \Delta T_o\ [K_4 - K_5[\tau_3 S/(1+\tau_3 S)]T - K_6[T - T''] - f_2(\Delta I)]$

Where:

ΔT_o = Indicated ΔT at rated power

T = Average temperature, °F

T" = Indicated T_{avg} at RATED THERMAL POWER less than or equal to 576.0 °F

K_4 = 1.08

K_5 = 0.02/°F for increasing average temperature and 0 for decreasing average temperature

K_6 = 0.00197 for T greater than T"; K_6 = 0 for T less than or equal to T"

$\tau_3 S/(1+\tau_3 S)$ = The function generated by the rate lag controller for T_{avg} dynamic compensation

τ_3 = Time constant utilized in the rate lag controller for T_{avg}; τ_3 = 10 secs.

S = Laplace transform operator

$f_2(\Delta I)$ = 0.0

LA.8

LA.8

LA.7

LA.8

Table 3.3.1-1 Note 2

Note 3: The channel's maximum trip point shall not exceed its computed trip point by more than 1.3 percent ΔT span.

0.012

L.19

Table 3.3.1-1 Note 2

Note 4: The channel's maximum trip point shall not exceed its computed trip point by more than 3.0 percent ΔT span.

0.038

M.17

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.3.1.1 Action and CTS Table 3.3-1 provide the compensatory actions to take when RTS instrumentation is inoperable. ITS 3.3.1 ACTIONS provide the compensatory actions for inoperable RTS Instrumentation. The ITS 3.3.1 ACTIONS includes a Note that allows separate Condition entry for each Function. In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 10 (Reactor Coolant Flow - Low) on a loop basis; and (b) for Function 14 (Steam Generator (SG) Water Level - Low Low) and Function 15 (SG Water Level Low Coincident with Steam Flow/Feedwater Flow Mismatch) on a steam generator basis. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable RTS instrumentation Function and for certain Functions on a loop or steam generator basis.

This change is acceptable because it clearly states the current requirement. The CTS considers each RTS instrumentation Function to be separate and independent from the others. In addition, the channels associated with Functions 10, 14, and 15 are allowed separate Condition entry on the specified basis (i.e., loop or SG) since the channels associated with each loop or steam generator, as applicable, will provide the associated RTS trip based on the logic associated with the channels on the specified basis. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST be performed for the Functional Units 16 (Undervoltage - Reactor Coolant Pumps) and 17 (Underfrequency - Reactor Coolant Pumps) channels. CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST be performed for the Functional Units 18.A (Turbine Trip - Low Fluid Oil Pressure) and 18.B (Turbine Trip - Turbine Stop Valve Closure) channels. ITS Table 3.3.1-1, for Functions 12 and 13, requires performance of SR 3.3.1.11, a TADOT, and for Functions 16.a and 16.b, requires performance of SR 3.3.1.18, a TADOT. However, the Surveillances are modified by a Note that states that a verification of the setpoint is not required. This changes the CTS by explicitly stating that setpoint verification is not part of the TADOT. The change from a CHANNEL FUNCTIONAL TEST to a TADOT is discussed in DOC A.20.

The CTS definition of CHANNEL FUNCTIONAL TEST does not require a setpoint verification. However, the ITS definition of TADOT does include a setpoint verification. Therefore, to be consistent with the current requirements and with current practice, the Note has been added. Since a setpoint verification is not currently required during performance of this test, this change is

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ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

acceptable. This change is designated as administrative because it does not result in a technical change to the CTS.

A.4 CTS 4.3.1.1.3 states, in part, that the RTS RESPONSE TIME of each trip function shall be demonstrated to be within its limit at least once per 18 months. The requirement specifies that each test shall include at least one logic train such that both logic trains are tested at least once per 36 months, and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1. ITS SR 3.3.1.19 requires the verification of RTS RESPONSE TIME every 24 months "on a STAGGERED TEST BASIS." The ITS definition of STAGGERED TEST BASIS is consistent with the CTS testing Frequency. This changes the CTS by utilizing the ITS definition of STAGGERED TEST BASIS. The extension in the Surveillance Frequency from 18 months to 24 months is discussed in DOC L.4.

This change is acceptable because the requirements for RESPONSE TIME testing for the RTS channels remain unchanged. The ITS definition of STAGGERED TEST BASIS and its application in this requirement do not change the current testing frequency requirements. This change is designated as administrative because it does not result in technical changes to the CTS.

A.5 CTS Table 3.3-1 specifies the "TOTAL NO. OF CHANNELS" and the "MINIMUM CHANNELS OPERABLE" associated with each RTS Functional Unit. For CTS Table 3.3-1 Functional Units 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.A, and for Unit 2 only, 18.B, the number of channels listed in the "TOTAL NO. OF CHANNELS" column is greater than that listed in the "MINIMUM OPERABLE CHANNELS" column. CTS Table 3.3-1 Actions 2, 6, and 7 specify the actions to take with the number of channels OPERABLE one less than required by the "TOTAL NO. OF CHANNELS" column. CTS Table 3.3-1 Actions 1, 3, 4, 11, 12, 14, and 15 specify the actions to take with the number of channels OPERABLE, one less than required by the "MINIMUM CHANNELS OPERABLE" column. ITS LCO 3.3.1 requires the RTS instrumentation for each Function in ITS Table 3.3.1-1 to be OPERABLE, and includes only one column titled "REQUIRED CHANNELS." For the associated ITS Table 3.3.1-1 Functions, the number of channels listed in the "REQUIRED CHANNELS" column is equal to the number of channels listed in the CTS "TOTAL NO. OF CHANNELS" column. The ITS 3.3.1 ACTIONS require entry when the OPERABLE channels are one less than required by the "REQUIRED CHANNELS" column. For CTS Table 3.3-1 Functional Units 12, 13, 14, and 20, the description in the "CHANNELS TO TRIP" (Functional Units 12, 13, and 14 only) and "MINIMUM CHANNELS OPERABLE" columns includes the phrase "in each operating loop." This description is not included in ITS Table 3.3.1-1 Functions 10, 11, and 14. In addition, CTS Table 3.3-1 Functional Unit 18.B (Turbine Stop Valve Closure) specifies there are 4 channels in the "TOTAL NO. OF CHANNELS" column while the "MINIMUM CHANNELS OPERABLE" column specifies "4" for Unit 1 and "3" for Unit 2. ITS Table 3.3.1-1 Function 16.b specifies 4 channels "per train" in the "REQUIRED CHANNELS" column. This changes the CTS by changing the title of the "MINIMUM CHANNELS OPERABLE" column to "REQUIRED CHANNELS," and increases the number of channels listed to match the number

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

listed in the "TOTAL NO. OF CHANNELS" column. It also changes the CTS by deleting the description "in each operating loop" and adding the words "per train."

This change is acceptable because the requirements for when actions must be taken remain unchanged. The "REQUIRED CHANNELS" column reflects the current requirements in the CTS Actions for when actions are required to be taken. The "MINIMUM CHANNELS OPERABLE" column for CTS Table 3.3-1 Functional Units 2, 3, 4, 7 through 17, and 18.A have changed to correspond to the number of channels in the "TOTAL NO. OF CHANNELS" column as reflected in ITS Table 3.3.1-1 Functions 2.a, 2.b, 3.a, 3.b, 6, 7, 8.a, 8.b, 9, 10.a, 10.b, 12, 13, 14, 15, and 16.a. For CTS Table 3.3-1 Functional Units 12, 13, 14, and 20, the description "in each operating loop" is not necessary since all loops are required to be operating in MODE 1. For Unit 1 CTS Table 3.3-1 Functional Unit 18.B, there are two contacts per turbine stop valve limit switch, with both contacts required to be OPERABLE, and for Unit 2 CTS Table 3.3-1 Functional Unit 18.B, there are two limit switches per turbine stop valve, with both limit switches required to be OPERABLE. In the ITS, each Unit 1 contact and each Unit 2 limit switch is considered a channel. This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS Table 3.3-1 Note # states that the provisions of CTS 3.0.4 are not applicable. CTS 3.0.4 states "Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted." ITS 3.3.1 does not contain the exception to ITS LCO 3.0.4, since ITS LCO 3.0.4 states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability may be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This changes the CTS by deleting an allowance since it is incorporated into ITS LCO 3.0.4.

This change is considered acceptable because ITS LCO 3.0.4 has been changed such that the CTS allowance is not required to retain the same CTS requirement. The applicable ITS 3.3.1 ACTIONS allows continued operation for an unlimited period of time, which together with ITS LCO 3.0.4, result in the same technical requirements as the CTS. This change is designated as administrative because it does not result in a technical change to the CTS.

A.7 CTS Table 3.3-1 Functional Unit 2 requires the Power Range Neutron Flux channels to be OPERABLE in MODES 1 and 2. CTS Table 3.3-1 specifies that the P-10 interlock prevents or defeats the manual block of the Power Range Neutron Flux Low setpoint reactor trip. CTS Table 4.3-1 Functional Unit 2 specifies the Surveillance Requirements for the Power Range Neutron Flux channels in MODES 1 and 2. ITS Table 3.3.1-1 Function 2.a requires the Power Range Neutron Flux - High channels to be OPERABLE in MODES 1 and 2 and ITS Table 3.3.1-1 Function 2.b requires the Power Range Neutron Flux - Low channels to be OPERABLE in MODE 1 below the P-10 interlock (as indicated in ITS Table 3.3.1-1 Footnote (b)) and MODE 2. This changes the CTS by splitting CTS Table 3.3-1 Functional Unit 2 into two distinct functions, Power Range Neutron Flux - High and Power Range Neutron Flux - Low, and placing the

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DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

allowances of the P-10 Function requirements associated with the Power Range Neutron Flux - Low channels into the Applicability statement.

This change is considered acceptable because the P-10 interlock prevents the block of the Power Range Neutron Flux reactor trip function below the P-10 interlock. The Power Range Neutron Flux - Low channels are not required to trip the unit when the thermal power is above the P-10 interlock. The Power Range Neutron Flux - High channels provide the appropriate protection in this thermal power range. This change is designated as administrative because it does not result in a technical change to the CTS.

A.8 CTS Tables 3.3-1 and 4.3-1 Functional Unit 5 require the Intermediate Range Neutron Flux channels to be OPERABLE in MODES 1 and 2. CTS Table 3.3-1 Action 3.a specifies that below P-6 an inoperable Intermediate Range Neutron Flux channel must be restored to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint. CTS Table 3.3-1 specifies that the P-10 interlock prevents or defeats the manual block of the Intermediate Range Neutron Flux reactor trip when the Power Range Neutron Flux channels are < 9% RTP. ITS Table 3.3.1-1, including Footnotes (b) and (c), requires Function 4, the Intermediate Range Neutron Flux channels, to be OPERABLE in MODE 1 below the P-10 interlocks and MODE 2 above the P-6 interlocks. This changes the CTS by placing the allowances of CTS Table 3.3-1 Action 3.a and the P-10 reactor trip system interlock into the Applicability statement.

This change is considered acceptable because the P-10 interlock only prevents the block of the Intermediate Range Neutron Flux reactor trip function below the P-10 setpoint. The Intermediate Range Neutron Flux channels are not required to trip the unit when the thermal power is above the P-10 interlock. The Power Range Neutron Flux channels provide the appropriate protection in this thermal power range. During thermal power levels below the P-6 interlock, the Source Range Neutron Flux channels provide the appropriate protection in this thermal power range. The change is administrative since the CTS Actions and interlocks do not require the channels to be OPERABLE outside of the specified Applicability. This change is designated as administrative because it does not result in a technical change to the CTS.

A.9 CTS Table 3.3-1 Functional Unit 6 requires the Source Range Neutron Flux channels to be OPERABLE in MODE 2, as modified by CTS Table 3.3-1 Note ##. CTS Table 3.3-1 Note ## specifies that the high voltage to the Source Range Neutron Flux detectors may be de-energized above P-6. ITS Table 3.3.1-1, including Footnote (d), requires Function 5, the Source Range Neutron Flux channels, to be OPERABLE in MODE 2 below the P-6 interlock. This changes the CTS by specifically stating that the Source Range Neutron Flux channels are only required in MODE 2 below the P-6 interlock.

This change is considered acceptable because the P-6 interlock prevents the block of the Source Range Neutron Flux reactor trip function below the P-6 interlock. CTS Table 3.3-1 Note ## specifically states that the high voltage to the detectors can be deenergized, which renders the Source Range Neutron Flux channels inoperable. In addition, the CTS Table 4.3-1 Applicability, including Note (7), for the Source Range Neutron Flux channels states the channels are

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only required in MODE 2 below P-6. This change is designated as administrative because it does not result in a technical change to the CTS.

A.10 CTS Table 3.3-1 Functional Units 9, 11, 16, 17, 18.A, and 18.B specify the requirements for Pressurizer Pressure - Low, Pressurizer Water Level - High, Undervoltage - Reactor Coolant Pumps, Underfrequency - Reactor Coolant Pumps, Turbine Trip - Low Fluid Oil Pressure, and Turbine Trip - Turbine Stop Valve Closure. The Applicability of Functional Units 9 and 11 in CTS Table 3.3-1 is MODES 1 and 2, while the Applicability of Functional Units 16, 17, 18.A, and 18.B in CTS Table 3.3-1 is MODE 1. In addition, the Applicability for the Surveillances in CTS Table 4.3-1 for Functional Units 9, 11, 16, and 17 are identical to the Applicability of the associated Function in CTS Table 3.3-1. CTS Table 3.3-1 also specifies that the P-7 interlock function prevents or defeats the automatic block of reactor trip on these channels. ITS Table 3.3.1-1 Functions 8.a, 9, 10, 12, 13, 16.a, and 16.b require the same Functions to be OPERABLE in MODE 1 above the P-7 interlock. This changes the CTS by placing the allowances of P-7 Reactor Trip System interlock into the Applicability statement for the applicable Functions. The change to the Surveillance Applicability for CTS Functional Units 18.A and 18.B is discussed in DOC A.15.

This change is considered acceptable because the P-7 interlock prevents or defeats the automatic block of the reactor trip on Pressurizer Pressure - Low, Pressurizer Water Level - High, Undervoltage - Reactor Coolant Pumps, Underfrequency – Reactor Coolant Pumps, Turbine Trip - Low Fluid Oil Pressure, and Turbine Trip - Turbine Stop Valve Closure above the P-7 interlock. Below the P-7 interlock, the reactor trips associated with these functions are blocked. This change is designated as administrative because it does not result in a technical change to the CTS.

A.11 CTS Table 3.3-1 Action 2 provides the actions when a Power Range Neutron Flux - High channel is inoperable. The Action, in part, requires either reducing reactor power to $\leq$ 75% RTP within 4 hours or monitoring the QPTR every 12 hours per Specification 4.2.4.c. This specific requirement is not included in the ITS 3.3.1 ACTIONS. This changes the CTS by not including these requirements in the ITS.

The purpose of these CTS Actions is related to QPTR, not the RTS Instrumentation. This change is acceptable because the specific actions are duplicative of requirements located in the QPTR Specification. CTS 4.2.4.c (ITS SR 3.2.4.2) requires the QPTR to be verified using the incore movable detectors every 12 hours when a Power Range Neutron Flux channel input is inoperable and reactor power is $\geq$ 75% RTP. CTS 4.2.4.a (ITS SR 3.2.4.1), the normal 7 day QPTR verification, can only be performed if all Power Range Neutron Flux channels are OPERABLE, or if three of the channels are OPERABLE (as allowed by the CTS 1.18 QPTR definition and ITS SR 3.2.4.1 Note) and reactor power is $\leq$ 75% RTP (i.e., when one Power Range Neutron Flux channel is inoperable, reactor power must be $\leq$ 75% RTP to perform SR 3.2.4.1). In addition, while CTS Table 3.3-1 Action 2 requires reactor power to be reduced within 4 hours, the alternate option in Action 2 is to perform the Surveillance every 12 hours. Thus, in actuality, 12 hours is allowed to reduce

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reactor power. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.12 CTS Table 3.3-1 Functional Unit 21 requires two Reactor Trip Breakers to be OPERABLE, while CTS Table 4.3-1 Functional Unit 21 specifies the Surveillance Requirements for the Reactor Trip Breakers as well as the Shunt Trip and Undervoltage Trip Functions. CTS 3.3-1 Action 13 provides compensatory actions for when the undervoltage or shunt trip feature is inoperable, while Action 15 specifies the compensatory actions for when the Reactor Trip Breakers are inoperable for reasons other than an inoperable diverse trip feature. ITS 3.3.1-1 Function 19 specifies the requirements for the Reactor Trip Breakers (2 trains are required to be OPERABLE), while Function 20 specifies the requirements for the Reactor Trip Breaker Shunt Trip and Undervoltage Functions (one of each trip feature per Reactor Trip Breaker is required to be OPERABLE). This changes the CTS by splitting the Reactor Trip Breaker Functional Unit into two separate Functions, the Reactor Trip Breaker Function (Function 19) and Reactor Trip Breaker Undervoltage and Shunt Trip Mechanism Function (Function 20).

This change is considered acceptable since the proposed requirements are consistent with current requirements. The CTS currently provides different compensatory actions for when an Undervoltage or Shunt Trip Mechanism is inoperable and when a Reactor Trip Breaker is inoperable for other reasons than Undervoltage and Shunt Trip Mechanism inoperabilities. Therefore, the divided requirements are consistent with the CTS. This change is designated as administrative because it does not result in a technical change to the CTS.

A.13 CTS Table 3.3-1 does not include any LCO requirements for the reactor trip bypass breakers. However, CTS Table 4.3-1 Functional Unit 23 includes Surveillance Requirements for these breakers, and requires them to be performed in MODES consistent with the Surveillances for the reactor trip breakers. ITS Table 3.3.1-1 Function 19 (Reactor Trip Breakers Function) includes Footnote (f), which states the Reactor Trip Breakers Function includes any reactor trip bypass breakers that are racked in and closed for bypassing a reactor trip breaker. This changes the CTS by explicitly stating when the reactor trip bypass breakers are required to be OPERABLE.

The reactor trip bypass breakers are used during testing of the associated reactor trip breaker, and at all other times they are not racked in or closed. This change is acceptable since CTS LCO 3.3.1 does not require the reactor trip bypass breakers to be OPERABLE as they are not listed in CTS Table 3.3-1. The only time they could be considered as being required is when they are replacing the reactor trip breakers. Thus, even though they are listed in CTS Table 4.3-1, the breakers are not required to meet the Surveillance Requirements when not racked in and closed, since they are not replacing the reactor trip breakers. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.14 CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Unit 8, the Overpower ΔT channels. CTS Table 4.3-1 Note 9 modifies the CHANNEL CALIBRATION requirement by specifying that the provisions of

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Specification 4.0.4 are not applicable for the f_2 (delta I) penalty. ITS Table 3.3.1-1 Function 7 requires the performance of a CHANNEL CALIBRATION (ITS SR 3.3.1.15) for the Overpower ΔT channels, and does not include an ITS SR 3.0.4 exception. This changes the CTS by deleting the CTS 4.0.4 allowance associated with the f_2 (delta I) penalty.

This change is acceptable because it results in no technical change to the Technical Specifications. The f_2 (delta I) penalty is associated with the Overpower ΔT Function. Per CTS Table 2.2-1, the f_2 (delta I) penalty is always zero. Since the f_2 (delta I) penalty is always zero, there is no need to include a CTS 4.0.4 allowance for the calibration of f_2 (delta I) penalty portion of the channel when the unit is operating in MODE 1 or 2, which are the MODES the Overpower ΔT Function is required to be OPERABLE. This change is designated as administrative because it does not result in a technical change to the CTS.

A.15 CTS Table 4.3-1 specifies that Surveillance Requirements for Functional Units 18.A (Turbine Trip - Low Fluid Oil Pressure) and 18.B (Turbine Trip - Turbine Stop Valve Closure) channels are to be performed in MODES 1 and 2. ITS 3.3.1 does not include any Surveillance Requirements for these Functions in MODE 2. This changes the CTS by deleting Surveillance Requirements for these Functional Units in MODE 2.

This change is considered acceptable since the specified channels do not include any LCO requirements in MODE 2. CTS Table 3.3-1 Functional Units 18.A and 18.B, which specifies LCO requirements for these channels, include requirements for the channels only in MODE 1. Therefore, when in MODE 2, in accordance with CTS 4.0.1 (ITS SR 3.0.1), Surveillances are not required. This change is designated as administrative because it does not result in a technical change to the CTS.

A.16 CTS Table 4.3-1, Functional Units 7 and 8 require the performance of a CHANNEL CALIBRATION of the Overtemperature ΔT and Overpower ΔT channels. ITS Table 3.3.1-1 Functions 6 and 7 also require the performance of a CHANNEL CALIBRATION (ITS SR 3.3.1.15) for the Overtemperature ΔT and Overpower ΔT channels; however, ITS SR 3.3.1.15 is modified by Note 1, which states that this Surveillance shall include verification of Reactor Coolant System (RCS) resistance temperature detector (RTD) bypass loop flow rate. This changes the CTS by adding a clarification Note to the Surveillance to ensure that RCS RTD bypass loop flow rate is verified.

This change is acceptable because the RCS RTD bypass loop flow rate verification is considered necessary to ensure the OPERABILITY of the associated Function channels. The Note is considered a clarification Note and is consistent with the current practice. This change is designated as administrative because it does not result in a technical change to the CTS.

A.17 CTS 4.3.1.1.3 requires REACTOR TRIP SYSTEM RESPONSE TIME testing of "each" reactor trip function. ITS SR 3.3.1.19 is the REACTOR TRIP SYSTEM RESPONSE TIME testing Surveillance, but in ITS Table 3.3.1-1, it is only required for Functions 2.a (Power Range Neutron Flux - High), 2.b (Power Range

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Neutron Flux - Low), 6 (Overtemperature ΔT), 7 (Overpower ΔT), 8.a (Pressurizer Pressure - Low), 8.b (Pressurizer Pressure - High), 9 (Pressurizer Water Level - High), 10 (Reactor Coolant Flow - Low), 12 (Undervoltage RCPs), 13 (Underfrequency RCPs), 14 (Steam Generator Water Level - Low Low), and 17 (SI input from ESFAS). This changes the CTS by specifically stating that the Surveillance is only applicable to certain Functions, not "each" function.

The purpose of CTS 4.3.1.1.3 is to ensure that the actuation response times are less than or equal to the maximum values assumed in the accident analysis. UFSAR Tables 7.2-6 and 7.2-7, which were previously in CTS 3.3.1 as Table 3.3-2 and in CTS 3.3.2 as Table 3.2-5, respectively, only specify response times for those RTS Functions assumed in the CNP safety analyses. These response times were removed from CTS 3.3.1 and 3.3.2 and placed under CNP control as documented in the NRC Safety Evaluation Report for License Amendments 202 (Unit 1) and 187 (Unit 2). This change is acceptable since ITS 3.3.1 requires REACTOR TRIP SYSTEM RESPONSE TIME testing (ITS SR 3.3.1.19) for only those Functions listed in UFSAR Tables 7.2-6 and 7.2-7. This change is designated as administrative because it does not result in technical changes to the CTS.

A.18 CTS Table 3.3-1, including Note *, requires Functional Units 1 (Manual Reactor Trip) and 6 (Source Range, Neutron Flux) channels to be OPERABLE with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal. In addition, CTS Table 4.3-1 requires Functional Unit 6 (Source Range, Neutron Flux) channels to be tested in MODES 3 (below P-6), 4, and 5. ITS Table 3.3.1-1, including Footnote (a), requires Functions 1 (Manual Reactor Trip) and 5 (Source Range Neutron Flux) channels to be OPERABLE in MODES 3, 4, and 5 with the Rod Control System capable of rod withdrawal or with one or more rods not fully inserted. This changes the CTS by specifically stating that the CTS Table 3.3-1 Note Applicability applies in MODES 3, 4, and 5. In addition, this changes the CTS by matching the MODES the Source Range Neutron Flux channels are to be tested with the MODES in which the channels are required to be OPERABLE. The change concerning the details of the reactor trip breakers is discussed in DOC LA.3 and the change that adds the requirement concerning the position of the rods is discussed in DOC M.1.

The purpose of the RTS instrumentation is that it must be OPERABLE so that the rods can be inserted in response to a reactivity excursion. This change is acceptable since it is only clarifying the actual MODES, other than MODES 1 and 2, in which fuel is in the vessel. In addition, while CTS Table 4.3-1 lists MODES 3, 4, and 5 for the Applicability of the two Functional Units, the ITS clarifies that the channels are only required to be tested when they are required to be OPERABLE, consistent with CTS 4.0.1 (ITS SR 3.0.1). This change is designated as administrative because it does not result in a technical change to the CTS.

A.19 CTS LCO 3.3.1.1 states that the interlocks of Table 3.3-1 shall be OPERABLE. CTS Table 3.3-1 includes the logic description, setpoint, and functional description of the P-6, P-7, P-8, and P-10 interlocks. However, no specific

Applicability requirements are provided. ITS Table 3.3.1-1 specifies the Applicable MODES or other specified conditions associated with the P-6, P-7, P-8, P-10 and P-13 interlocks (Functions 18.a, b, c, d, and e). This changes the CTS by adding specific applicable MODES or other specified conditions associated with the P-6, P-7, P-8, P-10, and P-13 interlocks.

This change is acceptable because the change provides more explicit conditions for when the interlocks are required to be OPERABLE, and are consistent with the RTS Functions they support (i.e., the RTS instruments described in the Functional Unit column of CTS Table 3.3-1). This change is designated as administrative because it does not result in a technical change to the CTS.

A.20 CTS 4.3.1.1.1 requires that the RTS instrumentation channels be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at the frequencies shown in Table 4.3-1. ITS 3.3.1 requires the performance of either a CHANNEL OPERATIONAL TEST (COT), a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT), or, in the case of the Automatic Trip Logic, an ACTUATION LOGIC TEST. This changes the CTS by changing the CHANNEL FUNCTIONAL TEST requirements to either a COT, a TADOT, or an ACTUATION LOGIC TEST.

This change is acceptable because the COT, TADOT, and ACTUATION LOGIC TEST continue to perform tests similar to the current CHANNEL FUNCTIONAL TEST. The change is one of format only and any technical change to the requirements is specifically addressed in an individual Discussion of Change. In addition, the change to the CHANNEL FUNCTIONAL TEST definition is also described in the Discussion of Changes for ITS 1.0. This change is designated as administrative because it does not result in technical changes to the CTS.

A.21 CTS LCO 3.3.1.1 states that the interlocks of Table 3.3-1 shall be OPERABLE. CTS Table 3.3-1 includes the logic description, setpoint, and functional description of the P-7 interlock. ITS 3.3.1.1 breaks out the turbine first stage pressure portion of the P-7 interlock into its own line item, the P-13 interlock. This changes the CTS by separating out the P-13 portion of the P-7 interlock.

This change is acceptable since the turbine first stage pressure input to the P-7 interlock is retained in the ITS. The change is one of format only, as the ITS continues to provide the requirements of the turbine first stage pressure, P-13 interlock. This change is designated as administrative because it does not result in technical changes to the CTS.

A.22 CTS Table 4.3-1 specifies that Surveillance Requirements for Functional Units 12 (Loss of Flow - Single Loop) and 13 (Loss of Flow - Two Loops) are to be performed in MODE 1. ITS 3.3.1 only requires Surveillances in MODE 1 above the P-7 interlock. This changes the CTS by deleting Surveillance Requirements for the specified Functional Units in MODE 1 below P-7.

This change is acceptable since the specified channels do not include any LCO requirements below P-7. CTS Table 3.3-1 Functional Units 12 and 13, which specify LCO requirements for these channels, do not include requirements for the channels in MODE 1 below P-7. Therefore, when in MODE 1 below P-7, in accordance with CTS 4.0.1 (ITS SR 3.0.1), Surveillances are not required. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS Table 3.3-1 requires Functional Units 1 (Manual Reactor Trip) and 6 (Source Range, Neutron Flux) channels to be OPERABLE with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal, as stated in Table 3.3-1 Note *. CTS Table 4.3-1 specifies the Surveillance Requirements for Functional Unit 1 (Manual Reactor Trip) channels are applicable in MODES 3, 4, and 5 with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal, as stated in CTS Table 4.3-1 Note *. CTS Table 4.3-1 specifies the Surveillance Requirements for the Source Range Neutron Flux channels in MODES 3, 4, 5; however there is no reference to CTS Table 4.3-1 Note *. ITS Table 3.3.1-1, including Footnote (a), requires the Functions 1 (Manual Reactor Trip) and 5 (Source Range Neutron Flux) channels to be OPERABLE in MODES 3, 4, and 5 with the Rod Control System capable of rod withdrawal or with one or more rods not fully inserted. This changes the CTS by requiring the Manual Reactor Trip and the Source Range Neutron Flux Functions to be OPERABLE when one or more rods are not fully inserted irrespective of the condition of the reactor trip breakers or the Control Rod Drive System. The change concerning the details of the reactor trip breakers are discussed in DOC LA.3 and the change that adds MODES 3, 4, and 5 is discussed in DOC A.18.

The purpose of the RTS instrumentation is that it must be OPERABLE so that the rods can be inserted in response to a reactivity excursion. This change is acceptable because it provides appropriate requirements for when one or more control rods are not fully inserted. This change is designated as more restrictive because it requires the Manual Reactor Trip and the Source Range Neutron Flux Functions to be OPERABLE when one or more rods are not fully inserted irrespective of the condition of the reactor trip breakers or the Control Rod Drive System.

M.2 With one Source Range Neutron Flux channel inoperable in MODE 2 below P-6 or with the RTS breakers in the closed position and the Control Rod Drive System capable of rod withdrawal, CTS Table 3.3-1 Action 4 limits the THERMAL POWER to the P-6 setpoint value until the inoperable channel is restored to OPERABLE status. ITS 3.3.1 ACTION G, which provides the actions for when one Source Range Neutron Flux channel is inoperable in MODE 2 below P-6, requires all operation involving positive reactivity additions to be immediately suspended. The requirement is modified by a Note that states limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ITS 3.3.1 ACTION I, which provides the actions for when one Source Range Neutron Flux channel is inoperable during MODE 3, 4, or 5 with Rod Control System capable of rod withdrawal or one or more rods not fully inserted, requires the channel to be restored to OPERABLE status within 48 hours or ITS 3.3.1 ACTION Q must be entered and action must be taken immediately to fully insert all rods and to place the Rod Control System

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in a condition incapable of rod withdrawal within one hour. This changes the CTS requirements for an inoperable Source Range Neutron Flux channel by limiting operation involving positive reactivity additions during operations in MODE 2 below the P-6 limit and limits the time a channel can be inoperable during MODE 3, 4, or 5 operations.

This change is acceptable because in this condition the number of Source Range Neutron Flux channels, which are the only channels providing protection, has been reduced by 50% and additional restrictions are appropriate. Positive reactivity additions must be either prohibited or minimized to ensure reactor reactivity is maintained in a known and controlled condition. Limited positive reactivity additions, temperature decreases or boron dilutions, are reasonable restraints to place on unit operations when only one Source Range channel is OPERABLE. With one Source Range Neutron Flux channel inoperable in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted, the redundancy of the RTS Instrumentation is lost and therefore the time operation can continue in this condition is limited. This change is more restrictive because plant operations are more limited by the ITS requirements than the CTS.

M.3 CTS Table 4.3-1, Functional Unit 2 requires a daily and monthly CHANNEL CALIBRATION of the Power Range Neutron Flux channels. CTS Table 4.3-1 Note 8 specifies that the provision of Specification 4.0.4 are not applicable to these Surveillances. ITS Table 3.3.1-1 Function 2.a requires the performance of SR 3.3.1.2 and SR 3.3.1.3 for the Power Range Neutron Flux - High channels. ITS SR 3.3.1.2 requires a comparison of the results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output every 24 hours. This Surveillance contains a Note (Note 2) that states that it is not required to be performed until 12 hours after THERMAL POWER is $\geq$ 15% RTP. ITS SR 3.3.1.3 requires a comparison of the results of the incore detector measurements to NIS AFD every 31 effective full power days (EFPD). This Surveillance contains a Note (Note 2) that states that it is not required to be performed until 24 hours after THERMAL POWER is $\geq$ 15% RTP. This changes the CTS by explicitly specifying the time required to perform the Surveillance after entering the specified Applicability.

The purpose of the CTS 4.0.4 exception is to allow the unit to enter the MODE of Applicability of the instrumentation without calibrating the associated equipment. This exception is necessary to allow a normal shutdown or startup to be completed and at the same time to allow time to perform the Surveillance. The proposed Surveillance Notes provide finite times in which the Surveillances must be performed after entering the specified condition and therefore this change is considered acceptable. This change is designated as more restrictive as it specifies an explicit time period to perform the tests.

M.4 CTS Table 3.3-1 Functional Units 2 (Power Range Neutron Flux), 3 (Power Range Neutron Flux High Positive Rate) and 4 (Power Range Neutron Flux High Negative Rate) require entry into Action 2 if one channel is inoperable. If the requirements of Action 2 are not met, entry into CTS 3.0.3 will be required since no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.1 ACTION P,

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which is applicable if any Required Action and associated Completion Time of Condition C or D (as applicable to the above Functions) is not met, requires the unit to be in MODE 3 within 6 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 from 7 hours in the CTS to 6 hours in the ITS.

This change is acceptable because the CTS requirements are modified to provide the necessary Required Actions and appropriate Completion Times. The Completion Time of 6 hours to reach MODE 3 from 100% RTP, in a safe manner without challenging unit systems, is consistent with other CTS and ITS requirements. This change is designated as more restrictive because the Completion Time for the unit to be placed in MODE 3 has been decreased by 1 hour.

M.5 With one Intermediate Range Neutron Flux channel inoperable, CTS Table 3.3-1 Action 3.b, when above the P-6 interlock and below 5% of RTP, requires the restoration of the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% RTP. In addition, CTS Table 3.3-1 Action 3.c allows unlimited operation with an inoperable Intermediate Range Neutron Flux channel above 5% RTP. ITS 3.3.1 ACTION E, which provides actions for when one Intermediate Range Neutron Flux channel is inoperable, requires either a reduction of THERMAL POWER to < P-6 within 24 hours or the increase in THERMAL POWER to > P-10 within 24 hours. This changes the CTS by limiting the time the unit can operate with an inoperable Intermediate Range Neutron Flux channel above 5% RTP but below the P-10 interlock to 24 hours.

This change is acceptable because a time limit is placed on the length of time the unit may operate with an inoperable Intermediate Range Neutron Flux channel at a power level above 5% RTP and below the P-10 interlock. The requirement to allow 24 hours to restore the instrument to OPERABLE status or to leave the Applicability for when the equipment is required to be OPERABLE is reasonable because a protection function has been significantly degraded and 24 hours is a reasonable period of time to allow for a slow and controlled power adjustment. This change is more restrictive because it restricts the time the unit can operate with an inoperable Intermediate Range Neutron Flux channel.

M.6 In CTS 3.3.1.1, no action is provided for two inoperable Source Range Neutron Flux channels; therefore CTS 3.0.3 must be entered. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.1 ACTION H provides actions for two inoperable Source Range Neutron Flux channels and requires the reactor trip breakers (RTBs) to be opened immediately. This changes the CTS by requiring the RTBs to be opened immediately if both Source Range Neutron Flux channels become inoperable, in lieu of performing a controlled shutdown to MODE 3 in 7 hours.

This change is acceptable because with no Source Range Neutron Flux channels OPERABLE and with the reactor in a condition of being capable of achieving criticality, the operator may have no automatic safety function capable of shutting down the unit. Therefore, the unit must be placed into a safe condition. This is accomplished by opening the RTBs, which inserts all rods.

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This change is designated as more restrictive because the actions added are more restrictive than are required by the CTS.

M.7 CTS Table 3.3-1 Functional Units 7, 8, 9, 10, 16, and 17 require entry into CTS Table 3.3-1 Action 6. CTS Table 3.3-1 Action 6 states that with the number of OPERABLE channels one less than the total number of channels, startup and power operations may proceed provided the inoperable channel is placed in the tripped condition within 1 hour. CTS Table 3.3-1 Functional Units 11 through 15, 18.A, and 18.B require entry into CTS Table 3.3-1 Action 7. CTS Table 3.3-1 Action 7 states that with the number of OPERABLE channels one less than the total number of channels, startup and power operations may proceed provided the inoperable channel is place in the tripped condition within 1 hour. CTS Table 3.3-1 Functional Unit 20 requires entry into CTS Table 3.3-1 Action 11. CTS Table 3.3-1 Action 11 states that with less than the minimum number of channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour. If CTS Table 3.3-1 Action 6, Action 7, or Action 11 is not met, entry into CTS 3.0.3 is required since no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.1 ACTIONS N and P, which are applicable if any Required Action and associated Completion Time of Condition D or L is not met (as applicable to the above Functions), require the unit to be placed in MODE 3 within 6 hours (ACTION P) or require a reduction in THERMAL POWER to < P-7 within 6 hours (ACTION N). This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3, and reducing the time to reach the applicable condition from 7 hours to 6 hours.

This change is acceptable because the proposed default condition will require the plant to be in a condition where the RTS instrumentation is no longer required to be OPERABLE. The proposed Completion Times are consistent with the time currently required for the unit to reach these conditions in a safe manner. This change is designated as more restrictive since the 1 hour specified in CTS 3.0.3 no longer applies.

M.8 CTS 4.3.1.1.2 requires the logic for the interlocks be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. ITS Table 3.3.1-1 Functions 18.a through 18.e require the performance of an ACTUATION LOGIC TEST every 92 days on a STAGGERED TEST BASIS (ITS SR 3.3.1.5). This changes the CTS by changing the Surveillance Frequency from prior to each reactor startup unless performed during the preceding 92 days to every 92 days on a STAGGERED TEST BASIS.

The purpose of the CTS Table 4.3.1.1.2 CHANNEL FUNCTIONAL TEST requirement is to ensure the RTS interlocks are OPERABLE. The change is acceptable since the proposed Surveillance Frequency will require performance of the test every 92 days on a STAGGERED TEST BASIS. This ensures that each interlock train is tested every 184 days, even when the unit is operating. Currently, the test could be performed only once in an 18-month cycle. The Frequency is also consistent with the ACTUATION LOGIC TEST Frequency for the RTS actuation logic and relays. This change is designated as more restrictive since the ITS will require the test to be performed more frequently than in the CTS.

M.9 CTS Table 3.3-1 Action 13 does not allow the Reactor Trip Breaker (RTB) to be bypassed while one of the diverse trip features is inoperable except for the time required to perform maintenance to restore the breaker to OPERABLE status. However, no finite time to perform maintenance is specified. ITS 3.3.1 ACTION K does not include this allowance. This changes the CTS by eliminating the allowance for one RTB to be bypassed for maintenance on undervoltage or shunt trip mechanisms for an unlimited amount of time.

This change is acceptable because the allowance was inadvertently left in the CTS by the License Amendment Request (AEP:NRC:3311) submitted to the NRC to adopt the relaxations of WCAP-15376-P-A, "Risk - Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," Revision 1, dated March 2003. WCAP-15376-P-A justified, in part, extensions of the RTB Completion Times and RTB bypass time and included the deletion of the allowance for bypassing an RTB for maintenance of a diverse trip mechanism. This License Amendment Request was approved by the NRC in License Amendments 277 (Unit 1) and 260 (Unit 2), dated May 23, 2003. This change is designated as more restrictive since an allowance for bypassing an RTB for maintenance on undervoltage or shunt trip mechanisms has been eliminated.

M.10 CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Units 7 and 8, the Overtemperature ΔT and Overpower ΔT channels, respectively. CTS Table 4.3-1 Note 9 modifies these CHANNEL CALIBRATION requirements, and specifies, in part, that the provisions of Specification 4.0.4 are not applicable for measurement of delta T. ITS Table 3.3.1-1 Functions 6 and 7 require the performance of ITS SR 3.3.1.15, a CHANNEL CALIBRATION for the Overtemperature ΔT and Overpower ΔT channels. ITS SR 3.3.1.15 is modified by a Note (Note 2) that states that normalization of the ΔT is not required to be performed until 72 hours after THERMAL POWER is $\geq$ 98% RTP. This changes the CTS by restricting the application of CTS 4.0.4 for measurement of delta T by requiring the performance of the Surveillance no later than 72 hours after THERMAL POWER is $\geq$ 98% RTP.

The purpose of the CTS 4.0.4 exception is to allow the unit to enter the MODE of Applicability of the Overtemperature ΔT and Overpower ΔT channels without completing the normalization of ΔT. The change explicitly specifies that the normalization of ΔT channels is not required to be performed until 72 hours after THERMAL POWER is $\geq$ 98% RTP. This change is acceptable since the proposed Surveillance is consistent with the intent of the current allowance and ensures the normalization of ΔT is performed within a reasonable period of time after the unit is in the condition to perform the normalization. The 72 hours is necessary for unit conditions to stabilize, obtain the appropriate data, perform calculations, and perform the actual normalization. This change is designated as more restrictive since the added Note explicitly states that the only portion of the CHANNEL CALIBRATION of the Overtemperature ΔT and Overpower ΔT channels that can be performed after entering the MODE of Applicability is the normalization of ΔT and that the normalization must be performed within 72 hours after achieving 98% RTP.

M.11 In CTS 3.3.1.1, no Action is provided for two inoperable Intermediate Range Neutron Flux channels; therefore CTS 3.0.3 must be entered. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.1 ACTION F provides actions for two inoperable Intermediate Range Neutron Flux channels. ITS 3.3.1 Required Action F.1 requires the immediate suspension of operations involving positive reactivity additions. A Note modifies the Required Action and states "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM." ITS 3.3.1 Required Action F.2 requires the reduction of THERMAL POWER to < P-6 within 2 hours. This changes the CTS by adding a specific ACTION to cover the condition for two inoperable Intermediate Range Neutron Flux channels.

This change is acceptable because the Required Actions require the unit to be placed in a condition where the Intermediate Range Nuclear Flux channels are no longer required to be OPERABLE. The proposed ACTION precludes a power level increase and allows a reasonable period of time for a slow and controlled power adjustment with no Intermediate Range channels OPERABLE status. The ITS requires the actions of precluding positive reactivity additions and reducing power. These remedial actions are for safe operation. This change is designated as more restrictive because an explicit ACTION is being added which requires the unit to be at a specific condition in 2 hours, in lieu of the current 7 hour time.

M.12 CTS Table 4.3-1, including Note 17, requires the performance of a CHANNEL FUNCTIONAL TEST for the Functional Unit 5 (Intermediate Range Neutron Flux) channels prior to each reactor startup if not performed in the previous 184 days. ITS Table 3.3.1-1 Function 4 requires the performance of a COT (SR 3.3.1.10) every 184 days. However, a Note (Note 1) states that the Surveillance is not required to be performed until 12 hours after reducing THERMAL POWER below the P-10 interlock. This effectively changes the CTS by requiring a COT be performed during a reactor shutdown within 12 hours after decreasing power below the P-10 interlock, if the COT has not been performed in the previous 184 days.

This change is acceptable because it ensures the Intermediate Range Neutron Flux channels are OPERABLE in the MODES or other specified conditions in which the channels are assumed to function. This change is designated as more restrictive since the Surveillance must be performed every 184 days instead of during a startup if not performed in the previous 184 days.

M.13 CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Unit 7, the Overtemperature ΔT channels. CTS Table 4.3-1 Note 9 modifies the CHANNEL CALIBRATION requirement, and specifies, in part, that the provisions of Specification 4.0.4 are not applicable for f_1 (delta I) penalty. However, the CTS does not include a requirement to calibrate the excore channels to agree with the incore channels, which are needed to determine the f_1 (delta I) penalty. ITS Table 3.3.1-1 Function 7 requires the performance of ITS SR 3.3.1.7 for the

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Overtemperature ΔT channels. ITS SR 3.3.1.7 requires the calibration of excore channels to agree with incore detector measurements every 92 effective full power days. ITS SR 3.3.1.7 is modified by a Note that states that the Surveillance is not required to be performed until 24 hours after THERMAL POWER is $\geq$ 50% RTP. This changes the CTS by adding an explicit Surveillance to calibrate the excore channels to agree with incore detector measurements. This also changes the CTS by restricting the application of CTS 4.0.4 for the f_1 (delta I) penalty by requiring the performance of the Surveillance no later than 24 hours after THERMAL POWER is $\geq$ 50% RTP.

The purpose of the excore to incore calibration is to ensure that the excore detectors are accurately measuring power. The purpose of CTS 4.0.4 exception is to allow the unit to enter the MODE of Applicability of the Overtemperature ΔT channels without completing a calibration of the excore to incore detectors. However, no finite time to complete the calibration is provided in the CTS. The change adds an explicit Surveillance to calibrate the excore channels to agree with incore detector measurements every 92 effective full power days with a Note which allows the performance of the Surveillance to be delayed only until 24 hours after THERMAL POWER is $\geq$ 50% RTP. This change is acceptable since the proposed Surveillance is consistent with the intent of the current allowance and ensures the incore to excore detector calibration is performed periodically. ITS SR 3.3.1.7 is a calibration of the excore channels to the incore channels. This Surveillance is performed to compute the f_1 (delta I) input to the Overtemperature ΔT Function Allowable Value. The change is designated as more restrictive since a new Surveillance with an explicit Frequency has been added to the Technical Specifications. In addition, a time period is specified for when the Surveillance must be performed after achieving a THERMAL POWER level at which the calibration can be performed.

M.14 CTS Table 4.3-2 Functional Units 18.A and 18.B specify the Surveillance Requirements for the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure Functions and do not include a CHANNEL CALIBRATION requirement. ITS SR 3.3.1.13 has been added which requires a CHANNEL CALIBRATION of these channels every 24 months (ITS Table 3.3.1-1, Functions 16.a and 16.b). This changes the CTS by adding a CHANNEL CALIBRATION requirement for the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure Functions every 24 months.

This change is acceptable because it ensures the Allowable Values for the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure Trip Functions are consistent with the plant setpoint methodology. This change is designated as more restrictive since a new Surveillance Requirement has been added to the Turbine Trip Functions.

M.15 CTS Table 4.3-1, Functional Units 2, 5, and 6 require a 92 day (for Functional Unit 2) and an 18 month (for Functional Units 5, 6, 12, and 13) CHANNEL CALIBRATION of the Power Range Neutron Flux, Intermediate Range Neutron Flux, Source Range Neutron Flux, Loss of Flow-Single Loop, and Loss of Flow-Two Loops channels, respectively. CTS Table 4.3-1 Note 8 specifies that the provision of Specification 4.0.4 are not applicable to the Functional Units 2, 5,

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12, and 13 Surveillances and CTS Table 4.3-1 Note 14 specifies that the provisions of Specification 4.0.4 are not applicable to the Functional Unit 6 Surveillance when leaving MODE 1 and requires the Surveillance to be performed within 24 hours after leaving MODE 1. The ITS does not include these exceptions for the Power Range Neutron Flux, Intermediate Range Neutron Flux, Source Range Neutron Flux, and Loss of Flow (Single Loop and Two Loops) CHANNEL CALIBRATION Surveillances (ITS SRs 3.3.1.9, 3.3.1.13, and 3.3.1.14). This changes the CTS by deleting a CTS 4.0.4 exception for performing CHANNEL CALIBRATIONS of certain RTS channels.

The purpose of the CTS 4.0.4 exception is to allow the unit to enter the MODE of Applicability of the instrumentation without calibrating the associated equipment. However, since the CHANNEL CALIBRATION Surveillances are normally performed while shutdown for the Intermediate Range Neutron Flux, Source Range Neutron Flux, and Loss of Flow channels, and the Frequency of the ITS Surveillance is 24 months, the exceptions are no longer needed. For the Power Range Neutron Flux channels, the Surveillance can be performed prior to entering the applicable MODES of the channels, thus the exception is no longer needed. The ITS will require the Surveillances to be current prior to entering the MODE of Applicability for the Power Range Neutron Flux, Intermediate Range Neutron Flux, Source Range Neutron Flux, and Loss of Flow channels. This change is designated as more restrictive since current exceptions are being deleted.

M.16 CTS Table 4.3-1, Functional Unit 16 (Undervoltage - Reactor Coolant Pumps) requires the performance of a CHANNEL CALIBRATION every 18 months, however the Surveillance is currently being performed more frequently. ITS Table 3.3.1-1 Function 12 (Undervoltage RCPs) requires the performance of CHANNEL CALIBRATION every 184 days (ITS SR 3.3.1.12). This changes the CTS by changing the Frequency of the Surveillance from 18 months to 184 days.

The purpose of the CHANNEL CALIBRATION is to ensure the Undervoltage - Reactor Coolant Pumps channels will function as designed during an analyzed event. Changing the SR Frequency is acceptable because a 184 day calibration interval is assumed in the setpoint analysis. This change is designated as more restrictive because Surveillances will be performed more frequently under the ITS than under the CTS.

M.17 CTS Table 2.2-1 provides the Allowable Values for Functional Unit 8 (Overpower ΔT) (Unit 2 only), Functional Unit 9 (Pressurizer Pressure - Low) (Unit 1 only), Functional Unit 12 (Loss of Flow), Functional Unit 13, (Steam Generator Water Level - Low Low) (Unit 2 only), Functional Unit 14, (Steam/Feedwater Flow Mismatch and Steam Generator Water Level - Low) (Steam Generator Water Level - Low portion only is covered by this change) (Unit 2 only), and Functional Unit 16 (Underfrequency - Reactor Coolant Pumps) (Unit 1 only). ITS Table 3.3.1-1 provides the Allowable Values for all the RTS Instrumentation Functions, including ITS Table 3.3.1-1 Functions 7, 8.a, 10, 13, 14, and 15. This change revises the above specified CTS RTS Table 2.2-1 Allowable Values to the ITS Allowable Values.

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The purpose of the Allowable Values is to ensure the instruments function as assumed in the safety analyses. ITS 3.3.1 reflects Allowable Values consistent with the philosophy of Westinghouse ISTS, NUREG-1431. These Allowable Values have been established consistent with the methods described in I&M's Instrument Setpoint Methodology (EG-IC-004, "Instrument Setpoint Uncertainty," Rev. 4). For most cases, the Allowable Value determinations were calculated using plant specific operating and Surveillance trend data. There were no changes to Safety Analysis Limits (SALs) required due to instrument performance. All design limits applied in the methodologies were confirmed as ensuring that applicable design requirements of the associated systems and equipment are maintained. The methodologies used have been compared with the guidance of ANSI/ISA S67.04-Part I-1994 and ANSI/ISA RP67.04-Part II-1994. Plant calibration procedures will ensure that the assumptions regarding calibration accuracy, measurement and test equipment accuracy, and setting tolerance are maintained. Nominal Trip Setpoints (NTSPs) for each design or SAL have been established by accounting for the applicable instrument accuracy, calibration and drift uncertainties, environmental effects, power supply fluctuations, as well as uncertainties related to process and primary element measurement accuracy using the instrument setpoint methodology. The Allowable Values have also been established from each SAL by combining the errors associated with the CHANNEL OPERATIONAL TEST (COT) (e.g., device accuracy, setting tolerance, and drift) with the calculated Nominal Trip Setpoint using the instrument setpoint methodology. Where a SAL exists, trigger values are used to ensure that the Allowable Value provides sufficient margin from the SAL to account for any associated errors not confirmed by the COT Use of the previously discussed methodologies for determining Allowable Values, instrument setpoints, and analyzing channel/instrument performance ensure that the design basis and associated SALs will not be exceeded during plant operation. These evaluations, determinations, and analyses now form a portion of the CNP design bases. Additionally, each applicable channel/instrument has been evaluated and analyzed to support a fuel cycle extension to a 24 month interval. These drift evaluations and drift analyses have been performed utilizing the guidance provided in EPRI TR-103335, "Statistical Analysis of Instrument Calibration Data/ Guidelines for Instrument Calibration Extension/Reduction Programs," Rev. 1. The EPRI guidance was used to demonstrate that the data collected by the operating plant (from Surveillance testing) has remained acceptable and reasonable with regard to the manufacturers design specifications. Therefore, based on the above discussion, the changes to the Allowable Values are acceptable. This change is designated as more restrictive because more stringent Allowable Values are being applied in the ITS than were applied in the CTS.

RELOCATED SPECIFICATIONS

None

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REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.3.1.1.3 requires each RTS trip function to be response time tested. However, CTS 4.3.1.1.3 Note * exempts the neutron detectors from response time testing and specifies that the "response time of the neutron flux signal portion of the channel shall be measured from the detector output or input of first electronic component in channel." ITS SR 3.3.1.19 Note exempts the neutron detectors from response time testing, but does not include the detail of how to test the neutron flux signal portion of the channel. This changes the CTS by moving the descriptive wording from the Specification to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform RESPONSE TIME TESTING. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.2 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 for RTS instrumentation has three columns stating various requirements for each function. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS Table 3.3.1-1 does not retain the "TOTAL NO. OF CHANNELS" or "CHANNELS TO TRIP" columns. This changes the CTS by moving the information of the "TOTAL NO. OF CHANNELS" and "CHANNELS TO TRIP" columns to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels and the appropriate Condition to enter if a required channel becomes inoperable. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 3.3-1, including Note *, requires Functional Units 1 (Manual Reactor Trip) and 6 (Source Range Neutron Flux) channels to

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be OPERABLE "with the reactor trip system breakers in the closed position" and the control rod drive system capable of rod withdrawal. CTS Table 4.3-1 specifies the Surveillance Requirements for the Manual Reactor Trip channels and includes a similar applicability in Note *. ITS Table 3.3.1-1, including Footnote (a), requires Functions 1 (Manual Reactor Trip) and 5 (Source Range Neutron Flux) channels to be OPERABLE in MODES 3, 4, and 5 with the Rod Control System capable of rod withdrawal or with one or more rods not fully inserted. This changes the CTS by moving the details on how to place the Rod Control System in a state capable of rod withdrawal (i.e., by using the reactor trip breakers) from the Technical Specifications to the Bases. The change that adds the requirement concerning the position of the rods is discussed in DOC M.1 and the change that adds MODES 3, 4, and 5 is discussed in DOC A.18.

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still continues to specify requirements on the RTS depending on the status of the Rod Control System's capability to withdraw rods. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 Function 6 requires two Source Range Neutron Flux channels be OPERABLE in MODE 2 ##. Note ## states that the high voltage to the detector may be de-energized above P-6. ITS Table 3.3.1-1 Function 5, including Footnote (d), requires two OPERABLE Source Range Neutron Flux channels in MODE 2 below the P-6 (Intermediate Range Neutron Flux) interlock, and maintains the intent of the CTS requirement. This changes the CTS by moving the allowance that the high voltage to the detector may be de-energized above P-6 from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the Source Range Neutron Flux channels to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 specifies the functions and logic of the P-6, P-7, P-8, and P-10 interlocks. ITS Table 3.3-1 Functions 18.a, b, c, and d, do not include this information. The ITS only specifies that there is 1 channel per train of each of the interlocks. This changes the CTS by moving the functional description and logic associated with each of the interlocks specified in CTS Table 3.3-1 to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the interlocks to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.6 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 breaks down the Loss of Flow Function into two separate Functional Units; the reactor trips on Loss of Flow - Single Loop and on Loss of Flow - Two Loops. As stated in CTS Table 3.3-1 Functional Unit 12, the Loss of Flow - Single Loop is enabled above P-8, and as stated in CTS Table 3.3-1 Functional Unit 13, the Loss of Flow - Two Loops is enabled above P-7 and below P-8. The two separate Functional Units are also listed in CTS Table 4.3-1 (Functional Units 12 and 13). ITS Table 3.3.1-1 Function 10 provides the requirements for the Reactor Coolant Flow - Low Function, but does not include the logic description of the Reactor Coolant Flow - Low Function (i.e., on a two loop loss of flow above P-7 and below P-8 and on a single loop loss of flow above P-8). This changes the CTS by moving the logic details to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the Reactor Coolant Flow - Low Function. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.7 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 2.2-1 Notes 1 and 2 provide descriptions of some of the factors in the Allowable Value formulas for the Overtemperature ΔT and Overpower ΔT Functional Units, specifically the descriptions concerning the lead-lag and rate lag controllers for T_{avg} dynamic compensation. ITS Table 3.3-1 Notes 1 and 2 include the same Allowable Value formula, but do not include these specific factor descriptions. This changes the CTS by moving these factor descriptions to the UFSAR.

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The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Allowable Value formula for the Overtemperature ΔT and Overpower ΔT Functions. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. Any changes to the UFSAR are made under 10 CFR 50.59 or 10 CFR 50.71(e), which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.8 *(Type 5 – Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report)* CTS Table 2.2-1 for the Limiting Safety System Settings states the formulas for Overtemperature ΔT and Overpower ΔT Functional Units. ITS 3.3.1 in Table 3.3.1-1 lists the formulas for the Overtemperature ΔT and Overpower ΔT Functions with a reference that certain variables/constants are contained in the CORE OPERATING LIMITS REPORT (COLR). This changes the CTS by relocating specific parameters for the Overtemperature ΔT and Overpower ΔT Functions, which must be confirmed on a cycle-specific basis, from the Technical Specifications to the COLR.

The removal of these cycle-specific parameter limits from the Technical Specifications and their relocation into the COLR is acceptable because these limits are developed or utilized under NRC-approved methodologies. The NRC documented in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications," that this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains requirements and Surveillances that verify that the cycle-specific parameter limits are being met. The functional requirements of the Overtemperature ΔT and Overpower ΔT Functions are retained in the Technical Specifications to ensure core protection. Also, this change is acceptable because the removed information will be adequately controlled in the COLR under the requirements provided in ITS 5.6.5, "CORE OPERATING LIMITS REPORT." ITS 5.6.5 ensures that the applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems limits, and nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analyses are met. This change is designated as a less restrictive removal of detail change because information relating to cycle-specific parameter limits is being removed from the Technical Specifications.

LA.9 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.3-1 Functional Unit 1 requires the performance of a CHANNEL FUNCTIONAL TEST for the Manual Reactor Trip Function, including the shunt and undervoltage trip devices. In addition, Table 4.3-1 Note 10 states that the CHANNEL FUNCTIONAL TEST shall "independently verify the OPERABILITY of the undervoltage and shunt trip circuits" and "verify the OPERABILITY of the bypass breaker trip circuits." CTS Table 4.3-1 Functional Unit 21 requires the performance of a CHANNEL

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FUNCTIONAL TEST for the Reactor Trip Breaker Shunt and Undervoltage Trip Functions. In addition, CTS Table 4.3-1 Note 11 states that the CHANNEL FUNCTIONAL TEST shall "independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers." CTS Table 4.3-1, Functional Unit 23 requires the performance of a CHANNEL FUNCTIONAL TEST for each Reactor Trip Bypass Breaker every 124 days and prior to each reactor startup if not performed in the previous 7 days. In addition, Note 12 states that the 124 day test includes a verification of the "local manual shunt trip" prior to placing the breaker in service, and Note 13 states that the prior to each startup test includes the "automatic undervoltage trip." ITS 3.3.1 requires a similar Surveillance (ITS SR 3.3.1.17) to be performed, however, the Surveillance does not include these quoted details. This changes the CTS by moving the details of the scope of the tests from the CTS to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform a TADOT. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.10 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 2.2.1 requires the RTS instrumentation setpoints to be set consistent with the Trip Setpoint values shown in Table 2.2-1. However, the CTS 2.2.1 Action is only required to be taken when the setpoint is less conservative than the Allowable Value column of Table 2.2-1. When the setpoint is less conservative than the Allowable Value, the channel is to be declared inoperable and adjusted consistent with the Trip Setpoint value. CTS Table 2.2-1 specifies both the Trip Setpoints and Allowable Values for the RTS Instrumentation Functional Units. ITS 3.3.1 requires the RTS instrumentation for each Function in Table 3.3.1-1 to be OPERABLE. ITS Table 3.3.1-1 specifies only the Allowable Values for the RTS Instrumentation Functions. The ITS also ties OPERABILITY of channels to the Allowable Values. This changes the CTS by moving the Trip Setpoints to the Technical Requirements Manual (TRM).

The removal of these details for meeting Technical Specification requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Allowable Values associated with the RTS Instrumentation. Also, this change is acceptable because these types of procedural details will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting

Technical Specification requirements are being removed from the Technical Specifications.

LA.11 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 2.2-1 Functional Unit 11 provides an Allowable Value of ≤ 93% of instrument span for the Pressurizer Water Level - High channels. CTS Table 2.2-1 Functional Unit 12 provides an Allowable Value of ≥ 89.1% of the design flow per loop for the Loss of Flow channels. In addition, Unit 1 CTS Table 2.2-1 Note * states that design flow is 1/4 Reactor Coolant System total flow rate from Table 3.2-1 (i.e., 341,100 gpm) and Unit 2 CTS Table 2.2-1 Note * states design flow is 91,600 gpm per loop. CTS Table 2.2-1 Functional Unit 13 provides an Allowable Value of ≥ 16% (Unit 1) and ≥ 19.2% (Unit 2) of narrow range instrument span for the Steam Generator Water Level - Low Low channels. CTS Table 2.2-1 Functional Unit 14 provides an Allowable Value of ≥ 4% of the narrow range instrument span for the SG Water Level - Low portion of the Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level channels. ITS Table 3.3.1-1 Function 9 provides an Allowable Value for the Pressurizer Water Level - High channels in terms of percent, but does not include the detail of the associated instrument span. ITS Table 3.3.1-1 Function 10 provides an Allowable Value for the Reactor Coolant Flow - Low channels in terms of percent, but does not include the detail of the associated design flow per loop. ITS Table 3.3.1-1 Function 14 provides an Allowable Value for the Steam Generator Water Level - Low Low channels in terms of percent, but does not include the detail of the associated narrow range instrument span. ITS Table 3.3.1-1 Function 15 provides an Allowable Value for the Steam Generator Water Level - Low portion of the Steam Generator Level - Low Coincident with Steam Flow/Feedwater Flow Mismatch channels in terms of percent, but does not include the detail of the associated narrow range instrument span. This changes the CTS by moving the details of what the setting in % is based upon to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the value for each of the Allowable Values. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.3.1.1.2 requires the total interlock function to be demonstrated OPERABLE at least once per 18 months. ITS SR 3.3.1.16 requires the performance of a CHANNEL OPERATIONAL TEST (COT), which tests a portion of the total interlock function, every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a

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maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.3.1.1.2 is to ensure the proper operation of the RTS interlock functions. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for this COT is acceptable because during the operating cycle, there is sufficient indication of THERMAL POWER and RTS interlock status to ensure the interlocks are in the correct status. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.2 *(Category 11 – 18 to 24 Month Surveillance Frequency Change, Channel Calibration Type)* CTS 4.3.1.1.2 requires the total interlock function to be demonstrated OPERABLE at least once per 18 months. CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Units 3 through 15 and 17 every 18 months. ITS Table 3.3.1-1 Functional Units 3 through 10, 13 through 15, and 18 require the performance of a CHANNEL CALIBRATION every 24 months (ITS SRs 3.3.1.12, 3.3.1.13, and 3.3.1.14). This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of the CHANNEL CALIBRATION required by CTS 4.3.1.1.2 and Table 4.3-1 is to ensure the RTS instrumentation and interlocks are calibrated correctly to ensure the safety analysis can be met. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. This change is acceptable because the RTS, including the actuation logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one of the channel components. Furthermore, CTS Table 4.3-1 Functional Units 3 through 15 and 17, and the Interlock Functions of the impacted RTS instrumentation have been evaluated for drift using both quantitative and qualitative analysis, based on manufacturer and model number to determine that the instrumentation's actual drift falls within the design allowance in the associated setpoint calculation.

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Functional Unit 3, Power Range Neutron Flux High Positive Rate

This function is performed by the Westinghouse Top and Bottom Half Core Power Detectors and Top and Bottom Half Core Power Drawers (Westinghouse Models 6051D51G01 and 6051D53G01, respectively). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Power Range Neutron Flux, High Positive Rate Function are verified by more frequent CHANNEL CHECKS every 12 hours, comparison tests between indicated power and calculated power (i.e., calorimetric verification) every 24 hours, and CHANNEL OPERATIONAL TESTS (COTs) every 92 days. This testing ensures a significant portion of the circuitry is operating properly and accurately, and will detect significant failures of this circuitry. Additionally, since the flux measurement is evaluated and corrected on a daily basis by the calorimetric verification using high accuracy measurement devices, any drift associated with the circuit is normalized. Therefore, long term drift has no impact on the accuracy of this trip. The results of these analyses will support a 24 month Surveillance interval.

Functional Unit 4, Power Range Neutron Flux High Negative Rate

This function is performed by the Westinghouse Top and Bottom Half Core Power Detectors and Top and Bottom Half Core Power Drawers (Westinghouse Models 6051D51G01 and 6051D53G01, respectively). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Power Range Neutron Flux, High Negative Rate Function are verified by more frequent CHANNEL CHECKS every 12 hours, comparison tests between indicated power and calculated power (i.e., calorimetric verification) every 24 hours, and COTs every 92 days. This testing ensures a significant portion of the circuitry is operating properly and accurately, and will detect significant failures of this circuitry. Additionally, since the flux measurement is evaluated and corrected on a daily basis by the calorimetric verification using high accuracy measurement devices, any drift associated with the circuit is normalized. Therefore, long term drift has no impact on the accuracy of this trip. The results of these analyses will support a 24 month Surveillance interval.

Functional Unit 5, Intermediate Range Neutron Flux

This function is performed by IRM Neutron Flux Detectors (Westinghouse Model WL-23707) and IRM Neutron Flux Drawers (Westinghouse Model 6051D46G01). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Intermediate Range Neutron Flux Function are verified by more frequent CHANNEL CHECKS every 12 hours and COTs every 184 days. The IRMs are only required in MODE 1 below the P-10 interlock and in MODE 2 above the P-6 interlock. While operating in MODE 1, operation is normally above the P-10 interlock and the IRM trip is inactive. Also, before the IRM detectors are used for operation, an overlap check is routinely performed to determine if the instruments are reading and

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tracking with the power range and the source range neutron detectors, as applicable. Therefore, long term drift has no impact on the accuracy of this circuit. The results of these analyses will support a 24 month Surveillance interval.

Functional Unit 6, Source Range Neutron Flux

This function is performed by SRM Neutron Flux Detectors (Westinghouse Model WL-23706) and SRM Neutron Flux Drawers (Westinghouse Model 6051D50G01). These system components were not evaluated for drift but were justified for extension based on engineering judgment. SRMs satisfy their design function if calibration is sufficient to ensure neutron level is observable when the reactor is shutdown. This is verified by CHANNEL CHECKS at least every 12 hours when the reactor is shutdown. The SRMs must be operational in MODE 2 below the P-6 interlock. SRM response to reactivity changes is distinctive and well known to plant operators, and SRM response is closely monitored during these reactivity changes. Additionally, since there is very little neutron activity during loading, refueling, shutdown, and approach to criticality, a neutron source is placed in the reactor during approach to criticality to provide a minimum observable SRM neutron count rate attributable to core neutrons of at least 2 counts per second. During plant shutdowns and startups, overlap between the IRM channels and the SRM channels is routinely verified to ensure performance of the SRM channels. There is also more frequent testing, including a COT every 184 days in MODES 1 and 2 and every 31 days in MODES 3, 4, and 5, to verify operation of the electronics for the source range trip. Therefore, any substantial degradation of the SRMs will be evident and long term drift has no impact on the accuracy of this circuit. The results of these analyses will support a 24 month Surveillance interval.

Functional Unit 7, Overtemperature ΔT

This function is performed by a loop consisting of a 200Ω Platinum RTD and Foxboro N-E11 Series Transmitter as the sensing elements with the signal conditioned by Foxboro N-2AI-P2V and N-2AI-H2V Input Cards, and Foxboro N-2CCA-DC Control Cards performing the trip functions. This function utilizes a reactor power input from the Power Range Monitors that is conditioned by a Foxboro N-2AI-T2V+VE Series Converter and N-2CCA-SC Control Card. The Input Cards, Converters and Control Cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified by a COT every 184 days, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The RTDs are not calibrated, and as such, instrument drift does not apply to these devices. Response of the RTDs to temperature variations during normal plant operation and during the more frequent testing verifies proper operation of the input signal. The flux input for this trip is derived from excore detectors that are calibrated to match the incore neutron detectors every 92 EFPD. The incore detectors are compared to a calorimetric every 24 hours. The Foxboro Transmitters' drift was determined by quantitative analysis. The drift value determined has been used in the development of, confirmation of, or revision to the current plant setpoint and the Technical

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Specification Allowable Values. The results of this analysis will support a 24 month Surveillance interval.

Functional Unit 8, Overpower ΔT

This function is performed by a loop consisting of a 200Ω Platinum RTD with the signal conditioned by Foxboro N-2AI-P2V and N-2AI-H2V Input Cards, and Foxboro N-2CCA-DC Control Cards performing the trip functions. This function utilizes a reactor power input from the Power Range Monitors that is conditioned by a Foxboro N-2AI-T2V+VE Series Converter and N-2CCA-SC Control Card. The Input Cards, Converters and Control Cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified by a COT every 184 days, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The RTDs are not calibrated, and as such, instrument drift does not apply to these devices. Response of the RTDs to temperature variations during normal plant operation and during the more frequent testing verifies proper operation of the input signal. Although the reactor power input is available for input to this function, input value is set to zero and has no impact on trip operation. The results of this analysis will support a 24 month Surveillance interval.

Functional Unit 9, Pressurizer Pressure - Low

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 10, Pressurizer Pressure - High

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The signal conditioner and control card are part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the

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current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 11, Pressurizer Water Level - High

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The signal conditioner and control card are part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 12, Loss of Flow - Single Loop

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval or the interval.

Functional Unit 13, Loss of Flow - Two Loops

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

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Functional Unit 14, Steam Generator (SG) Water Level - Low Low

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval or the interval.

Functional Unit 15, Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level

This function is performed by Foxboro (N-)E13 Series Differential Pressure Transmitters with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The signal conditioners and control cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval or the interval.

Functional Unit 17, Underfrequency - RCPs

This function is performed by General Electric Model SFF99AE002A Underfrequency Relays. The Underfrequency Relays' drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

P-6 Interlock

This P-6 Interlock receives an input from the Intermediate Range Monitoring System. The function is performed by IRM Neutron Flux Detectors (Westinghouse Model WL-23707) and IRM Neutron Flux Drawers (Westinghouse Model 6051D46G01). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the P-6 Interlock Function are verified by more frequent CHANNEL CHECKS every

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12 hours, COTs every 184 days, and an ACTUATION LOGIC TEST every 184 days. The IRMs are only required in MODE 1 below the P-10 interlock and in MODE 2 above the P-6 interlock. While operating in MODE 1, operation is normally above the P-10 interlock and the IRM trip is inactive. Also, before the IRM detectors are used for operation, an overlap check is routinely performed to determine if the instruments are reading and tracking with the power range and the source range neutron detectors, as applicable. Therefore, long term drift has no impact on the accuracy of this circuit. The results of these analyses will support a 24 month Surveillance interval.

P-7 Interlock

The P-7 Interlock receives an input from the Power Range Neutron Monitoring System and the Turbine Impulse Pressure instrumentation. The Power Range Neutron Monitoring System portion of the Function is performed by the Westinghouse Top and Bottom Half Core Power Detectors and Top and Bottom Half Core Power Drawers (Westinghouse Models 6051D51 and 6051D53, respectively). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Power Range Neutron Monitoring System – P-7 Interlock Function are verified by more frequent CHANNEL CHECKS every 12 hours, comparison tests between indicated power and calculated power (i.e., calorimetric verification) every 24 hours, and COTs every 92 days. This testing ensures a significant portion of the circuitry is operating properly and accurately, and will detect significant failures of this circuitry. Additionally, since the flux measurement is evaluated and corrected on a daily basis by the calorimetric verification using high accuracy measurement devices, any drift associated with the circuit is normalized. Therefore, long term drift has no impact on the accuracy of this portion of the Function. The Turbine Impulse Pressure portion of the Function (the P-13 interlock) is performed by a Foxboro E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip function. The Input Card and Control Card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined has been used in the development of, confirmation of, or revision to the current plant setpoint. The results of these analyses will support a 24 month Surveillance interval.

P-8 Interlock

The P-8 Interlock receives an input from the Power Range Neutron Monitoring System. This function is performed by the Westinghouse Top and Bottom Half Core Power Detectors and Top and Bottom Half Core Power Drawers (Westinghouse Models 6051D51G01 and 6051D53G01, respectively). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Power Range Neutron Monitoring

System – P-8 Interlock are verified by more frequent CHANNEL CHECKS every 12 hours, comparison tests between indicated power and calculated power (i.e., calorimetric verification) every 24 hours, and COTs every 92 days. This testing ensures a significant portion of the circuitry is operating properly and accurately, and will detect significant failures of this circuitry. Additionally, since the flux measurement is evaluated and corrected on a daily basis by the calorimetric verification using high accuracy measurement devices, any drift associated with the circuit is normalized. Therefore, long term drift has no impact on the accuracy of this Function. The results of these analyses will support a 24 month Surveillance interval.

P-10 Interlock

The P-10 Interlock receives an input from the Power Range Neutron Monitoring System. This function is performed by the Westinghouse Top and Bottom Half Core Power Detectors and Top and Bottom Half Core Power Drawers (Westinghouse Models 6051D51G01 and 6051D53G01, respectively). These system components were not evaluated for drift but were justified for extension based on engineering judgment. Extension of this SR is acceptable because the operation of the circuits associated with the Power Range Neutron Monitoring System – P-10 Interlock are verified by more frequent CHANNEL CHECKS every 12 hours, comparison tests between indicated power and calculated power (i.e., calorimetric verification) every 24 hours, and COTs every 92 days. This testing ensures a significant portion of the circuitry is operating properly and accurately, and will detect significant failures of this circuitry. Additionally, since the flux measurement is evaluated and corrected on a daily basis by the calorimetric verification using high accuracy measurement devices, any drift associated with the circuit is normalized. Therefore, long term drift has no impact on the accuracy of this Function. The results of these analyses will support a 24 month Surveillance interval.

Based on the design of the instrumentation and the drift evaluations, it is concluded that the impact, if any, from this change on system availability is minimal. A review of the Surveillance test history was performed to validate the above conclusion. There were approximately 41 Intermediate Range and Power Range Monitor tests classified as failures. However, these tests were evaluated and the vast majority involved components found with out of tolerance calibration data. The other failures were reviewed and those failures did not invalidate the conclusion that the impact, if any, on system availability from this change is minimal. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.3.1.1.3 requires the RTS RESPONSE TIME of each reactor trip function to be demonstrated to be within limit at least once per 18 months. ITS SR 3.3.1.19 requires the same test at a 24 month Frequency. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.3.1.1.3 is to ensure the actuation response times are less than or equal to the maximum values assumed in the accident analysis. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the RTS RESPONSE TIME TEST is acceptable because the RTS instrumentation is verified to be operating properly throughout the operating cycle by the performance of CHANNEL OPERATIONAL TESTS and, in some cases, CHANNEL CHECKS. This testing ensures that a significant portion of the RTS circuitry is operating properly and will detect significant failures of this circuitry. Additional justification for extending the Surveillance test interval is that the RTS, including the actuating logic, is designed to be single failure proof and therefore, is highly reliable. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 requires that when a Functional Unit 2 (Power Range Neutron Flux) channel is inoperable, CTS Table 3.3-1 Action 2 be entered. Action 2 requires, in part, the Power Range Neutron Flux trip setpoint to be reduced to ≤ 85% RTP within the 4 hours. ITS 3.3.1 does not include this Required Action. This changes the CTS by deleting the requirement to reduce the Power Range Neutron Flux - High trip setpoint to ≤ 85% RTP.

The purpose of the CTS Actions is to ensure proper compensatory measures are taken in the event of an inoperable Power Range Neutron Flux channel is inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The resetting of the Power Range Neutron Flux - High trip setpoints to ≤ 85% RTP would increase the potential for an inadvertent reactor trip and does not provide significant additional assurance of safety. The ITS retains the requirement to place the inoperable channel in trip, which performs the intended function of the channel. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.5 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-1 requires Functional Units 2 (Power Range Neutron Flux) and 5 (Intermediate Range Neutron Flux) channels to be OPERABLE with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal, as stated in CTS Table 3.3-1 Note *. A similar Note is provided in CTS Table 4.3-1 for Functional Units 2 and 5. ITS Table 3.3.1-1 does not include this Applicability for either of these Functions (Functions 2.a, 2.b, and 4). This changes the CTS by deleting the requirements for OPERABILITY of the Power Range Neutron Flux and Intermediate Range Neutron Flux channels with the reactor trip system breakers in the closed position and the control rod drive system capable of rod withdrawal.

The purpose of CTS Table 3.3-1 Functional Units 2 and 5 is to ensure the Power Range Neutron Flux and Intermediate Range Neutron Flux channels are OPERABLE. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. This change deletes the shutdown requirements for both the Power Range Neutron Flux and Intermediate Range Neutron Flux channels. The Source Range Neutron Flux channels are sufficient to mitigate any reactivity excursions in these conditions. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.6 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 requires that when a Functional Unit 19 (Safety Injection input from ESF) or a Functional Unit 22 (Automatic Trip Logic) train is inoperable, CTS Table 3.3-1 Action 1 be entered. CTS Table 3.3-1 Action 1 requires, in part, the unit to be in MODE 3 within 6 hours. In addition, this Action allows one channel to be bypassed for up to 2 hours for surveillance testing per CTS 4.3.1.1.1. CTS Table 3.3-1 requires that when a Functional Unit 2 (Power Range, Neutron Flux), Functional Unit 3 (Power Range, Neutron Flux, High Positive Rate), or Functional Unit 4 (Power Range, Neutron Flux, High Negative Rate) channel is inoperable, CTS Table 3.3-1 Action 2 be entered. CTS Table 3.3-1 Action 2 allows the inoperable channel be bypassed for up to 2 hours for surveillance testing of the other channels per CTS 4.3.1.1.1. CTS Table 3.3-1 requires that when a Functional Unit 7 (Overtemperature ΔT), Functional Unit 8 (Overpower ΔT), Functional Unit 9 (Pressurizer Pressure - Low), Functional Unit 10 (Pressurizer Pressure - High), Functional Unit 16 (Undervoltage - Reactor Coolant Pumps), or Functional Unit 17 (Underfrequency - Reactor Coolant Pumps) channel is inoperable, CTS Table 3.3-1 Action 6 be entered. CTS Table 3.3-1 Action 6 requires that the inoperable channel be placed in the tripped condition within 1 hour. In addition, this Action allows the inoperable channel be bypassed for up to 2 hours for surveillance testing of the other channels per CTS 4.3.1.1.1. CTS Table 3.3-1 requires that when a Functional Unit 11 (Pressurizer Water Level - High), Functional Unit 12 (Loss of Flow - Single Loop), Functional Unit 13 (Loss of Flow

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- Two Loops), Functional Unit 14 (Steam Generator Water Level - Low Low), Functional Unit 15 (Steam/Feedwater Flow Mismatch and Low Steam Generator Water), Functional Unit 18.A (Turbine Trip Low Fluid Oil Pressure), or Functional Unit 18.B (Turbine Trip Turbine Stop Valve Closure) channel is inoperable, CTS Table 3.3-1 Action 7 be entered. CTS Table 3.3-1 Action 7 requires, in part, the inoperable channel be placed in the tripped condition within 1 hour. No allowance is provided in this Action to allow an inoperable channel to be bypassed for surveillance testing. CTS Table 3.3-1 requires that when a Functional Unit 20 (Reactor Coolant Pump Breaker Position) channel is inoperable, CTS Table 3.3-1 Action 11 be entered. CTS Table 3.3-1 Action 11 requires the inoperable channel be placed in the tripped condition within 1 hour. ITS Table 3.3.1-1 Functions 17 and 21 require entry into ITS 3.3.1 ACTION J if one Safety Injection Input from ESFAS train or one Automatic Trip Logic train is inoperable. ITS 3.3.1 ACTION J requires the restoration of the inoperable train to OPERABLE status within 6 hours. If the inoperable train cannot be restored to OPERABLE status within 6 hours, the unit must be in MODE 3 within the following 6 hours (ITS 3.3.1 ACTION P). In addition, ITS 3.3.1 ACTION J includes an allowance to bypass one train for up to 4 hours for surveillance testing provided the other train is OPERABLE. ITS 3.3.1 ACTION C applies when one Power Range Neutron Flux - High channel (ITS 3.3.1 Function 2.a) is inoperable. ITS 3.3.1 ACTION C requires the placement of the inoperable channel in the trip condition within 6 hours and includes an allowance to bypass the inoperable channel for up to 4 hours for surveillance testing and setpoint adjustment of other channels. ITS 3.3.1 ACTION D applies when one channel is inoperable and applies to ITS 3.3.1 Functions 2.b, 3.a, 3.b, 6, 7, 8.a, 8.b, 9 through 15, 16.a, and 16.b. ITS 3.3.1 ACTION D requires the placement of the inoperable channel in the trip condition within 6 hours and includes an allowance to bypass the inoperable channel (except for the Function 11 channel) for up to 4 hours for surveillance testing of other channels. This changes the CTS by: a) allowing 6 hours to restore the CTS Table 3.3-1 Functional Units 19 and 22 trains to OPERABLE status prior to requiring a shutdown to MODE 3 and extends the bypass time for these Functional Units from 2 hours to 4 hours; b) extending the time allowed to place an inoperable channel in the tripped condition from 1 hour to 6 hours for CTS Table 3.3-1 Functional Units 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.A, 18.B, and 20; c) extending the time allowed to bypass an inoperable channel or train from 2 hours to 4 hours for CTS Table 3.3-1 Functional Units 2, 3, 4, 7, 8, 9, 10, 16, and 17; and d) adds an allowance to bypass the inoperable CTS Table 3.3-1 Functional Units 11, 12, 13, 14, 15, 18.A, and 18.B channels for 4 hours.

The purpose of the current Actions is to provide a short period of time to restore the inoperable channel or train to OPERABLE status. The proposed bypass time of 4 hours in ITS 3.3.1 ACTIONS C, D, and J is a sufficient time to perform train or channel surveillance. The 4 hour time period is acceptable since it is considered an acceptable amount of time based on the risk analysis of WCAP-10271-P, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System." The 6 hour Completion Time specified in ITS 3.3.1 ACTIONS C, D, and J is also acceptable since the change results in a small, and therefore acceptable, impact on plant risk as stated in the NRC Safety Evaluation Reports (SERs) associated with WCAP-10271-P. I&M has performed an evaluation to ensure that the conditions

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of the three NRC SERs supporting WCAP-10271-P, including Supplements 1 and 2 and Supplement 2, Rev. 1, have been met for the proposed ITS Completion Time and/or bypass time. Specifically, the NRC imposed five conditions on utilities seeking to implement the Technical Specification changes approved generically as a result of their review of WCAP-10271 and WCAP-10271 Supplement 1, and two conditions as a result of their review of WCAP-10271 Supplement 2 and Supplement 2, Rev. 1. Two of the conditions imposed in the Reactor Trip System (RTS) SER are now not applicable due to approvals given in the ESFAS SER. Conditions given in the RTS SER are considered to apply equally to the ESFAS Functions and equipment, and the conditions given in the ESFAS SER are considered to apply equally to the RTS Functions and equipment. I&M provided results of this evaluation to the NRC by application dated August 30, 2002, as supplemented by letters dated February 27, April 7, April 29, and May 2, 2003, that requested approval for increasing the CHANNEL OPERATIONAL TEST Surveillance intervals for analog channels, logic cabinets, and reactor trip breakers, and increasing the Completion Time and bypass time for the reactor trip breakers, as allowed by WCAP-15376-P, Rev. 0, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," and the Nuclear Regulatory Commission (NRC) staff's approved Technical Specification Task Force (TSTF) Traveler TSTF-411, Rev. 1, "Surveillance Test Interval Extension for Components of the Reactor Protection System." The NRC granted approval for these new requirements based upon WCAP-15376 by issuing License Amendments 277 (Unit 1) and 260 (Unit 2) on May 23, 2003. In the NRC SER for these amendments, the NRC stated that the December 20, 2002, acceptance letter for WCAP-15376 noted that this topical report was built on the foundation established by WCAP-10271-P and WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times." As a result, the NRC staff's review of I&M's application, as supplemented, verified that the applicable implementation requirements associated with the NRC staff acceptance of WCAP-10271 was also adequately addressed by I&M. Therefore, this change is considered acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.7 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-1 Action 7 states, in part, that with the number of OPERABLE channels one less than the total number of channels, startup and power operation may proceed "until performance of the next required CHANNEL FUNCTIONAL TEST." This CTS Action applies to CTS Table 3.3-1 Functional Units 11 through 15, 18.A, and 18.B. ITS 3.3.1 ACTION D is the applicable ACTION for the above Functions when one channel is inoperable, and does not include the restoration time limit of "until performance of the next required CHANNEL FUNCTIONAL TEST." This changes the CTS by allowing operation with an inoperable channel for an unlimited amount of time provided the inoperable channel is in the tripped condition.

The purpose of CTS Table 3.3-1 Action 7 is to only allow operation until performance of the next required CHANNEL FUNCTIONAL TEST. This requirement is based upon the assumption that when it is time to test the other OPERABLE channels in the associated Function, the OPERABLE channels

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cannot be tested with the inoperable channel in trip. However, CTS 3.0.6 (ITS LCO 3.0.5) is a generic allowance that will allow the inoperable channel to be restored to service in order to perform Surveillances on the other OPERABLE channels in the associated Function. Thus, using this generic allowance, it is possible to test the remaining OPERABLE channels in the associated Function and there is no reason to restrict the generic allowance from applying to these specific channels. As such, the CTS Table 3.3-1 Action 7 statement is not necessary and has been deleted. The administrative controls required by ITS LCO 3.0.5 will ensure the time the channel is returned to service in conflict with the requirements of ITS 3.3.1 ACTION D is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY of the other channels. In addition, this specific example (taking an inoperable channel out of the tripped condition) is discussed in the Bases of ISTS SR 3.0.5. Therefore, this change is acceptable for the above described reasons. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.8 *(Category 4 - Relaxation of Required Action)* CTS LCO 3.3.1.1 states that the interlocks of Table 3.3-1 shall be OPERABLE. However, no specific Actions are provided for when an interlock is inoperable. Therefore, all affected RTS instrumentation is required to be declared inoperable, which will result in a CTS 3.0.3 entry. CTS 3.0.3 allows 1 hour to initiate action and then requires the unit to be in MODES 3, 4, and 5 within the following 6 hours, 12 hours, and 36 hours, respectively. ITS 3.3.1 ACTION L provides the actions for when one or more interlock channels are inoperable. ACTION L requires a verification that the interlock is in the required state for existing unit conditions within 1 hour. ITS 3.3.1 ACTIONS O, P, and Q, which are applicable if any Required Action and associated Completion Time of Condition L is not met, requires the unit to be placed in MODE or other specified condition outside the Applicability of the associated interlock. This changes the CTS by allowing continued operation as long as the interlock is placed in the correct state and providing actions if the inoperable interlock is not placed in the correct state.

The purpose of the interlocks is to ensure the associated RTS instrumentation is automatically enabled or disabled when required. This change is acceptable since the proposed ACTIONS ensure that the interlock is either manually placed in the correct state for the existing unit conditions or that the unit is placed in a MODE or specified Condition outside the Applicability of the associated interlock. ITS 3.3.1 Required Action L.1 requires the interlock to be placed in the same state as it would be normally placed in if it were automatically functioning (i.e., this performs the intended function of the interlock). If this Required Action is not accomplished within 1 hour, then ITS 3.3.1 ACTIONS O, P, and Q will require the unit to be placed in a MODE or specified condition that is outside the Applicability of the associated interlock. The Required Actions and Completion Times for placing the unit in the MODES or specified conditions outside the Applicabilities of the interlocks are consistent with the Required Actions and Completion Times associated with exiting the Applicabilities for RTS Instrumentation Functions supported by the interlocks. With the unit placed in a MODE or specified condition that is outside the Applicability of the associated interlock, the interlock is no longer required to function to support the required OPERABILITY of the associated RTS Instrumentation Function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.9 *(Category 4 – Relaxation of Required Action)* With one Intermediate Range Neutron Flux channel inoperable, CTS Table 3.3-1 Action 3.b requires, when above the P-6 interlock and below 5% of RTP, the restoration of the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% RTP. ITS 3.3.1 ACTION E, which provides the actions when one Intermediate Range Neutron Flux channel is inoperable, provides two optional Required Actions. Required Action E.1 requires the reduction of THERMAL POWER to < P-6 within 24 hours, while Required Action E.2 requires the increase of THERMAL POWER to > P-10 within 24 hours. This changes the CTS by allowing the unit to change power level to exit the MODE of Applicability instead of requiring the restoration of the equipment.

The purpose of CTS Table 3.3-1 Action 3.b is to ensure the appropriate actions are taken when an Intermediate Range Neutron Flux channel is inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The Intermediate Range Neutron Flux channels are required to mitigate events within the proposed Applicability of above the P-6 interlock and below the P-10 interlock. While the unit is within the Applicability of the LCO, the other Intermediate Range Neutron Flux channel can perform the required safety function. With the unit outside the proposed Applicability of the equipment, the equipment is not credited in any transient. Other instrumentation is available to mitigate the consequences of a transient event. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.10 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.3-1, including Note 1, require the performance of CHANNEL FUNCTIONAL TEST for Functional Units 18.A (Turbine Trip - Low Fluid Oil Pressure) and 18.B (Turbine Trip - Turbine Stop Valve Closure) channels prior to each reactor startup if not performed in previous 7 days. ITS Table 3.3.1-1, Functions 16.a and 16.b require the performance of a TADOT (ITS SR 3.3.1.18) prior to exceeding the P-7 interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days. This changes the CTS by extending the requirement to perform the test from "if not performed within the previous 7 days" to "if not performed within the previous 31 days."

The purpose of the CHANNEL FUNCTIONAL TEST/TADOT is to ensure the instrumentation is functioning properly. This changes the CTS by extending the requirement to perform the test from "if not performed within the previous 7 days" to "if not performed within the previous 31 days." Currently this Surveillance is only required to be performed prior to each reactor startup. During a normal

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cycle, the unit is in MODE 1 for a time period in excess of 31 days and the Surveillance is not performed. A review of maintenance history has shown that when the Surveillance is performed after an extended time period in MODE 1 (i.e., ≥ 31 days), the Surveillance normally passes. Thus, allowing the reactor startup to proceed without performing the Surveillance if the Surveillance has been performed within the previous 31 days versus the current 7 days is acceptable. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.11 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS Table 4.3-1 Functional Unit 20 requires the performance of a CHANNEL FUNCTIONAL TEST on the Reactor Coolant Pump Breaker Position Trip channels every 18 months. CTS Table 4.3-1 Functional Unit 19 requires the performance of a CHANNEL FUNCTIONAL TEST on the Safety Injection Input from ESF (Manual ESF functional input check) every 18 months. ITS Table 3.3.1-1 Functions 11 and 17 require the performance of ITS SR 3.3.1.17, a TADOT, every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change from a CHANNEL FUNCTIONAL TEST to a TADOT is discussed in DOC A.20.

The purpose of the CHANNEL FUNCTIONAL TEST required by CTS Table 4.3-1 is to ensure the RTS instrumentation can perform its intended function. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval associated with the Reactor Coolant Pump Breaker Position Trip is acceptable since the RTS Instrumentation includes redundant instrumentation to monitor Reactor Coolant Flow (i.e., Loss of Flow - Single Loop, Loss of Flow - Two Loops, Underfrequency - Reactor Coolant Pump, Undervoltage - Reactor Coolant Pump). Extending the Surveillance interval for the Safety Injection Input from ESF is also acceptable since redundant trains exist. Based on the inherent system and component reliability, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.12 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 Functional Unit 1 specifies the requirements for the Manual Reactor Trip channels. The CTS requirement specifies that Action 12 applies with the number of channels

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OPERABLE one less than required by the minimum channels OPERABLE requirement. CTS Table 3.3-1 Action 12 requires the restoration of the inoperable channel to OPERABLE status within 48 hours or to be in MODE 3 within the next 6 hours and/or open the reactor trip breakers. ITS Table 3.3.1-1 Function 1 requires entry in ITS 3.3.1 ACTION B if a required channel is inoperable. ITS 3.3.1 Required Action B.1 requires restoration of the channel to OPERABLE status within 48 hours. If this cannot be met in MODE 1 and 2, ACTION P must be entered and Required Action P.1 requires the unit to be in at least MODE 3 within 6 hours. If the inoperable channel cannot be restored to OPERABLE status in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted, ACTION Q must be entered and Required Action Q.1 requires the immediate initiation of action to fully insert all rods and Required Action Q.2 requires the Rod Control System to be in a condition incapable of rod withdrawal within 1 hour. This changes the CTS by not specifically requiring the reactor trip breakers to be opened and providing 1 additional hour to ensure the Rod Control System is incapable of rod withdrawal.

The purpose of CTS Table 3.3-1 Action 12 is allow time to restore an inoperable channel and if not, to place the unit in a condition where the equipment is not required to be OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change deletes the requirement to open the reactor trip breakers. The proposed Required Action ensures the unit is outside of the Applicability of the Manual Reactor Trip channels. The Required Actions require immediate action to insert all rods and, once inserted, the Rod Control System must be placed in a condition incapable of rod withdrawal within 1 hour, which is the purpose of opening the reactor trip breakers. This is normally performed by opening the reactor trip breakers. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.13 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 Functional Units 21 (Reactor Trip Breakers) and 22 (Automatic Trip Logic) specifies that Action 14 applies with the number of channels OPERABLE one less than required by the minimum channels OPERABLE requirement when in MODES 3, 4, and 5 with the reactor trip breakers closed and the rod control system capable of rod withdrawal. CTS Table 3.3-1 Action 14 requires the restoration of the inoperable channel to OPERABLE status within 48 hours "or open the reactor trip breakers within the next hour." In the ITS for the same Functions, if an inoperable channel/train is not restored to OPERABLE status within 48 hours as specified in ITS 3.3.1 ACTION B, then ITS 3.3.1 ACTION Q must be entered. ITS 3.3.1 Required Actions Q.1 and Q.2 require the unit to initiate action to fully insert all rods immediately and to place the Rod Control System in a condition incapable of rod withdrawal within 1 hour. This changes the CTS by not requiring the reactor trip breakers to be opened.

The purpose of CTS Table 3.3-1 Action14 is allow time to restore an inoperable channel and if this cannot be accomplished to place the unit in a condition where the equipment is not required to be OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change deletes the requirement to open the reactor trip breakers. The proposed Required Action ensures the unit is outside of the Applicability of the Reactor Trip Breaker and Automatic Trip Logic Functions. The actions require immediate action to insert all rods which is the purpose of opening the reactor trip breakers. Once inserted, the Rod Control System is placed in a condition incapable of rod withdrawal within 1 hour. This is normally performed by opening the reactor trip breakers. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.14 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change*) CTS Table 4.3-1 Functional Unit 1, including Note 1, requires the performance of a CHANNEL FUNCTIONAL TEST of the Manual Reactor Trip Function prior to each reactor startup if not performed in the previous 7 days. CTS Table 4.3-1 Functional Unit 23, including Note 1, requires the performance of a CHANNEL FUNCTIONAL TEST of each Reactor Trip Bypass Breaker prior to each reactor startup if not performed in the previous 7 days. ITS SR 3.3.1.17 requires these tests to be performed every 24 months. This changes the CTS by changing the Surveillance Frequency from prior to each reactor startup if not performed in the previous 7 days to 24 months.

The purpose of the CTS Table 4.3-1 CHANNEL FUNCTIONAL TEST requirement is to ensure the Manual Reactor Trip and the Reactor Trip Bypass Breaker Functions are OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. If a unit operates a complete cycle without requiring a shutdown, this Surveillance will only be performed once per cycle (approximately 18 months). Testing these channels once per cycle is considered acceptable. A review of the Surveillance test history for the Manual Reactor Trip and Reactor Trip Bypass Breaker Functions indicates that an extension to 24 months is acceptable. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.15 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change*) CTS Table 4.3-1 Functional Unit 2, including Note 3, requires a monthly comparison of the incore to excore axial imbalance above 15% of RATED THERMAL POWER and that recalibration is necessary if the absolute

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difference is greater than or equal to 3 percent. ITS Table 3.3.1-1, Function 2.a requires the performance of this same test (ITS SR 3.3.1.3); however, the Frequency has been changed to 31 effective full power days (EFPD). This changes the CTS by allowing this Surveillance to be performed every 31 EFPD instead of 31 days.

The purpose of the ITS SR Frequency expressed in EFPD is to relate the requirement to a meaningful time frame. This change is acceptable because the new Surveillance Frequency has been evaluated and has been shown to provide an acceptable level of equipment reliability. The allowance for performing the comparison of the NIS channels indications to the incore indications are a function of burn up and not calendar days. The relationship of incore to excore measurement changes with the burnup of the fuel in the reactor, and depends upon power distribution in the reactor core. The burnup of the fuel is not a function of calendar days, but of total power produced by the reactor. A Frequency stated in EFPD is the appropriate unit for the Surveillance Frequency. This change is designated as less restrictive because Surveillances may be performed less frequently under the ITS than under the CTS.

L.16 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.3-1 Functional Unit 2 (Power Range Neutron Flux), including Note 1, requires the performance of a CHANNEL FUNCTIONAL TEST during startup if not performed in previous 7 days. CTS Table 4.3-1 Functional Unit 6 (Source Range Neutron Flux), including Note 1, requires the performance of a CHANNEL FUNCTIONAL TEST during startup if not performed in previous 7 days. CTS Table 4.3-1 Functional Unit 21 (Reactor Trip Breakers, Shunt Trip and Undervoltage Trip), including Note 1, requires the performance of a CHANNEL FUNCTIONAL TEST during startup if not performed in previous 7 days. The ITS does not require these "during startup if not performed in the previous 7 days" tests. This changes the CTS by deleting the requirement to perform the startup Surveillance on the Power Range Neutron Flux, Source Range Neutron Flux, and Reactor Trip Breakers, including the Shunt and Undervoltage trip channels.

The purpose of the CTS Table 4.3-1 CHANNEL FUNCTIONAL TEST is to ensure the RTS instrumentation is functioning properly. This change is acceptable because the normal periodic CHANNEL FUNCTIONAL TEST (changed to COT or TADOT per DOC A.20) Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. This change deletes the requirement to perform the startup Surveillance on the Power Range Neutron Flux, Source Range Neutron Flux, and Reactor Trip Breakers, including the Shunt Trip and Undervoltage trip channels. ITS SR 3.0.4 requires the normal periodic Surveillances to be performed and be current prior to entry into the applicable operational conditions. Once the applicable conditions are entered, the normal, periodic Surveillance Frequency provides adequate assurance of OPERABILITY. Therefore, the removal of this Frequency is considered acceptable. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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L.17 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.3-1 Functional Unit 6 requires the performance of a CHANNEL FUNCTIONAL TEST every 31 days. This Surveillance is modified by a Note (CTS Table 4.3-1 Note 14), which states that the provisions of Specification 4.0.4 are not applicable when leaving MODE 1 and shall be performed within 24 hours after leaving MODE 1. ITS Table 3.3.1-1 Function 5 requires the performance of a COT (ITS SR 3.3.1.10) at a Frequency of 184 days. This Surveillance is modified by a Note (Note 2) that states that the Surveillance is not required to be performed until 4 hours after power is below the P-6 interlock. This changes the CTS by changing the point at which the required completion time begins (leaving MODE 1 in the CTS and power below P-6 in the ITS) to perform the Surveillance, and reduces the time (24 hours to 4 hours) to perform the Surveillance after reaching that point. The change from a CHANNEL FUNCTIONAL TEST to a COT is discussed in DOC A.20 and the change in the Frequency is discussed in DOC L.18.

The purpose of CTS Table 4.3-1 Note 14 is to allow time for the Surveillance to be performed after power is reduced to the conditions where the equipment is required to function. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Since the Applicability of the Source Range Neutron Flux channels is below P-6, this interlock is a more convenient reference point since instrument panels in the Control Room indicate when the condition has been met. The unit leaves MODE 1 when it reaches 5% RTP. The nuclear instrumentation available in the control room is not as accurate at this THERMAL POWER level, and it is therefore difficult to determine when the unit actually leaves MODE 1. This change modifies the point at which the required completion time begins (leaving MODE 1 in the CTS and power below P-6 in the ITS) to perform the Surveillances and reduces the time allowed (24 hours to 4 hours) to perform the Surveillance after reaching that point. The change is considered less restrictive since the point at which the required completion time begins is reduced to a lower power level, and the actual time to reach the P-6 interlock point could be greater than 20 hours. This change is designated as less restrictive because Surveillances may be performed less frequently under the ITS than under the CTS.

L.18 *(Category 9 – Surveillance Frequency Change Using GL 91-04 Guidelines, Non-24 Month Type Change)* CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST of Functional Units 6 (Source Range Neutron Flux), 16 (Undervoltage - Reactor Coolant Pumps), and 17 (Underfrequency - Reactor Coolant Pumps) instrumentation every 31 days. ITS SR 3.3.1.10 requires the performance of a COT for the Source Range Neutron Flux instrumentation every 184 days and ITS SR 3.3.1.11 requires the performance of a TADOT for the Undervoltage RCPs and Underfrequency RCPs instrumentation every 184 days. This changes the CTS by extending the Frequency of the Surveillance from 31 days (i.e., a maximum of 38.75 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 184 days (i.e., a maximum of 230 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change from a CHANNEL FUNCTIONAL TEST to a COT or TADOT is discussed in DOC A.20.

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The purpose of the CHANNEL FUNCTIONAL TEST requirement in CTS Table 4.3-1 is to ensure the channels of the Source Range Neutron Flux, Undervoltage - Reactor Coolant Pumps, and Underfrequency - Reactor Coolant Pumps Functions will function as designed during an analyzed event. An evaluation of the surveillance interval extension was performed, based on the same approach described in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for this COT and TADOT is acceptable because for the Undervoltage RCPs and Underfrequency RCPs trips, the probability of significant variations of the RCP pump power supply is remote due to the plant electrical system and the offsite grid reliability, and for the Source Range Neutron Flux trip, the source range monitors are always checked prior to use and overlap is confirmed between the source and intermediate range monitors during startup and shutdown. During operations where the Source Range Neutron Flux trip is required, a significant change in detected power level would be noticed and investigated by plant operators. Based on the inherent system and component reliability the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 184 day Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (230 days) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances may be performed less frequently under the ITS than under the CTS.

L.19 *(Category 14 – Changing Instrumentation Allowable Values)* CTS Table 2.2-1 provides the Allowable Values for Functional Unit 7 (Overtemperature ΔT), Functional Unit 8 (Overpower ΔT) (Unit 1 only), Functional Unit 9 (Pressurizer Pressure - Low) (Unit 2 only), Functional Unit 10, (Pressurizer Pressure - High), Functional Unit 11 (Pressurizer Water Level - High), Functional Unit 13, (Steam Generator Water Level - Low Low) (Unit 1 only), Functional Unit 14 (Steam/Feedwater Flow Mismatch and Steam Generator Water Level - Low) (Steam Generator Water Level - Low portion only is covered by this change) (Unit 1 only), and Functional Unit 16 (Underfrequency - Reactor Coolant Pumps) (Unit 2 only). ITS Table 3.3.1-1 provides the Allowable Values for all the RTS Instrumentation Functions, including ITS Table 3.3.1-1 Function 6, 7, 8.a, 8.b, 9, 13, 14, and 15. This change revises the above specified CTS RTS Table 2.2-1 Allowable Values to the ITS Allowable Values.

The purpose of the Allowable Values is to ensure the instruments function as assumed in the safety analyses. ITS 3.3.1 reflects Allowable Values consistent with the philosophy of Westinghouse ISTS, NUREG-1431. These Allowable Values have been established consistent with the methods described in I&M's Instrument Setpoint Methodology (EG-IC-004, "Instrument Setpoint Uncertainty," Rev. 4). For all cases where a SAL exists, the Allowable Value determinations were calculated using plant specific operating and Surveillance trend data. For all other cases, existing Allowable Values were converted directly to the ITS

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

Allowable Values. The Allowable Value verification used actual plant operating and surveillance trend information to ensure the validity of the developed Allowable Value. There were no changes to SALs required due to instrument performance. All design limits applied in the methodologies were confirmed as ensuring that applicable design requirements of the associated systems and equipment are maintained. The methodologies used have been compared with the guidance of ANSI/ISA S67.04-Part I-1994 and ANSI/ISA RP67.04-Part II-1994. Plant calibration procedures will ensure that the assumptions regarding calibration accuracy, measurement and test equipment accuracy, and setting tolerance are maintained. Setpoints for each SAL have been established by accounting for the applicable instrument accuracy, calibration and drift uncertainties, environmental effects, power supply fluctuations, as well as uncertainties related to process and primary element measurement accuracy using the instrument setpoint methodology. The Allowable Values have also been established from each SAL by combining the errors associated with the COT (e.g., device accuracy, setting tolerance, and drift) with the calculated Nominal Trip Setpoint using the instrument setpoint methodology. Where a SAL exists, trigger values are used to ensure that the Allowable Value provides sufficient margin from the SAL to account for any associated errors not confirmed by the COT. Use of the previously discussed methodologies for determining Allowable Values, NTSPs, and analyzing channel/instrument performance ensure that the design basis and associated SALs will not be exceeded during plant operation. These evaluations, determinations, and analyses now form a portion of the CNP design bases. Additionally, each applicable channel/instrument has been evaluated and analyzed to support a fuel cycle extension to a 24 month interval. These drift evaluations and drift analyses have been performed utilizing the guidance provided in EPRI TR-103335, "Statistical Analysis of Instrument Calibration Data/ Guidelines for Instrument Calibration Extension/Reduction Programs," Rev. 1. The EPRI guidance was used to demonstrate that the data collected by the operating plant (from Surveillance testing) has remained acceptable and reasonable with regard to the manufacturers design specifications. Therefore, based on the above discussion, the changes to the Allowable Values are acceptable. This change is designated as less restrictive because the less stringent Allowable Values are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1.1

LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function. INSERT 1 (5)

Action

Table 3.3-1 ACTION 12, Table 3.3-1 ACTION 14

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 3.3.1-1 for the channel(s) or train(s).	Immediately
B. One Manual Reactor Trip channel or train inoperable.	B.1 Restore channel or train to OPERABLE status.	48 hours (2)
	OR	
	B.2. Be in MODE 3.	54 hours (1)
C. One channel or train inoperable.	C.1 Restore channel or train to OPERABLE status.	48 hours
	OR	
	C.2.1 Initiate action to fully insert all rods.	48 hours (1)
	AND	

5 **INSERT 1**

In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 10 on a loop basis; and (b) for Functions 14 and 15 on a steam generator basis.

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(TSTF - 418 not shown) (25)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	C.2.2	Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours
D. One Power Range Neutron Flux - High channel inoperable.		- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment of other channels.	
	D.1.1	Place channel in trip.	6 hours
	AND		
	D.1.2	Reduce THERMAL POWER to ≤ 75% RTP.	12 hours
	OR		
	D.2.1	Place channel in trip.	6 hours
	AND		
	D.2.2	- NOTE - Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable.	
		Perform SR 3.2.4.2.	Once per 12 hours
	OR		
	D.3	Be in MODE 3.	12 hours

Table 3.3-1 ACTION 2

TSTF-418 not shown 25

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. One channel inoperable. ~~, except for Function 11 channel,~~		- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.	
	E.1	Place channel in trip.	6 hours
	OR		
	E.2	Be in MODE 3.	12 hours
F. One Intermediate Range Neutron Flux channel inoperable.	F.1	Reduce THERMAL POWER to < P-6.	24 hours
	OR		
	F.2	Increase THERMAL POWER to > P -10.	24 hours
G. Two Intermediate Range Neutron Flux channels inoperable.		- NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.	
	G.1	Suspend operations involving positive reactivity additions.	Immediately
	AND		
	G.2	Reduce THERMAL POWER to < P-6.	2 hours

Handwritten annotations: Table 3.3-1 ACTIONS 2, 6, 7, 11; E→D; D.1 with E.2 struck; Table 3.3-1 ACTION 3; F→E; DOC M.11; G→F; margin notes (1), (3), (6).

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 ⟨TSTF-418 not shown⟩ (25)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Table 3.3-1 Action 4 — ~~H~~ G. One Source Range Neutron Flux channel inoperable.		- NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.	(1)
	~~H~~ G.1	Suspend operations involving positive reactivity additions.	Immediately (1)
DOC M.6 — ~~I~~ H. Two Source Range Neutron Flux channels inoperable.	~~I~~ H.1	Open reactor trip breakers (RTBs).	Immediately (16) (1)
Table 3.3-1 Action 4 — ~~J~~ I. One Source Range Neutron Flux channel inoperable.	~~J~~ I.1	Restore channel to OPERABLE status.	48 hours (1)
	~~OR~~		
	~~J.2.1~~	~~Initiate action to fully insert all rods.~~	~~48 hours~~ (1)
	~~AND~~		
	~~J.2.2~~	~~Place the Rod Control System in a condition incapable of rod withdrawal.~~	~~49 hours~~
~~K. One channel inoperable.~~		~~- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.~~	(1)
	~~K.1~~	~~Place channel in trip.~~	~~6 hours~~
	~~OR~~		

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<TSTF - 418 not shown> (25)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	K.2 Reduce THERMAL POWER to < P-7.	12 hours (1)
L. One Reactor Coolant Pump Breaker Position channel inoperable.	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.	(1)
	L.1 Restore channel to OPERABLE status.	6 hours
	OR	
	L.2 Reduce THERMAL POWER to < P-8.	10 hours
M. One Turbine Trip channel inoperable.	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.	(1)
	M.1 Place channel in trip.	6 hours
	OR	
	M.2 Reduce THERMAL POWER to < [P-9].	10 hours

TSTF-418 not shown 25

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-1 ACTION 1 — J N. One train inoperable.	- NOTE - One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE.	
	J N.1 Restore train to OPERABLE status.	6 hours (24) TSTF-418 (6) (7) (1)
	OR	
	N.2 Be in MODE 3.	12 hours (1)
Table 3.3-1 Action 15 — K O. One RTB train inoperable.	- NOTE - 1. One train may be bypassed for up to (4) 2 hours for surveillance testing, provided the other train is OPERABLE. 2. One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE. (Table 3.3-1 Action 13)	(1) TSTF-411
	K O.1 Restore train to OPERABLE status.	1 hour 24 hours TSTF-411 (1)
	OR	
	O.2 Be in MODE 3.	7 hours (1)

 <TSTF-418 not shown> 25

RTS Instrumentation
3.3.1

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
(L) P. One or more channels inoperable.	P.1 (L)	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	P.2	Be in MODE 3.	7 hours
Q. One or more channels inoperable.	Q.1	Verify interlock is in required state for existing unit conditions.	1 hour
	OR		
	Q.2	Be in MODE 2.	7 hours
(M) R. One trip mechanism inoperable for one RTB.	R.1 (M)	Restore inoperable trip mechanism to OPERABLE status.	48 hours
	OR		
	R.2	Be in MODE 3.	54 hours

DOC L.8 (1)

Table 3.3-1 Action 13 (1)

INSERT 2 (1)

4.3.1.1.1

SURVEILLANCE REQUIREMENTS

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

Table 4.3-1, Functions 2, 5-15

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Perform CHANNEL CHECK.	12 hours

CTS

(1) **INSERT 2**

CTS	Condition	Required Action	Completion Time
DOC M.7	N. Required Action and associated Completion Time of Condition D not met for Function 8.a, 9, 10, 11, 12, 13, 16.a, or 16.b.	N.1 Reduce THERMAL POWER to < P-7.	6 hours
DOC L.8	O. Required Action and associated Completion Time of Condition L not met for Function 18.b, 18.c, or 18.e.	O.1 Be in MODE 2.	6 hours
Table 3.3-1 Actions 1, 12, and 15	P. Required Action and associated Completion Time of Condition B, J, K, or M not met in MODE 1 or 2.	P.1 Be in MODE 3.	6 hours
	<u>OR</u>		
DOC M.4	Required Action and associated Completion Time of Condition C not met.		
	<u>OR</u>		
DOC M.7	Required Action and associated Completion Time of Condition D not met for Function 2.b, 3.a, 3.b, 6, 7, 8.b, 14, or 15.		
	<u>OR</u>		
DOC L.8	Required Action and associated Completion Time of Condition L not met for Function 18.a or 18.d.		

Insert Page 3.3.1-7a

CTS

(1) **INSERT 2 (continued)**

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-1 Actions 12 and 14	Q. Required Action and associated Completion Time of Condition B not met in MODE 3, 4, or 5.	Q.1 Initiate action to fully insert all rods.	Immediately
		AND	
	OR	Q.2 Place the Rod Control System in a condition incapable of rod withdrawal.	1 hour
DOC L.8	Required Action and associated Completion Time of Condition L not met in MODE 3, 4, or 5 for Function 18.a.		
	OR		
Table 3.3-1 Action 4	Required Action and associated Completion Time of Condition I not met.		

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY	
Table 4.3-1 Function 2, including Notes 2 and 8	SR 3.3.1.2	- NOTES - 1. Adjust NIS channel if absolute difference is > 2%. 2. Not required to be performed until [12] hours after THERMAL POWER is ≥ 15% RTP.		7
		Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	24 hours	TSTF-371 not shown, 26
Table 4.3-1 Function 2, including Notes 3 and 8	SR 3.3.1.3	- NOTES - 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until [24] hours after THERMAL POWER is ≥ [15]% RTP.		7
		Compare results of the incore detector measurements to NIS AFD.	31 effective full power days (EFPD)	
Table 4.3-1 Functions 21.A, 21.B, and 23, including Notes 5 and 12	SR 3.3.1.4	- NOTE - This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service.		
		Perform TADOT.	(62) [31] days on a STAGGERED TEST BASIS	TSTF-411
Table 4.3-1 Function 22, including Note 15, 4.3.1.1.2	SR 3.3.1.5	Perform ACTUATION LOGIC TEST. (92)	[31] days on a STAGGERED TEST BASIS	TSTF-411

INSERT 3 (8)

CTS

(8)

INSERT 3

Table 4.3-1 Function 19, including Note 15	SR 3.3.1.6	--- -NOTE- The manual portion of the Safety Injection (SI) Input from ESFAS Function is excluded from the TADOT. --- Perform TADOT.	92 days on a STAGGERED TEST BASIS

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DOC M.13 SR 3.3.1.6 7	- NOTE - Not required to be performed until [24] hours after THERMAL POWER is ≥ 50% RTP. Calibrate excore channels to agree with incore detector measurements.	[92] EFPD 8 7
Table 4.3-1 Functions 2.a, 2.b, 3, 4 SR 3.3.1.7 8	- NOTE - Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. 9 Perform COT.	~~[92]~~ days 184 92 7 TSTF-411 8

CTS

INSERT 4 (8) (9)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.8 (10)	- NOTE - (5) This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. (10) Perform COT. INSERT 5 (9)	- NOTE - Only required when not performed within previous [92] days (9) Prior to reactor startup AND Four hours after reducing power below P-6 for source range instrumentation (9) AND [Twelve] hours after reducing power below P-10 for power and intermediate range instrumentation (9) AND Every [92] days thereafter (184) (TSTF-411)
SR 3.3.1.9 2 (11)	- NOTE - Verification of setpoint is not required. Perform TADOT.	[92] days (184) (7)

INSERT 5A (8)

Table 4.3-1 Functions 5 through 12, 14, and 15

Table 4.3-1 Functions 16 and 17

8

INSERT 4

Table 4.3-1 Function 2, including Note 6	SR 3.3.1.9	--- -NOTE- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	92 days

9

INSERT 5

1. For Function 4, not required to be performed until 12 hours after THERMAL POWER is below the P-10 interlock.

2 For Function 5, not required to be performed until 4 hours after THERMAL POWER is below the P-6 interlock.

8

INSERT 5A

Table 4.3-1 Function 16, DOC M.16	SR 3.3.1.12	Perform CHANNEL CALIBRATION.	184 days

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
Table 4.3-1 Functions 9 through 17, 4.3.1.1.2, DOC M.14	SR 3.3.1.10 (13) ------- - NOTE - This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ------- Perform CHANNEL CALIBRATION.	(11) 18 (24) months (7) (8)
Table 4.3-1 Functions 3 through 6, including Note 6, 4.3.1.1.2	SR 3.3.1.11 (14) ------- - NOTE - Neutron detectors are excluded from CHANNEL CALIBRATION. ------- Perform CHANNEL CALIBRATION.	18 (24) months (7) (8)
Table 4.3-1 Functions 7 and 8 and Note 9	SR 3.3.1.12 (15) ------- - NOTE - (5) (1) This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate. INSERT 6 ------- Perform CHANNEL CALIBRATION.	(9) 18 (24) months (7) (8)
4.3.1.1.2	SR 3.3.1.13 (16) Perform COT.	18 (24) months (7) (8)
Table 4.3-1 Functions 1, 19, including Note 4, and 20	SR 3.3.1.14 (17) ------- - NOTE - Verification of setpoint is not required. (21) ------- Perform TADOT. INSERT 7 (22)	18 (24) months (7) (8)
Table 4.3-1 Functions 18.a and 18.b	SR 3.3.1.15 (18) ------- - NOTE - Verification of setpoint is not required. ------- Perform TADOT.	Prior to exceeding the P-9 (P-7) interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days (7) (8)

9

INSERT 6

2. Normalization of the ΔT is not required to be performed until 72 hours after THERMAL POWER is ≥ 98% RTP.

22

INSERT 7

The automatic portion of the SI Input from ESFAS Function is excluded from the TADOT.

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CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.3.1.1.3 SR 3.3.1.16 ← 19	- NOTE - Neutron detectors are excluded from response time testing. Verify RTS RESPONSE TIME is within limits.	18 ← 24 (7) months on a STAGGERED TEST BASIS (8)

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Table 3.3.1-1 (page 1 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.14	NA	NA
	3(a), 4(a), 5(a)	2	C	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ [111.2]% RTP	[109]% RTP
b. Low	1(b),2	4	E	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ [27.2]% RTP	[25]% RTP
3. Power Range Neutron Flux Rate						
a. High Positive Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11	≤ [6.8]% RTP with time constant ≥ [2] sec	[5]% RTP with time constant ≥ [2] sec
b. High Negative Rate	1,2	4	E	SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ [6.8]% RTP with time constant ≥ [2] sec	[5]% RTP with time constant ≥ [2] sec
4. Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ [31]% RTP	[25]% RTP
5. Source Range Neutron Flux	2(d)	2	H,I	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ [1.4 E5] cps	[1.0 E5] cps
	3(a), 4(a), 5(a)	2	I,J	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ [1.4 E5] cps	[1.0 E5] cps

(a) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(b) Below the P-10 (Power Range Neutron Flux) interlocks.

(c) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

<TSTF-418 not shown> (25)

CTS Tables 3.3-1 4.3-1 2.2-1

Table 3.3.1-1 (page 2 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Overtemperature ΔT	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 1 (Page 3.3.1-16)	Refer to Note 1 (Page 3.3.1-16)
7. Overpower ΔT	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 2 (Page 3.3.1-17)	Refer to Note 2 (Page 3.3.1-17)
8. Pressurizer Pressure						
a. Low	1(f)	[4]	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [1886] psig	[1900] psig
b. High	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ [2396] psig	[2385] psig
9. Pressurizer Water Level - High	1(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ [93.8]%	[92]%
10. Reactor Coolant Flow - Low	1(f)	3 per loop	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [89.2]%	[90]%
11. Reactor Coolant Pump (RCP) Breaker Position						
a. Single Loop	1(f)	1 per RCP	L	SR 3.3.1.14	NA	NA
b. Two Loops	1(g)	1 per RCP	K	SR 3.3.1.14	NA	NA

(e) Above the P-7 (Low Power Reactor Trips Block) interlock.

(f) Above the P-8 (Power Range Neutron Flux) interlock.

(g) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) Interlock

<TSTF - 418 not shown> (25)

CTS Tables 3.3-1 4.3-1 2.2-1

Table 3.3.1-1 (page 3 of 6)
Reactor Trip System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS (7)	CONDITIONS (1)	SURVEILLANCE REQUIREMENTS (8)	ALLOWABLE VALUE (7)	NOMINAL TRIP SETPOINT (12)
(16) (16) (15)	12. Undervoltage RCPs	1(e)	[3] per bus (1)	[K] (D)	SR 3.3.1.[9] (11) SR 3.3.1.[10] (12) SR 3.3.1.[16] (19)	≥ [4760] V (2725 (Unit 1) and 2870 (Unit 2))	[4830] V
(17) (17) (16)	13. Underfrequency RCPs	1(e)	[3] per bus	[K]	SR 3.3.1.[9] (11) SR 3.3.1.[10] (13) SR 3.3.1.[16] (19)	≥ [57.1] Hz (58.22 (Unit 1) and 57.02 (Unit 2))	[57.5] Hz
(14) (14) (13)	14. Steam Generator (SG) Water Level - Low Low	1,2	[4] per SG (3)	E	SR 3.3.1.1 SR 3.3.1.[7] (10) SR 3.3.1.[10] (13) SR 3.3.1.[16] (19)	≥ [30.4]% (4.0 (Unit 1) and 20.8 (Unit 2))	[32.3]%
(15) (15) (14)	15. SG Water Level - Low	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.[7] (10) SR 3.3.1.[10] (13) ~~SR 3.3.1.16~~ (13)	≥ [30.4]% (9.7 (Unit 1) and 25.0 (Unit 2))	[32.3]%
	Coincident with Steam Flow/ Feedwater Flow Mismatch	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.[7] (10) SR 3.3.1.[10] (13) ~~SR 3.3.1.16~~	≤ [42.5]% full steam flow at RTP (0.73 E6 lb/hr (Unit 1) and 1.56 E6 lb/hr (Unit 2))	[40]% full steam flow at RTP
	16. Turbine Trip						
(18A) (18A) (17A)	a. Low Fluid Oil Pressure	1[(h)] (e) (18)	3	[M] (D)	SR 3.3.1.[10] (13) SR 3.3.1.[15] (18)	≥ [750] psig ((Unit 1) and ≥ 57 psig (Unit 2))	[800] psig
(18B) (18B) (17B)	b. Turbine Stop Valve Closure	1[(h)] (e)	4 (per train (24))	[M]	SR 3.3.1.[10] (13) SR 3.3.1.[15] (18)	≥ [1]% open	[1]% open
(19) (19) (18)	17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	[N] (J)	SR 3.3.1.[14] (17) SR 3.3.1.19 SR 3.3.1.6 (8)	NA	NA

Table 3.3-1 P-7 — (e) Above the P-7 (Low Power Reactor Trips Block) interlock.

~~(h) Above the P-[9] (Power Range Neutron Flux) interlock.~~ (18)

<TSTF-418 not shown> (25)

CTS

Tables 3.3-1 4.3-1 2.2-1

Table 3.3.1-1 (page 4 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
18. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2[(d)]	2	H	SR 3.3.1.11 SR 3.3.1.13	≥ [6E-11] amp	[1E-10] amp
b. Low Power Reactor Trips Block, P-7	1[(c)]	1 per train	I	SR 3.3.1.11 SR 3.3.1.13	NA	NA
c. Power Range Neutron Flux, P-8	1	4	I	SR 3.3.1.11 SR 3.3.1.13	≤ [50.2]% RTP	[48]% RTP
d. Power Range Neutron Flux, P-9	1	4	Q	SR 3.3.1.11 SR 3.3.1.13	≤ [52.2]% RTP	[50]% RTP
e. Power Range Neutron Flux, P-10	1,2	4	H	SR 3.3.1.11 SR 3.3.1.13	≥ [7.8]% RTP and ≤ [12.2]% RTP	[10]% RTP
f. Turbine Impulse Pressure, P-13	1	2	I	SR 3.3.1.1 SR 3.3.1.10 SR 3.3.1.13	≤ [12.2]% turbine power	[10]% turbine power
19. Reactor Trip Breakers[(i)] (RTBs)	1,2	2 trains	R	SR 3.3.1.4	NA	NA
	3[(b)], 4[(b)], 5[(b)]	2 trains	C	SR 3.3.1.4	NA	NA
20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per RTB	U	SR 3.3.1.4	NA	NA
	3[(b)], 4[(b)], 5[(b)]	1 each per RTB	C	SR 3.3.1.4	NA	NA
21. Automatic Trip Logic	1,2	2 trains	N	SR 3.3.1.5	NA	NA
	3[(b)], 4[(b)], 5[(b)]	2 trains	C	SR 3.3.1.5	NA	NA

(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(i) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

- REVIEWER'S NOTE -
(a) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

37 psig (unit 1) and 51 psig (unit 2)

Table 3.3.1-1 (page 5 of 6)
Reactor Trip System Instrumentation

CTS

Note 1: Overtemperature ΔT

Table 2.1-1 Notes 1 and 3

The Overtemperature ΔT Function Allowable Value shall not exceed the following nominal Trip Setpoint by more than [3.8]% of ΔT span. 0.008 (Unit 1) and 0.012 (Unit 2) (7)

$$\Delta T \frac{(1+\tau_1 s)}{(1+\tau_2 s)}\left(\frac{1}{1+\tau_3 s}\right) \le \Delta T_0 \left\{K_1 - K_2\frac{(1+\tau_4 s)}{(1+\tau_5 s)}\left[T\frac{1}{(1+\tau_6 s)} - T'\right] + K_3(P-P') - f_1(\Delta I)\right\}$$

(20) (2) (20)

Where: ΔT is measured RCS ΔT,°F.
ΔT₀ is the indicated ΔT at RTP,°F.
s is the Laplace transform operator, sec^{-1}.
T is the measured RCS average temperature,°F.
T' is the nominal T_{avg} at RTP, ≤ [*]°F.

P is the measured pressurizer pressure, psig
P' is the nominal RCS operating pressure, ≥ [*] psig

K_1 ≤ [*]	K_2 ≥ [*]/°F	K_3 ≥ [*]/psig
τ_1 ≥ [*] sec	τ_2 ≤ [*] sec	τ_3 ≤ [*] sec
τ_4 ≥ [*] sec	τ_5 ≤ [*] sec	τ_6 ≤ [*] sec

(20)

$f_1(\Delta I)$ =	[*] {[*] + (q_t - q_b)}	when q_t - q_b ≤ - [*]% RTP
	0% of RTP	when -[*]% RTP < q_t - q_b ≤ [*]% RTP
	-[*] {(q_t - q_b) - [*]}	when q_t - q_b > [*]% RTP

Where q_t and q_b are percent RTP in the upper and lower halves of the core, respectively, and q_t + q_b is the total THERMAL POWER in percent RTP.

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

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Table 3.3.1-1 (page 6 of 6)
Reactor Trip System Instrumentation

CTS

Table 2.1-1
Notes 2 and 4

Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following nominal Trip Setpoint by more than 3% of ΔT span. 0.037 (Unit 1) and 0.038 (Unit 2) (7)

$$\Delta T \frac{(1+\tau_1 s)}{(1+\tau_2 s)}\left(\frac{1}{1+\tau_3 s}\right) \le \Delta T_0 \left\{K_4 - K_5 \frac{\tau_7 s}{1+\tau_7 s}\left(\frac{1}{1+\tau_6 s}\right) T - K_6\left[T\left(\frac{1}{1+\tau_6 s}\right) - T''\right] - f_2(\Delta I)\right\}$$ (20)

Where: ΔT is measured RCS ΔT, °F.
ΔT_0 is the indicated ΔT at RTP, °F.
s is the Laplace transform operator, sec^{-1}.
T is the measured RCS average temperature, °F.
T'' is the nominal T_{avg} at RTP, ≤ [*]°F.

K_4 ≤ [*]

K_5 ≥ [*]/°F for increasing T_{avg}
[*]/°F for decreasing T_{avg}

K_6 ≥ [*]/°F when T > T''
[*]/°F when T ≤ T''

τ_1 ≥ [*] sec
τ_2 ≤ [*] sec
τ_3 ≤ [*] sec
τ_6 ≤ [*] sec
τ_7 ≥ [*] sec (20)

$f_2(\Delta I)$ = [*]

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

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

1. ISTS 3.3.1 ACTIONS B, C, D, E, J, K, L, M, N, O, P, Q, and R provide Required Actions and associated Completion Times for various RTS instrumentation inoperabilities. Each of these ACTIONS include Required Actions to either trip a channel or restore a channel to OPERABLE status (depending on the associated RTS Instrumentation Function). Each of these ACTIONS also include Required Actions that require placing the unit outside the applicable MODE or condition of the associated RTS Instrumentation Function (i.e., default Required Action). In each of these ACTIONS, the Required Actions to restore or trip the affected channels are connected to the default Required Action by the logical connector "OR." The Completion Times for the Required Actions to restore or trip affected channels are inconsistent with the Completion Times for the default Required Actions. This presentation is inconsistent with the format and convention used in all but one other specification in ISTS 3.3, all other sections of the ISTS, and other NSSS vendor ISTS (e.g., NUREG-1433, Revision 2 and NUREG-1434, Revision 2). This presentation can also cause confusion with respect to the correct application of the requirements of ISTS Section 3.0, "LCO Applicability." For example, ISTS LCO 3.0.4 includes an exception that allows entry into an applicable MODE or other specified condition when an LCO is not met if the ACTIONS permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. However, with an ACTION that includes both the Required Action to trip a channel and the default Required Action to exit the applicable MODE, it could be argued that this ACTION would not allow continued operation. Therefore, these ACTIONS have been revised or deleted to eliminate the default Required Actions from the ACTIONS with Required Actions to restore or trip the affected channels. As a result, additional ACTIONS (ITS 3.3.1 ACTIONS N, O, P, and Q) have been added, which include the default Required Actions consistent with placing the unit outside the applicable MODE or other specified condition of the associated RTS Instrumentation Function. In addition, ISTS ACTIONS K, L, and M have been incorporated in ITS ACTION D since the bypass time and Completion Times are the same. Subsequent Conditions and Required Actions have been renumbered, as necessary.

2. ISTS 3.3.1 Functions 1 (Manual Reactor Trip), 19 (Reactor Trip Breakers (RTBs), 20 (Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms), and 21 (Automatic Trip Logic) during shutdown conditions require entry into ISTS 3.3.1 ACTION C. ISTS 3.3.1 ACTION C has been deleted based on the discussion in JFD 1 above. Since the Required Action and associated Completion Time of ISTS 3.3.1 Required Actions B.1 and C.1 are similar, ITS Table 3.3.1-1, for Functions 1, 19, 20, and 21, has been revised to require entry into ITS 3.3.1 ACTION B, instead of ISTS 3.3.1 ACTION C. Since ISTS 3.3.1-1 Functions 19 and 21 require "2 trains" to be OPERABLE, ISTS 3.3.1 ACTION B (ITS 3.3.1 ACTION B) has been revised to address an inoperable train.

3. The ISTS 3.3.1 ACTION E Note (ITS 3.3.1 ACTION D Note) has been modified to exclude Function 11 channels. This change is necessary since the 4 hour bypass time is not supported by WCAP-10271-A for the Function 11 channels.

4. ISTS 3.3.1 ACTION D (ITS 3.3.1 ACTION C) provides requirements for an inoperable Power Range Neutron Flux - High channel. ISTS 3.3.1 Required Actions D.1.2 , D.2.1, and D.2.2 include requirements that are duplicative of the requirements in the Surveillance Requirements for ISTS 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)" (ITS 3.2.4). In addition, the inoperability of the RTS

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

Power Range Neutron Flux - High channel does not necessarily result in the Power Range Neutron Flux Monitor being inoperable such that QPTR cannot be determined. Therefore, ITS 3.3.1 ACTION D has been revised to delete the duplicative requirements.

5. The ISTS 3.3.1 ACTIONS NOTE has been revised to allow separate Condition entry for certain Functions specified on a loop or steam generator basis. This change is acceptable since the channels associated with each loop or steam generator, as applicable, will provide the associated RTS trip based on the logic associated with the channels on the specified basis. This change has been made to be consistent with the allowances specified in the Bases for ISTS 3.3.2 for similar type Functions and the modified ACTIONS Note in ITS 3.3.2.

6. TSTF-286, Rev. 2, was approved by the NRC on April 13, 2000. When NUREG-1431, Rev. 2, was issued, this TSTF was incorporated, but included a typographical error. Therefore, this change corrects the typographical error to be consistent with the approved TSTF-286, Rev. 2.

7. The brackets are removed and the proper plant specific information/value is provided.

8. ITS SR 3.3.1.6 (Perform TADOT once per 92 days on a STAGGERED TEST BASIS), SR 3.3.1.9 (Perform CHANNEL CALIBRATION once per 92 days) and ITS SR 3.3.1.12 (Perform CHANNEL CALIBRATION once per 184 days) have been added to ISTS 3.3.1 to be consistent with the CNP Units 1 and 2 CTS. Subsequent SRs have been renumbered, as necessary. In addition, an ACTUATION LOGIC TEST (ITS SR 3.3.1.5) has been added for the RTS Interlock Functions (ITS Table 3.3.1-1 Functions 18.a through e) and an RTS RESPONSE TIME test (ITS SR 3.3.1.19) has been added for ITS Table 3.3.1-1 Function 17 (SI Input From ESFAS), consistent with the current licensing basis requirements. The addition of ITS SR 3.3.1.5 for Function 18.b is also consistent with approved TSTF-347. However, the deletion of the other two SRs of Function 18.b has not been adopted, since the SRs are required for OPERABILITY of Function 18.b.

9. The Notes in ISTS SR 3.3.1.7 and ISTS SR 3.3.1.8 provide allowances to enter the applicable MODES or other specified conditions without having performed the required COT. The allowances of these ISTS Notes have been incorporated into the ITS SR for performance of a COT only for the intermediate range and source range neutron flux instrumentation (ITS SR 3.3.1.10, Notes 1 and 2). The allowances for the power range neutron flux instrumentation are not needed. A similar Note has also been provided for ISTS SR 3.3.1.12 (ITS SR 3.3.1.15) for ITS Table 3.3.1-1 Function 6 (Overtemperature ΔT) and Function 7 (Overpower ΔT), to reflect the CNP Units 1 and 2 CTS allowances and current practice.

10. The Note to ISTS SR 3.3.1.8 (ITS SR 3.3.1.10) associated with the verification that the P-6 and P-10 are in their required state for existing unit conditions has been deleted consistent with the CNP Units 1 and 2 CTS. This change is acceptable since these verifications are made more frequently since status of the interlocks is available in the control room. In addition, this type of verification is not normally part of a COT.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

11. A Note to ISTS SR 3.3.1.10 requires the CHANNEL CALIBRATION to include verification that time constants are adjusted to the prescribed values. ITS SR 3.3.1.13 does not include this Note since it does not apply to any ITS Table 3.3.1-1 Functions that include time constants.

12. The Nominal Trip Setpoint column has been deleted as allowed by the Reviewer's Note at the end of ISTS Table 3.3.1-1. This Reviewer's Note allows the unit specific implementation to contain only the Allowable Value. The nominal trip setpoints for each of the applicable ITS Table 3.3.1-1 Functions will be controlled in accordance with the Note in the ISTS 3.3.1 Bases Background section.

13. ISTS SR 3.3.1.16 (ITS SR 3.3.1.19) requires verification that RTS RESPONSE TIME is within limits. This requirement has been deleted from ITS Table 3.3.1-1 Functions 3.b (Power Range Neutron Flux Rate - High Negative Rate), 5 (Source Range Neutron Flux), and 15 (SG Water Level - Low Coincident with Steam Flow/Feedwater Flow Mismatch) and has been added to Function 9 (Pressurizer Water Level - High). These changes are made to achieve consistency with the CNP Units 1 and 2 current licensing basis reflected in UFSAR Table 7.2-6.

14. ISTS SR 3.3.1.3 (ITS SR 3.3.1.3), which requires the comparison of results of the incore detector measurements to NIS AFD, has been added to the Surveillance Requirements for ITS Table 3.3.1-1 Function 2.a (Power Range Neutron Flux - High) and deleted from the Surveillance Requirements for Function 6 (Overtemperature ΔT). These changes are made to achieve consistency with the CNP Units 1 and 2 CTS.

15. The Footnotes which modify the Applicability of ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Functions 8.a (Pressurizer Pressure - Low), 10 (Reactor Coolant Flow - Low), and 11 (Reactor Coolant Pump (RCP) Breaker Position) have been revised to be consistent with the CNP Units 1 and 2 current design and licensing basis. As a result of this change, ISTS Table 3.3.1-1 Footnotes (f) and (g) are deleted since they are not used. In addition, ISTS Table 3.3.1-1 Functions 11.a (Reactor Coolant Pump (RCP) Breaker Position Single Loop) and 11.b (Reactor Coolant Pump (RCP) Breaker Position Two Loop) requirements are revised into a single requirement (ITS Table 3.3.1-1 Function 11) to be consistent with the CNP Units 1 and 2 current design and licensing basis. Subsequent footnotes are renumbered, as necessary.

16. Editorial changes made for enhanced clarity or to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03.

17. The Applicability for the RTS P-6 Interlock Function has been revised to be consistent with the Functions it supports. The P-6 interlock prevents or defeats the manual block of the Source Range Neutron Flux reactor trip. The logic is such that both channels are required to defeat the block of the Source Range Neutron Flux reactor trip. Therefore, if any one of the two interlock channels are inoperable and not in the correct state, the Required Action should be consistent with ACTIONS for when two Source Range Neutron Flux reactor trip channels are inoperable. Therefore ISTS 3.3.1 Required Action P.2 (ITS 3.3.1 Required Actions Q.1 and Q.2) has been changed to reflect exiting the applicable MODE or other specified condition.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

18. The P-9 Interlock Function and Footnotes referencing the P-9 Interlock Function have been deleted since the interlock does not apply to the RTS Instrumentation. The Applicable Modes for ITS Table 3.3.1-1 Functions 16.a (Turbine Trip - Low Fluid Oil Pressure) and 16.b (Turbine Trip - Turbine Stop Valve Closure) have been corrected as necessary to reflect the unit design. Subsequent Functions and Footnotes have been renumbered, as necessary.

19. The Reviewer's Note has been deleted since it is not intended to be included in the ITS.

20. Changes to the ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Note 1 (the Overtemperature ΔT Allowable Value) and Note 2 (Overpower ΔT Allowable Value) have been made to be consistent with the CNP Units 1 and 2 CTS.

21. ISTS SR 3.3.1.14 (ITS SR 3.3.1.17) requires the performance of a TADOT for ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Functions 1 (Manual Reactor Trip), 11 (Reactor Coolant Pump (RCP) Breaker Position), and 17 (Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)). ISTS SR 3.3.1.14 is modified by a Note, which states "Verification of setpoint is not required." ITS Table 3.3.1-1 Functions 1, 11, and 17 do not have required setpoints. The ISTS definition of TADOT states "The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy." Since no required setpoints apply for ITS Table 3.3.1-1 Functions 1, 11, and 17, the TADOT definition does not require verification of setpoints. Therefore, the Note to ISTS SR 3.3.1.14 is unnecessary and has been deleted.

22. ISTS SR 3.3.1.14 requires the performance of a TADOT once per [18] months. ISTS SR 3.3.1.14 applies, in part, to ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Function 17 (Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)). A Note is added to ISTS SR 3.3.1.14 (ITS SR 3.3.1.17) that states that automatic portion of the SI Input from ESFAS Function is excluded for the TADOT. This change is made to achieve consistency with the CNP Units 1 and 2 CTS.

23. ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Function 18 (Reactor Trip System Interlocks) has been revised to reflect the CNP specific design and nomenclature.

24. ISTS Table 3.3.1-1 (ITS Table 3.3.1-1) Function 16.b (Turbine Trip - Turbine Stop Valve Closure) has been revised to reflect the plant design. For Unit 1, each turbine stop valve includes a limit switch that provides input to two contacts (channels). One contact (channel) provides input to Train A while the other contact (channel) provides input to Train B. For Unit 2, each turbine stop valve includes two limit switches. One limit switch (channel) provides input to Train A while the other limit switch (channel) provides input to Train B. Since there are four stop valves installed in each unit, the LCO states that 4 channels per train are required to be OPERABLE.

25. TSTF-418, Rev. 2, which incorporates WCAP-14333, has not been adopted.

26. Approved TSTF-371, Rev. 1 provided a less restrictive change to ISTS SR 3.3.1.2 and ISTS SR 3.3.1.3 that would allow the acceptance criteria for the Nuclear Instrumentation System to be changed from $\underline{+}$ 2% RTP to + 2% RTP. The TSTF

required a plant-specific evaluation. This has not been performed for CNP, thus this less restrictive change is not being adopted.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Trip System (RTS) Instrumentation

BASES

BACKGROUND

The RTS initiates a unit shutdown, based on the values of selected unit parameters, to protect against violating the core fuel design limits and Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs) and to assist the Engineered Safety Features (ESF) Systems in mitigating accidents.

The protection and monitoring systems have been designed to assure safe operation of the reactor. This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RTS, as well as specifying LCOs on other reactor system parameters and equipment performance.

Technical specifications are required by 10 CFR 50.36 to contain LSSS defined by the regulation as "...settings for automatic protective devices...so chosen that automatic protective action will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytic Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytic Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protective devices must be chosen to be more conservative that the Analytic Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur.

The Trip Setpoint is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the Analytic Limit and thus ensuring that the SL would not be exceeded. As such, the Trip Setpoint accounts for uncertainties in setting the device (e.g. calibration), uncertainties in how the device might actually perform (e.g., repeatability), changes in the point of action of the device over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the Trip Setpoint plays an important role in ensuring that SLs are not exceeded. As such, the Trip Setpoint meets the definition of an LSSS (Ref. 10) and could be used to meet the requirement that they be contained in the technical specifications.

Technical specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is

BASES

BACKGROUND (continued)

defined in technical specifications as "...being capable of performing its safety functions(s)." For automatic protective devices, the required safety function is to ensure that a SL is not exceeded and therefore the LSSS as defined by 10 CFR 50.36 is the same as the OPERABILITY limit for these devices. However, use of the Trip Setpoint to define OPERABILITY in technical specifications and its corresponding designation as the LSSS required by 10 CFR 50.36 would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as found" value of a protective device setting during a surveillance. This would result in technical specification compliance problems, as well as reports and corrective actions required by the rule which are not necessary to ensure safety. For example, an automatic protective device with a setting that has been found to be different from the Trip Setpoint due to some drift of the setting may still be OPERABLE since drift is to be expected. This expected drift would have been specifically accounted for in the setpoint methodology for calculating the Trip Setpoint and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as found" setting of the protective device. Therefore, the device would still be OPERABLE since it would have performed its safety function and the only corrective action required would be to reset the device to the Trip Setpoint to account for further drift during the next surveillance interval.

Use of the Trip Setpoint to define "as found" OPERABILITY and its designation as the LSSS under the expected circumstances described above would result in actions required by both the rule and technical specifications that are clearly not warranted. However, there is also some point beyond which the device would have not been able to perform its function due, for example, to greater than expected drift. This value needs to be specified in the technical specifications in order to define OPERABILITY of the devices and is designated as the Allowable Value which, as stated above, is the same as the LSSS.

The Allowable Value specified in Table 3.3.1-1 serves as the LSSS such that a channel is OPERABLE if the trip setpoint is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). As such, the Allowable Value differs from the Trip Setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a Safety Limit is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the surveillance interval. Note that, although the channel is "OPERABLE" under these circumstances,

BASES

BACKGROUND (continued)

the trip setpoint should be left adjusted to a value within the established trip setpoint calibration tolerance band, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned. If the actual setting of the device is found to have exceeded the Allowable Value the device would be considered inoperable from a technical specification perspective. This requires corrective action including those actions required by 10 CFR 50.36 when automatic protective devices do not function as required. (2)

[Note: Alternatively, a TS format incorporating an Allowable Value only column may be proposed by a licensee. In this case the trip setpoint value of Table 3.3.1-1 is located in the TS Bases or in a licensee-controlled document outside the TS. Changes to the trip setpoint value would be controlled by 10 CFR 50.59 or administratively as appropriate, and adjusted per the setpoint methodology and applicable surveillance requirements. At their option, the licensee may include the trip setpoint in Table 3.3.1-1 as shown, or as suggested by the licensees' setpoint methodology or license.] (3)

anticipated operational transients

During AOOs, which are those events expected to occur one or more times during the unit life, the acceptable limits are: (1)

1. The Departure from Nucleate Boiling Ratio (DNBR) shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling (DNB), ; (11)

2. Fuel centerline melt shall not occur, and ; (11)

3. The RCS pressure SL of 2750 psia shall not be exceeded.

Operation within the SLs of Specification 2.0, "Safety Limits (SLs)," also maintains the above values and assures that offsite dose will be within the 10 CFR 50 and 10 CFR 100 criteria during AOOs. (1)

Accidents are events that are analyzed even though they are not expected to occur during the unit life. The acceptable limit during accidents is that offsite dose shall be maintained within an acceptable fraction of 10 CFR 100 limits. Different accident categories are allowed a different fraction of these limits, based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event.

BASES

BACKGROUND (continued)

The RTS instrumentation is segmented into four distinct but interconnected modules as illustrated in Figure [ ], FSAR, Chapter [7] (Ref. 1), and as identified below:

1. Field transmitters or process sensors: provide a measurable electronic signal based upon the physical characteristics of the parameter being measured;

2. Signal Process Control and Protection System, including Analog Protection System, Nuclear Instrumentation System (NIS), field contacts, and protection channel sets: provides signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications;

3. Solid State Protection System (SSPS), including input, logic, and output bays: initiates proper unit shutdown and/or ESF actuation in accordance with the defined logic, which is based on the bistable outputs from the signal process control and protection system; and

4. Reactor trip switchgear, including reactor trip breakers (RTBs) and bypass breakers: provides the means to interrupt power to the control rod drive mechanisms (CRDMs) and allows the rod cluster control assemblies (RCCAs), or "rods," to fall into the core and shut down the reactor. The bypass breakers allow testing of the RTBs at power.

Field Transmitters or Sensors

To meet the design demands for redundancy and reliability, more than one, and often as many as four, field transmitters or sensors are used to measure unit parameters. To account for the calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the trip setpoint and Allowable Values. The OPERABILITY of each transmitter or sensor is determined by either "as-found" calibration data evaluated during the CHANNEL CALIBRATION or by qualitative assessment of field transmitter or sensor as related to the channel behavior observed during performance of the CHANNEL CHECK.

BASES

BACKGROUND (continued)

Signal Process Control and Protection System

Generally, three or four channels of process control equipment are used for the signal processing of unit parameters measured by the field instruments. The process control equipment provides signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with setpoints established by safety analyses. These setpoints are defined in FSAR, Chapter [7] (Ref. 1), Chapter [6] (Ref. 2), and Chapter [15] (Ref. 3). If the measured value of a unit parameter exceeds the predetermined setpoint, an output from a bistable is forwarded to the SSPS for decision evaluation. Channel separation is maintained up to and through the input bays. However, not all unit parameters require four channels of sensor measurement and signal processing. Some unit parameters provide input only to the SSPS, while others provide input to the SSPS, the main control board, the unit computer, and one or more control systems.

Generally, if a parameter is used only for input to the protection circuits, three channels with a two-out-of-three logic are sufficient to provide the required reliability and redundancy. If one channel fails in a direction that would not result in a partial Function trip, the Function is still OPERABLE with a two-out-of-two logic. If one channel fails, such that a partial Function trip occurs, a trip will not occur and the Function is still OPERABLE with a one-out-of-two logic.

Generally, if a parameter is used for input to the SSPS and a control function, four channels with a two-out-of-four logic are sufficient to provide the required reliability and redundancy. The circuit must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation. These requirements are described in IEEE-279-1971 (Ref. 4). The actual number of channels required for each unit parameter is specified in Reference 4.

Two logic channels are required to ensure no single random failure of a logic channel will disable the RTS. The logic channels are designed such that testing required while the reactor is at power may be accomplished without causing trip. Provisions to allow removing logic channels from service during maintenance are unnecessary because of the logic system's designed reliability.

1

INSERT 1

the Technical Requirements Manual (Ref. 3)

1

INSERT 2

Where a unit condition that requires protective action can be brought on by a failure or malfunction of the control system, and the same failure or malfunction prevents proper action of a protection system channel or channels designed to protect against the resultant unsafe condition, the remaining portions of the protection system shall be independently capable of withstanding a single failure and automatically initiating appropriate protective action. This is described in Reference 4. The protection system is designed to be independent of the status of the control system. However, the control system does derive signals from the protection systems through isolation amplifiers, which are part of the protection system. The isolation amplifiers prevent perturbation of the protection signal (input) due to disturbances of the isolated signal (output) which could occur near any termination of the output wiring external to the protection and safeguards racks. As such, other acceptable logic designs (e.g., two-out-of-three logic) exist for parameters that are used as inputs to SSPS and a control function.

BASES

BACKGROUND (continued)

Allowable Values and RTS Setpoints

The trip setpoints used in the bistables are based on the analytical limits stated in Reference 6. The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservative with respect to the analytical limits. A detailed description of the methodology used to calculate the Allowable Value and trip setpoints, including their explicit uncertainties, is provided in the "RTS/ESFAS Setpoint Methodology Study" (Ref. 6) which incorporates all of the known uncertainties applicable to each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint and corresponding Allowable Value. The trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value (LSSS) to account for measurement errors detectable by the COT. The Allowable Value serves as the Technical Specification OPERABILITY limit for the purpose of the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

The trip setpoint is the value at which the bistable is set and is the expected value to be achieved during calibration. The trip setpoint value ensures the LSSS and the safety analysis limits are met for surveillance interval selected when a channel is adjusted based on stated channel uncertainties. Any bistable is considered to be properly adjusted when the "as left" setpoint value is within the band for CHANNEL CALIBRATION uncertainty allowance (i.e., ± rack calibration + comparator setting uncertainties). The trip setpoint value is therefore considered a "nominal" value (i.e., expressed as a value without inequalities) for the purposes of COT and CHANNEL CALIBRATION.

Trip setpoints consistent with the requirements of the Allowable Value ensure that SLs are not violated during AOOs (and that the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed).

BASES

BACKGROUND (continued)

Each channel of the process control equipment can be tested on line to verify that the signal or setpoint accuracy is within the specified allowance requirements of Reference 8. Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. SRs for the channels are specified in the SRs section.

Solid State Protection System

The SSPS equipment is used for the decision logic processing of outputs from the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for maintenance or test purposes, the second train will provide reactor trip and/or ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is packaged in its own cabinet for physical and electrical separation to satisfy separation and independence requirements. The system has been designed to trip in the event of a loss of power, directing the unit to a safe shutdown condition.

The SSPS performs the decision logic for actuating a reactor trip or ESF actuation, generates the electrical output signal that will initiate the required trip or actuation, and provides the status, permissive, and annunciator output signals to the main control room of the unit.

The bistable outputs from the signal processing equipment are sensed by the SSPS equipment and combined into logic matrices that represent combinations indicative of various unit upset and accident transients. If a required logic matrix combination is completed, the system will initiate a reactor trip or send actuation signals via master and slave relays to those components whose aggregate Function best serves to alleviate the condition and restore the unit to a safe condition. Examples are given in the Applicable Safety Analyses, LCO, and Applicability sections of this Bases.

Reactor Trip Switchgear

The RTBs are in the electrical power supply line from the control rod drive motor generator set power supply to the CRDMs. Opening of the RTBs interrupts power to the CRDMs, which allows the shutdown rods and control rods to fall into the core by gravity. Each RTB is equipped with a bypass breaker to allow testing of the RTB while the unit is at power.

BASES

BACKGROUND (continued)

During normal operation the output from the SSPS is a voltage signal that energizes the undervoltage coils in the RTBs and bypass breakers, if in use. When the required logic matrix combination is completed, the SSPS output voltage signal is removed, the undervoltage coils are de-energized, the breaker trip lever is actuated by the de-energized undervoltage coil, and the RTBs and bypass breakers are tripped open. This allows the shutdown rods and control rods to fall into the core. In addition to the de-energization of the undervoltage coils, each breaker is also equipped with a shunt trip device that is energized to trip the breaker open upon receipt of a reactor trip signal from the SSPS. Either the undervoltage coil or the shunt trip mechanism is sufficient by itself, thus providing a diverse trip mechanism.

The decision logic matrix Functions are described in the functional diagrams included in Reference 2. In addition to the reactor trip or ESF, these diagrams also describe the various "permissive interlocks" that are associated with unit conditions. Each train has a built in testing device that can automatically test the decision logic matrix Functions and the actuation devices while the unit is at power. When any one train is taken out of service for testing, the other train is capable of providing unit monitoring and protection until the testing has been completed. The testing device is semiautomatic to minimize testing time.

(1) are also described (1) anticipated operational transients

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to maintain the SLs during all AOOs and mitigates the consequences of DBAs in all MODES in which the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

Each of the analyzed accidents and transients can be detected by one or more RTS Functions. The accident analysis described in Reference 3 takes credit for most RTS trip Functions. RTS trip Functions not specifically credited in the accident analysis are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These RTS trip Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. They may also serve as backups to RTS trip Functions that were credited in the accident analysis.

(9) (1)

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 in the accompanying LCO, to be OPERABLE. A channel OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the

is (2)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Nominal Trip Setpoint. A trip setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

unit (1)

The LCO generally requires OPERABILITY of four or three channels in each instrumentation Function, two channels of Manual Reactor Trip in each logic Function, and two trains in each Automatic Trip Logic Function. Four OPERABLE instrumentation channels in a two-out-of-four configuration are required when one RTS channel is also used as a control system input. This configuration accounts for the possibility of the shared channel failing in such a manner that it creates a transient that requires RTS action. In this case, the RTS will still provide protection, even with random failure of one of the other three protection channels. Three OPERABLE instrumentation channels in a two-out-of-three configuration are generally required when there is no potential for control system and protection system interaction that could simultaneously create a need for RTS trip and disable one RTS channel. The two-out-of-three and two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing a reactor trip. Specific exceptions to the above general philosophy exist and are discussed below.

Functions with four (1) are arranged (1) (1) functions with three are arranged (1) (1)

Reactor Trip System Functions

The safety analyses and OPERABILITY requirements applicable to each RTS Function are discussed below:

1. Manual Reactor Trip

The Manual Reactor Trip ensures that the control room operator can initiate a reactor trip at any time by using either of two reactor trip switches in the control room. A Manual Reactor Trip accomplishes the same results as any one of the automatic trip Functions. It is used by the reactor operator to shut down the reactor whenever any parameter is rapidly trending toward its Trip Setpoint.

INSERT 3 (1)

The LCO requires two Manual Reactor Trip channels to be OPERABLE. Each channel is controlled by a manual reactor trip switch. Each channel activates the reactor trip breaker in both trains. Two independent channels are required to be OPERABLE so that no single random failure will disable the Manual Reactor Trip Function.

1

INSERT 3

There are two Manual Reactor Trip channels arranged in a one-out-of-two logic.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 4

In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the shutdown rods and/or control rods are partially or fully withdrawn from the core. In MODE 3, 4, or 5, the manual initiation Function must also be OPERABLE if one or more shutdown rods or control rods are withdrawn or the Rod Control System is capable of withdrawing the shutdown rods or the control rods. In this condition, inadvertent control rod withdrawal is possible. In MODE 3, 4, or 5, manual initiation of a reactor trip does not have to be OPERABLE if the Rod Control System is not capable of withdrawing the shutdown rods or control rods and if all rods are fully inserted. If the rods cannot be withdrawn from the core, or all of the rods are inserted, there is no need to be able to trip the reactor. In MODE 6, neither the shutdown rods nor the control rods are permitted to be withdrawn and the CRDMs are disconnected from the control rods and shutdown rods. Therefore, the manual initiation Function is not required. (1) (7)

and

2. Power Range Neutron Flux

The NIS power range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS power range detectors provide input to the Rod Control System and the Steam Generator (SG) Water Level Control System. Therefore, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Note that this Function also provides a signal to prevent automatic and manual rod withdrawal prior to initiating a reactor trip. Limiting further rod withdrawal may terminate the transient and eliminate the need to trip the reactor. (12) (1) (1) (12)

a. Power Range Neutron Flux - High

The Power Range Neutron Flux - High trip Function ensures that protection is provided, from all power levels, against a positive reactivity excursion leading to DNB during power operations. These can be caused by rod withdrawal or reductions in RCS temperature.

INSERT 5

The LCO requires all four of the Power Range Neutron Flux - High channels to be OPERABLE. (1)

1

INSERT 4

(e.g., RTBs in the closed position)

1

INSERT 5

There are four Power Range Neutron Flux - High channels arranged in a two-out-of-four logic.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 1 or 2, when a positive reactivity excursion could occur, the Power Range Neutron Flux - High trip must be OPERABLE. This Function will terminate the reactivity excursion and shut down the reactor prior to reaching a power level that could damage the fuel. In MODE 3, 4, 5, or 6, the NIS power range detectors cannot detect neutron levels in this range. In these MODES, the Power Range Neutron Flux - High does not have to be OPERABLE because the reactor is shut down and reactivity excursions into the power range are extremely unlikely. Other RTS Functions and administrative controls provide protection against reactivity additions when in MODE 3, 4, 5, or 6.

b. Power Range Neutron Flux - Low

The LCO requirement for the Power Range Neutron Flux - Low trip Function ensures that protection is provided against a positive reactivity excursion from low power or subcritical conditions.

INSERT 6 → The LCO requires all four of the Power Range Neutron Flux - Low channels to be OPERABLE. (1)

In MODE 1, below the Power Range Neutron Flux (P-10 setpoint), and in MODE 2, the Power Range Neutron Flux - Low trip must be OPERABLE. This Function may be manually blocked by the operator when two out of four power range channels are greater than approximately 10% RTP (P-10 setpoint). This Function is automatically unblocked when three out of four power range channels are below the P-10 setpoint. Above the P-10 setpoint, positive reactivity additions are mitigated by the Power Range Neutron Flux - High trip Function.

In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - Low trip Function does not have to be OPERABLE because the reactor is shut down and the NIS power range detectors cannot detect neutron levels in this range. Other RTS trip Functions and administrative controls provide protection against positive reactivity additions or power excursions in MODE 3, 4, 5, or 6.

1

INSERT 6

There are four Power Range Neutron Flux - Low channels arranged in a two-out-of-four logic.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3. Power Range Neutron Flux Rate

The Power Range Neutron Flux Rate trips use the same channels as discussed for Function 2 above.

a. Power Range Neutron Flux - High Positive Rate

The Power Range Neutron Flux - High Positive Rate trip Function ensures that protection is provided against rapid increases in neutron flux that are characteristic of an RCCA drive rod housing rupture and the accompanying ejection of the RCCA. This Function compliments the Power Range Neutron Flux - High and Low Setpoint trip Functions to ensure that the criteria are met for a rod ejection from the power range.

INSERT 7

The LCO requires all four of the Power Range Neutron Flux - High Positive Rate channels to be OPERABLE. (1)

In MODE 1 or 2, when there is a potential to add a large amount of positive reactivity from a rod ejection accident (REA), the Power Range Neutron Flux - High Positive Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - High Positive Rate trip Function does not have to be OPERABLE because other RTS trip Functions and administrative controls will provide protection against positive reactivity additions. Also, since only the shutdown banks may be withdrawn in MODE 3, 4, or 5, the remaining complement of control bank worth ensures a sufficient degree of SDM in the event of an REA. In MODE 6, no rods are withdrawn and the SDM is increased during refueling operations. The reactor vessel head is also removed or the closure bolts are detensioned preventing any pressure buildup. In addition, the NIS power range detectors cannot detect neutron levels present in this mode. (1)

b. Power Range Neutron Flux - High Negative Rate

The Power Range Neutron Flux - High Negative Rate trip Function ensures that protection is provided for multiple rod drop accidents. At high power levels, a multiple rod drop accident could cause local flux peaking that would result in an unconservative local DNBR. DNBR is defined as the ratio of the heat flux required to cause a DNB at a particular location in (1)

provides

INSERT 8

1

INSERT 7

There are four Power Range Neutron Flux - High Positive Rate channels arranged in a two-out-of-four logic.

1

INSERT 8

However, this Function is not credited in the multiple rod drop accident analysis.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

the core to the local heat flux. The DNBR is indicative of the margin to DNB. No credit is taken for the operation of this Function for those rod drop accidents in which the local DNBRs will be greater than the limit. (1)

INSERT 9

The LCO requires all four Power Range Neutron Flux - High Negative Rate channels to be OPERABLE. (1)

In MODE 1 or 2, when there is potential for a multiple rod drop accident to occur, the Power Range Neutron Flux - High Negative Rate trip must be OPERABLE. In MODE 3, 4, 5, or 6, the Power Range Neutron Flux - High Negative Rate trip Function does not have to be OPERABLE because the core is not critical and DNB is not a concern. Also, since only the shutdown banks may be withdrawn in MODE 3, 4, or 5, the remaining complement of control bank worth ensures a sufficient degree of SDM in the event of an REA. In MODE 6, no rods are withdrawn and the required SDM is increased during refueling operations. In addition, the NIS power range detectors cannot detect neutron levels present in this MODE. (1)

4. Intermediate Range Neutron Flux

The Intermediate Range Neutron Flux trip Function ensures that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This trip Function provides redundant protection to the Power Range Neutron Flux - Low Setpoint trip Function. The NIS intermediate range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS intermediate range detectors do not provide any input to control systems. (1) Note that this Function also provides a signal to prevent automatic and manual rod withdrawal prior to initiating a reactor trip. Limiting further rod withdrawal may terminate the transient and eliminate the need to trip the reactor. (12)

INSERT 10

The LCO requires two [all] channels of Intermediate Range Neutron Flux to be OPERABLE. Two OPERABLE channels are sufficient to ensure no single random failure will disable this trip Function. (1)

Because this trip Function is important only during startup, there is generally no need to disable channels for testing while the Function

1

INSERT 9

There are four Power Range Neutron Flux - High Negative Rate channels arranged in a two-out-of-four logic.

1

INSERT 10

There are two Intermediate Range Neutron Flux channels arranged in a one-out-of-two logic.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

is required to be OPERABLE. Therefore, a third channel is unnecessary.

In MODE 1 below the P-10 setpoint, and in MODE 2 above the P-6 setpoint, when there is a potential for an uncontrolled RCCA bank rod withdrawal accident during reactor startup, the Intermediate Range Neutron Flux trip must be OPERABLE. Above the P-10 setpoint, the Power Range Neutron Flux - High Setpoint trip and the Power Range Neutron Flux - High Positive Rate trip provide core protection for a rod withdrawal accident. In MODE 2 below the P-6 setpoint, the Source Range Neutron Flux Trip provides the core protection for reactivity accidents. In MODE 3, 4, or 5, the Intermediate Range Neutron Flux trip does not have to be OPERABLE because the control rods must be fully inserted and only the shutdown rods may be withdrawn. The reactor cannot be started up in this condition. The core also has the required SDM to mitigate the consequences of a positive reactivity addition accident. In MODE 6, all rods are fully inserted and the core has a required increased SDM. Also, the NIS intermediate range detectors cannot detect neutron levels present in this MODE.

INSERT 10A (1)

5. Source Range Neutron Flux

The LCO requirement for the Source Range Neutron Flux trip Function ensures that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This trip Function provides redundant protection to the Power Range Neutron Flux - Low trip Function. In MODES 3, 4, and 5, administrative controls also prevent the uncontrolled withdrawal of rods. The NIS source range detectors are located external to the reactor vessel and measure neutrons leaking from the core. The NIS source range detectors do not provide any inputs to control systems. The source range trip is the only RTS automatic protection function required in MODES 3, 4, and 5 when rods are capable of withdrawal or one or more rods are not fully inserted. Therefore, the functional capability at the specified Trip Setpoint is assumed to be available.

(7) In MODE 2, (5) (1) and Intermediate Range Neutron Flux (14) (e.g., RTBs in the closed position) Allowable Value (5)

The Source Range Neutron Flux Function provides protection for control rod withdrawal from subcritical, boron dilution and control rod ejection events.

1

INSERT 10A

other RTS trip Functions and administrative controls will provide protection against positive reactivity additions.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 2 when below the P-6 setpoint and in MODES 3, 4, and 5 when there is a potential for an uncontrolled RCCA bank rod withdrawal accident, the Source Range Neutron Flux trip must be OPERABLE. Two OPERABLE channels are sufficient to ensure no single random failure will disable this trip Function. Above the P-6 setpoint, the Intermediate Range Neutron Flux trip and the Power Range Neutron Flux - Low trip will provide core protection for reactivity accidents. Above the P-6 setpoint, the NIS source range detectors are de-energized.

In MODES 3, 4, and 5 with all rods fully inserted and the Rod Control System not capable of rod withdrawal, and in MODE 6, the outputs of the Function to RTS logic are not required OPERABLE. The requirements for the NIS source range detectors to monitor core neutron levels and provide indication of reactivity changes that may occur as a result of events like a boron dilution are addressed in LCO 3.3.9, "Boron Dilution Protection System (BDPS)," for MODE 3, 4, or 5 and LCO 3.9.3, "Nuclear Instrumentation," for MODE 6.

6. Overtemperature ΔT

The Overtemperature ΔT trip Function is provided to ensure that the design limit DNBR is met. This trip Function also limits the range over which the Overpower ΔT trip Function must provide protection. The inputs to the Overtemperature ΔT trip include all pressure, coolant temperature, axial power distribution, and reactor power as indicated by loop ΔT assuming full reactor coolant flow. Protection from violating the DNBR limit is assured for those transients that are slow with respect to delays from the core to the measurement system. The Function monitors both variation in power and flow since a decrease in flow has the same effect on ΔT as a power increase. The Overtemperature ΔT trip Function uses each loop's ΔT as a measure of reactor power and is compared with a setpoint that is automatically varied with the following parameters:

- reactor coolant average temperature - the Trip Setpoint is varied to correct for changes in coolant density and specific heat capacity with changes in coolant temperature;
- pressurizer pressure - the Trip Setpoint is varied to correct for changes in system pressure; and

1

INSERT 11

There are two Source Range Neutron Flux channels arranged in a one-out-of-two logic. The LCO requires all (two) channels of Source Range Neutron Flux to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Allowable Value 5

- axial power distribution - f(ΔI), the Trip Setpoint is varied to account for imbalances in the axial power distribution as detected by the NIS upper and lower power range detectors. If axial peaks are greater than the design limit, as indicated by the difference between the upper and lower NIS power range detectors, the Trip Setpoint is reduced in accordance with Note 1 of Table 3.3.1-1. Allowable Value 5

Dynamic compensation is included for system piping delays from the core to the temperature measurement system.

The Overtemperature ΔT trip Function is calculated for each loop as described in Note 1 of Table 3.3.1-1. Trip occurs if Overtemperature ΔT is indicated in two loops. At some units, the pressure and temperature signals are used for other control functions. For those units, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Note that this Function also provides a signal to generate a turbine runback prior to reaching the Trip Setpoint. A turbine runback will reduce turbine power and reactor power. A reduction in power will normally alleviate the Overtemperature ΔT condition and may prevent a reactor trip. 14 1 5 15

INSERT 12

The LCO requires all four channels of the Overtemperature ΔT trip Function to be OPERABLE for two and four loop units (the LCO requires all three channels on the Overtemperature ΔT trip Function to be OPERABLE for three loop units). Note that the Overtemperature ΔT Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions. 1

In MODE 1 or 2, the Overtemperature ΔT trip must be OPERABLE to prevent DNB. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about DNB.

1

7. Overpower ΔT

against excessive power (fuel rod rating protection)

The Overpower ΔT trip Function ensures that protection is provided to ensure the integrity of the fuel (i.e., no fuel pellet melting and less than 1% cladding strain) under all possible overpower conditions. This trip Function also limits the required range of the 1

1

INSERT 12

There are four Overtemperature ΔT channels arranged in a two-out-of-four logic.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Overtemperature ΔT trip Function and provides a backup to the Power Range Neutron Flux - High Setpoint trip. The Overpower ΔT trip Function ensures that the allowable heat generation rate (kW/ft) of the fuel is not exceeded. It uses the ΔT of each loop as a measure of reactor power with a setpoint that is automatically varied with the following parameters:

- reactor coolant average temperature - the Trip Setpoint is varied to correct for changes in coolant density and specific heat capacity with changes in coolant temperature; and
- rate of change of reactor coolant average temperature - including dynamic compensation for the delays between the core and the temperature measurement system.

The Overpower ΔT trip Function is calculated for each loop as per Note 2 of Table 3.3.1-1. Trip occurs if Overpower ΔT is indicated in two loops. At some units, the temperature signals are used for other control functions. At those units, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation and a single failure in the remaining channels providing the protection function actuation. Note that this Function also provides a signal to generate a turbine runback prior to reaching the Allowable Value. A turbine runback will reduce turbine power and reactor power. A reduction in power will normally alleviate the Overpower ΔT condition and may prevent a reactor trip.

The LCO requires four channels for two and four loop units (three channels for three loop units) of the Overpower ΔT trip Function to be OPERABLE. Note that the Overpower ΔT trip Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

In MODE 1 or 2, the Overpower ΔT trip Function must be OPERABLE. These are the only times that enough heat is generated in the fuel to be concerned about the heat generation rates and overheating of the fuel. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about fuel overheating and fuel damage.

1

INSERT 13

There are four Overpower ΔT channels arranged in a two-out-of-four logic.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

8. Pressurizer Pressure

The same sensors provide input to the Pressurizer Pressure - High and - Low trips and the Overtemperature ΔT trip. At some units, the Pressurizer Pressure channels are also used to provide input to the Pressurizer Pressure Control System. For those units, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation.

a. Pressurizer Pressure - Low

The Pressurizer Pressure - Low trip Function ensures that protection is provided against violating the DNBR limit due to low pressure.

The LCO requires four channels for two and four loop units (three channels for three loop units) of Pressurizer Pressure - Low to be OPERABLE.

In MODE 1, when DNB is a major concern, the Pressurizer Pressure - Low trip must be OPERABLE. This trip Function is automatically enabled on increasing power by the P-7 interlock (NIS power range P-10 or turbine impulse pressure greater than approximately 10% of full power equivalent (P-13)). On decreasing power, this trip Function is automatically blocked below P-7. Below the P-7 setpoint, no conceivable power distributions can occur that would cause DNB concerns.

b. Pressurizer Pressure - High

The Pressurizer Pressure - High trip Function ensures that protection is provided against overpressurizing the RCS. This trip Function operates in conjunction with the pressurizer relief and safety valves to prevent RCS overpressure conditions.

The LCO requires four channels for two and four loop units (three channels for three loop units) of the Pressurizer Pressure - High to be OPERABLE.

The Pressurizer Pressure - High LSSS is selected to be below the pressurizer safety valve actuation pressure and above the

1

INSERT 14

There are four Pressurizer Pressure - Low channels arranged in a two-out-of-four logic.

1

INSERT 15

There are four Pressurizer Pressure - High channels arranged in a two-out-of-four logic.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

power operated relief valve (PORV) setting. This setting minimizes challenges to safety valves while avoiding unnecessary reactor trip for those pressure increases that can be controlled by the PORVs.

In MODE 1 or 2, the Pressurizer Pressure - High trip must be OPERABLE to help prevent RCS overpressurization and minimize challenges to the relief and safety valves. In MODE 3, 4, 5, or 6, the Pressurizer Pressure - High trip Function does not have to be OPERABLE because transients that could cause an overpressure condition will be slow to occur. Therefore, the operator will have sufficient time to evaluate unit conditions and take corrective actions. Additionally, low temperature overpressure protection systems provide overpressure protection when below MODE 4.

9. Pressurizer Water Level - High

The Pressurizer Water Level - High trip Function provides a backup signal for the Pressurizer Pressure - High trip and also provides protection against water relief through the pressurizer safety valves. These valves are designed to pass steam in order to achieve their design energy removal rate. A reactor trip is actuated prior to the pressurizer becoming water solid. The LCO requires three channels of Pressurizer Water Level - High to be OPERABLE. The pressurizer level channels are used as input to the Pressurizer Level Control System. A fourth channel is not required to address control/ protection interaction concerns. The level channels do not actuate the safety valves, and the high pressure reactor trip is set below the safety valve setting. Therefore, with the slow rate of charging available, pressure overshoot due to level channel failure cannot cause the safety valve to lift before reactor high pressure trip.

In MODE 1, when there is a potential for overfilling the pressurizer, the Pressurizer Water Level - High trip must be OPERABLE. This trip Function is automatically enabled on increasing power by the P-7 interlock. On decreasing power, this trip Function is automatically blocked below P-7. Below the P-7 setpoint, transients that could raise the pressurizer water level will be slow and the operator will have sufficient time to evaluate unit conditions and take corrective actions.

1

INSERT 16

Water relief could be damaging to the pressurizer safety valves, relief piping, and pressurizer relief tank.

1

INSERT 17

There are three Pressurizer Water Level - High channels arranged in a two-out-of-three logic.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

10. Reactor Coolant Flow - Low

The Reactor Coolant Flow - Low trip Function ensures that protection is provided against violating the DNBR limit due to low flow in one or more RCS loops, while avoiding reactor trips due to normal variations in loop flow. Above the P-7 setpoint, the reactor trip on low flow in two or more RCS loops is automatically enabled. Above the P-8 setpoint, which is approximately 48% RTP, a loss of flow in any RCS loop will actuate a reactor trip. Each RCS loop has three flow detectors to monitor flow. The flow signals are not used for any control system input.

the logic is such that — 1 — 31 — 1 — low — 1 — one — the logic is such that — INSERT 18 — 14

The LCO requires three Reactor Coolant Flow - Low channels per loop to be OPERABLE in MODE 1 above P-7.

In MODE 1 above the P-8 setpoint, a loss of flow in one RCS loop could result in DNB conditions in the core because of the higher power level. In MODE 1 below the P-8 setpoint and above the P-7 setpoint, a loss of flow in two or more loops is required to actuate a reactor trip because of the lower power level and the greater margin to the design limit DNBR. Below the P-7 setpoint, all reactor trips on low flow are automatically blocked since there is insufficient heat production to generate DNB conditions.

11. Reactor Coolant Pump (RCP) Breaker Position

Both RCP Breaker Position trip Functions operate together on two sets of auxiliary contacts, with one set on each RCP breaker. These Functions anticipate the Reactor Coolant Flow - Low trips to avoid RCS heatup that would occur before the low flow trip actuates. 1

a. Reactor Coolant Pump Breaker Position (Single Loop)

The RCP Breaker Position (Single Loop) trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in one RCS loop. The position of each RCP breaker is monitored. If one RCP breaker is open above the P-8 setpoint, a reactor trip is initiated. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Single Loop) Trip Setpoint is reached. 5

The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for

1

INSERT 18

Any two of the detectors in each loop must trip for a low flow signal in the RCS loop.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

this trip Function because the RCS Flow - Low trip alone provides sufficient protection of unit SLs for loss of flow events. The RCP Breaker Position trip serves only to anticipate the low flow trip, minimizing the thermal transient associated with loss of a pump.

This Function measures only the discrete position (open or closed) of the RCP breaker, using a position switch. Therefore, the Function has no adjustable trip setpoint with which to associate an LSSS.

In MODE 1 above the P-8 setpoint, when a loss of flow in any RCS loop could result in DNB conditions in the core, the RCP Breaker Position (Single Loop) trip must be OPERABLE. In MODE 1 below the P-8 setpoint, a loss of flow in two or more loops is required to actuate a reactor trip because of the lower power level and the greater margin to the design limit DNBR.

b. Reactor Coolant Pump Breaker Position (Two Loops)

The RCP Breaker Position (Two Loops) trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops. The position of each RCP breaker is monitored. Above the P-7 setpoint and below the P-8 setpoint, a loss of flow in two or more loops will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached.

INSERT 19 — INSERT 20 — Function

INSERT 21

The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for this Function because the RCS Flow - Low trip alone provides sufficient protection of unit SLs for loss of flow events. The RCP Breaker Position trip serves only to anticipate the low flow trip, minimizing the thermal transient associated with loss of an RCP.

This Function measures only the discrete position (open or closed) of the RCP breaker, using a position switch. Therefore, the Function has no adjustable trip setpoint with which to associate an LSSS.

1

INSERT 19

This Function anticipates the Reactor Coolant Flow-Low trip to avoid RCS heatup that would occur before the low flow trip actuates.

1

INSERT 20

by a set of auxiliary contacts.

1

INSERT 21

There is one RCP Breaker Position channel per RCP breaker (i.e., 4 channels) arranged in a two-out-of-four logic.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In MODE 1 above the P-7 setpoint and below the P-8 setpoint, the RCP Breaker Position (Two Loops) trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two RCS loops is automatically enabled. Above the P-8 setpoint, a loss of flow in any one loop will actuate a reactor trip because of the higher power level and the reduced margin to the design limit DNBR.

12. Undervoltage Reactor Coolant Pumps

The Undervoltage RCPs reactor trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops. The voltage to each RCP is monitored. Above the P-7 setpoint, a loss of voltage detected on two or more RCP buses will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached. Time delays are incorporated into the Undervoltage RCPs channels to prevent reactor trips due to momentary electrical power transients.

The LCO requires three Undervoltage RCPs channels (one per phase) per bus to be OPERABLE.

In MODE 1 above the P-7 setpoint, the Undervoltage RCP trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two or more RCS loops is automatically enabled. This Function uses the same relays as the ESFAS Function 6.f, "Undervoltage Reactor Coolant Pump (RCP)" start of the auxiliary feedwater (AFW) pumps.

13. Underfrequency Reactor Coolant Pumps

The Underfrequency RCPs reactor trip Function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops from a major network frequency disturbance. An underfrequency condition will slow down the pumps, thereby reducing their coastdown time following a pump trip.

1

INSERT 22

A bus undervoltage signal is generated by one out of two undervoltage relays per reactor coolant pump bus, and two-out-of-four bus undervoltage signals will generate a reactor trip.

1

INSERT 23

The settings for the time delays are verified to be within limits during the performance of SR 3.3.1.19.

1

INSERT 24

While there are two Undervoltage RCPs channels per bus,

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The proper coastdown time is required so that reactor heat can be removed immediately after reactor trip. The frequency of each RCP bus is monitored. Above the P-7 setpoint, a loss of frequency detected on two or more RCP buses will initiate a reactor trip. This trip Function will generate a reactor trip before the Reactor Coolant Flow - Low (Two Loops) Trip Setpoint is reached. Time delays are incorporated into the Underfrequency RCPs channels to prevent reactor trips due to momentary electrical power transients.

The LCO requires three Underfrequency RCPs channels per bus to be OPERABLE.

In MODE 1 above the P-7 setpoint, the Underfrequency RCPs trip must be OPERABLE. Below the P-7 setpoint, all reactor trips on loss of flow are automatically blocked since no conceivable power distributions could occur that would cause a DNB concern at this low power level. Above the P-7 setpoint, the reactor trip on loss of flow in two or more RCS loops is automatically enabled.

14. Steam Generator Water Level - Low Low

The SG Water Level - Low Low trip Function ensures that protection is provided against a loss of heat sink and actuates the AFW System prior to uncovering the SG tubes. The SGs are the heat sink for the reactor. In order to act as a heat sink, the SGs must contain a minimum amount of water. A narrow range low low level in any SG is indicative of a loss of heat sink for the reactor. The level transmitters provide input to the SG Level Control System. Therefore, the actuation logic must be able to withstand an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. This Function also performs the ESFAS function of starting the AFW pumps on low low SG level.

The LCO requires four channels of SG Water Level - Low Low per SG to be OPERABLE for four loop units in which these channels are shared between protection and control. In two, three, and four loop units where three SG Water Levels are dedicated to the RTS, only three channels per SG are required to be OPERABLE.

In MODE 1 or 2, when the reactor requires a heat sink, the SG Water Level - Low Low trip must be OPERABLE. The normal

1

INSERT 25

A bus underfrequency signal is generated by one-out-of-two underfrequency relays per reactor coolant pump bus, and two-out-of-four bus underfrequency signals will generate a reactor trip.

1

INSERT 26

The settings for the time delays are verified to be within limits during the performance of SR 3.3.1.19.

1

INSERT 27

While there are two Underfrequency RCPs channels per bus,

1

INSERT 27A

There are three SG Water Level - Low Low channels per SG. The logic is arranged such that any two channels on the same SG will actuate a reactor trip.

1

INSERT 28

There are three SG Water Level-Low Low channels per SG arranged in a two-out-of-three logic per SG.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

source of water for the SGs is the Main Feedwater (MFW) System (not safety related). The MFW System is only in operation in MODE 1 or 2. The AFW System is the safety related backup source of water to ensure that the SGs remain the heat sink for the reactor. During normal startups and shutdowns, the AFW System provides feedwater to maintain SG level. In MODE 3, 4, 5, or 6, the SG Water Level - Low Low Function does not have to be OPERABLE because the MFW System is not in operation and the reactor is not operating or even critical. Decay heat removal is accomplished by the AFW System in MODE 3 and by the Residual Heat Removal (RHR) System in MODE 4, 5, or 6.

, by any combination of the AFW System and Residual Heat Removal (RHR) System in MODE 4, (7)

15. Steam Generator Water Level - Low, Coincident With Steam Flow/Feedwater Flow Mismatch

SG Water Level - Low, in conjunction with the Steam Flow/ Feedwater Flow Mismatch, ensures that protection is provided against a loss of heat sink and actuates the AFW System prior to uncovering the SG tubes. In addition to a decreasing water level in the SG, the difference between feedwater flow and steam flow is evaluated to determine if feedwater flow is significantly less than steam flow. With less feedwater flow than steam flow, SG level will decrease at a rate dependent upon the magnitude of the difference in flow rates. There are two SG level channels and two Steam Flow/ Feedwater Flow Mismatch channels per SG. One narrow range level channel sensing a low level coincident with one Steam Flow/ Feedwater Flow Mismatch channel sensing flow mismatch (steam flow greater than feed flow) will actuate a reactor trip. (1)

The logic is arranged such that · in the same SG (1)

The LCO requires two channels of SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch. (1)

(2) and · per SG · 2 channels of · per SG to be OPERABLE (7)

In MODE 1 or 2, when the reactor requires a heat sink, the SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch trip must be OPERABLE. The normal source of water for the SGs is the MFW System (not safety related). The MFW System is only in operation in MODE 1 or 2. The AFW System is the safety related backup source of water to ensure that the SGs remain the heat sink for the reactor. During normal startups and shutdowns, the AFW System provides feedwater to maintain SG level. In MODE 3, 4, 5, or 6, the SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch Function does not have to be OPERABLE because the MFW System is not in operation and the

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

reactor is not operating or even critical. Decay heat removal is accomplished by the AFW System in MODE 3 and by the RHR System in MODE 4, 5, or 6. The MFW System is in operation only in MODE 1 or 2 and, therefore, this trip Function need only be OPERABLE in these MODES.

16. Turbine Trip

a. Turbine Trip - Low Fluid Oil Pressure

The Turbine Trip - Low Fluid Oil Pressure trip Function anticipates the loss of heat removal capabilities of the secondary system following a turbine trip. This trip Function acts to minimize the pressure/temperature transient on the reactor. Any turbine trip from a power level below the P-9 setpoint, approximately 50% power, will not actuate a reactor trip. Three pressure switches monitor the control oil pressure in the Turbine Electrohydraulic Control System. A low pressure condition sensed by two-out-of-three pressure switches will actuate a reactor trip. These pressure switches do not provide any input to the control system. The unit is designed to withstand a complete loss of load and not sustain core damage or challenge the RCS pressure limitations. Core protection is provided by the Pressurizer Pressure - High trip Function and RCS integrity is ensured by the pressurizer safety valves.

The LCO requires three channels of Turbine Trip - Low Fluid Oil Pressure to be OPERABLE in MODE 1 above P-9.

Below the P-9 setpoint, a turbine trip does not actuate a reactor trip. In MODE 2, 3, 4, 5, or 6, there is no potential for a turbine trip, and the Turbine Trip - Low Fluid Oil Pressure trip Function does not need to be OPERABLE.

b. Turbine Trip - Turbine Stop Valve Closure

The Turbine Trip - Turbine Stop Valve Closure trip Function anticipates the loss of heat removal capabilities of the secondary system following a turbine trip from a power level below the P-9 setpoint, approximately 50% power. This action will not actuate a reactor trip. The trip Function anticipates the loss of secondary heat removal capability that occurs when the stop valves close. Tripping the reactor in anticipation of loss of

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

secondary heat removal acts to minimize the pressure and temperature transient on the reactor. This trip Function will not and is not required to operate in the presence of a single channel failure. The unit is designed to withstand a complete loss of load and not sustain core damage or challenge the RCS pressure limitations. Core protection is provided by the Pressurizer Pressure - High trip Function, and RCS integrity is ensured by the pressurizer safety valves. This trip Function is diverse to the Turbine Trip - Low Fluid Oil Pressure trip Function. Each turbine stop valve is equipped with one limit switch that inputs to the RTS. If all four limit switches indicate that the stop valves are all closed, a reactor trip is initiated.

The LSSS for this Function is set to assure channel trip occurs when the associated stop valve is completely closed.

per train

INSERT 28A

The LCO requires four Turbine Trip - Turbine Stop Valve Closure channels, one per valve, to be OPERABLE in MODE 1 above P-9. All four channels must trip to cause reactor trip. (5) (5)

associated with a train

7

Below the P-9 setpoint, a load rejection can be accommodated by the Steam Dump System. In MODE 2, 3, 4, 5, or 6, there is no potential for a load rejection, and the Turbine Trip - Stop Valve Closure trip Function does not need to be OPERABLE. (5)

17. Safety Injection Input from Engineered Safety Feature Actuation System

The SI Input from ESFAS ensures that if a reactor trip has not already been generated by the RTS, the ESFAS automatic actuation logic will initiate a reactor trip upon any signal that initiates SI. This is a condition of acceptability for the LOCA. However, other transients and accidents take credit for varying levels of ESF performance and rely upon rod insertion, except for the most reactive rod that is assumed to be fully withdrawn, to ensure reactor shutdown. Therefore, a reactor trip is initiated every time an SI signal is present.

from

Trip Setpoint and Allowable Values are not applicable to this Function. The SI Input is provided by relay in the ESFAS. Therefore, there is no measurement signal with which to associate an LSSS. (5) (1) (1)

signal directly inputs to the RTS

5

INSERT 28A
(UNIT 1 only)

Each turbine stop valve includes a limit switch that has two contacts. One contact provides input to Train A while the other contact provides input to Train B. Each contact is considered to be a channel.

5

INSERT 28A
(UNIT 2 only)

Each turbine stop valve includes two limit switches. One limit switch provides input to Train A while the other limit switch provides input to Train B. Each limit switch is considered to be a channel.

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 29

The LCO requires two trains of SI Input from ESFAS to be OPERABLE in MODE 1 or 2.

A reactor trip is initiated every time an SI signal is present. Therefore, this trip Function must be OPERABLE in MODE 1 or 2, when the reactor is critical, and must be shut down in the event of an accident. In MODE 3, 4, 5, or 6, the reactor is not critical, and this trip Function does not need to be OPERABLE.

18. Reactor Trip System Interlocks

Reactor protection interlocks are provided to ensure reactor trips are in the correct configuration for the current unit status. They back up operator actions to ensure protection system Functions are not bypassed during unit conditions under which the safety analysis assumes the Functions are not bypassed. Therefore, the interlock Functions do not need to be OPERABLE when the associated reactor trip functions are outside the applicable MODES. These [interlocks] are:

a. Intermediate Range Neutron Flux, P-6

INSERT 30

The Intermediate Range Neutron Flux, P-6 interlock is [above the setpoint] actuated when any NIS intermediate range channel goes ~~approximately one decade above the minimum channel reading~~. If both channels drop below the setpoint, the permissive will automatically be defeated. The LCO requirement for the P-6 interlock ensures that the following Functions are performed:

- on increasing power, the P-6 interlock allows the manual block of the NIS Source Range, Neutron Flux reactor trip. This prevents a premature block of the source range trip and allows the operator to ensure that the intermediate range is OPERABLE prior to leaving the source range. When the source range trip is blocked, the high voltage to the detectors is also removed[; and]

- on decreasing power, the P-6 interlock automatically energizes the NIS source range detectors and enables the NIS Source Range Neutron Flux reactor trip~~, and~~ INSERT 31

- ~~on increasing power, the P-6 interlock provides a backup block signal to the source range flux doubling circuit.~~

1

INSERT 29

There are two trains of SI Input from ESFAS arranged in a one-out-of-two logic.

1

INSERT 30

There are two Intermediate Range Neutron Flux, P-6 interlock channels (1 per train). Each channel receives input from two NIS intermediate range channels. Each P-6 interlock channel actuates to provide the interlock function for its associated RTS logic train.

1

INSERT 31

(i.e., defeats the manual block).

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued) 5

Normally, this Function is manually blocked by the control room operator during the reactor startup. 7

(1 per train)

The LCO requires two channels of Intermediate Range Neutron Flux, P-6 interlock to be OPERABLE in MODE 2 when below the P-6 interlock setpoint. 1 5

INSERT 32

Above the P-6 interlock setpoint, the NIS Source Range Neutron Flux reactor trip will be blocked, and this Function will no longer be necessary.

In MODE 3, 4, 5, or 6, the P-6 interlock does not have to be OPERABLE because the NIS Source Range is providing core protection. 5

b. Low Power Reactor Trips Block, P-7

INSERT 33

The Low Power Reactor Trips Block, P-7 interlock is actuated by input from either the Power Range Neutron Flux, P-10, or the Turbine Impulse (First Stage) Pressure, P-13 interlock. The LCO requirement for the P-7 interlock ensures that the following Functions are performed: 1 1

(1) on increasing power, the P-7 interlock automatically enables reactor trips on the following Functions:

- Pressurizer Pressure - Low; 11
- Pressurizer Water Level - High; 11
- Reactor Coolant Flow - Low (low flow in two or more RCS loops); 7 11
- RCPs Breaker Open (Two Loops); 7 11
- Undervoltage RCPs, and 11
- Underfrequency RCPs; and 11
- Turbine Trip (Low Fluid Oil Pressure and Turbine Stop Valve Closure), 1

These reactor trips are only required when operating above the P-7 setpoint (approximately 10% power RTP). The reactor trips provide protection against violating the DNBR limit. Below the P-7 setpoint, the RCS is capable of 1

5

INSERT 32

and in MODE 3, 4, and 5 with Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

1

INSERT 33

There are two Low Power Reactor Trips Block, P-7 interlock channels (1 per train). Each channel receives input from the associated Power Range Neutron Flux, P-10 interlock channels and the associated Turbine First Stage Pressure, P-13 interlock channel. Each P-7 interlock channel actuates to provide the interlock function for its associated RTS logic train.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

providing sufficient natural circulation without any RCP running.

(2) on decreasing power, the P-7 interlock automatically blocks reactor trips on the following Functions:

- Pressurizer Pressure - Low
- Pressurizer Water Level - High
- Reactor Coolant Flow - Low (low flow in two or more RCS loops)
- RCP Breaker Position (Two Loops)
- Undervoltage RCPs and
- Underfrequency RCPs.

Trip Setpoint and Allowable Value are not applicable to the P-7 interlock because it is a logic Function and thus has no parameter with which to associate an LSSS.

The P-7 interlock is a logic Function with train and not channel identity. Therefore, the LCO requires one channel per train of Low Power Reactor Trips Block, P-7 interlock to be OPERABLE in MODE 1.

The low power trips are blocked below the P-7 setpoint and unblocked above the P-7 setpoint. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the interlock performs its Function when power level drops below 10% power, which is in MODE 1.

c. Power Range Neutron Flux, P-8

The Power Range Neutron Flux, P-8 interlock is actuated at approximately 48% power as determined by two-out-of-four NIS power range detectors. The P-8 interlock automatically enables the Reactor Coolant Flow - Low and RCP Breaker Position (Single Loop) reactor trips on low flow in one or more RCS loops on increasing power. The LCO requirement for this trip Function ensures that protection is provided against a loss of

1

INSERT 34

There are two Power Range Neutron Flux, P-8 interlock channels (1 per train). Each channel receives input from four NIS power range channels. Each P-8 interlock channel actuates to provide the interlock function for its associated RTS logic train.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

flow in any RCS loop that could result in DNB conditions in the core when greater than approximately 48% power. On decreasing power, the reactor trip on low flow in any loop is automatically blocked. (31) (1)

The LCO requires four channels of Power Range Neutron Flux, P-8 interlock to be OPERABLE in MODE 1. (2) (1 per train) (1)

In MODE 1, a loss of flow in one RCS loop could result in DNB conditions, so the Power Range Neutron Flux, P-8 interlock must be OPERABLE. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the core is not producing sufficient power to be concerned about DNB conditions.

d. Power Range Neutron Flux, P-9 (5)

The Power Range Neutron Flux, P-9 interlock is actuated at approximately 50% power as determined by two-out-of-four NIS power range detectors. The LCO requirement for this Function ensures that the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure reactor trips are enabled above the P-9 setpoint. Above the P-9 setpoint, a turbine trip will cause a load rejection beyond the capacity of the Steam Dump System. A reactor trip is automatically initiated on a turbine trip when it is above the P-9 setpoint, to minimize the transient on the reactor.

The LCO requires four channels of Power Range Neutron Flux, P-9 interlock to be OPERABLE in MODE 1.

In MODE 1, a turbine trip could cause a load rejection beyond the capacity of the Steam Dump System, so the Power Range Neutron Flux interlock must be OPERABLE. In MODE 2, 3, 4, 5, or 6, this Function does not have to be OPERABLE because the reactor is not at a power level sufficient to have a load rejection beyond the capacity of the Steam Dump System.

(d) → e. Power Range Neutron Flux, P-10

INSERT 35 → The Power Range Neutron Flux, P-10 interlock is actuated at approximately 10% power, as determined by two-out-of-four NIS power range detectors. If power level falls below 10% RTP (approximately) (1) (1)

1

INSERT 35

There are two Power Range Neutron Flux, P-10 interlock channels (1 per train). Each channel receives input from four NIS power range channels. Each P-10 interlock channel actuates to provide the interlock function for its associated RTS logic train.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

on 3 of 4 channels, the nuclear instrument trips will be automatically unblocked. The LCO requirement for the P-10 interlock ensures that the following Functions are performed:

- on increasing power, the P-10 interlock allows the operator to manually block the Intermediate Range Neutron Flux reactor trip. Note that blocking the reactor trip also blocks the signal to prevent automatic and manual rod withdrawal, (11)
- on increasing power, the P-10 interlock allows the operator to manually block the Power Range Neutron Flux - Low reactor trip, (11)
- on increasing power, the P-10 interlock automatically provides a backup signal to block the Source Range Neutron Flux reactor trip, and also to de-energize the NIS source range detectors, (1) (11)
- the P-10 interlock provides one of the two inputs to the P-7 interlock, and (11)
- on decreasing power, the P-10 interlock automatically enables the Power Range Neutron Flux - Low reactor trip and the Intermediate Range Neutron Flux reactor trip (and rod stop).

The LCO requires four (2) channels (1 per train) of Power Range Neutron Flux, P-10 interlock to be OPERABLE in MODE 1 or 2. (1)

OPERABILITY in MODE 1 ensures the Function is available to perform its decreasing power Functions in the event of a reactor shutdown. This Function must be OPERABLE in MODE 2 to ensure that core protection is provided during a startup or shutdown by the Power Range Neutron Flux - Low and Intermediate Range Neutron Flux reactor trips. In MODE 3, 4, 5, or 6, this Function does not have to be OPERABLE because the reactor is not at power and the Source Range Neutron Flux reactor trip provides core protection.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

f. Turbine Impulse Pressure, P-13

The Turbine Impulse Pressure, P-13 interlock is actuated when the pressure in the first stage of the high pressure turbine is greater than approximately 10% of the rated full power pressure. This is determined by one-out-of-two pressure detectors. The LCO requirement for this Function ensures that one of the inputs to the P-7 interlock is available.

The LCO requires two channels of Turbine Impulse Pressure, P-13 interlock to be OPERABLE in MODE 1.

The Turbine Impulse Chamber Pressure, P-13 interlock must be OPERABLE when the turbine generator is operating. The interlock Function is not required OPERABLE in MODE 2, 3, 4, 5, or 6 because the turbine generator is not operating.

19. Reactor Trip Breakers

This trip Function applies to the RTBs exclusive of individual trip mechanisms. The LCO requires two OPERABLE trains of trip breakers. A trip breaker train consists of all trip breakers associated with a single RTS logic train that are racked in, closed, and capable of supplying power to the Rod Control System. Thus, the train may consist of the main breaker, bypass breaker, or main breaker and bypass breaker, depending upon the system configuration. Two OPERABLE trains ensure no single random failure can disable the RTS trip capability.

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms

The LCO requires both the Undervoltage and Shunt Trip Mechanisms to be OPERABLE for each RTB that is in service. The trip mechanisms are not required to be OPERABLE for trip breakers that are open, racked out, incapable of supplying power to the Rod Control System, or declared inoperable under Function 19 above. OPERABILITY of both trip mechanisms on each breaker ensures

1

INSERT 36

There are two Turbine First Stage Pressure, P-13 interlock channels (1 per train). Each channel receives input from two pressure detectors. Each P-13 interlock channel actuates to provide the interlock function for its associated RTS logic train.

1

INSERT 37

There are two Reactor Trip Breaker trains arranged in a one-out-of-two logic.

1

INSERT 38

Either trip mechanism is capable of opening the associated RTB on receipt of a trip signal.

<TSTF - 418 not shown> (16)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

that no single trip mechanism failure will prevent opening any breaker on a valid signal.

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

21. Automatic Trip Logic

The LCO requirement for the RTBs (Functions 19 and 20) and Automatic Trip Logic (Function 21) ensures that means are provided to interrupt the power to allow the rods to fall into the reactor core. Each RTB is equipped with an undervoltage coil and a shunt trip coil to trip the breaker open when needed. Each RTB is equipped with a bypass breaker to allow testing of the trip breaker while the unit is at power. The reactor trip signals generated by the RTS Automatic Trip Logic cause the RTBs and associated bypass breakers to open and shut down the reactor.

INSERT 39 → The LCO requires two trains of RTS Automatic Trip Logic to be OPERABLE. Having two OPERABLE channels ensures that random failure of a single logic channel will not prevent reactor trip. (1)

These trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip Functions must be OPERABLE when the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

The RTS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

ACTIONS

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.1-1. ← INSERT 39A (5)

In the event a channel's Trip Setpoint is found nonconservative with respect to the Allowable Value, or the transmitter, instrument loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected.

When the number of inoperable channels in a trip Function exceed those specified in one or other related Conditions associated with a trip

1

INSERT 39

There are two RTS Automatic Trip Logic trains arranged in a one-out-of-two logic.

5

INSERT 39A

In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 10 on a loop basis; and (b) for Functions 14 and 15 on a steam generator basis. The Completion Time(s) of the inoperable channel(s) of a Function (i.e., loop basis for Function 10 and steam generator basis for Functions 14 and 15) will be tracked separately for each Function starting from the time the Condition was entered for that Function.

BASES

ACTIONS (continued)

Function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 must be immediately entered if applicable in the current MODE of operation.

- REVIEWER'S NOTE -

Certain LCO Completion Times are based on approved topical reports. In order for a licensee to use these times, the licensee must justify the Completion Times as required by the staff Safety Evaluation Report (SER) for the topical report.

A.1

Condition A applies to all RTS protection Functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.1-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1 and B.2

INSERT 40 (5)

Condition B applies to the Manual Reactor Trip in MODE 1 or 2. This action addresses the train orientation of the SSPS for this Function. With one channel (or train) inoperable, the inoperable channel must be restored to OPERABLE status within 48 hours. In this Condition, the remaining OPERABLE channel is adequate to perform the safety function.

The Completion Time of 48 hours is reasonable considering that there are two automatic actuation trains and another manual initiation channel OPERABLE, and the low probability of an event occurring during this interval.

INSERT 41 (5)

If the Manual Reactor Trip Function cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be brought to a MODE in which the requirement does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 additional hours (54 hours total time). The 6 additional hours to reach MODE 3 is reasonable, based on operating experience, to reach MODE 3 from full power operation in an orderly manner and without challenging unit systems. With the unit in MODE 3, ACTION C would apply to any inoperable Manual Reactor Trip Function if the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

(5) **INSERT 40**

RTBs, RTB Undervoltage and Shunt Trip Mechanisms, and Automatic Trip Logic

(1) **INSERT 41**

in this condition, the remaining OPERABLE channel or train is adequate to perform the safety function

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(TSTF-418 not shown) 16

BASES

ACTIONS (continued)

C.1, C.2.1, and C.2.2

Condition C applies to the following reactor trip Functions in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted:

- Manual Reactor Trip,
- RTBs,
- RTB Undervoltage and Shunt Trip Mechanisms, and
- Automatic Trip Logic.

This action addresses the train orientation of the SSPS for these Functions. With one channel or train inoperable, the inoperable channel or train must be restored to OPERABLE status within 48 hours. If the affected Function(s) cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be placed in a MODE in which the requirement does not apply. To achieve this status, action must be initiated within the same 48 hours to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal within the next hour. The additional hour provides sufficient time to accomplish the action in an orderly manner. With rods fully inserted and the Rod Control System incapable of rod withdrawal, these Functions are no longer required.

The Completion Time is reasonable considering that in this Condition, the remaining OPERABLE train is adequate to perform the safety function, and given the low probability of an event occurring during this interval. 5

C D.1.1, D.1.2, D.2.1, D.2.2, and D.3 5

Condition C D applies to the Power Range Neutron Flux - High Function.

The NIS power range detectors provide input to the Rod Control System and the SG Water Level Control System and, therefore, have a two-out-of-four trip logic. A known inoperable channel must be placed in the tripped condition. This results in a partial trip condition requiring only one-out-of-three logic for actuation. The 6 hours allowed to place the inoperable channel in the tripped condition is justified in WCAP-10271-P-A (Ref. 10 9). 1 1

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(TSTF-418 not shown) (16)

BASES

ACTIONS (continued)

In addition to placing the inoperable channel in the tripped condition, THERMAL POWER must be reduced to ≤ 75% RTP within 12 hours. Reducing the power level prevents operation of the core with radial power distributions beyond the design limits. With one of the NIS power range detectors inoperable, 1/4 of the radial power distribution monitoring capability is lost. (5)

As an alternative to the above actions, the inoperable channel can be placed in the tripped condition within 6 hours and the QPTR monitored once every 12 hours as per SR 3.2.4.2, QPTR verification. Calculating QPTR every 12 hours compensates for the lost monitoring capability due to the inoperable NIS power range channel and allows continued unit operation at power levels ≥ 75% RTP. The 6 hour Completion Time and the 12 hour Frequency are consistent with LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Twelve hours are allowed to place the plant in MODE 3. This is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. If Required Actions cannot be completed within their allowed Completion Times, LCO 3.0.3 must be entered. (5)

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypass condition for up to 4 hours while performing routine surveillance testing of other channels. The Note also allows placing the inoperable channel in the bypass condition to allow setpoint adjustments of other channels when required to reduce the setpoint in accordance with other Technical Specifications. The 4 hour time limit is justified in Reference ~~7~~ (10). (1)

Required Action D.2.2 has been modified by a Note which only requires SR 3.2.4.2 to be performed if the Power Range Neutron Flux input to QPTR becomes inoperable. Failure of a component in the Power Range Neutron Flux Channel which renders the High Flux Trip Function inoperable may not affect the capability to monitor QPTR. As such, determining QPTR using this movable incore detectors once per 12 hours may not be necessary. (5)

⟨TSTF-418 not shown⟩ (16)

BASES

ACTIONS (continued)

E.1 and E.2

Condition E applies to the following reactor trip Functions:

- Power Range Neutron Flux - Low,
- Overtemperature ΔT,
- Overpower ΔT,
- Power Range Neutron Flux - High Positive Rate,
- Power Range Neutron Flux - High Negative Rate,
- Pressurizer Pressure - High,
- SG Water Level - Low Low, and
- SG Water Level - Low coincident with Steam Flow/Feedwater Flow Mismatch.

(5) • Pressurizer Pressure - Low

(5) INSERT 42

A known inoperable channel must be placed in the tripped condition within 6 hours. Placing the channel in the tripped condition results in a partial trip condition requiring only one-out-of-two logic for actuation of the two-out-of-three trips and one-out-of-three logic for actuation of the two-out-of-four trips. The 6 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 7. (10) (1)

If the inoperable channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in a MODE where these Functions are not required OPERABLE. An additional 6 hours is allowed to place the unit in MODE 3. Six hours is a reasonable time, based on operating experience, to place the unit in MODE 3 from full power in an orderly manner and without challenging unit systems. (5)

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7. (10) (1)

(5) , except Function 11 channels,

5 **INSERT 42**

- Pressurizer Water Level - High;
- Reactor Coolant Flow - Low;
- Reactor Coolant Pump (RCP) Breaker Position;
- Undervoltage RCPs;
- Underfrequency RCPs;

BASES

ACTIONS (continued)

F.1 and F.2

Condition F applies to the Intermediate Range Neutron Flux trip when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint and one channel is inoperable. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. If THERMAL POWER is greater than the P-6 setpoint but less than the P-10 setpoint, 24 hours is allowed to reduce THERMAL POWER below the P-6 setpoint or increase to THERMAL POWER above the P-10 setpoint. The NIS Intermediate Range Neutron Flux channels must be OPERABLE when the power level is above the capability of the source range, P-6, and below the capability of the power range, P-10. If THERMAL POWER is greater than the P-10 setpoint, the NIS power range detectors perform the monitoring and protection functions and the intermediate range is not required. The Completion Times allow for a slow and controlled power adjustment above P-10 or below P-6 and take into account the redundant capability afforded by the redundant OPERABLE channel, and the low probability of its failure during this period. This action does not require the inoperable channel to be tripped because the Function uses one-out-of-two logic. Tripping one channel would trip the reactor. Thus, the Required Actions specified in this Condition are only applicable when channel failure does not result in reactor trip.

G.1 and G.2

Condition G applies to two inoperable Intermediate Range Neutron Flux trip channels in MODE 2 when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint. Required Actions specified in this Condition are only applicable when channel failures do not result in reactor trip. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. With no intermediate range channels OPERABLE, the Required Actions are to suspend operations involving positive reactivity additions immediately. This will preclude any power level increase since there are no OPERABLE Intermediate Range Neutron Flux channels. The operator must also reduce THERMAL POWER below the P-6 setpoint within two hours. Below P-6, the Source Range Neutron Flux channels will be able to monitor the core power level. The Completion Time of 2 hours will allow a slow and controlled power reduction to less than the P-6 setpoint and takes into account the low probability of occurrence of an event during this period that may require the protection afforded by the NIS Intermediate Range Neutron Flux trip.

BASES

ACTIONS (continued)

Required Action F.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM.

G.1

Condition G applies to one inoperable Source Range Neutron Flux trip channel when in MODE 2, below the P-6 setpoint, and performing a reactor startup. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the two channels inoperable, operations involving positive reactivity additions shall be suspended immediately.

This will preclude any power escalation. With only one source range channel OPERABLE, core protection is severely reduced and any actions that add positive reactivity to the core must be suspended immediately.

Required Action G.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM.

H.1

Condition H applies to two inoperable Source Range Neutron Flux trip channels when in MODE 2, below the P-6 setpoint, and in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With both source range channels inoperable, the RTBs must be opened immediately. With the RTBs open, the core is in a more stable condition.

I.1, J.2, and J.2.2

Condition I applies to one inoperable source range channel in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the source range channels inoperable, 48 hours is allowed to restore it to an OPERABLE status. If the channel cannot be returned to

<TSTF - 418 not shown> (16)

BASES

ACTIONS (continued)

an OPERABLE status, action must be initiated within the same 48 hours to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal within the next hour. The allowance of 48 hours to restore the channel to OPERABLE status, and the additional hour, are justified in Reference 7. (5)

INSERT 43 (1)

K.1 and K.2 (5)

Condition K applies to the following reactor trip Functions:

- Pressurizer Pressure - Low,
- Pressurizer Water Level - High,
- Reactor Coolant Flow - Low
- RCP Breaker Position,
- Undervoltage RCPs, and
- Underfrequency RCPs.

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 6 hours. For the Pressurizer Pressure - Low, Pressurizer Water Level - High, Undervoltage RCPs, and Underfrequency RCPs trip Functions, placing the channel in the tripped condition when above the P-7 setpoint results in a partial trip condition requiring only one additional channel to initiate a reactor trip. For the Reactor Coolant Flow - Low and RCP Breaker Position (Two Loops) trip Functions, placing the channel in the tripped condition when above the P-8 setpoint results in a partial trip condition requiring only one additional channel in the same loop to initiate a reactor trip. For the latter two trip Functions, two tripped channels in two RCS loops are required to initiate a reactor trip when below the P-8 setpoint and above the P-7 setpoint. These Functions do not have to be OPERABLE below the P-7 setpoint because there are no loss of flow trips below the P-7 setpoint. There is insufficient heat production to generate DNB conditions below the P-7 setpoint. The 6 hours allowed to place the channel in the tripped condition is justified in Reference 7. An additional 6 hours is allowed to reduce THERMAL POWER to below P-7 if the inoperable channel cannot be restored to OPERABLE status or placed in trip within the specified Completion Time.

1

INSERT 43

is acceptable given the capability of the remaining OPERABLE source range channel.

<TSTF - 418 not shown> (16)

BASES

ACTIONS (continued)

Allowance of this time interval takes into consideration the redundant capability provided by the remaining redundant OPERABLE channel, and the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition K.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

(5)

L.1 and L.2

Condition L applies to the RCP Breaker Position (Single Loop) reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 6 hours. If the channel cannot be restored to OPERABLE status within the 6 hours, then THERMAL POWER must be reduced below the P-8 setpoint within the next 4 hours.

This places the unit in a MODE where the LCO is no longer applicable. This Function does not have to be OPERABLE below the P-8 setpoint because other RTS Functions provide core protection below the P-8 setpoint. The 6 hours allowed to restore the channel to OPERABLE status and the 4 additional hours allowed to reduce THERMAL POWER to below the P-8 setpoint are justified in Reference 7.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing outline surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

M.1 and M.2

Condition M applies to Turbine Trip on Low Fluid Oil Pressure or on Turbine Stop Valve Closure. With one channel inoperable, the inoperable channel must be placed in the trip condition within 6 hours. If placed in the tripped condition, this results in a partial trip condition requiring only one additional channel to initiate a reactor trip. If the channel cannot be restored to OPERABLE status or placed in the trip condition, then power must be reduced below the P-9 setpoint within the next 4 hours. The 6 hours allowed to place the inoperable channel in the

<TSTF – 418 not shown> (16)

RTS Instrumentation
B 3.3.1

BASES

ACTIONS (continued)

tripped condition and the 4 hours allowed for reducing power are justified in Reference 7.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4 hour time limit is justified in Reference 7.

N.1 and N.2

Condition N applies to the SI Input from ESFAS reactor trip and the RTS Automatic Trip Logic in MODES 1 and 2. These actions address the train orientation of the RTS for these Functions. With one train inoperable, 6 hours are allowed to restore the train to OPERABLE status (Required Action N.1) or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 6 hours (Required Action N.1) is reasonable considering that in this Condition, the remaining OPERABLE train is adequate to perform the safety function and given the low probability of an event during this interval. The Completion Time of 6 hours (Required Action N.2) is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems.

The Required Actions have been modified by a Note that allows bypassing one train up to 4 hours for surveillance testing, provided the other train is OPERABLE.

O.1 and O.2

Condition O applies to the RTBs in MODES 1 and 2. These actions address the train orientation of the RTS for the RTBs. With one train inoperable, 1 hour is allowed to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. The 1 hour and 6 hour Completion Times are equal to the time allowed by LCO 3.0.3 for shutdown actions in the event of a complete loss of RTS Function. Placing the unit in MODE 3 results in ACTION C entry while RTB(s) are inoperable.

The Required Actions have been modified by two Notes. Note 1 allows one channel to be bypassed for up to 2 hours for surveillance testing, provided the other channel is OPERABLE. Note 2 allows one RTB to be

TSTF-411

INSERT 44

for train corrective maintenance

1 TSTF-411

INSERT 45

11

The 24 hour Completion Time is justified in Reference [8].

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<TSTF - 418 not shown> (16)

BASES

ACTIONS (continued)

bypassed for up to 2 hours for maintenance if the other RTB train is OPERABLE. The 2 hour time limit is justified in Reference 7.

TSTF - 411

(L) P.1 and P.2

(5) (5)

Condition P applies to the P-6 and P-10 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition within 1 hour or the unit must be placed in MODE 3 within the next 6 hours. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. The 1 hour and 6 hour Completion Times are equal to the time allowed by LCO 3.0.3 for shutdown actions in the event of a complete loss of RTS Function.

(P-7, P-8) (and P-13) (5)

Q.1 and Q.2

(5)

Condition Q applies to the P-7, P-8, P-9, and P-13 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition within 1 hour or the unit must be placed in MODE 2 within the next 6 hours. These actions are conservative for the case where power level is being raised. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems.

(M) R.1 and R.2

(i.e., the) (5) (2)

Condition R applies to the RTB Undervoltage and Shunt Trip Mechanisms, or diverse trip features, in MODES 1 and 2. With one of the diverse trip features inoperable, it must be restored to an OPERABLE status within 48 hours or the unit must be placed in a MODE where the requirement does not apply. This is accomplished by placing the unit in MODE 3 within the next 6 hours (54 hours total time). The Completion Time of 6 hours is a reasonable time, based on operating experience, to

<TSTF-418 not shown> (16)

BASES

ACTIONS (continued)

reach MODE 3 from full power in an orderly manner and without challenging unit systems. With the unit in MODE 3, ACTION C would apply to any inoperable RTB trip mechanism. The affected RTB shall not be bypassed while one of the diverse features is inoperable except for the time required to perform maintenance to one of the diverse features. The allowable time for performing maintenance of the diverse features is 2 hours for the reasons stated under Condition Ø. (5)

The Completion Time of 48 hours for Required Action (M) Ø.1 is reasonable considering that in this Condition there is one remaining diverse feature for the affected RTB, and one OPERABLE RTB capable of performing the safety function and given the low probability of an event occurring during this interval. (5) INSERT 46 (5)

SURVEILLANCE REQUIREMENTS

The SRs for each RTS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

A Note has been added to the SR Table stating that Table 3.3.1-1 determines which SRs apply to which RTS Functions.

Note that each channel of process protection supplies both trains of the RTS. When testing Channel I, Train A and Train B must be examined. Similarly, Train A and Train B must be examined when testing Channel II, Channel III, and Channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

- REVIEWER'S NOTE -

Certain Frequencies are based on approval topical reports. In order for a licensee to use these times, the licensee must justify the Frequencies as required by the staff SER for the topical report. (8)

SR 3.3.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift

5

INSERT 46

N.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 1 below the P-7 interlock within 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

O.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 2 within 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

P.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Q.1 and Q.2

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must immediately initiate action to fully insert all rods and place the Rod Control System incapable of rod withdrawal within 1 hour. The additional hour provides sufficient time to accomplish the action in an orderly manner. With rods fully inserted and the Rod Control System incapable of rod withdrawal, these Functions are no longer required.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.1.2

(5) TSTF-371 not shown

SR 3.3.1.2 compares the calorimetric heat balance calculation to the NIS channel output every 24 hours. If the calorimetric exceeds the NIS channel output by > 2% RTP, the NIS is not declared inoperable, but must be adjusted. If the NIS channel output cannot be properly adjusted, the channel is declared inoperable.

Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS channel output shall be adjusted consistent with the calorimetric results if the absolute difference between the NIS channel output and the calorimetric is > 2% RTP. The second Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 12 hours is allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate.

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate the change in the absolute difference between NIS and heat balance calculated powers rarely exceeds 2% in any 24 hours period.

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

BASES

SURVEILLANCE REQUIREMENTS (continued)

(5) TSTF-371 not shown

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted.

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed to verify the f(ΔI) input to the overtemperature ΔT Function. (5)

(3)

Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. Note 2 clarifies that the Surveillance is required only if reactor power is ≥ [15%] RTP and that 24 hours is allowed for performing the first Surveillance after reaching [15%] RTP. (4)

The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.

SR 3.3.1.4 (62) TSTF 411 (5)

SR 3.3.1.4 is the performance of a TADOT every 31 days on a STAGGERED TEST BASIS. This test shall verify OPERABILITY by actuation of the end devices. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The RTB test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of RTB undervoltage and shunt trip Function is not required for the bypass breakers. No capability is provided for performing such a test at power. The independent test for bypass breakers is included in SR 3.3.1.11 (17). The bypass breaker test shall include a local shunt trip. A Note has been added to indicate that this test must be performed on the bypass breaker prior to placing it in service. (5)

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 31 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.1.6

SR 3.3.1.6 is a calibration of the excore channels to the incore channels. If the measurements do not agree, the excore channels are not declared inoperable but must be calibrated to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed to verify the f(ΔI) input to the overtemperature ΔT Function.

A Note modifies SR 3.3.1.6. The Note states that this Surveillance is required only if reactor power is > 50% RTP and that [24] hours is allowed for performing the first surveillance after reaching 50% RTP.

The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every [92] days.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the

(5)

INSERT 47

SR 3.3.1.6

SR 3.3.1.6 is the performance of a TADOT and is performed every 92 days on a STAGGERED TEST BASIS. This test applies to the automatic SI input from ESFAS. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The SR is modified by a Note that excludes the manual SI input from ESFAS during the performance of SR 3.3.1.6. The manual SI input for ESFAS is tested during the performance of SR 3.3.1.17.

The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 11.

<TSTF-418 not shown> (16)

BASES

SURVEILLANCE REQUIREMENTS (continued)

relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 7. (1) <TSTF 411 changes not shown>

SR 3.3.1.7 is modified by a Note that provides a 4 hours delay in the requirement to perform this Surveillance for source range instrumentation when entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3. (5)

The Frequency of [92] days is justified in Reference 7. (4) (1)

SR 3.3.1.8 INSERT 48 (5)

SR 3.3.1.8 is the performance of a COT as described in SR 3.3.1.7, except it is modified by a Note that this test shall include verification that the P-6 and P-10 interlocks are in their required state for the existing unit condition. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within [92] days of the Frequencies prior to reactor startup and four hours after reducing power below P-10 and P-6. The Frequency of "prior to startup" ensures this surveillance is performed prior to critical operations and applies to the source, intermediate and power range low instrument channels. The Frequency of [12] hours after reducing power

(10) every 184 days. (10) INSERT 49 (OT) (2) (10) INSERT 49A (5) INSERT 50 (4)

5

INSERT 48

SR 3.3.1.9

A CHANNEL CALIBRATION is performed every 92 days. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of 92 days is based on the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

This SR is modified by a Note that states that neutron detectors are excluded from the CHANNEL CALIBRATION. Changes in power range neutron detector sensitivity are compensated for by normalization of the channel output based on a power calorimetric and flux map performed above 15% RTP (SR 3.3.1.2).

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A COT is performed on each required channel to ensure the entire channel will perform the intended Function.

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INSERT 49A

Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 8.

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INSERT 50

two Notes. Note 1 provides a 12 hour delay in the requirement to perform this Surveillance for intermediate range instrumentation after reducing THERMAL POWER below the P-10 interlock.

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<TSTF-418 not shown> (16)

BASES

SURVEILLANCE REQUIREMENTS (continued)

below P-10 (applicable to intermediate and power range low channels) and 4 hours after reducing power below P-6 (applicable to source range channels) allows a normal shutdown to be completed and the unit removed from the MODE of Applicability for this surveillance without a delay to perform the testing required by this surveillance. The Frequency of every 92 days thereafter applies if the plant remains in the MODE of Applicability after the initial performances of prior to reactor startup and [12] and four hours after reducing power below P-10 or P-6, respectively. The MODE of Applicability for this surveillance is < P-10 for the power range low and intermediate range channels and < P-6 for the source range channels. Once the unit is in MODE 3, this surveillance is no longer required. If power is to be maintained < P-10 for more than [12] hours or < P-6 for more than 4 hours, then the testing required by this surveillance must be performed prior to the expiration of the time limit. [Twelve] hours and four hours are reasonable times to complete the required testing or place the unit in a MODE where this surveillance is no longer required. This test ensures that the NIS source, intermediate, and power range low channels are OPERABLE prior to taking the reactor critical and after reducing power into the applicable MODE (< P-10 or < P-6) for periods > [12] and 4 hours, respectively.

INSERT 50A

INSERT 51

SR 3.3.1.9

SR 3.3.1.9 is the performance of a TADOT and is performed every [92] days, as justified in Reference 7. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

INSERT 52

INSERT 53

SR 3.3.1.10

A CHANNEL CALIBRATION is performed every [18] months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test

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INSERT 50A

Note 2 provides a 4 hour delay in the requirement to perform this Surveillance for source range instrumentation after THERMAL POWER is reduced below the P-6 interlock. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.10 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after THERMAL POWER is reduced below the P-6 interlock.

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The Frequency of 184 days is justified in Reference 11.

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The Frequency of 184 days is based on operating experience, considering instrument reliability and operating history data.

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INSERT 53

SR 3.3.1.12

A CHANNEL CALIBRATION is performed every 184 days. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of 184 days is based on the assumption of an 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

BASES

SURVEILLANCE REQUIREMENTS (continued)

verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

SR 3.3.1.10 is modified by a Note stating that this test shall include verification that the time constants are adjusted to the prescribed values where applicable.

SR 3.3.1.11

SR 3.3.1.11 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detectors based on a power calorimetric and flux map performed above 15% RTP. The CHANNEL CALIBRATION for the source range and intermediate range neutron detectors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.

SR 3.3.1.12

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CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor.

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Changes in power range neutron detector sensitivity are compensated for by normalization of the channel output based on a power calorimetric and flux map performed above 15% RTP (SR 3.3.1.2). Changes in intermediate range neutron flux detector sensitivity are compensated for by periodically evaluating the compensating voltage setting and making adjustments as necessary. Changes in source range neutron detector sensitivity are compensated for by periodically obtaining the detector plateau or preamp discriminator curves, evaluating those curves, comparing the curves to the manufacturer's data, and adjusting the channel output as necessary.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, every 18 months. This SR is modified by a Note stating that this test shall include verification of the RCS resistance temperature detector (RTD) bypass loop flow rate. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

This test will verify the rate lag compensation for flow from the core to the RTDs.

The Frequency is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a COT of RTS interlocks every 18 months. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

SR 3.3.1.14

SR 3.3.1.14 is the performance of a TADOT of the Manual Reactor Trip, RCP Breaker Position, and the SI Input from ESFAS. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This TADOT is performed every 18 months. The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the

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This SR is modified by two Notes.

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Note 2 provides a 72 hour delay in the requirement to perform a normalization of the ΔT channels after THERMAL POWER is $\geq$ 98% RTP.

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<TSTF-418 not shown> (16)

RTS Instrumentation
B 3.3.1

BASES

SURVEILLANCE REQUIREMENTS (continued)

Manual Reactor Trip Function for the Reactor Trip Breakers and Reactor Trip Bypass Breakers. The Reactor Trip Bypass Breaker test shall include testing of the automatic undervoltage trip.

The Frequency is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

INSERT 58 → The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them. (5)

SR 3.3.1.15 (18) (5)

SR 3.3.1.15 is the performance of a TADOT of Turbine Trip Functions. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This TADOT is as described in SR 3.3.1.4, except that this test is performed prior to exceeding the P-9 interlock whenever the unit has been in MODE 3. This Surveillance is not required if it has been performed within the previous 31 days. Verification of the Trip Setpoint does not have to be performed for this Surveillance. Performance of this test will ensure that the turbine trip Function is OPERABLE prior to exceeding the P-9 interlock. (5) (4) (4) (P-7) (4) (P-7)

SR 3.3.1.16 (19) (5)

SR 3.3.1.16 verifies that the individual channel/train actuation response times are less than or equal to the maximum values assumed in the accident analysis. Response time testing acceptance criteria are included in Technical Requirements Manual, Section 15 (Ref. 8). Individual component response times are not modeled in the analyses. (UFSAR Table 7.2-6) (12) (1)

The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the point at which the equipment reaches the required functional state (i.e., control and shutdown rods fully inserted in the reactor core).

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This SR is modified by a Note that excludes the automatic SI input from ESFAS during the performance of SR 3.3.1.17. The automatic SI input from ESFAS is tested during the performance of SR 3.3.1.6.

BASES

SURVEILLANCE REQUIREMENTS (continued)

For channels that include dynamic transfer Functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer Function set to one, with the resulting measured response time compared to the appropriate FSAR response time. Alternately, the response time test can be performed with the time constants set to their nominal value, provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

- REVIEWER'S NOTE -

Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A and/or WCAP-14036-P.

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test.

WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that my adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may re replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

<TSTF-418 not shown> (16)

BASES

SURVEILLANCE REQUIREMENTS (continued)

(24) As appropriate, each channel's response must be verified every 18 months on a STAGGERED TEST BASIS. Testing of the final actuation devices is included in the testing. Response times cannot be determined during unit operation because equipment operation is required to measure response times. Experience has shown that these components usually pass this surveillance when performed at the (24) 18 months Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. (4) (1) (5)

(19) SR 3.3.1.16 is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response. (5)

INSERT 59 (1)

REFERENCES

1. FSAR, Chapter [7].

2. FSAR, Chapter [6].

3. FSAR, Chapter [15].

4. IEEE-279-1971.

INSERT 6D

5. 10 CFR 50.49. (1)

6. RTS/ESFAS Setpoint Methodology Study.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. Technical Requirements Manual, Section 15, "Response Times."

(13) 9. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996. (4)

(14) 10. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995. (4)

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The response time testing of the neutron flux signal portion of the channel shall be measured from either the detector output or the input of the first electronic component in the channel.”

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INSERT 60

1. Regulatory Guide 1.105, Revision 3, “Setpoints for Safety Related Instrumentation.”

2. UFSAR, Chapter 7.

3. Technical Requirements Manual.

4. IEEE-279, “Proposed Criteria for Nuclear Power Plant Protection Systems,” August 1968.

5. UFSAR, Table 7.2-1.

6. UFSAR, Table 14.1-2 (Unit 1) and UFSAR, Table 14.1.0-4 (Unit 2).

7. 10 CFR 50.49.

8. EG-IC-004, "Instrument Setpoint Uncertainty," Rev. 4.

9. UFSAR, Chapter 14.

10. WCAP-10271-P-A, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," including Supplement 1, May 1986, and Supplement 2, Rev.1, June 1990.

11

~~8~~. WCAP-15376, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," October 2000. TSTF-411

12. UFSAR, Table 7.2-6.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1 BASES, REACTOR TRIP SYSTEM INSTRUMENTATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Grammatical/editorial error corrected.

3. The Note, describing an alternative Technical Specification format with respect to Allowable Values and Trip Setpoints, is deleted because it is not intended to be included in the plant specific ITS submittal.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Changes are made to reflect changes made to the Specification.

6. Spelling error corrected.

7. Changes are made to reflect the Specifications.

8. The Reviewer’s Notes are deleted because they are not intended to be included in the plant specific ITS submittal.

9. The discussion in ISTS SR 3.3.1.11 (ITS SR 3.3.1.14) about the normalization of the power range neutron detectors has been deleted since the adjustment is part of ISTS SR 3.3.1.2 (ITS SR 3.3.1.2).

10. Changes are made for consistency with other places of the Bases.

11. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

12. This statement has been deleted since the Power Range Neutron Flux and Intermediate Range Neutron Flux instrumentation are not assumed in the accident analyses to prevent automatic or manual rod withdrawal.

13. This statement has been deleted since this feature is not required for OPERABILITY of the Steam Generator Water Level - Low Low RTS Function.

14. This statement has been deleted since it is not relevant to the discussion.

15. This statement has been deleted since this feature is not assumed in the safety analyses.

16. TSTF-418, Rev. 2, which incorporates WCAP-14333, has not been adopted.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

ATTACHMENT 2

ITS 3.3.2, Engineered Safety Features Actuation System (ESFAS) Instrumentation

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.2 — 3.3.2.1 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4. [LA.1]

APPLICABILITY: As shown in Table 3.3-3.

ACTION: [Add proposed ACTIONS Note — A.2]

ACTIONS A through F — a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value. [LA.1]

ACTION A — b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

SR Table Note — 4.3.2.1.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, CHANNEL FUNCTIONAL TEST and TRIP ACTUATING DEVICE OPERATIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2. [A.10] [L.1]

SR 3.3.2.2; SR 3.3.2.10, SR 3.3.2.12 — 4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 [24] months during CHANNEL CALIBRATION testing of each channel affected by interlock operation. [L.2] [L.3]

[Add proposed Note to SR 3.3.2.13]

SR 3.3.2.13 — 4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 [24] months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3. [L.4] [A.3]

[on a STAGGERED TEST BASIS — A.4]

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2

A.5 REQUIRED

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1	1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN FEEDWATER PUMPS (LA.3)					
1.a	a. Manual Initiation	See Functional Unit 9				
1.b	b. Automatic Actuation Logic	2	1	2	1,2,3,4	13 C, I (LA.2)
1.c	c. Containment Pressure-High	3	2	2 (3)	1,2,3	14[#] D (A.5, A.6)
1.d	d. Pressurizer Pressure-Low	3	2	2 (3)	1,2,3[#]	14[#] D (A.6)
1.e.(2)	e. Differential Pressure Between Steam Lines- High					
	Four Loops Operating	3/steam line	2/steam line any steam line	2/steam line (3)	1,2,3[##]	14[#] D (A.6)
	Three Loops Operating	3/operating steam line	1[###]/steam line, any operating steam line	2/operating steam line	3[##]	15 (A.15)

COOK NUCLEAR PLANT-UNIT 1 Page 3/4 3-16 AMENDMENT 90, 120, 153

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 REQUIRED A.5 per steam line A.6 A.15

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1.e.(1)	f. Steam Line Pressure-Low					
	Four Loops Operating	1 pressure/loop	2 pressures any loops	1 pressure any 3 loops	1,2,3##	14 D
	Three Loops Operating	1 pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops	3##	15

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2

A.5

LA.2

A.5

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	2. CONTAINMENT SPRAY					
2.a	a. Manual	See Functional Unit 9				
2.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13 C, I
2.c	c. Containment Pressure--High-High	4	2	3 4	1, 2, 3	16 E

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 A.5 A.7 LA.2 LA.2 A.5

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM (REQUIRED) CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	3. CONTAINMENT ISOLATION					
	a. Phase "A" Isolation					
3.a.(1)	1) Manual	See Functional Unit 9				
	(Add proposed Function 3.a.(2))					
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13 C, I
	b. Phase "B" Isolation					
3.b.(1)	1) Manual	See Functional Unit 9				
3.b.(2)	2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13 C, I
3.b.(3)	3) Containment Pressure -- High-High	4	2	3 4	1, 2, 3	16 E
	c. Purge and Exhaust Isolation					
	1) Manual	See Functional Unit 9				
	2) Containment Radioactivity-* High Train A (VRS 1101, ERS-1301, ERS 1305)	3	1	2	1, 2, 3, 4	17
	3) Containment Radioactivity-* High Train B (VRS 1201, ERS-1401, ERS-1405)	3	1	2	1, 2, 3, 4	17

See ITS 3.3.6

*This specification only applies during PURGE.

ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 REQUIRED A.5 LA.2 L.6

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	4. STEAM LINE ISOLATION					
4.a	a. Manual	------------------	See Functional Unit 9	------------------		
4.b	b. Automatic Actuation Logic	2	1	2 Add proposed Footnote (d)	1, 2, 3	13 C, H
4.c	c. Containment Pressure --High-High	4	2	3 4	1, 2, 3 Add proposed Foonote (d)	16 E
4.e	d. Steam Flow in Two Steam Lines--High					
	Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line 2	1, 2, 3## Add proposed Footnote (d)	14* D
	Three Loops Operating	2/operating steam line	1###/any operating steam line	1/ operating steam line	3##	15

A.5 L.6 A.5 A.6 L.6 A.15

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 A.5 L.6

REQUIRED

Add proposed Footnote (d)

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
COINCIDENT WITH					
4.e T_{avg} -- Low-Low					
Four Loops Operating	1 T_{avg}/loop	2 T_{avg} any loops	1 T_{avg} any 3 loops (per loop)	1, 2, 3##	14# D
Three Loops Operating	1 T_{avg}/operating loop	1### T_{avg} in any operating loop	1 T_{avg} in any two operating loops	3##	15
4.d e. Steam Line Pressure-Low					
Four Loops Operating	1 pressure/loop	2 pressures any loops	1 pressure any 3 loops (per steam line)	1, 2, 3##	14# D
Three Loops Operating	1 pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops	3##	15
5. TURBINE TRIP & FEEDWATER ISOLATION					
5.b a. Steam Generator Water Level--High-High	3/loop	2/loop in any operating loop	3 2/loop in each operating loop (per SG)	1,2,3	14# D

A.6 A.5 A.15 LA.2 L.6 A.6 A.5 A.15 LA.2 L.7 A.6 A.5

Add proposed Footnote (d)

Add proposed Footnote (f)

Add proposed Function 5.a L.8 A.12

Add proposed Function 5.c A.8 L.15 L.16

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level -- Low-Low	3/Stm. Gen.	2/Stm. Gen. any Stm. Gen.	2/Stm. Gen. 3	1, 2, 3	14* D
6.e	b. 4 kV Bus Loss of Voltage	3/Bus	2/Bus	2/Bus 3	1, 2, 3	14* B
	Pump Start		2/bus (T11A -- Train B; T11D -- Train A)			
	Valve Actuation (Both trains)		2/bus on (T11A & T11B or 2/busses T11C & T11D)			
6.d	c. Safety Injection	2	1	2	1, 2, 3	18* B, H
6.g	d. Loss of Main Feedwater Pumps	2	2	2	1, 2	18* B, G
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level -- Low-Low	3/Stm. Gen.	2/Stm. Gen. any 2 Stm. Gen.	2/Stm. Gen. 3	1, 2, 3	14* D
6.f	b. Reactor Coolant Pump Bus Undervoltage	4-1/Bus	2	3 1 per bus	1, 2, 3	19* D
	8. LOSS OF POWER					
	a. 4 kV Bus Loss of Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	14*
	b. 4 kV Bus Degraded Voltage	3/Bus (T11A -- Train B; T11D -- Train A)	2/Bus (T11A -- Train B; T11D -- Train A)	2/Bus (T11A -- Train B; T11D -- Train A)	1, 2, 3, 4	14*

Annotations: LA.2; REQUIRED; A.5; A.6; A5; L.21; LA.2; LA.2; A.13; L.17; Add proposed Functions 6.a and 6.b; LA.2; A.5; A.6; L.18; A.6; A.5; See ITS 3.3.5; Add proposed Function 6.a; L.17; A.13

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	Annotations
	9. MANUAL						LA.2, A.5
1.a 5.c 3.a.(3) 6.d	a. Safety Injection (ECCS) Feedwater Isolation Reactor Trip (SI) Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps Essential Service Water System	2/train	1/train	2/train (1)	1, 2, 3, 4	18 B, I	L.20, LA.3, See ITS 3.3.6, LA.3
2.a 3.b.(1)	b. Containment Spray Containment Isolation - Phase "B" Containment Purge and Exhaust Isolation	1/train	1/train	1/train	1, 2, 3, 4	18 B, I	LA.2, See ITS 3.3.6
3.a.(1)	c. Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation	1/train	1/train	1/train	1, 2, 3, 4	18 B, I	LA.2, See ITS 3.3.6
4.a	d. Steam Line Isolation	2/steam line (1 per train)	2/steam line (1 per train)	2/operating steam line (1 per train)	1, 2, 3 Add proposed Footnote (d)	20 B, J	L.6
7.a	e. Containment Air Recirculation Fan	1/train	1/train	1/train	1, 2, 3, 4	18 B, I	LA.2
	10. CONTAINMENT AIR RECIRCULATION FAN						
7.a	a. Manual	See Functional Unit 9					
7.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3	13 C, H	
7.c	c. Containment Pressure - High	3	2	2 (3)	1, 2, 3	14# D	A.6, A.5, LA.2

ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-3 (Continued)

TABLE NOTATION

Footnote (a) *Trip function may be bypassed in this MODE below P-11.

Footnote (b) **Trip function may be bypassed in this MODE below P-12.

***The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.

****Manually trip all bistables which would be automatically tripped in the event pressure in the associated active loop were less than the pressure in the inactive loop. For example, if loop 1 is the inactive loop, then the bistables which indicate low pressure in loops 2, 3, and 4 relative to loop 1 should be tripped.

A.15

ACTION B Note *The provisions of Specification 3.0.4 are not applicable.

A.6

Add proposed Required Action C.1

L.9

ACTION STATEMENTS

ACTION C — ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTIONS H and I

ACTION C Note

M.9

4

L.5

Add proposed ACTION D Note

ACTION D — ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operations may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

L.10

6

L.5

Add proposed ACTIONS G, H, and I

M.4

ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

A.15

ACTION E — ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is met; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

within 6 hours

L.11

4

L.5

Add proposed ACTIONS H and I

M.4

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ITS 3.3.2

A.1

ITS

TABLE 3.3-3 (Continued)

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

See ITS 3.3.6

ACTION B

ACTIONS G, H, and I

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

M.9

A.14

ACTION D

ACTION 19 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 1 hour.

6

L.5

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

4

Add proposed ACTION J

M.4

ACTION B

ACTION J

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

ITS 3.3.2

A.1

ITS

Table 3.3.2-1

A.9

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

LA.4

ENGINEERED SAFETY FEATURES INTERLOCKS

1 per train

ITS	DESIGNATION	CONDITION AND SETPOINT	FUNCTION
8.b	P-11	With 2 of 3 pressurizer pressure channels greater than or equal to 1915 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
8.c	P-12	With 2 of 4 T_{avg} channels less than or equal to Setpoint. Setpoint greater than or equal to 541°F	P-12 allows the manual block of safety injection actuation on low steam line pressure causes steam line isolation on high steam flow. Affects steam dump blocks. With 3 of 4 T_{avg} channels above the reset point, prevents or defeats the manual block of safety injection actuation on low steam line pressure.

Add proposed Applicability

Add proposed ACTIONS F and H

Add proposed ACTIONS D and H

538.8

LA.4

LA.4

L.22

L.12

Add proposed Function 8.a, including ACTIONS and Surveillance Requirement

M.5

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
1	1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN FEEDWATER PUMPS			LA.1, LA.3
1.a	a. Manual Initiation	See Functional Unit 9	See Functional Unit 9	
1.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	LA.1
1.c	c. Containment Pressure--High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig (1.17)	M.11
1.d	d. Pressurizer Pressure--Low	Greater than or equal to 1815 psig	Greater than or equal to 1805 psig (1765)	L.22
1.e.(2)	e. Differential Pressure Between Steam Lines--High	Less than or equal to 100 psi	Less than or equal to 112 psi	
1.e.(1)	f. Steam Line Pressure--Low	Greater than or equal to 500 psig steam line pressure	Greater than or equal to 480 (481.3) psig steam line pressure (Add proposed Footnote (c))	M.11, M.1

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
	2. CONTAINMENT SPRAY			LA.1
2.a	a. Manual Initiation	See Functional Unit 9		
2.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	LA.1
2.c	c. Containment Pressure--High-High	Less than or equal to 2.9 psig	Less than or equal to 3 psig (2.97)	M.11
	3. CONTAINMENT ISOLATION			
	a. Phase "A" Isolation			
3.a.(1)	1. Manual	See Functional Unit 9		
3.a.(3)	2. From Safety Injection Automatic Actuation Logic	Not Applicable	Not Applicable	LA.1
	b. Phase "B" Isolation			
3.b.(1)	1. Manual	See Functional Unit 9		
3.b.(2)	2. Automatic Actuation Logic	Not Applicable	Not Applicable	LA.1
3.b.(3)	3. Containment Pressure--High-High	Less than or equal to 2.9 psig	Less than or equal to 3 psig (2.97)	M.11
	c. Purge and Exhaust Isolation			See ITS 3.3.6
	1. Manual	See Functional Unit 9		

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
	2. Containment Radio-activity--High Train A (VRS-1101, ERS-1301, ERS-1305)	See Table 3.3-6	Not Applicable	See ITS 3.3.6
	3. Containment Radio-activity--High Train B (VRS-1201, ERS-1401, ERS-1405)	See Table 3.3-6	Not Applicable	
	4. STEAM LINE ISOLATION			
4.a	a. Manual	See Functional Unit 9		LA.1
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
4.c	c. Containment Pressure--High-High	Less than or equal to 2.9 psig	Less than or equal to 3 psig (2.97)	M.11
4.e	d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low	Less than or equal to 1.42 x 10^6 lbs/hr from 0% load to 20% load. Linear from 1.42 x 10^6 lbs/hr at 20% load to 3.88 x 10^6 lbs/hr at 100% load.	Less than or equal to 1.56 x 10^6 lbs/hr from 0% load to 20% load. Linear from 1.56 x 10^6 lbs/hr at 20% load to 3.93 10^6 lbs/hr at 100% load.	
		T_{avg} greater than or equal to 541°F	T_{avg} greater than or equal to 539°F (538.8)	L.22
4.d	e. Steam Line Pressure--Low	Greater than or equal to 500 psig steam line pressure	Greater than or equal to 480 (481.3) psig steam line pressure (Add proposed Footnote (c))	M.11, M.1
	5. TURBINE TRIP AND FEEDWATER ISOLATION			
5.b	a. Steam Generator Water Level--High-High	Less than or equal to 67% of narrow-range instrument span each steam generator	Less than or equal to 68% of narrow-range instrument span each steam generator	LA.5

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS		
6.c	a. Steam Generator Water Level--Low-Low	Greater than or equal to 17% of narrow-range instrument span each steam generator	Greater than or equal to 16% of narrow-range instrument span each steam generator (4.0, L.22, LA.5)
6.e	b. 4 kv Bus Loss of Voltage	3286 volts with a time delay of 2 seconds	≥ 3245 volts and ≤ 3328 volts with a time delay of 2 ± 0.2 seconds
6.d	c. Safety Injection	Not Applicable	Not Applicable
6.g	d. Loss of Main Feedwater Pumps	Not Applicable	Not Applicable
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS		
6.c	a. Steam Generator Water Level--Low-Low	Greater than or equal to 17% of narrow-range instrument span each steam generator	Greater than or equal to 16% of narrow-range instrument span each steam generator (4.0, L.22, LA.5)
6.f	b. Reactor Coolant Pump Bus Undervoltage	Greater than or equal 2750 Volts--each bus	Greater than or equal to 2725 Volts--each bus
	8. LOSS OF POWER		
	a. 4 kv Bus Loss of Voltage	3286 volts with a time delay of 2 seconds	≥ 3245 volts and ≤ 3328 volts with a time delay of 2 ± 0.2 seconds
	b. 4 kv Bus Degraded Voltage	3959 volts with a time delay of 9 seconds when a steam generator water level low-low or a safety injection signal is present	≥ 3910 volts and ≤ 4000 volts with a time delay of 9 ± 0.25 seconds when a steam generator water level low-low or a safety injection signal is present

See ITS 3.3.5

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
	9. Manual			LA.3
1.a	a. Safety Injection (ECCS)	N.A.	N.A.	
5.c	Feedwater Isolation	N.A.	N.A.	
	Reactor Trip (SI)	N.A.	N.A.	
3.a.(3)	Containment Isolation - Phase "A"	N.A.	N.A.	
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
6.d	Auxiliary Feedwater Pumps	N.A.	N.A.	
	Essential Service Water System	N.A.	N.A.	LA.3, LA.1
2.a	b. Containment Spray	N.A.	N.A.	
3.b.(1)	Containment Isolation - Phase "B"	N.A.	N.A.	
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
3.a.(1)	c. Containment Isolation - Phase "A"	N.A.	N.A.	LA.1
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
4.a	d. Steam Line Isolation	N.A.	N.A.	LA.1
7.a	e. Containment Air Recirculation Fan	N.A.	N.A.	
	10. CONTAINMENT AIR RECIRCULATION FAN			
7.a	a. Manual	See Functional Unit 9		LA.1
7.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
7.c	c. Containment Pressure - High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig	1.17, M.11

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A.1

TABLE 3.3-5

Table Intentionally Deleted

A.1

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

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A.1

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

ITS 3.3.2

A.1

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

A.10 LA.3 L.2 M.6 LA.6

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.2.1)	CHANNEL CALIBRATION (SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.5)	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
1.a	a. Manual Initiation	See Functional Unit 9 (Add proposed SR 3.3.2.4 and SR 3.3.2.8)				
1.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
1.c	c. Containment Pressure-- High	S-1	R-10 (24 months)	SA(3)-5	N.A.	1, 2, 3
1.d	d. Pressurizer Pressure--Low	S-1	R-10	SA-5	N.A.	1, 2, 3
1.e.(2)	e. Differential Pressure Between Steam Lines-- High	S-1	R-10	SA-5	N.A.	1, 2, 3
1.e.(1)	f. Steam Line Pressure--Low	S-1	R-10	SA-5	N.A.	1, 2, 3
	2. CONTAINMENT SPRAY					
2.a	a. Manual Initiation	See Functional Unit 9 (Add proposed SR 3.3.2.4 and SR 3.3.2.8)				
2.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
2.c	c. Containment Pressure-- High-High	S-1	R-10	SA(3)-5	N.A.	1, 2, 3

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

A.10

ITS	FUNCTIONAL UNIT	SR 3.3.2.1 CHANNEL CHECK	SR 3.3.2.10 CHANNEL CALIBRATION	SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.5 CHANNEL FUNCTIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	3. CONTAINMENT ISOLATION					
	a. Phase "A" Isolation					
3.a.(1)	1) Manual		---------- See Functional Unit 9 ----------			
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	Q (2)-3	N.A.	1, 2, 3, 4
	b. Phase "B" Isolation					
3.b.(1)	1) Manual		---------- See Functional Unit 9 ----------			
3.b.(2)	2) Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
3.b.(3)	3) Containment Pressure--High-High	S -1	R -10 (24 months)	SA (3)-5	N.A.	1, 2, 3
	c. Purge and Exhaust Isolation					
	1) Manual		---------- See Functional Unit 9 ----------			
	2) Containment Radioactivity--High	S	R	Q	N.A.	1, 2, 3, 4

Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 3.a.(2) — M.8

Add proposed SR 3.3.2.4 and SR 3.3.2.8 — M.6

L.2

LA.6

See ITS 3.3.6

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.2.1)	CHANNEL CALIBRATION (SR 3.3.2.7, SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.5, SR 3.3.2.6, SR 3.3.2.9)	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	4. STEAM LINE ISOLATION					
4.a	a. Manual	See Functional Unit 9				
4.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2) -2	N.A.	1, 2, 3,
4.c	c. Containment Pressure-- High-High	S-1	R -10	SA (3) -5	N.A.	1, 2, 3
4.e	d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low	S -1 (24 months)	R -10	SA -5	N.A.	1, 2, 3
4.d	e. Steam Line Pressure-Low	S -1	R -10	SA -5	N.A.	1, 2, 3
	5. TURBINE TRIP AND FEEDWATER ISOLATION					
5.b	a. Steam Generator Water Level--High-High	S -1	R -10	SA -5	N.A.	1, 2, 3
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level--Low-Low	S -1 (24 months)	R -10	SA -5	N.A.	1, 2, 3
6.e	b. 4 kv Bus Loss of Voltage	S -1	R -7	M -6 (184 days)	N.A.	1, 2, 3
6.d	c. Safety Injection	N.A.	N.A.	Q (2) -3	N.A.	1, 2, 3
6.g	d. Loss of Main Feed Pumps	N.A. (184 days)	N.A.	R -9 (24 months)	N.A.	1, 2

A.10
L.2
Add proposed SR 3.3.2.4 and SR 3.3.2.8 — M.6
Add proposed Footnote (d) — L.6
LA.6
Add proposed Footnote (d) — L.6
Add proposed Footnote (f) — L.7
Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 5.a — M.2
Add proposed SR 3.3.2.9 for Function 5.c — M.7
L.2
Add proposed Note to SR 3.3.2.6 — A.11
L.19
L.13
M.10
Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 6.a
Add proposed SR 3.3.2.11 for Function 6.b — M.3

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

A.10

L.2

ITS	FUNCTIONAL UNIT	SR 3.3.2.1 CHANNEL CHECK	SR 3.3.2.7, SR 3.3.2.10 CHANNEL CALIBRATION	SR 3.3.2.5, SR 3.3.2.6 CHANNEL FUNCTIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS		24 months	184 days		
6.c	a. Steam Generator Water Level--Low-Low	S -1	R -10	SA -5	N.A.	1, 2, 3
				Add proposed Note to SR 3.3.2.6		
6.f	b. Reactor Coolant Pump Bus Undervoltage	N.A.	184 days R -7	M -6	N.A.	1, 2, 3
	8. LOSS OF POWER					
	a. 4 kv Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3, 4
	b. 4 kv Bus Degraded Voltage	S	R	M	N.A.	1, 2, 3, 4

L.19

A.11

L.18

M.10

See ITS 3.3.5

Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 6.a

M.3

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

A.10

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION (SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.5)	TRIP ACTUATING DEVICE OPERATIONAL TEST (SR 3.3.2.9)	MODES IN WHICH SURVEILLANCE REQUIRED
	9. Manual					
1.a, 5.c, 3.a.(3), 6.d	a. Safety Injection (ECCS) Feedwater Isolation ~~Reactor Trip (SI)~~ Containment Isolation-Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps ~~Essential Service Water System~~	N.A.	N.A.	N.A.	R -9 (24 months)	1, 2, 3, 4
2.a, 3.b.(1)	b. Containment Spray Containment Isolation-Phase "B" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R -9 (24 months)	1, 2, 3, 4
3.a.(1)	c. Containment Isolation-Phase "A" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R -9 (24 months)	1, 2, 3, 4
4.a	d. Steam Line Isolation	N.A.	N.A.	~~Q~~	R -9 (24 months)	1, 2, 3 (Add proposed Footnote (d))
7.a	e. Containment Air Recirculation Fan	N.A.	N.A.	N.A.	R -9	1, 2, 3, 4
	10. CONTAINMENT AIR RECIRCULATION FAN					
7.a	a. Manual	See Functional Unit 9				
7.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2) -2	N.A.	1, 2, 3
7.c	c. Containment Pressure - High	S -1	R -10 (24 months)	SA (3) -5	N.A.	1, 2, 3

LA.3 (Reactor Trip (SI)); LA.3 (Essential Service Water System)

L.13; See ITS 3.3.6 (Containment Purge and Exhaust Isolation); L.13; See ITS 3.3.6; L.13; See ITS 3.3.6; L.13; L.6; L.14

Add proposed SR 3.3.2.4 and SR 3.3.2.8 — M.6

LA.6

L.2

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 4.3-2 (Continued)

TABLE NOTATION

(1) Deleted

SR 3.3.2.2, SR 3.3.2.3 — (2) Each train or logic channel shall be tested at least every other 92 days. A.10

SR 3.3.2.5 Note — (3) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either a vacuum or pressure to the appropriate side of the transmitter. LA.6

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.2 3.3.2.1 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4. LA.1

APPLICABILITY: As shown in Table 3.3-3.

ACTION: Add proposed ACTIONS Note A.2

ACTIONS A through F

a. With an ESFAS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value. LA.1

ACTION A

b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

A.10

SR Table Note

4.3.2.1.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, CHANNEL FUNCTIONAL TEST and TRIP ACTUATING DEVICE OPERATIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2. L.1

SR 3.3.2.2

SR 3.3.2.10, SR 3.3.2.12

4.3.2.1.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 24 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation. L.2 L.3

Add proposed Note to SR 3.3.2.13

SR 3.3.2.13

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 24 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3. L.4 A.3

on a STAGGERED TEST BASIS A.4

ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 A.5 REQUIRED

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1	1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS (LA.3)					
1.a	a. Manual Initiation	---------------- See Functional Unit 9 ----------------				
1.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13 C, I
1.c	c. Containment Pressure-High	3	2	2 3	1, 2, 3	14# D
1.d	d. Pressurizer Pressure-Low	3	2	2 3	1, 2, 3#	14# D
1.e.(2)	e. Differential Pressure Between Steam Lines-High					
	Four Loops Operating	3/steam line	2/steam line any steam line	2 3/steam line	1, 2, 3##	14# D
	Three Loops Operating	3/operating steam line	1####/ steam line, any operating steam line	2/ operating steam line	3##	15
1.e.(1)	f. Steam Line Pressure-Low					
	Four Loops Operating	1 pressure/ loop	2 pressures any loops	1 pressure any 3 loops (per steam line)	1, 2, 3##	14# D
	Three Loops Operating	1 pressure/ operating loop	1###/ pressure in any operating loop	1 pressure in any 2 operating loops	3##	15

LA.2 A.5 LA.3 LA.2 A.5 A.6 A.6 A.15 LA.2 A.5 A.6 A.15

ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2

REQUIRED

A.5

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
	2. CONTAINMENT SPRAY						
2.a	a. Manual	---------------- See Functional Unit 9 ----------------					
2.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13	C, I
2.c	c. Containment Pressure--High-High	4	2	3 4	1, 2, 3	16	E

LA.2

A.5

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LA.2

A.5

A.7

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM (REQUIRED) CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
	3. CONTAINMENT ISOLATION						Add proposed Function 3.a.(2)
	a. Phase "A" Isolation						
3.a.(1)	1) Manual	See Functional Unit 9					LA.2
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13	C, I
	b. Phase "B" Isolation						
3.b.(1)	1) Manual	See Functional Unit 9					LA.2
3.b.(2)	2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13	C, I
3.b.(3)	3) Containment Pressure -- High-High	4	2	~~3~~ 4	1, 2, 3	16	E (A.5)
	c. Purge and Exhaust Isolation						See ITS 3.3.6
	1) Manual	See Functional Unit 9					
	2) Containment Radioactivity-* High Train A (VRS-2101, ERS-2301, ERS-2305)	3	1	2	1, 2, 3, 4	17	
	3) Containment Radioactivity-* High Train B (VRS-2201, ERS-2401, ERS-2405)	3	1	2	1, 2, 3, 4	17	

*This specification only applies during PURGE.

A.1

ITS 3.3.2

ITS

Table 3.3.2-1

TABLE 3.3-3 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LA.2 A.5 L.6

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM [REQUIRED] CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	4. STEAM LINE ISOLATION				Add proposed Footnote (d)	
4.a	a. Manual	---------------- See Functional Unit 9 ----------------				
4.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3	13 C, H
4.c	c. Containment Pressure --High-High	4	2	3 [4]	1, 2, 3 (Add proposed Foonote (d))	16 E
4.e	d. Steam Flow in Two Steam Lines--High					
	Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line [2]	1, 2, 3## (Add proposed Footnote (d))	14# D
	Three Loops Operating	2/operating steam line	1###/any operating steam line	1/ operating steam line	3##	15
	COINCIDENT WITH					
	T_{avg} -- Low-Low				Add proposed Footnote (d)	
	Four Loops Operating	1 T_{avg}/ loop	2 T_{avg} any loops	1 T_{avg} any 3 loops [per loop]	1, 2, 3##	14# D
	Three Loops Operating	1 T_{avg}/ operating loop	1### T_{avg} in any operating loop	1 T_{avg} in any two operating loops	3##	15

A.5 L.6 LA.2 A.5 L.6 A.5 A.6 L.6 A.15 LA.2 L.6 A.6 A.5 A.15

A.1

ITS 3.3.2

ITS

Table 3.3.2-1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4.d	e. Steam Line Pressure-Low					
	Four Loops Operating	1 pressure/loop	2 pressures any loops	1 pressure any 3 loops	1, 2, 3##	14 D
	Three Loops Operating	1 pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops	3##	15
	5. TURBINE TRIP & FEEDWATER ISOLATION					
5.b	a. Steam Generator Water Level -- High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	14 D
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level -- Low-Low	3/Stm. Gen.	2/Stm. Gen. any Stm. Gen.	2/Stm. Gen.	1, 2, 3	14 D
6.e	b. 4 kV Bus Loss of Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3	14 B
	Pump Start		2/bus (T21A - Train B; T21D - Train A)			
	Valve Actuation (Both trains)		2/bus on (T21A & T21B or 2/busses T21C & T21D)			
6.d	c. Safety Injection	2	1	2	1, 2, 3	18* B,H
6.g	d. Loss of Main Feedwater Pumps	2	2	2	1, 2	18* B,G

Markups: LA.2; A.5; REQUIRED; Add proposed Footnote (d); L.6; A.6; per steam line; A.5; A.15; LA.2; Add proposed Footnote (f); L.7; 3; A.6; per SG; A.5; Add proposed Function 5.a; L.8; A.12; Add proposed Function 5.c; A.8; L.16; A.6; L.15; 3; L.21; A.5; LA.2; LA.2; A.13; Add proposed Functions 6.a and 6.b; L.17

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE (REQUIRED)	APPLICABLE MODES	ACTION
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level -- Low-Low	3/Stm. Gen.	2/Stm. Gen. any 2 Stm. Gen.	2/Stm. Gen. (3)	1, 2, 3	14* D
6.f	b. Reactor Coolant Pump Bus Undervoltage (Add proposed Function 6.a)	4-1/Bus	2	3 (1 per bus)	1, 2, 3	19* D
	8. LOSS OF POWER					
	a. 4 kV Bus Loss of Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	14*
	b. 4 kV Bus Degraded Voltage	3/Bus (T21A - Train B) (T21D – Train A)	2/Bus (T21A-Train B) (T21D–Train A)	2/Bus (T21A-Train B) (T21D–Train A)	1, 2, 3, 4	14*
	9. MANUAL					
1.a 5.c 3.a.(3) 6.d	a. Safety Injection (ECCS) Feedwater Isolation Reactor Trip (SI) Containment Isolation-Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps Essential Service Water System	2/train	1/train	2/train (1)	1, 2, 3, 4	18 B, I
2.a 3.b.(1)	b. Containment Spray Containment Isolation - Phase "B" Containment Purge and Exhaust Isolation	1/train	1/train	1/train	1, 2, 3, 4	18 B, I
3.a.(1)	c. Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation	1/train	1/train	1/train	1, 2, 3, 4	18 B, I
4.a	d. Steam Line Isolation	2/steam line (1 per train)	2/steam line (1 per train)	2/operating steam line (1 per train)	1, 2, 3 (Add proposed Footnote (d))	20 B, J

LA.2 A.5 A.6 L.18 A.13 L.17 See ITS 3.3.5 LA.2 L.20 LA.3 See ITS 3.3.6 LA.3 LA.2 See ITS 3.3.6 LA.2 See ITS 3.3.6 L.6 LA.2

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA.2 A.5

ITS	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7.a	e. Containment Air Recirculation Fan	1/train	1/train	1/train	1, 2, 3, 4	18 B, I
	10. CONTAINMENT AIR RECIRCULATION FAN					
7.a	a. Manual	See Functional Unit 9				
7.b	b. Automatic Actuation Logic	2	1	2	1, 2, 3	13 C, H
7.c	c. Containment Pressure - High	3	2	2 3	1, 2, 3	14 4 D

A.6 A.5 LA.2

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ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-3 (Continued)
TABLE NOTATION

Footnote (a) *Trip function may be bypassed in this MODE below P-11.

Footnote (b) **Trip function may be bypassed in this MODE below P-12.

***The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.

****Manually trip all bistables which would be automatically tripped in the event pressure in the associated active loop were less than the pressure in the inactive loop. For example, if loop 1 is the inactive loop then the bistables which indicate low pressure in loops 2, 3, and 4 relative to loop 1 should be tripped.

A.15

ACTION B Note *The provisions of Specification 3.0.4 are not applicable.

A.6

Add proposed Required Action C.1

ACTION STATEMENTS

L.9

M.9

ACTION C ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 6 hours and in

ACTIONS H and I COLD SHUTDOWN within the following 30 hours; however, one

ACTION C Note channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

4 L.5

Add proposed ACTION D Note

ACTION D ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

L.10

6 L.5

Add proposed ACTIONS G, H, and I

M.4

ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

A.15

within 6 hours

L.11

ACTION E ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is met; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

4 L.5

Add proposed ACTIONS H and I

M.4

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ITS 3.3.2

A.1

ITS

TABLE 3.3-3 (Continued)

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

See ITS 3.3.6

ACTION B

ACTIONS G, H, and I

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

M.9

A.14

ACTION D

ACTION 19 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 1 hour.

6

L.5

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

4

Add proposed ACTION J

M.4

ACTION B

ACTION J

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

A.9

1 per train

ENGINEERED SAFETY FEATURES INTERLOCKS

LA.4

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels greater than or equal to 1915 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
P-12	With 2 of 4 T_{avg} channels less than or equal to Setpoint. Setpoint greater than or equal to 541 °F.	P-12 allows manual block of safety injection actuation on low steam line pressure. Causes steam line isolation on high steam flow. Affects steam dump blocks. With 3 of 4 T_{avg} channels above the reset point, prevents or defeats the manual block of safety injection actuation on low steam line pressure.

Add proposed Applicability

LA.4

Add proposed ACTIONS F and H

Add proposed ACTIONS D and H

538.8

L.22

L.12

Add proposed Function 8.a, including ACTIONS and Surveillance Requirement

M.5

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ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS		FUNCTIONAL UNIT	TRIP SETPOINTS	ALLOWABLE VALUES
1	1.	SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS (LA.3)		
1.a	a.	Manual Initiation	------------------------See Functional Unit 9------------------	
1.b	b.	Automatic Actuation Logic	Not Applicable (LA.1)	Not Applicable
1.c	c.	Containment Pressure High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig (1.17) (M.11)
1.d	d.	Pressurizer Pressure–Low	Greater than or equal to 1815 psig	Greater than or equal to 1805 psig (1765) (L.22)
1.e.(2)	e.	Differential Pressure Between Steam Lines–High	Less than or equal to 100 psi	Less than or equal to 112 psi
1.e.(1)	f.	Steam Line Pressure–Low	Greater than or equal to 600 psig steam line pressure	Greater than or equal to 585 (481.3) psig steam line pressure (Add proposed Footnote (c)) (M.1)

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ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINTS	ALLOWABLE VALUES
	2. CONTAINMENT SPRAY		
2.a	a. Manual Initiation	------------ See Functional Unit 9 -----------	
2.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
2.c	c. Containment Pressure--High-High	Less than or equal to 2.9 psig	Less than or equal to 3.0 psig (2.97)
	3. CONTAINMENT ISOLATION		
	a. Phase "A" Isolation		
3.a.(1)	1. Manual	------------ See Functional Unit 9 -----------	
3.a.(3)	2. From Safety Injection Automatic Actuation Logic	Not Applicable	Not Applicable
	b. Phase "B" Isolation		
3.b.(1)	1. Manual	------------ See Functional Unit 9 -----------	
3.b.(2)	2. Automatic Actuation Logic	Not Applicable	Not Applicable
3.b.(3)	3. Containment Pressure-High-High	Less than or equal to 2.9 psig	Less than or equal to 3.0 psig (2.97)
	c. Purge and Exhaust Isolation		
	1. Manual	------------ See Functional Unit 9 -----------	
	2. Containment Radio-activity--High Train A (VRS-2101, ERS-2301, ERS-2305)	See Table 3.3-6	Not Applicable
	3. Containment Radio-activity--High Train B (VRS-2201, ERS-2401, ERS-2405)	See Table 3.3-6	Not Applicable

LA.1

M.11

LA.1

LA.1

M.11

See ITS 3.3.6

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ITS 3.3.2

A.1

ITS

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	TRIP SETPOINTS	ALLOWABLE VALUES	
	4. STEAM LINE ISOLATION			LA.1
4.a	a. Manual	------------- See Functional Unit 9 ----------		LA.1
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
4.c	c. Containment Pressure--High-High	Less than or equal to 2.9 psig	Less than or equal to 3.0 psig (2.97)	M.11
4.e	d. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low	Less than or equal to a function defined as follows: A Delta-p corresponding to 1.6 x 10^6 lbs/hr steam flow between 0% and 20% load and then a Delta-p increasing linearly to a Delta-p corresponding to 4.5 x 10^6 lbs/hr at full load. T_{avg} greater than or equal to 541°F	Less than or equal to a function defined as follows: A Delta-p corresponding to 1.75 x 10^6 lbs/hr steam flow between 0% and 20% load and then a Delta-p increasing linearly to a Delta-p corresponding to to 4.55 x 10^6 lbs/hr at full load. T_{avg} greater than or equal to 539°F (538.8)	L.22
4.d	e. Steam Line Pressure--Low	Greater than or equal to 600 psig steam line pressure	Greater than or equal to 585 psig steam line pressure (481.3) (Add proposed Footnote (c))	L.22, M.1
	5. TURBINE TRIP AND FEEDWATER ISOLATION			
5.b	a. Steam Generator Water Level--High-High	Less than or equal to 67% of narrow range instrument span each steam generator	Less than or equal to 68% of narrow range instrument span each steam generator (71.6)	LA.5, L.22

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ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS			M.11 (20.8)
6.c	a. Steam Generator Water Level--Low-Low	Greater than or equal to 21% of narrow range instrument span each steam generator	Greater than or equal to ~~19.2~~ 20.8% ~~of narrow range instrument span~~ each steam generator	LA.5
6.e	b. 4 kV Bus Loss of Voltage	3241 volts with a time delay of 2 seconds	≥ 3195 volts and ≤ 3280 volts with a time delay of 2 ± 0.2 seconds	
6.d	c. Safety Injection	Not Applicable	Not Applicable	
6.g	d. Loss of Main Feedwater Pumps	Not Applicable	Not Applicable	
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS			M.11 (20.8)
6.c	a. Steam Generator Water Level - - Low-Low	Greater than or equal to 21% of narrow range instrument span each steam generator	Greater than or equal to ~~19.2~~ 20.8% ~~of narrow range instrument span~~ each steam generator	LA.5
6.f	b. Reactor Coolant Pump Bus Undervoltage	Greater than or equal to 2750 Volts -- each bus	Greater than or equal to 2725 Volts -- each bus	
	8. LOSS OF POWER			See ITS 3.3.5
	a. 4 kV Bus Loss of Voltage	3241 volts with a time delay of 2 seconds	≥ 3195 volts and ≤ 3280 volts with a time delay of 2 ± 0.2 seconds	
	b. 4 kV Bus Degraded Voltage	3959 volts with a time delay of 9 seconds when a steam generator water level low-low or a safety injection signal is present	≥ 3910 volts and ≤ 4000 volts with a time delay of 9 ± 0.25 seconds when a steam generator water level low-low or a safety injection signal is present	

A.1

ITS 3.3.2

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA.1

ITS	FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES	
	9. Manual			
1.a	a. Safety Injection (ECCS)	N.A.	N.A.	
5.c	Feedwater Isolation	N.A.	N.A.	
	Reactor Trip (SI) (LA.3)	N.A.	N.A.	
3.a.(3)	Containment Isolation - Phase "A"	N.A.	N.A.	
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
6.d	Auxiliary Feedwater Pumps	N.A.	N.A.	
	Essential Service Water System (LA.3)	N.A.	N.A.	LA.1
2.a	b. Containment Spray	N.A.	N.A.	
3.b.(1)	Containment Isolation - Phase "B"	N.A.	N.A.	
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
3.a.(1)	c. Containment Isolation - Phase "A"	N.A.	N.A.	LA.1
	Containment Purge and Exhaust Isolation	N.A.	N.A.	See ITS 3.3.6
4.a	d. Steam Line Isolation	N.A.	N.A.	
7.a	e. Containment Air Recirculation Fan	N.A.	N.A.	LA.1
	10. CONTAINMENT AIR RECIRCULATION FAN			
7.a	a. Manual	See Functional Unit 9	See Functional Unit 9	LA.1
7.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
7.c	c. Containment Pressure - High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig (1.17)	M.11

A.1

TABLE 3.3-5

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A.1

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

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A.1

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

TABLE 3.3-5 (Continued)

Table Intentionally Deleted

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ITS 3.3.2

A.1

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3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.2.1)	CHANNEL CALIBRATION (SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.5)	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
1.a	a. Manual Initiation	See Functional Unit 9				
1.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
1.c	c. Containment Pressure -- High	S -1	R-10	SA (3) -5	N.A.	1, 2, 3
1.d	d. Pressurizer Pressure -- Low	S -1	R-10	SA -5	N.A.	1, 2, 3
1.e.(2)	e. Differential Pressure Between Steam Lines -- High	S -1	R -10	SA -5	N.A.	1, 2, 3
1.e.(1)	f. Steam Line Pressure -- Low	S -1	R -10	SA -5	N.A.	1, 2, 3
	2. CONTAINMENT SPRAY					
2.a	a. Manual Initiation	See Functional Unit 9				
2.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
2.c	c. Containment Pressure -- High-High	S -1	R -10	SA (3) -5	N.A.	1, 2, 3
	3. CONTAINMENT ISOLATION					
	a. Phase "A" Isolation					
3.a.(1)	1) Manual	See Functional Unit 9				
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	Q (2)-3	N.A.	1, 2, 3, 4
	b. Phase "B" Isolation					
3.b.(1)	1) Manual	See Functional Unit 9				
3.b.(2)	2) Automatic Actuation Logic	N.A.	N.A.	Q (2)-2	N.A.	1, 2, 3, 4
3.b.(3)	3) Containment Pressure-- High-High	S -1	R -10	SA (3) -5	N.A.	1, 2, 3

Annotations: A.10; LA.3; L.2; M.6 "Add proposed SR 3.3.2.4 and SR 3.3.2.8"; LA.6; "24 months"; M.6 "Add proposed SR 3.3.2.4 and SR 3.3.2.8"; LA.6; M.8 "Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 3.a.(2)"; M.6 "Add proposed SR 3.3.2.4 and SR 3.3.2.8"; L.2 "24 months"; LA.6

ITS 3.3.2

A.1

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3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.2.1)	CHANNEL CALIBRATION (SR 3.3.2.7, SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.3, SR 3.3.2.5, SR 3.3.2.6, SR 3.3.2.9)	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	c. Purge and Exhaust Isolation					
	1) Manual	See Functional Unit 9				
	2) Containment Radioactivity -- High	S	R	Q	N.A.	1, 2, 3, 4
	4. STEAM LINE ISOLATION					
4.a	a. Manual	See Functional Unit 9				
4.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2) -2	N.A.	1, 2, 3
4.c	c. Containment Pressure -- High-High	S -1	R -10	SA (3) -5	N.A.	1, 2, 3
4.e	d. Steam Flow in Two Steam Lines -- High Coincident with T_{avg} -- Low-Low	S -1	R -10	SA -5	N.A.	1, 2, 3
4.d	e. Steam Line Pressure -- Low	S -1	R -10	SA -5	N.A.	1, 2, 3
	5. TURBINE TRIP AND FEEDWATER ISOLATION					
5.b	a. Steam Generator Water Level -- High-High	S -1	R -10	SA -5	N.A.	1, 2, 3
	6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
6.c	a. Steam Generator Water Level -- Low-Low	S -1	R -10	SA -5	N.A.	1, 2, 3
6.e	b. 4 kV Bus Loss of Voltage	S -1	R -7	M -6	N.A.	1, 2, 3
6.d	c. Safety Injection	N.A.	N.A.	Q (2) -3	N.A.	1, 2, 3
6.g	d. Loss of Main Feed Pumps	N.A.	N.A.	R -9	N.A.	1, 2

A.10

See ITS 3.3.6

L.2 M.6

Add proposed SR 3.3.2.4 and SR 3.3.2.8

Add proposed Footnote (d) L.6

LA.6

24 months

Add proposed Footnote (d) L.6

Add proposed Footnote (f) L.7

Add proposed SRs 3.3.2.2, 3.3.2.4, SR 3.3.2.8 for Function 5.a M.2

Add proposed SR 3.3.2.9 for Function 5.c M.7

24 months

L.2

Add proposed Note to SR 3.3.2.6 A.11

184 days L.19

184 days

24 months L.13

M.10

Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 6.a
Add proposed SR 3.3.2.11 for Function 6.b

M.3

ITS 3.3.2

A.1

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3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.2.1)	CHANNEL CALIBRATION (SR 3.3.2.7, SR 3.3.2.10)	CHANNEL FUNCTIONAL TEST (SR 3.3.2.2, SR 3.3.2.5, SR 3.3.2.6)	TRIP ACTUATING DEVICE OPERATIONAL TEST (SR 3.3.2.9)	MODES IN WHICH SURVEILLANCE REQUIRED
	7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMP					
6.c	a. Steam Generator Water Level -- Low-Low	S -1	R -10	SA -5	N.A.	1, 2, 3
6.f	b. Reactor Coolant Pump Bus Undervoltage	N.A.	R -7	M -6	N.A.	1, 2, 3
	8. LOSS OF POWER					
	a. 4 kv Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3, 4
	b. 4 kv Bus Degraded Voltage	S	R	M	N.A.	1, 2, 3, 4
	9. MANUAL					
1.a, 5.c, 3.a.(3), 6.d	a. Safety Injection (ECCS) Feedwater Isolation Reactor Trip (SI) Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps Essential Service Water System	N.A.	N.A.	N.A.	R -9	1, 2, 3, 4
2.a, 3.b.(1)	b. Containment Spray Containment Isolation - Phase "B" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R -9	1, 2, 3, 4
3.a.(1)	c. Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R -9	1, 2, 3, 4
4.a	d. Steam Line Isolation	N.A.	N.A.	Ø	R -9	1, 2, 3
7.a	e. Containment Air Recirculation Fan	N.A.	N.A.	N.A.	R -9	1, 2, 3, 4
	10. CONTAINMENT AIR RECIRCULATION FAN					
7.a	a. Manual	See Functional Unit 9				
7.b	b. Automatic Actuation Logic	N.A.	N.A.	Q (2) -2	N.A.	1, 2, 3
7.c	c. Containment Pressure – High	S -1	R -10	SA (3) -5	N.A.	1, 2, 3

Annotations:
- A.10; L.2; L.19; A.11; L.18; M.3; M.10
- 24 months; 184 days; 184 days
- Add proposed Note to SR 3.3.2.6
- Add proposed SRs 3.3.2.2, 3.3.2.4, and 3.3.2.8 for Function 6.a
- See ITS 3.3.5 (Functional Unit 8)
- LA.3 (Reactor Trip (SI)); LA.3 (Essential Service Water System)
- L.13; 24 months (9.a, 9.b, 9.c)
- See ITS 3.3.6 (Containment Purge and Exhaust Isolation)
- Add proposed Footnote (d); L.6; L.14; 24 months
- Add proposed SR 3.3.2.4 and SR 3.3.2.8; M.6
- LA.6; L.2; 24 months

COOK NUCLEAR PLANT-UNIT 2 Page 3/4 3-32 AMENDMENT ~~82~~, ~~97~~, ~~134~~, ~~137~~, ~~159~~, ~~189~~, ~~217~~, 260

ITS 3.3.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 4.3-2 (Continued)

TABLE NOTATION

(1) Deleted

SR 3.3.2.2, SR 3.3.2.3 (2) Each train or logic channel shall be tested at least every other 92 days. A.10

SR 3.3.2.5 Note (3) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter ~~by applying either a vacuum or pressure to the appropriate side of the transmitter.~~ LA.6

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DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.3.2.1 Actions provide the compensatory actions to take when ESFAS instrumentation is inoperable. ITS 3.3.2 ACTIONS provide the compensatory actions for inoperable ESFAS Instrumentation. The ITS 3.3.2 ACTIONS include a Note that allows separate Condition entry for each Function. In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 1.e.(2) (High Differential Pressure Between Steam Lines) on a steam line basis; (b) for Function 5.b (SG Water Level - High High) and Function 6.c (SG Water Level - Low Low) on a steam generator basis; and (c) for Function 6.e (Loss of Voltage) on a bus basis. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable ESFAS instrumentation Function and for certain Functions on a steam line, steam generator, or bus basis.

This change is acceptable because it clearly states the current requirement. The CTS considers each ESFAS instrumentation Function to be separate and independent from the others. In addition, the channels associated with Functions 1.e.(2), 5.b, 6.c, and 6.e are allowed separate Condition entry on the specified basis (i.e., steam line, steam generator, or bus) since the channels associated with each steam line, steam generator, or bus will provide the associated ESFAS actuation based on the logic associated with the channels on the specified basis. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 4.3.2.1.3 requires ENGINEERED SAFETY FEATURES (ESF) RESPONSE TIME testing of "each" ESFAS function. ITS SR 3.3.2.13 is the ESF RESPONSE TIME testing Surveillance, but in ITS Table 3.3.2-1, it is only required for Functions 1.c (Safety Injection Containment Pressure - High), 1.d (Safety Injection Pressurizer Pressure - Low), 1.e.(1) (Safety Injection Steam Line Pressure - Low), 2.c (Containment Spray Containment Pressure - High High), 4.c (Steam Line Isolation Containment Pressure - High High), 4.d (Steam Line Isolation Steam Line Pressure - Low), 5.b (Turbine Trip and Feedwater Isolation SG Water Level - High High), 5.c (Turbine Trip and Feedwater Isolation SI Input from ESFAS), 6.c (Auxiliary Feedwater SG Water Level - Low Low), 6.e (Auxiliary Feedwater Loss of Voltage), 6.f (Auxiliary Feedwater Undervoltage Reactor Coolant Pump), 6.g (Auxiliary Feedwater Trip of All Main Feedwater Pumps), and 7.c (CEQ System Containment Pressure - High). This changes the CTS by specifically stating that the Surveillance is only applicable to certain Functions, not "each" function.

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DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

The purpose of CTS 4.3.2.1.3 is to ensure that the actuation response times are less than or equal to the maximum values assumed in the accident analysis. UFSAR Table 7.2-7, which was previously in CTS 3.3.2 as Table 3.3-5, only specifies response times for those ESFAS Functions assumed in the CNP safety analyses. These response times were removed from CTS 3.3.2 and placed under CNP control as documented in the NRC Safety Evaluation Report for License Amendments 202 (Unit 1) and 187 (Unit 2). This change is acceptable since ITS 3.3.2 requires ESF RESPONSE TIME testing (ITS SR 3.3.2.13) for only those Functions listed in UFSAR Table 7.2-7. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 4.3.2.1.3 states, in part, that the ESF RESPONSE TIME of each trip function shall be demonstrated to be within its limit at least once per 18 months. The requirement specifies that each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months, where N is the total number of redundant channels in a specific ESFAS Function as shown in the "TOTAL NO. OF CHANNELS" column of Table 3.3-3. ITS SR 3.3.2.13 requires the verification of ESF RESPONSE TIME every 24 months "on a STAGGERED TEST BASIS." The ITS definition of STAGGERED TEST BASIS is consistent with the CTS testing Frequency. This changes the CTS by utilizing the ITS definition of STAGGERED TEST BASIS. The extension in the Surveillance Frequency from 18 months to 24 months is discussed in DOC L.4.

This change is acceptable because the requirements for ESF RESPONSE TIME testing for the ESFAS channels remain unchanged. The ITS definition of STAGGERED TEST BASIS and its application in this requirement do not change the current testing frequency requirements. This change is designated as administrative because it does not result in technical changes to the CTS.

A.5 CTS Table 3.3-3 specifies the "TOTAL NO. OF CHANNELS" and the "MINIMUM CHANNELS OPERABLE" associated with each ESFAS Functional Unit. For CTS Table 3.3-3 Functional Units 1.c, 1.d, 1.e, 1.f, 2.c, 3.b.3), 4.c, 4.d, 4.e, 5.a, 6.a, 6.b, 7.a, 7.b, 9.d, and 10.c, the number of channels listed in the "TOTAL NO. OF CHANNELS" column is greater than that listed in the "MINIMUM CHANNELS OPERABLE" column. CTS Table 3.3-3 Actions 14, 16, 19, and 20 specify the actions to take with the number of channels OPERABLE one less than required by the "TOTAL NO. OF CHANNELS" column. ITS LCO 3.3.2 requires the ESFAS instrumentation for each Function in Table 3.3.2-1 to be OPERABLE, and ITS Table 3.3.2-1 includes only one column titled "REQUIRED CHANNELS." For the associated ITS Table 3.3.2-1 Functions, the number of channels listed in the "REQUIRED CHANNELS" column is equal to the number of channels listed in CTS "TOTAL NO. OF CHANNELS" column. The ITS 3.3.2 ACTIONS require entry when the OPERABLE channels are one less than required by the "REQUIRED CHANNELS" column. In addition, the description in the CTS Table 3.3-3 "MINIMUM CHANNELS OPERABLE" column includes: a) the word "loops" for Functional Units 1.f and 4.e; and b) the phrase "loop" for Functional Unit 5.a. In ITS Table 3.3.2-1, the phrases used are a) "per steam line" for Functions 1.e.(1) and 4.d; and b) "per SG" for Function 5.b. This changes the CTS by changing the title of the "MINIMUM CHANNELS OPERABLE" column to

DISCUSSION OF CHANGES
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"REQUIRED CHANNELS" and increases the number of channels listed to match the number listed in the "TOTAL NO. OF CHANNELS" column. It also changes the CTS by modifying some of the descriptions in the "MINIMUM CHANNELS OPERABLE" column.

This change is acceptable because the requirements for when actions must be taken remain unchanged. The "REQUIRED CHANNELS" column reflects the current requirements in the CTS Actions for when actions are required to be taken. The "MINIMUM CHANNELS OPERABLE" column for CTS Table 3.3-3 Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3), 4.c, 4.d, 5.a, 6.a, 6.b, 7.a, 7.b, and 10.c have changed to correspond to the number of channels in the "TOTAL NO. OF CHANNELS" column as reflected in ITS Table 3.3.2-1 Functions 1.c, 1.d, 1.e.(2), 2.c, 3.b.(3), 4.c, 4.e, 5.b, 6.c, 6.e, 6.f, and 7.c. This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS Table 3.3-3 Note * states that the provisions of CTS 3.0.4 are not applicable. This Note is associated with CTS Table 3.3-3 Functional Units 1.c, 1.d, 1.e, 1.f, 4.d, 4.e, 5.a, 6.a, 7.a, 7.b and 10.c. CTS 3.0.4 states "Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted." ITS 3.3.2 does not contain the exception to ITS LCO 3.0.4 for the specified Functions, since ITS LCO 3.0.4 states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability may be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This changes the CTS by deleting an allowance since it is incorporated into ITS LCO 3.0.4.

This change is considered acceptable because ITS LCO 3.0.4 has been changed such that the CTS allowance is not required to retain the same CTS requirement. The applicable ITS 3.3.2 ACTIONS allows continued operation for an unlimited period of time, which together with ITS LCO 3.0.4, result in the same technical requirements as the CTS. This change is designated as administrative because it does not result in a technical change to the CTS.

A.7 CTS Table 3.3-3 Functional Unit 3.a (Containment Isolation Phase "A" Isolation) does not specifically include the Automatic Actuation Logic and Actuation Relays Function. ITS Table 3.3.2-1 Function 3.a.(2) requires the two Automatic Actuation Logic and Actuation Relay trains to be OPERABLE in MODES 1, 2, 3, and 4. ITS 3.3.2 ACTIONS C and I have been included for this Function, and provide 6 hours to restore an inoperable train if one train is inoperable (ACTION C), and if not restored, provide a shutdown requirement (ACTION I). This changes the CTS by adding Function 3.a.(2) (Containment Isolation Phase A Isolation Automatic Actuation Logic and Actuation Relays) to the Technical Specifications including the LCO, number of channels (2 trains), and appropriate ACTIONS.

This change is considered acceptable because the Containment Isolation Phase A Isolation Function utilizes the relays associated with the Automatic

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Actuation Logic and Actuation Relays to initiate the Manual Initiation Function (CTS Table 3.3-3 Functional Units 3.a.1) and 9.c) and the SI Automatic Actuation Logic Function (CTS Table 3.3-3 Functional Unit 3.a.2)). The proposed requirements are consistent with the requirements for both of these Functions. The Manual Initiation Function currently requires one manual initiation channel in each train. For each Manual Initiation train to function properly the associated Automatic Actuation Logic and Actuation Relays must also operate as designed. The SI Automatic Actuation Logic also requires two trains. If the relays associated with Train A of the Automatic Actuation Logic and Actuation Relays were inoperable, the current Action is to enter Action 13 (CTS Table 3.3-3 Functional Unit 3.a.2), SI Automatic Actuation Logic) and Action 18 (CTS Table 3.3-3 Functional Unit 9.a, Manual Initiation) since the relays affect both the Manual Initiation Function and the Automatic Actuation Logic. The proposed Action for ITS Table 3.3.2-1 Function 3.a.(2) is ACTION C since it is more restrictive of the two actions. Changes to CTS Table 3.3-3 Action 13 is discussed in DOC L.9. Since the number of channels are consistent with the number of channels for the Manual Initiation and SI Automatic Actuation Logic Functions, and since changes to the Actions are discussed in DOC L.9, this change is considered administrative. This change is designated as administrative because it does not result in a technical change to the CTS.

A.8 CTS Table 3.3-3 Functional Unit 5, Turbine Trip and Feedwater Isolation, does not explicitly contain the OPERABILITY requirements for the SI Input from ESFAS Function. CTS Table 3.3-3 Functional Unit 1 requires the Safety Injection Function to also provide input to the Turbine Trip and Feedwater Isolation Function, as indicated in the title of CTS Table 3.3-3 Functional Unit 1. ITS Table 3.3.2-1 Function 5.c, SI Input from ESFAS, requires two trains of the SI Input from ESFAS Function to be OPERABLE in MODE 1, and MODES 2 and 3 except when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. This changes the CTS by adding the explicit requirement that two trains of SI Input from ESFAS must support the Turbine Trip and Feedwater Isolation. The changes related to the Applicability and Actions associated with this Function are discussed in DOCs L.15 and L.16, respectively.

The purpose of ITS Table 3.3.2-1 Function 5.c is to ensure two trains of SI Input from ESFAS Function are OPERABLE to support the Turbine Trip and Feedwater Isolation Function. CTS Table 3.3-3 Functional Unit 1 states that the Safety Injection signals must support the Turbine Trip and Feedwater Isolation Function. This Function requires two trains of Automatic Actuation Logic (CTS Table 3.3-3 Functional Unit 1.b). Therefore, the requirement to have two trains of SI Input from ESFAS Function to support the Turbine Trip and Feedwater Isolation Function is acceptable. This change is designated as administrative because it does not result in a technical change to the CTS.

A.9 CTS LCO 3.3.2.1 states that the interlocks of Table 3.3-3 shall be OPERABLE. However, CTS Table 3.3-3 provides no specific Applicability requirements for the P-11 and P-12 interlocks. ITS Table 3.3.2-1 specifies MODES 1, 2, and 3 as the Applicability for the P-11 and P-12 interlocks (Functions 8.b and 8.c). This changes the CTS by adding a specific Applicability for the P-11 and P-12 interlocks.

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This change is acceptable because the change provides more explicit conditions for when the interlocks are required to be OPERABLE, and are consistent with the ESFAS Functions they support. This change is designated as administrative because it does not result in a technical change to the CTS.

A.10 CTS 4.3.2.1.1 requires that the ESFAS instrumentation channels be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at the frequencies shown in Table 4.3-2. ITS 3.3.2 requires the performance of either a CHANNEL OPERATIONAL TEST (COT), a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT), or, in the case of the Automatic Actuation Logic, an ACTUATION LOGIC TEST. This changes the CTS by changing the CHANNEL FUNCTIONAL TEST requirements to either a COT, a TADOT, or an ACTUATION LOGIC TEST.

This change is acceptable because the COT, TADOT, and ACTUATION LOGIC TEST continue to perform tests similar to the current CHANNEL FUNCTIONAL TEST. The change is one of format only and any technical change to the requirements is specifically addressed in an individual Discussion of Change. In addition, the change to the CHANNEL FUNCTIONAL TEST definition is also described in the Discussion of Changes for ITS 1.0. This change is designated as administrative because it does not result in technical changes to the CTS.

A.11 CTS Table 4.3-2 requires a CHANNEL FUNCTIONAL TEST be performed for Functional Unit 6.b (4 kV Bus Loss of Voltage) and Functional Unit 7.b (Reactor Coolant Pump Bus Undervoltage). ITS Table 3.3.2-1 Function 6.e (Loss of Voltage) and Function 6.f (Undervoltage Reactor Coolant Pump) require performance of SR 3.3.2.6, a TADOT. However, the Surveillance is modified by a Note that states that a verification of the setpoint is not required. This changes the CTS by explicitly stating that setpoint verification is not part of the TADOT. The change from a CHANNEL FUNCTIONAL TEST to a TADOT is discussed in DOC A.10.

The CTS definition of CHANNEL FUNCTIONAL TEST does not require a setpoint verification. However, the ITS definition of TADOT does include a setpoint verification. Therefore, to be consistent with the current requirements and with current practice, the Note has been added. Since a setpoint verification is not currently required during performance of this test, this change is acceptable. This change is designated as administrative because it does not result in a technical change to the CTS.

A.12 CTS Table 3.3-3 Functional Unit 5, Turbine Trip and Feedwater Isolation, does not specifically include the Automatic Actuation Logic and Actuation Relay Function. ITS Table 3.3.2-1 Function 5.a requires the two Automatic Actuation Logic and Actuation Relay trains to be OPERABLE in MODE 1, and MODES 2 and 3 except when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. This changes the CTS by explicitly requiring the two trains of the Automatic Actuation Logic and Actuation Relays Functions for Turbine Trip and Feedwater Isolation to be OPERABLE in MODE 1, and MODES 2 and 3 except when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve.

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This change is considered acceptable because the Turbine Trip and Feedwater Isolation Functions require the Automatic Actuation Logic and Actuation Relays to operate properly in order to actuate Turbine Trip and Feedwater Isolation. Two trains are required to be OPERABLE to help ensure a single failure of a logic train does not prevent the actuation of the Turbine Trip and Feedwater Isolation. The proposed Applicability is consistent with the Applicability of the Functions listed under CTS Table 3.3-3 Functional Unit 5 as modified by DOC L.7. This change is designated as administrative because it does not result in a technical change to the CTS.

A.13 CTS Table 3.3-3 Functional Unit 6, Motor Driven Auxiliary Feedwater Pumps, and Functional Unit 7, Turbine Driven Auxiliary Feedwater Pumps, do not include the Automatic Actuation Logic and Actuation Relays Function. ITS Table 3.3.2-1 Function 6.a includes the requirements for the Automatic Actuation Logic and Actuation Relays (Solid State Protection System) and Function 6.b includes the requirements for the Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS). The Applicability of these Functions is MODES 1, 2, and 3 and two trains of each Function are required to be OPERABLE. This changes the CTS by explicitly requiring the two trains of the Automatic Actuation Logic and Actuation Relays Functions (Solid State Protection System and Balance of Plant ESFAS) for the Auxiliary Feedwater System to be OPERABLE in MODES 1, 2, and 3.

This change is considered acceptable because the Auxiliary Feedwater Pump Functions either requires the Automatic Actuation Logic and Actuation Relays (Solid State Protection System) or the Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) to operate properly in order to start the associated auxiliary feedwater pump. Two trains are required to be OPERABLE to help ensure a single failure of a logic train does not prevent the actuation of the Auxiliary Feedwater Function. The proposed Applicability is consistent with the Applicability of the Functions listed under CTS Table 3.3-3 Functional Units 6 and 7. This change is designated as administrative because it does not result in a technical change to the CTS.

A.14 CTS Table 3.3-1 Action 18 requires the unit to be in MODE 3 within 6 hours and MODE 5 within the following 30 hours if a Functional Unit 6.d, Loss of Main Feedwater Pumps, channel is inoperable and not restored within 48 hours. However, CTS Table 3.3-3 Functional Unit 6.d is applicable only in MODES 1 and 2. Thus, as described in CTS 3.0.1, CTS Table 3.3-3 Action 18 is only applicable in MODES 1 and 2 for Functional Unit 6.d. ITS 3.3.2 ACTION G is the associated shutdown action for the above Function (ITS Table 3.3.2-1 Function 6.g), and it only requires the unit to be in MODE 3 within 6 hours. This changes the CTS by explicitly specifying that the unit is only required to be shut down to MODE 3.

The purpose of CTS Table 3.3-3 Action 18 is to place the unit in a MODE in which Functional Unit 6.d does not apply. The change is acceptable because the CTS 3.0.1 specifically states that the Actions are only applicable in the MODES specified by the LCO. Thus, a shutdown only to MODE 3 is actually required by

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CTS Table 3.3-3 Action 18 for this Function. This change is designated as administrative because it does not result in a technical change to the CTS.

A.15 CTS Table 3.3-3 Functional Unit 1.e specifies the requirements for the Differential Pressure Between Steam Lines - High Function for four loop operation and three (n-1) loop operation (in MODE 3 above P-12). CTS Table 3.3-3 Functional Units 1.f and 4.e specify the requirements for the Steam Line Pressure - Low Function for four loop operation and three (n-1) loop operation (in MODE 3 above P-12). CTS Table 3.3-3 Functional Unit 4.d specifies the requirements for the Steam Flow in Two Steam Lines - High Function coincident with Tavg - Low Low for four loop operation and three (n-1) loop operation (in MODE 3 above P-12). Each of these CTS Table 3.3-3 Functional Units "CHANNELS TO TRIP" column is modified by CTS Table 3.3-3 Note ### or ####, as applicable. These Notes require certain channels to be tripped during three (n-1) loop operation. In addition, CTS Table 3.3-3 Action 15 is provided for these three (n-1) loop operation instrumentation requirements. ITS Table 3.3.2-1 Functions 1.e.(2) (Steam Line Pressure - High Differential Pressure Between Steam Lines), 1.e.(1) and 4.d (Steam Line Pressure - Low), and 4.e (High Steam Flow in Two Steam Lines coincident with Tavg - Low Low) specify requirements for these Functions based only upon the four loop operation requirements from the CTS. This changes the CTS by eliminating the ESFAS instrumentation requirements that are only associated with three (n-1) loop operation.

The current CNP CTS requirements to trip the instrumentation channels associated with a non-operating RCS loop are based on NUREG-0452, Revision 4. All revisions of NUREG-0452 included these requirements in anticipation of future NRC approval for n-1 loop operation for nuclear power plants that were currently being licensed to operate. However, no nuclear power plant, including CNP, has ever obtained NRC approval for n-1 loop operation, and no interest in requesting NRC approval is evident in the industry. Because of this lack of interest, these requirements were eliminated during the development of NUREG-1431, as reviewed and approved by the NRC. Consequently, ISTS Table 3.3.2-1 Functions 1.e.(1), 1.e.(2), 1.f, 1.g, 4.d.(1), 4.d.(2), 4.e, 4.f, 4.g, and 4.h do not address requirements for n-1 loop operation. Since CNP is not currently licensed for n-1 loop operation, the proposed ITS do not include requirements for n-1 loop operation consistent with the ISTS. This change is designated as administrative since this change eliminates requirements that are not applicable to CNP and is consistent with the NUREG-1431 ISTS requirements.

MORE RESTRICTIVE CHANGES

M.1 CTS Table 3.3-4 provides Allowable Values for Functional Units 1.f (Safety Injection Steam Line Pressure - Low) and 4.e (Steam Line Isolation Steam Line Pressure - Low), but does not explicitly provide requirements for the time constants of the lead/lag controllers associated with these Functional Units. ITS Table 3.3.2-1 Footnote (c) is applied to each of these Functions (ITS Table 3.3.2-1 Functions 1.e.(1) and 4.d) and provides requirements for the time constants for these lead/lag controllers. This changes the CTS by providing explicit values for the time constants of the Steam Line Pressure - Low lead/lag controllers.

This change is acceptable because proper settings of the time constants of the lead/lag controllers are necessary to support the OPERABILITY of the Steam Line Pressure - Low Functions. As such, explicitly including the values for these time constants in the Technical Specifications provides additional assurance that the OPERABILITY of the Safety Injection Steam Line Pressure - Low and Steam Line Isolation Steam Line Pressure - Low Functions will be maintained. The addition of the time constants of the Steam Line Pressure - Low lead/lag controllers is acceptable since these requirements are currently administratively controlled in procedures. The requirements for the Safety Injection Steam Line Pressure - Low and Steam Line Isolation Steam Line Pressure - Low Functions continue to require the time constants of the lead/lag controller to be within required limits to ensure that these instruments function as assumed in the safety analyses. This change is designated as more restrictive because it adds explicit Allowable Values for the time constants of the Steam Line Pressure - Low lead/lag controllers to the CTS.

M.2 CTS Table 4.3-2 Functional Unit 5, which provides the Surveillance Requirements for the Turbine Trip and Feedwater Isolation instrumentation, does not include an Automatic Actuation Logic and Actuation Relays Function. ITS Table 3.3.2-1 Function 5.a requires the two Automatic Actuation Logic and Actuation Relays trains to be OPERABLE and requires the performance of SR 3.3.2.2, an ACTUATION LOGIC TEST, and SR 3.3.2.4, a MASTER RELAY TEST, every 92 days on a STAGGERED TEST BASIS, and SR 3.3.2.8, a SLAVE RELAY TEST, every 24 months. This changes the CTS by adding the explicit Surveillances for proposed Function 5.a, Automatic Actuation Logic and Actuation Relays, to the Technical Specifications. The addition of the LCO, number of channels, and ACTIONS is discussed in DOCs A.12 and L.8.

This change is acceptable because the Automatic Actuation Logic and Actuation Relays Function is required to support the OPERABILITY of Turbine Trip and Feedwater Isolation function. As such, explicitly including requirements for the Automatic Actuation Logic and Actuation Relays Function in the Technical Specifications provides additional assurance that the OPERABILITY of the Turbine Trip and Feedwater Isolation function will be maintained. The change provides explicit requirements for testing the Automatic Actuation Logic and Actuation Relays Function (ITS Table 3.3.2-1 Function 5.a). The addition of SR 3.3.2.2 (an ACTUATION LOGIC TEST), SR 3.3.2.4 (a MASTER RELAY TEST), and SR 3.3.2.8 (a SLAVE RELAY TEST) is acceptable since the proposed Surveillance Requirements are consistent with current practice. The proposed Frequencies of testing of the actuation logic and master relays is consistent with the current Frequency of testing of the CHANNEL FUNCTIONAL TEST associated with the Automatic Actuation Logic and Actuation Relays for other Functions. The Frequency proposed for the slave relays is consistent with the Frequency proposed for the simulated actuation tests. This change is designated as more restrictive because it adds SRs for the Automatic Actuation Logic and Actuation Relays Function to the CTS.

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M.3 CTS Table 4.3-2 Functional Unit 6, which provides the ESFAS instrumentation Surveillance Requirements for the motor driven AFW Pumps, and CTS Table 4.3-2 Functional Unit 7, which provides the ESFAS instrumentation Surveillance Requirements for the turbine driven AFW pump, do not provide any explicit requirements for the motor driven or turbine auxiliary feedwater (AFW) pump ESFAS Automatic Actuation Logic and Actuation Relays Function. ITS Table 3.3.2-1 Function 6.a requires the two Automatic Actuation Logic and Actuation Relays (Solid State Protection System) trains to be OPERABLE and requires the performance of SR 3.3.2.2, an ACTUATION LOGIC TEST, and SR 3.3.2.4, a MASTER RELAY TEST, every 92 days on a STAGGERED TEST BASIS, and SR 3.3.2.8, a SLAVE RELAY TEST, every 24 months. ITS Table 3.3.2-1 Function 6.b requires the two Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) trains to be OPERABLE and requires the performance of SR 3.3.2.11, an ACTUATION LOGIC TEST, every 24 months. This changes the CTS by adding the explicit Surveillances for proposed Functions 6.a, Auxiliary Feedwater (AFW) Automatic Actuation Logic and Actuation Relays (Solid State Protection System) and 6.b, AFW Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) to the Technical Specifications. The addition of the LCO, number of channels, and ACTIONS is discussed in DOCs A.13 and L.17.

This change is acceptable because the Automatic Actuation Logic and Actuation Relays Functions are required to support the OPERABILITY of other AFW System instrumentation Functions. As such, explicitly including requirements for the Automatic Actuation Logic and Actuation Relays Functions in the Technical Specifications provides additional assurance that the OPERABILITY of the other AFW System instrumentation Functions will be maintained. The change provides explicit requirements for testing the AFW Automatic Actuation Logic and Actuation Relays (Solid State Protection System) Function (ITS Table 3.3.2-1 Function 6.a) and the AFW Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) Function (ITS Table 3.3.2-1 Function 6.b). The addition of SR 3.3.2.2 (an ACTUATION LOGIC TEST), SR 3.3.2.4 (a MASTER RELAY TEST), SR 3.3.2.8 (a SLAVE RELAY TEST), and SR 3.3.2.11 (an ACTUATION LOGIC TEST) is acceptable since the proposed Surveillance Requirements are consistent with current practice. The proposed Frequencies of testing of the actuation logic and master relays associated with the Solid State Protection System is consistent with the Frequency of testing of the CHANNEL FUNCTIONAL TEST associated with the Automatic Actuation Logic for other Functions. The Frequency proposed for the slave relays and the balance of plant ESFAS ACTUATION LOGIC TEST is consistent with the Frequency proposed for the simulated actuation tests. This change is designated as more restrictive because it adds explicit OPERABILITY requirements and SRs for the AFW Automatic Actuation Logic and Actuation Relays Functions to the CTS.

M.4 CTS Table 3.3-3 Action 14 states that with the number of OPERABLE Functional Units 1.c through 1.f, 4.d, 4.e, 5.a, 6.a, 6.b, 7.a, or 10.c channels one less than the total number of channels, operations may proceed provided the inoperable channel is placed in the tripped condition within 1 hour. CTS Table 3.3-3 Action 16 states that with the number of OPERABLE Functional Units 2.c, 3.b.3), or 4.c channels one less than the total number of channels, operations may proceed

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provided the inoperable channel is placed in the bypassed condition. CTS Table 3.3-3 Action 19 states that with less than the minimum number of Functional Unit 7.b channels OPERABLE, startup and power operations may proceed provided the inoperable channel is placed in the tripped condition within 1 hour. If CTS Table 3.3-3 Action 14, Action 16, or Action 19 is not met, entry into CTS 3.0.3 is required since no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action, 7 hours for the unit to be placed in MODE 3, 13 hours for the unit to be in MODE 4, and 37 hours for the unit to be in MODE 5. ITS 3.3.2 ACTION G requires the unit to be placed in MODE 3 in 6 hours, ITS 3.3.2 ACTION H requires the unit to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours, and ITS 3.3.2 ACTION I requires the unit to be placed in MODE 3 in 6 hours and MODE 5 in 36 hours. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3, and reducing the time allowed to reach the applicable conditions.

This change is acceptable because the CTS requirements are modified to provide the necessary Required Actions and appropriate Completion Times. The Completion Time of 6 hours to reach MODE 3, 12 hours to reach MODE 4, and 36 hours to reach MODE 5 from 100% RTP, in a safe manner without challenging unit systems, is consistent with other CTS and ITS requirements. This change is designated as more restrictive because the Completion Times for the unit to be placed in the specified MODES have been decreased by 1 hour.

M.5 CTS Table 3.3-3 includes the ESFAS interlocks. The Table does not include the requirements for the P-4 interlock. ITS LCO 3.3.2 and Table 3.3.2-1 Function 8.a requires the OPERABILITY of the Reactor Trip P-4 interlock. This interlock requires one channel per train of this Function in MODES 1, 2, and 3. If one channel is inoperable, ITS 3.3.2 ACTION B provides 48 hours to restore the train to OPERABLE status. If not restored, ACTION H requires a unit shutdown to MODE 4. In addition, a requirement has been added to perform a TADOT (SR 3.3.2.9) every 24 months. This changes the CTS by adding the requirements for the P-4 interlock.

The purpose of the P-4 interlock is to provide the appropriate interlock when the Reactor Trip Breaker and its corresponding bypass breaker are open. The interlock is assumed to block re-actuation of safety injection after manual reset of Safety Injection actuation signal. This function is necessary to meet the accident and transient analyses. This change is designated as more restrictive because it adds an explicit LCO, Applicability, ACTIONS, and Surveillance Requirements for the P-4 interlock to the Technical Specifications.

M.6 CTS Table 4.3-2 Functional Units 1.b, 2.b, 3.b.2), 4.b, and 10.b provide the Surveillance Requirements for the Automatic Actuation Logic. CTS Table 4.3-2 does not provide requirements to test the master and slave relays associated with this logic. ITS Table 3.3.2-1 Functions 1.b, 2.b, 3.b.(2), 4.b, and 7.b (the Automatic Actuation Logic and Actuation Relays Functions) require the performance of a MASTER RELAY TEST (SR 3.3.2.4) every 92 days on a STAGGERED TEST BASIS and a SLAVE RELAY TEST (SR 3.3.2.8) every 24 months. This changes the CTS by explicitly requiring the master and slave relays to be tested at the specified Frequencies.

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This change is acceptable because these relays are required to support the Automatic Actuation Logic required to support the OPERABILITY of the associated equipment. As such, explicitly including requirements for the master and slave relays in the Technical Specifications provides additional assurance that the OPERABILITY of the associated ESFAS Automatic Actuation Logic and Actuation Relays Functions will be maintained. The proposed Frequencies of testing of the master relays is consistent with the current Frequency of testing of the CHANNEL FUNCTIONAL TEST associated with the Automatic Actuation Logic. The Frequency proposed for the slave relays is consistent with the Frequency proposed for the simulated actuation tests. This change is designated as more restrictive because it adds explicit Surveillance Requirements to the Technical Specifications for the master and slave relays associated with ESFAS instrumentation Functions.

M.7 CTS Table 4.3-2 Functional Unit 5, which provides the Surveillance Requirements for the Turbine Trip and Feedwater Isolation instrumentation, does not include an SI Input from ESFAS Functional Unit. However, CTS Table 4.3-2 Functional Unit 1 requires the Safety Injection Function to also provide input to the Turbine Trip and Feedwater Isolation Function. ITS Table 3.3.2-1 Function 5.c requires the two SI Input from ESFAS trains to be OPERABLE and requires the performance of SR 3.3.2.9, a TADOT, every 24 months. This changes the CTS by adding an explicit requirement to perform a TADOT to test the SI Input from ESFAS Function in order to support the Turbine Trip and Feedwater Isolation instrumentation. The addition of the LCO, number of channels, Applicability, and ACTIONS is discussed in DOCs A.8, L.15, and L.16.

The change is acceptable since SR 3.3.2.9 ensures the SI Input from ESFAS Function is available to support the Turbine Trip and Feedwater Isolation instrumentation. The proposed Surveillance and Frequency is considered adequate to ensure the Function is OPERABLE. This change is designated as more restrictive because it adds an explicit Surveillance Requirement to the Technical Specifications to test the SI Input from ESFAS Function, to ensure this Function is available to support the Turbine Trip and Feedwater Isolation instrumentation.

M.8 CTS Table 4.3-2 Functional Unit 3.a, Containment Isolation Phase "A" Isolation, does not include the Automatic Actuation Logic and Actuation Relays Function. ITS Table 3.3.2-1 Function 3.a.(2) requires the two Automatic Actuation Logic and Actuation Relays trains to be OPERABLE and requires the performance of SR 3.3.2.2, an ACTUATION LOGIC TEST, and SR 3.3.2.4, a MASTER RELAY TEST, every 92 days on a STAGGERED TEST BASIS and SR 3.3.2.8, a SLAVE RELAY TEST, every 24 months. This changes the CTS by adding the explicit Surveillances for proposed ITS Table 3.3.2-1 Function 3.a.(2), Containment Isolation Phase A Isolation Automatic Actuation Logic and Actuation Relays, to the Technical Specifications. The addition of the LCO, number of channels, and ACTIONS is discussed in DOC A.7.

This change is acceptable because the Automatic Actuation Logic and Actuation Relays Function is required to support the OPERABILITY of the Containment Isolation Phase "A" Isolation Function. As such, explicitly including requirements

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for the Automatic Actuation Logic and Actuation Relays Function in the Technical Specifications provides additional assurance that the OPERABILITY of the Containment Isolation Phase "A" Isolation Function will be maintained. The change provides explicit requirements for testing the Automatic Actuation Logic and Actuation Relays Function (ITS Table 3.3.2-1 Function 3.a.(2)). The addition of SR 3.3.2.2 (an ACTUATION LOGIC TEST), SR 3.3.2.4 (a MASTER RELAY TEST), and SR 3.3.2.8 (a SLAVE RELAY TEST) is acceptable since currently the requirements of SR 3.3.2.2 and SR 3.3.2.4 are satisfied during the 92 day performance of the CHANNEL FUNCTIONAL TEST for CTS Table 4.3-2 Functional Unit 3.a.2) (From Safety Injection Automatic Actuation Logic) channels, and the requirements of SR 3.3.2.8 are satisfied during the performance of the TADOT associated with the Manual Initiation Function. This change is designated as more restrictive because it adds SRs for the Automatic Actuation Logic and Actuation Relays Function to the CTS.

M.9 CTS Table 3.3-3 Action 13 requires the unit to be in MODE 3 within 6 hours and MODE 5 within the following 30 hours if a Functional Unit 4.b, Steam Line Isolation Automatic Actuation Logic, or Functional Unit 10.b, Containment Air Recirculation Fan Automatic Actuation Logic, channel is inoperable (DOC L.9 discusses the addition of an allowable outage time prior to requiring a unit shutdown). However, CTS Table 3.3-3 Functional Units 4.b and 10.b are applicable only in MODES 1, 2, and 3. Thus, as described in CTS 3.0.1, CTS Table 3.3-3 Action 13 is only applicable in MODES 1, 2, and 3 for Functional Units 4.b and 10.b. CTS Table 3.3-1 Action 18 requires the unit to be in MODE 3 within 6 hours and MODE 5 within the following 30 hours if a Functional Unit 6.c, Motor Driven Auxiliary Feedwater Pumps Safety Injection, channel is inoperable and not restored within 48 hours. However, CTS Table 3.3-3 Functional Unit 6.c is applicable only in MODES 1, 2, and 3. Thus, as described in CTS 3.0.1, CTS Table 3.3-3 Action 18 is only applicable in MODES 1, 2, and 3 for Functional Unit 6.c. ITS 3.3.2 ACTION H is the associated shutdown action for the above Functions, and it only requires the unit to be in MODE 3 within 6 hours and MODE 4 within 12 hours. This changes the CTS by explicitly specifying that the unit is only required to be shut down to MODE 4, and that it must be performed within 12 hours, not 36 hours.

The purpose of CTS Table 3.3-3 Actions 13 and 18 is to place the unit in a MODE in which Functional Unit 4.b, 10.b, or 6.c, respectively, does not apply. The change is acceptable because the 12 hour time to reach MODE 4 is consistent with other CTS and ITS requirements, and provides adequate time to reach the MODE in a safe manner without challenging unit systems. This change is designated as more restrictive because the Completion Time for the unit to reach MODE 4 has been decreased by 24 hours.

M.10 CTS Table 4.3-2, Functional Unit 6.b (Motor Driven AFW Pumps 4 kV Bus Loss of Voltage) and Functional Unit 7.b (Turbine Driven AFW Pump Reactor Coolant Pump Bus Undervoltage) require the performance of a CHANNEL CALIBRATION every 18 months, however the Surveillances are currently being performed more frequently. ITS Table 3.3.2-1 Function 6.e (Auxiliary Feedwater Loss of Voltage) and Function 6.f (Auxiliary Feedwater Undervoltage Reactor Coolant Pump) require the performance of a CHANNEL CALIBRATION every

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184 days (ITS SR 3.3.2.7). This changes the CTS by changing the Frequency of the Surveillance from 18 months to 184 days.

The purpose of the CHANNEL CALIBRATION is to ensure the Motor Driven AFW Pumps 4 kV Bus Loss of Voltage and Turbine Driven AFW Pump Reactor Coolant Pump Bus Undervoltage channels will function as designed during an analyzed event. Changing the SR Frequency is acceptable because a 184 day calibration interval is assumed in the setpoint analysis. This change is designated as more restrictive because Surveillances will be performed more frequently under the ITS than under the CTS.

M.11 CTS Table 3.3-4 provides the Allowable Values for Functional Unit 1.c (Safety Injection Containment Pressure - High), Functional Unit 1.f (Safety Injection Steam Line Pressure - Low) (Unit 1 only), Functional Unit 2.c (Containment Spray - Containment Pressure - High High), Functional Unit 3.b.3 (Containment Isolation Phase "B" Containment Pressure - High High), Functional Unit 4.c (Steam Line Isolation Containment Pressure – High High), Functional Unit 4.e (Steam Line Isolation Steam Line Pressure - Low) (Unit 1 only), Functional Unit 6.a (Motor Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low) (Unit 2 only), Functional Unit 7.a (Turbine Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low) (Unit 2 only), and Functional Unit 10.c (Containment Pressure - High). ITS Table 3.3.2-1 provides the Allowable Values for all the ESFAS Instrumentation Functions, including ITS Table 3.3.2-1 Functions 1.c, 1.e.(1), 2.c, 3.b.(3), 4.c, 4.d, 6.c, and 7.c. This change revises the above specified CTS ESFAS Table 3.3-4 Allowable Values to the ITS Allowable Values.

The purpose of the Allowable Values is to ensure the instruments function as assumed in the safety analyses. ITS 3.3.2 reflects Allowable Values consistent with the philosophy of Westinghouse ISTS, NUREG-1431. These Allowable Values have been established consistent with the methods described in AEP's Instrument Setpoint Methodology (EG-IC-004, "Instrument Setpoint Uncertainty," Rev. 4). For all cases where a SAL exists, the Allowable Value determinations were calculated using plant specific operating and surveillance trend data. For all other cases, existing Allowable Values were converted directly to the ITS Allowable Values. The Allowable Value verification used actual plant operating and surveillance trend information to ensure the validity of the developed Allowable Value. There were no changes to SALs required due to instrument performance. All design limits applied in the methodologies were confirmed as ensuring that applicable design requirements of the associated systems and equipment are maintained. The methodologies used have been compared with the guidance of ANSI/ISA S67.04-Part I-1994 and ANSI/ISA RP67.04-Part II-1994. Plant calibration procedures will ensure that the assumptions regarding calibration accuracy, measurement and test equipment accuracy, and setting tolerance are maintained. Setpoints for each SAL have been established by accounting for the applicable instrument accuracy, calibration and drift uncertainties, environmental effects, power supply fluctuations, as well as uncertainties related to process and primary element measurement accuracy using the instrument setpoint methodology. The Allowable Values have also been established from each SAL by combining the errors associated with the

CHANNEL OPERATIONAL TEST (COT) (e.g., device accuracy, setting tolerance, and drift) with the calculated Nominal Trip Setpoint using the instrument setpoint methodology. Where a SAL exists, trigger values are used to ensure that the Allowable Value provides sufficient margin from the SAL to account for any associated errors not confirmed by the COT. Use of the previously discussed methodologies for determining Allowable Values, NTSPs, and analyzing channel/instrument performance ensure that the design basis and associated SALs will not be exceeded during plant operation. These evaluations, determinations, and analyses now form a portion of the CNP design bases. Additionally, each applicable channel/instrument has been evaluated and analyzed to support a fuel cycle extension to a 24 month interval. These drift evaluations and drift analyses have been performed utilizing the guidance provided in EPRI TR-103335, "Statistical Analysis of Instrument Calibration Data/ Guidelines for Instrument Calibration Extension/Reduction Programs," Rev. 1. The EPRI guidance was used to demonstrate that the data collected by the operating plant (from Surveillance testing) has remained acceptable and reasonable with regard to the manufacturers design specifications. Therefore, based on the above discussion, the changes to the Allowable Values are acceptable. This change is designated as more restrictive because more stringent Allowable Values are being applied in the ITS than were applied in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.3.2.1 requires the ESFAS instrumentation setpoints to be set consistent with the Trip Setpoint values shown in Table 3.3-4. CTS 3.3.2.1 Action a is required to be entered when the setpoint is less conservative than the Allowable Value. The channel is to be declared inoperable until adjusted consistent with the Trip Setpoint value. CTS Table 3.3-4 specifies the Trip Setpoints and Allowable Values for the ESFAS Instrumentation Functional Units. ITS 3.3.2 requires the ESFAS instrumentation for each Function in Table 3.3.2-1 to be OPERABLE. ITS Table 3.3.2-1 specifies the Allowable Values for the ESFAS Instrumentation Functions. This changes the CTS by moving the Trip Setpoints and associated requirements to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Allowable Values associated with the ESFAS Instrumentation. Also, this change is acceptable because these types of procedural details will be adequately controlled in the

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TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.2 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for ESFAS instrumentation has three columns stating various requirements for each Functional Unit. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." In addition, the titles for CTS Table 3.3-3 Functional Units 6 and 7 provide clarifying information concerning motor driven and turbine driven AFW pump logic, and CTS Table 3.3-3 Functional Unit 6.b provides clarifying information concerning motor driven AFW pump and valve actuation logic. ITS Table 3.3.2-1 does not retain the "TOTAL NO. OF CHANNELS" or "CHANNELS TO TRIP" columns, nor the logic description for the motor driven AFW pumps and valves and turbine driven AFW pumps. This changes the CTS by moving the information of the "TOTAL NO. OF CHANNELS" and "CHANNELS TO TRIP" columns and the logic description for the motor driven AFW pumps and valves and turbine driven AFW pump to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels and the appropriate Condition to enter if a required channel becomes inoperable. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.3 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Tables 3.3-3, 3.3-4, and 4.3-2 Functional Unit 1 provides the ESFAS actuation Functions associated with Safety Injection, Turbine Trip, Feedwater Isolation, and Motor Driven Auxiliary Feedwater Pumps. CTS Tables 3.3-3, 3.3-4, and 4.3-2 Functional Unit 9.a states, in part, the Manual Initiation Function is associated with Reactor Trip (SI) and Essential Service Water System. ITS Table 3.3.2-1 Function 1 provides all the Functions associated with Safety Injection including the Manual Initiation Function. This changes the CTS by moving the details of the logic initiation from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the Functions to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to

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the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 specifies the functions and logic of the P-11 and P-12 interlocks. ITS Table 3.3.2-1 Functions 8.b and 8.c do not include this information. The ITS only specifies that there is 1 channel per train of each of the interlocks. This changes the CTS by moving the functional description and logic associated with each of the interlocks specified in the Table to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the interlocks to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-4 Functional Unit 5.a provides an Allowable Value of ≤ 68% of narrow range instrument span for the Steam Generator Water Level - High High channels. CTS Table 3.3-4 Functional Units 6.a and 7.a provides an Allowable Value of ≥ 16% (Unit 1) and ≥ 19.2% (Unit 2) of narrow range instrument span for the Steam Generator Water Level - Low Low channels. ITS Table 3.3.2-1 Function 5.b provides an Allowable Value for the Steam Generator Water Level - High High channels in terms of percent, but does not include the detail of the associated narrow range instrument span. ITS Table 3.3.2-1 Function 6.c provides an Allowable Value for the Steam Generator Water Level - Low Low channels in terms of percent, but does not include the detail of the associated narrow range instrument span. This changes the CTS by moving the details of what the setting in % is based upon to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the value for each of the Allowable Values. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

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LA.6 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.3-2, including Note 3, requires a CHANNEL FUNCTIONAL TEST for Functional Units 1.c and 10.c (Containment Pressure - High), and Functional Units 2.c, 3.b.3), and 4.c (Containment Pressure - High High), and includes requirements for exercising the transmitter "by applying a vacuum or pressure to the appropriate side of the transmitter." ITS SR 3.3.2.5 and associated Note requires the performance of a COT and the exercising of the transmitter, but does not include the information relating to the method of exercising the transmitter. This changes the CTS by moving the explicit method for performing the transmitter exercise to the Bases. The change which changes this test from a CHANNEL FUNCTIONAL TEST to a COT is discussed in DOC A.10.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements that the Containment Pressure - High and Containment Pressure - High High channels remain OPERABLE and a COT and transmitter exercise is still required to be performed. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.3.2.1.2 requires the total interlock function to be demonstrated OPERABLE at least once per 18 months. ITS SR 3.3.2.12 requires the performance of a CHANNEL OPERATIONAL TEST (COT), which tests a portion of the total interlock function, every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.3.2.1.2 is to ensure the proper operation of the ESFAS interlock functions. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance

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test interval for this COT is acceptable because during the operating cycle, there is sufficient indication of the status of T_{avg} and pressurizer pressure and the ESFAS interlock status to ensure the interlocks are in the correct status. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.2 *(Category 11 – 18 to 24 Month Surveillance Frequency Change, Channel Calibration Type)* CTS 4.3.2.1.2 requires the total interlock function to be demonstrated OPERABLE at least once per 18 months. CTS Table 4.3-2 requires a CHANNEL CALIBRATION of Functional Units 1.c through 1.f, 2.c, 3.b.3), 4.c through 4.e, 5.a, 6.a, 7.a, and 10.c every 18 months. ITS Table 3.3.2-1 Functions 1.c, 1.d, 1.e.(1), 1.e.(2), 2.c, 3.b.(3), 4.c through 4.e, 5.b, 6.c, 7.c, 8.b, and 8.c require the performance of a CHANNEL CALIBRATION every 24 months (ITS SR 3.3.2.10). This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of the CHANNEL CALIBRATION required by CTS 4.3.2.1.2 and Table 4.3-2 is to ensure the ESFAS instrumentation and interlocks be calibrated correctly to ensure the safety analysis can be met. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. This change is acceptable because the ESFAS, including the actuation logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one of the channel componets. Furthermore, the impacted ESFAS instrumentation has been evaluated for drift using both quantitative and qualitative analysis, based on manufacturer and model number to determine that the instrumentation's actual drift falls within the design allowance in the associated setpoint calculation.

Functional Units 1.c, 10.c, Containment Pressure - High

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter’s drift was determined by quantitative analysis. The drift value determined will be used

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in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 1.d, Pressurizer Pressure - Low

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 1.e, Differential Pressure Between Steam Lines - High

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by Foxboro N-2AI-H2V Input Cards and Foxboro N-2CCA-DC Control Cards performing the trip functions. The signal conditioners and control cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Units 1.f, 4.e, Steam Line Pressure - Low

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioners and control cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitters' drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

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Functional Units 2.c, 3.b.3), 4.c, Containment Pressure - High High

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Unit 4.d, Steam Flow in Two Steam Lines - High coincident with T_{avg} - Low Low

This function is performed by a loop consisting of 200Ω Platinum RTDs and Foxboro N-E13 Series Differential Pressure Transmitters with the signals conditioned by Foxboro N-2AI-H2V and N-2AI-P2V Input Cards with a Foxboro N-2CCA-DC Control Card performing the trip functions. The trip setpoint is generated using a Foxboro N-2CCA-DC Control Card based on Turbine Impulse Pressure. The Turbine Impulse Pressure portion of the function is performed by a Foxboro E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card. The Foxboro N-2CCA-DC Control Card generates the setpoint signal. The input and Control Cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified by a COT every 184 days, and if necessary, recalibrated (with the exception of the generated setpoint signal which is calibrated every 24 months). These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The RTDs are not calibrated, and as such, instrument drift does not apply to these devices. Response of the RTDs to temperature variations during normal plant operation and during the more frequent testing verifies proper operation of the input signal. The Foxboro Transmitters' drift, (for Differential Pressure and Pressure Transmitters) was determined by quantitative analysis as was the drift for the rack equipment used to generate the setpoint. The drift values determined have been used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of these analyses will support a 24 month Surveillance interval.

Functional Unit 5.a, Steam Generator Water Level - High High

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Differential Pressure Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

Functional Units 6.a, 7.a, Steam Generator Water Level - Low Low

This function is performed by a Foxboro (N-)E13 Series Differential Pressure Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Differential Pressure Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

P-11 Interlock

This function is performed by a Foxboro (N-)E11 Series Transmitter with the signal conditioned by a Foxboro N-2AI-H2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioner and control card are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro Transmitter's drift was determined by quantitative analysis. The drift value determined will be used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. The results of this analysis will support a 24 month surveillance interval.

P-12 Interlock

This function is performed by a loop consisting of a 200Ω Platinum RTD as the sensing element with the signal conditioned by a Foxboro N-2AI-P2V Input Card and a Foxboro N-2CCA-DC Control Card performing the trip functions. The signal conditioners and control cards are a part of the Foxboro Spec 200 Micro digital rack. The racks are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration surveillance interval does not affect the Foxboro rack components with respect to drift. The RTD sensing element is not subject to drift nor is it calibratable;

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therefore a quantitative analysis for the sensing element was not required. The results of this analysis will support a 24 month surveillance interval.

Based on the design of the instrumentation and the drift evaluations, it is concluded that the impact, if any, from this change on system availability is minimal. A review of the Surveillance test history was performed to validate the above conclusion. This review demonstrates that there are no failures that would invalidate the conclusion that the impact, if any, on system availability from this change is minimal. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.3.2.1.3 requires the ESF RESPONSE TIME of each ESFAS function to be demonstrated to be within limit. ITS SR 3.3.2.13 requires the same test, however a Note is included that allows a delay in the performance of the test for the turbine driven AFW pump until 24 hours after the required steam pressure of $\geq$ 850 psig is reached. This changes the CTS by providing an allowance for delaying the performance of required testing without requiring the turbine driven AFW pump to be declared inoperable.

The purpose of CTS 4.3.2.1.3 is to ensure the ESF RESPONSE times are within limit. The allowance provides for entry into MODE 3 before requiring the testing of the pump. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. This change is necessary because the main steam pressure may be insufficient in MODE 4 to accurately test the pump, and only a short time is allowed without verification of the required testing. The majority of SRs demonstrate equipment is, in fact, OPERABLE when the tests are performed. Inconsistent testing results may result if testing of the turbine driven AFW pump is required before establishing a sufficient steam pressure. The allowance will permit the establishment of stable unit conditions and sufficient steam pressure to test the pump and will allow an accurate and consistent method for the testing. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.4 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.3.2.1.3 requires the ESF RESPONSE TIME of each ESFAS function to be demonstrated to be within limit at least once per 18 months. ITS SR 3.3.2.13 requires the same test at a 24 month Frequency. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

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The purpose of CTS 4.3.2.1.3 is to ensure the actuation response times are less than or equal to the maximum values assumed in the accident analysis. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the ESF RESPONSE TIME test is acceptable because the ESFAS instrumentation is verified to be operating properly throughout the operating cycle by the performance of CHANNEL OPERATIONAL TESTS and, in some cases, CHANNEL CHECKS. This testing ensures that a significant portion of the ESFAS circuitry is operating properly and will detect significant failures of this circuitry. Additional justification for extending the Surveillance test interval is that the ESFAS, including the actuating logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one of the channel components. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.5 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Action 13, which applies when a Functional Unit 1.b (Safety Injection Automatic Actuation Logic), 2.b (Containment Spray Automatic Actuation Logic), 3.a.2) (Containment Isolation Phase "A" Isolation From SI Automatic Actuation Logic), 3.b.2) (Containment Isolation Phase "B" Isolation Automatic Actuation Logic), 4.b (Steam Line Isolation Automatic Actuation Logic), or 10.b (Containment Air Recirculation Fan Automatic Actuation Logic) train is inoperable, allows one channel to be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1. CTS Table 3.3-3 Action 14, which applies when a Functional Unit 1.c (Safety Injection Containment Pressure - High), 1.d (Safety Injection Pressurizer Pressure - Low), 1.e (Safety Injection Differential Pressure Between Steam Lines - High), 1.f (Safety Injection Steam Line Pressure - Low), 4.d (Steam Line Isolation Steam Flow in Two Steam Lines - High Coincident with T_{avg} - Low Low), 4.e (Steam Line Isolation Steam Line Pressure - Low), 5.a (Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High), 6.a (Motor Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low), 7.a (Turbine Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low), or 10.c (Containment Air Recirculation Fan Containment Pressure - High) channel is inoperable, requires the inoperable channel to be placed in trip within 1 hour. No allowance is provided in this Action to allow an inoperable channel to be bypassed for surveillance testing. CTS Table 3.3-3 Action 16, which applies when a Functional Unit 2.c

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(Containment Spray Containment Pressure - High High), 3.b.3) (Containment Isolation Phase "B" Isolation Containment Pressure - High High), or 4.c (Steam Line Isolation Containment Pressure - High High) channel is inoperable, allows one channel to be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1. CTS Table 3.3-3 Action 19, which applies when a Functional Unit 7.b (Turbine Driven Auxiliary Feedwater Pumps Reactor Coolant Pump Bus Undervoltage) channel is inoperable, requires the inoperable channel to be tripped within 1 hour and allows one channel to be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1. ITS 3.3.2 ACTION C, which applies to one train inoperable for ITS Table 3.3.2-1 Functional Units 1.b, 2.b, 3.a.(3), 3.b.(2), 4.b, and 7.b, includes an allowance to bypass one train for up to 4 hours for surveillance testing provided the other train is OPERABLE. ITS 3.3.2 ACTION D, which applies to one channel inoperable for ITS Table 3.3.2-1 Functions 1.c, 1.d, 1.e.(1), 1.e.(2), 4.d, 4.e, 5.b, 6.c, 6.f, and 7.c, requires the inoperable channel be placed in the tripped condition within 6 hours and includes an allowance to bypass one channel for up to 4 hours for surveillance testing of other channels. ITS 3.3.2 ACTION E, which applies to one channel inoperable for ITS Table 3.3.2-1 Functions 2.c, 3.b.(3), and 4.c, includes an allowance to bypass one train for up to 4 hours for surveillance testing provided the other train is OPERABLE. This changes the CTS by: a) extending the time allowed to bypass an inoperable train from 2 hours to 4 hours for CTS Table 3.3-3 Functional Units 1.b, 2.b, 3.a.2), 3.b.2), 4.b, and 10.b; b) extending the time allowed to place an inoperable CTS Table 3.3-3 Functional Units 1.c, 1.d, 1.e, 1.f, 4.d, 4.e, 5.a, 6.a, 7.a, and 10.c channel in the tripped condition from 1 hour to 6 hours and adding an allowance to bypass an inoperable channels of the above CTS Functional Units for 4 hours; c) extending the time allowed to bypass an inoperable channel from 2 hours to 4 hours for CTS Table 3.3-3 Functional Units 2.c, 3.b.3), and 4.c; and d) extending the time allowed to place an inoperable CTS Table 3.3-3 Functional Unit 7.b channel in the tripped condition from 1 hour to 6 hours and extending the time allowed to bypass an inoperable CTS Table 3.3-3 Functional Unit 7.b channel from 2 hours to 4 hours.

The purpose of the current Actions is to provide a short period of time to restore the inoperable channel or train to OPERABLE status. The proposed bypass time of 4 hours in ITS 3.3.2 ACTIONS C, D, and E is a sufficient time to perform train or channel surveillance. The 4 hour time period is acceptable since it is considered an acceptable amount of time based on the risk analysis of WCAP-10271-P "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System." The 6 hour Completion Time specified in ITS 3.3.2 ACTIONS C, D, and E is also acceptable since the change results in a small and therefore acceptable impact on plant risk as stated in the NRC Safety Evaluation Reports (SERs) associated with WCAP-10271-P. I&M has performed an evaluation to ensure that the conditions of the three NRC SERs supporting WCAP-10271-P, including Supplements 1 and 2 and Supplement 2, Rev. 1, have been met for the proposed ITS Completion Time and/or bypass time. Specifically, the NRC imposed five conditions on utilities seeking to implement the Technical Specification changes approved generically as a result of their review of WCAP-10271 and WCAP-10271 Supplement 1, and two conditions as a result of their review of WCAP-10271 Supplement 2 and Supplement 2, Rev. 1. Two of the conditions

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imposed in the Reactor Trip System (RTS) SER are now not applicable due to approvals given in the ESFAS SER. Conditions given in the RTS SER are considered to apply equally to the ESFAS Functions and equipment, and the conditions given in the ESFAS SER are considered to apply equally to the RTS Functions and equipment. I&M provided results of this evaluation to the NRC by application dated August 30, 2002 as supplemented by letters dated February 27, April 7, April 29, and May 2, 2003, that requested approval for increasing the CHANNEL OPERATIONAL TEST Surveillance intervals for analog channels, logic cabinets, and reactor trip breakers, and increasing the Completion Time and bypass time for the reactor trip breakers, as allowed by WCAP-15376-P, Rev. 0, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," and the Nuclear Regulatory Commission (NRC) staff's approved Technical Specification Task Force (TSTF) Traveler TSTF-411, Rev. 1, "Surveillance Test Interval Extension for Components of the Reactor Protection System." The NRC granted approval for these new requirements based upon WCAP-15376 by issuing License Amendments 277 (Unit 1) and 260 (Unit 2) on May 23, 2003. In the NRC SER for these amendments, the NRC stated that the December 20, 2002 acceptance letter for WCAP-15376 noted that this topical report was built on the foundation established by WCAP 10271-P and WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times." As a result, the NRC staff's review of I&M's application, as supplemented, verified that the applicable implementation requirements associated with the NRC staff acceptance of WCAP-10271 was also adequately addressed by I&M. Therefore, this change is considered acceptable. The WCAP-10271-P analysis did not review the Containment Air Recirculation Fan Automatic Actuation Logic and Containment Pressure - High Functions. However, since the design of these Functions are similar to the Safety Injection Actuation Logic and Containment Pressure - High Functions, the risk associated with increasing the Completion Times and bypass time are considered acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.6 *(Category 2 – Relaxation of Applicability)* CTS Tables 3.3-3 and 4.3-2 require Functional Units 4.b (Steam Line Isolation Automatic Actuation Logic), 4.c (Steam Line Isolation Containment Pressure - High High), 4.d (Steam Line Isolation Steam Line Flow in Two Steam Lines - High), 4.e (Steam Line Isolation Steam Line Pressure - Low), and 9.d (Steam Line Isolation Manual Initiation) to be OPERABLE in MODES 1, 2, and 3. ITS Table 3.3.2-1, including Footnote (d), requires these same Functions (ITS Table 3.3.2-1 Functions 4.a, 4.b, 4.c, 4.d, and 4.e) to be OPERABLE in MODE 1, and in MODES 2 and 3 except when all steam generator stop valves (SGSVs) are closed. This changes the CTS by making the Specification for these Functions not applicable in MODES 2 and 3 when all SGSVs are closed.

The purpose of the ITS Table 3.3.2-1 Function 4 Applicability exception is to clarify that the Steam Line Isolation instrumentation Functions are not required when the SGSVs are in a position that supports the safety analyses. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other

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specified conditions assumed in the safety analyses and licensing basis. When all the valves are in the closed position, they are in their assumed accident position, thus the isolation instrumentation is not needed. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.7 *(Category 2 – Relaxation of Applicability)* CTS Tables 3.3-3 and 4.3-2 require Functional Unit 5.a (Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High) to be OPERABLE in MODES 1, 2, and 3. ITS Table 3.3.2-1 requires the same Function (ITS Table 3.3.2-1 Function 5.b) to be OPERABLE in MODE 1, and in MODES 2 and 3 except when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. This changes the CTS by not requiring the instrumentation to be OPERABLE when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve.

The purpose of the ITS Table 3.3.2-1 Function 5.b Applicability exception is to clarify that the Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High instrumentation is not required when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. In this condition, the Function will not need to function since the valves are in a position that supports the safety analyses. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. When all the valves are in the closed position, they are in their assumed accident position. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.8 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Functional Unit 5, Turbine Trip and Feedwater Isolation, does not include the Automatic Actuation Logic and Actuation Relay Function. ITS Table 3.3.2-1 Function 5.a requires two Automatic Actuation Logic and Actuation Relay trains to be OPERABLE in MODE 1, and MODES 2 and 3 except when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. This addition is discussed in DOC A.12. ITS 3.3.2 ACTIONS C and H have been included for this Function and provide 6 hours to restore an inoperable train to OPERABLE status if one train is inoperable (ACTION C), and if not restored, provide a shutdown requirement (ACTION H). This changes the CTS by providing specific ACTIONS to take when an Automatic Actuation Logic and Actuation Relays Function associated with Turbine Trip and Feedwater Isolation instrumentation is inoperable.

The purpose of the ITS 3.3.2 ACTION C is to provide a short period of time to restore an inoperable Automatic Actuation Logic and Actuation Relays train and the purpose of ITS 3.3.2 ACTION H is to place the unit outside the Applicability of the Turbine Trip and Feedwater Isolation instrumentation. Currently, if the Automatic Actuation Logic and Actuation Relays Function is inoperable, the affected Turbine Trip and Feedwater Isolation instrumentation channels would be required to be declared inoperable, resulting in entry into CTS 3.0.3 since no

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Action is provided for this case. CTS 3.0.3 allows 1 hour to initiate action, 7 hours for the unit to be placed in MODE 3, and 13 hours for the unit to be placed in MODE 4. If a train is inoperable, ITS 3.3.2 provides 6 hours to restore the train to OPERABLE status (ACTION C), and if not restored, provides a shutdown requirement (ACTION H). ITS 3.3.2 ACTION H requires the unit to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours. The proposed Completion Time of 6 hours in ITS 3.3.2 ACTION C is acceptable considering that there is another train OPERABLE and the low probability of an event occurring during this interval. The Completion Time of 6 hours to reach MODE 3 and 12 hours to reach MODE 4, in a safe manner without challenging unit systems, is consistent with other CTS and ITS requirements. In addition, this change is consistent with NUREG-1431. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.9 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Action 13, which applies when a Functional Unit 1.b (Safety Injection Automatic Actuation Logic), 2.b (Containment Spray Automatic Actuation Logic), 3.a.2) (Containment Isolation Phase "A" Isolation From SI Automatic Actuation Logic), 3.b.2) (Containment Isolation Phase "B" Isolation Automatic Actuation Logic), 4.b (Steam Line Isolation Automatic Actuation Logic), or 10.b (Containment Air Recirculation Fan Automatic Actuation Logic) train is inoperable, does not provide any time to restore the inoperable train. ITS 3.3.2 Required Action C.1 will allow 6 hours to restore an inoperable Function 1.b, 2.b, 3.a.(3), 3.b.(2), 4.b, or 7.b train to OPERABLE status prior to requiring a unit shutdown. This changes the CTS by allowing 6 hours to restore the affected train to OPERABLE status prior to commencing a shutdown.

The purpose of the ITS 3.3.2 ACTION C is to provide a short period of time to restore the inoperable train. The proposed Completion Time of 6 hours in ITS 3.3.2 ACTION C is acceptable considering that there is another train OPERABLE and the low probability of an event occurring during this interval. In addition, this change is consistent with NUREG-1431. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.10 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-3 Action 14 states, in part, that with the number of OPERABLE channels one less than the total number of channels, operations may proceed "until performance of the next required CHANNEL FUNCTIONAL TEST." This CTS Action applies to CTS Table 3.3-3 Functional Units 1.c through 1.f, 4.d, 4.e, 5.a, 6.a, 7.a, and 10.c. ITS 3.3.2 ACTION D is the applicable ACTION for the above Functions when one channel is inoperable, and does not include the restoration time limit of "until performance of the next required CHANNEL FUNCTIONAL TEST." This changes the CTS by allowing operation with an inoperable channel for an unlimited amount of time provided the inoperable channel is in the tripped condition.

The purpose of CTS Table 3.3-3 Action 14 is to only allow operation until performance of the next required CHANNEL FUNCTIONAL TEST. This

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requirement is based upon the assumption that when it is time to test the other OPERABLE channels in the associated Function, the OPERABLE channels cannot be tested with the inoperable channel in trip. However, CTS 3.0.6 (ITS LCO 3.0.5) is a generic allowance that will allow the inoperable channel to be restored to service in order to perform Surveillances on the other OPERABLE channels in the associated Function. Thus, using this generic allowance, it is possible to test the remaining OPERABLE channels in the associated Function and there is no reason to restrict the generic allowance from applying to these specific channels. As such, the CTS Table 3.3-3 Action 14 statement is not necessary and has been deleted. The administrative controls required by ITS LCO 3.0.5 will ensure the time the channel is returned to service in conflict with the requirements of ITS 3.3.2 ACTION D is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY of the other channels. In addition, this specific example (taking an inoperable channel out of the tripped condition) is discussed in the Bases of ISTS SR 3.0.5. Therefore, this change is acceptable for the above described reasons. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.11 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-3 Action 16 states that with the number of OPERABLE Functional Unit 2.c, 3.b.3), or 4.c channels one less than the total number of channels, operations may proceed provided the inoperable channel is placed in the bypassed condition. ITS 3.3.2 ACTION E includes the same requirement, however a Completion Time of 6 hours has been added for placing the inoperable channel in bypass. This changes the CTS by allowing 6 hours to place the inoperable channel in the bypass condition.

The purpose of the CTS Table 3.3-3 Action 16 is to provide compensatory measures when the Containment Pressure - High High channels are inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a design basis accident occurring during the repair period. In addition, this change is consistent with NUREG-1431. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.12 *(Category 4 - Relaxation of Required Action)* CTS LCO 3.3.2.1 states that the interlocks of Table 3.3-3 shall be OPERABLE. However, no specific Actions are provided for when an interlock is inoperable. Therefore, all affected ESFAS instrumentation would be required to be declared inoperable, resulting in a CTS 3.0.3 entry. CTS 3.0.3 allows 1 hour to initiate action and then requires the unit to be in MODES 3, 4, and 5 within the following 6 hours, 12 hours, and 36 hours, respectively. ITS 3.3.2 ACTION F provides the actions for when one or more P-11 interlock channels are inoperable. ITS 3.3.2 ACTION F requires a verification that the interlock is in the required state for existing unit conditions

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within 1 hour. ITS 3.3.2 ACTION D provides the actions for when one P-12 interlock channel is inoperable. ITS 3.3.2 ACTION D requires the channel be placed in trip within 6 hours. If any of these two actions are not met, ITS 3.3.2 ACTION H requires the unit to be shut down to MODE 4. This changes the CTS by allowing continued operation as long as the P-12 interlock channel is placed in trip or as long as the P-11 interlock channel is placed in the correct state and providing shutdown actions if the inoperable interlock is not placed in the correct state.

The purpose of the interlocks is to ensure the associated ESFAS instrumentation is automatically enabled or disabled when required. This change is acceptable since the proposed ACTIONS ensure that the interlock is either tripped or manually placed in the correct state for the existing unit conditions, or the unit is placed in a MODE outside the Applicability of the associated interlock. ITS 3.3.2 ACTION D requires the interlock channel to be place in trip (i.e., this performs the intended function of the interlock). ITS 3.3.2 ACTION F requires the interlock to be placed in the same state as it would be normally placed in if it were automatically functioning (i.e., this performs the intended function of the interlock). If any of these actions are not accomplished within 1 hour or 6 hours, respectively, then ITS 3.3.2 ACTION H requires the unit to be placed in MODE 4, which is outside the Applicability of the associated interlock. The Required Actions and Completion Times for placing the unit in the MODE outside the Applicability of the interlocks are consistent with the Required Actions and Completion Times associated with exiting the Applicabilities for ESFAS Instrumentation Functions supported by the interlocks. With the unit placed in a MODE that is outside the Applicability of the associated interlock, the interlock is no longer required to function to support the required OPERABILITY of the associated ESFAS Instrumentation Function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.13 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS Table 4.3-2 Functional Unit 6.d (Loss of Main Feed Pumps) requires the performance of a CHANNEL FUNCTIONAL TEST every 18 months. CTS Table 4.3-2 Functional Units 9.a, 9.b, 9.c, 9.d, and 9.e (Manual Initiation) require the performance of a TADOT every 18 months. ITS Table 3.3.2-1 Functions 1.a, 2.a, 3.a.(1), 3.b.(1), 4.a, 6.g, and 7.a require the performance of SR 3.3.2.9, a TADOT, every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change from a CHANNEL FUNCTIONAL TEST to a TADOT for CTS Table 4.3-2 Function 6.d is discussed in DOC A.10.

The purpose of the CHANNEL FUNCTIONAL TEST and the TADOT required by CTS Table 4.3-2 is to ensure the ESFAS instrumentation can perform its intended function. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2,

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1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Based on the inherent system and component reliability, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.14 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-2 Functional Unit 9.d (Steam Line Isolation Manual Initiation) requires the performance of a CHANNEL FUNCTIONAL TEST every 92 days. ITS Table 3.3.2-1 Function 4.a does not require this test. This changes the CTS by deleting the quarterly CHANNEL FUNCTIONAL TEST of the Steam Line Isolation Manual Initiation Function.

The purpose of the quarterly CHANNEL FUNCTIONAL TEST associated with CTS Table 4.3-2 Functional Unit 9.d is to ensure all circuitry associated with the Steam Line Isolation Manual Initiation Function channels are OPERABLE except for the manual actuation switches. The Manual Initiation Function design includes two redundant manual actuation switches per steam line, each of which can close the associated steam generator stop valve. CTS Table 4.3-2 for Functional Unit 9.d also requires the performance of a TADOT every 18 months. The TADOT verifies the complete circuitry associated with the Manual Initiation Function channels. The Frequency of testing of the TADOT has been changed from 18 months to 24 months as discussed in DOC L.13. In reviewing the test history it has been determined that the performance of the TADOT is sufficient to ensure the circuitry remains OPERABLE. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.15 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 Functional Unit 5 specifies the requirements for the Turbine Trip and Feedwater Isolation. It does not contain the OPERABILITY requirements for the SI input from ESFAS. CTS Table 3.3-3 Functional Unit 1 requires the Safety Injection Function to also provide input to the Turbine Trip and Feedwater Isolation Function. The Applicability of CTS Table 3.3-3 Functional Unit 1.b, Automatic Actuation Logic is MODES 1, 2, 3, and 4. In addition, when a channel is inoperable, a shutdown to MODE 5 is required (CTS Table 3.3-3 Action 13). A new requirement was added as ITS Table 3.3.2-1 Function 5.c, SI Input from ESFAS, as discussed in DOC A.8. ITS Table 3.3.2-1 will require two trains of the SI Input from ESFAS Function capable of supporting the Turbine Trip and Feedwater Isolation instrumentation in MODE 1, and MODES 2 and 3 except when all main feedwater isolation valves (MFIVs) or main feedwater regulation valves (MFRVs) are closed and de-activated or isolated by a closed manual valve. Also, the ITS

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shutdown action (ITS 3.3.2 ACTION H), only requires a shutdown to MODE 4. This changes the CTS by making the SI Input from ESFAS Function only applicable in MODE 1, and MODES 2 and 3 except when MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve. Consistent with this change, the CTS shutdown action has been changed to only require a shutdown to MODE 4.

The purpose of the CTS Table 3.3-3 Applicability is to ensure that the SI Input from ESFAS Function that supports the Turbine Trip and Feedwater Isolation instrumentation is OPERABLE when it is needed to support the safety analyses. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. When all the MFIVs or MFRVs are in the closed position or isolated, they are essentially in their assumed accident position. In addition, when in MODE 4, the Turbine and Main Feedwater System are not in operation, thus the trip and isolation are also not needed. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.16 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Functional Unit 5 specifies the requirements for the Turbine Trip and Feedwater Isolation. It does not contain the OPERABILITY requirements for the SI input from ESFAS Function. CTS Table 3.3-3 Functional Unit 1 requires the Safety Injection Functions to also provide input to the Turbine Trip and Feedwater Isolation instrumentation. If a Functional Unit 1.b, Automatic Actuation Logic, train is inoperable, CTS Table 3.3-3 Action 13 (the applicable Action) does not provide any time to restore the inoperable train; a unit shutdown is required. A new requirement was added as ITS Table 3.3.2-1 Function 5.c, SI Input from ESFAS, as discussed in DOC A.8. If a channel of the SI Input from ESFAS Function is inoperable, ITS 3.3.2 ACTION C allows 6 hours to restore the channel to OPERABLE status. In addition, ITS 3.3.2 ACTION C includes an allowance to bypass one train for up to 4 hours for surveillance testing provided the other train is OPERABLE. If this cannot be met, ITS 3.3.2 ACTION H must be entered and the unit must be in MODE 3 in 6 hours and MODE 4 in 12 hours. This changes the CTS by allowing 6 hours to restore the affected train to OPERABLE status prior to commencing a shutdown and allows a 4 hour bypass time for Surveillance testing.

The purpose of the ITS 3.3.2 ACTION C is to provide a short period of time to restore the inoperable train to OPERABLE status. The purpose of the proposed bypass time of 4 hours in ITS 3.3.2 ACTION C is to provide a sufficient time to perform a train Surveillance. The Turbine Trip and Feedwater Isolation SI Input from ESFAS Function receives its input from the output of the SI Automatic Actuation Logic (ITS Table 3.3.2-1 Function 1.b). The Completion Time of 6 hours and the bypass time of 4 hours has been justified for the SI Automatic Actuation Logic in DOC L.9 and DOC L.5, respectively. Since the Turbine Trip and Feedwater Isolation SI Input Function receives its input from the SI Automatic Actuation Logic, extending the Completion Time and bypass times for this Function provides consistency between the Specifications and is considered

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acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.17 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Functional Units 6 (Motor Driven Auxiliary Feedwater Pumps) and 7 (Turbine Driven Auxiliary Feedwater Pumps) do not include the Automatic Actuation Logic and Actuation Relays Function. New requirements were added as ITS Table 3.3.2-1 Function 6.a, the Automatic Actuation Logic and Actuation Relays (Solid State Protection System) and Function 6.b, the Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS). The Applicability of these Functions is MODES 1, 2, and 3 and two trains of each Function are required to be OPERABLE, as discussed in DOC A.13. ITS 3.3.2 ACTIONS C and H have been included for these Functions and provide 6 hours to restore an inoperable train to OPERABLE status if one train is inoperable (ACTION C), and if not restored, provide a shutdown requirement (ACTION H). In addition, ITS 3.3.2 ACTION C includes an allowance to bypass one train for up to 4 hours for Surveillance testing provided the other train is OPERABLE. ITS 3.3.2 ACTION H requires the unit to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours. This changes the CTS by providing specific ACTIONS to enter when an Automatic Actuation Logic and Actuation Relays Function associated with AFW instrumentation is inoperable.

The purpose of the ITS 3.3.2 ACTION C is to provide a short period of time to restore an inoperable Automatic Actuation Logic and Actuation Relays train and the purpose of ITS 3.3.2 ACTION H is to place the unit outside the Applicability of the Auxiliary Feedwater instrumentation. The purpose of the proposed bypass time of 4 hours in ITS 3.3.2 ACTION C is to provide sufficient time to perform a train Surveillance. Currently, if an Automatic Actuation Logic and Actuation Relays Function is inoperable, the affected Auxiliary Feedwater instrumentation channels would be required to be declared inoperable, resulting in entry into CTS 3.0.3 since no Action is provided for this case. CTS 3.0.3 allows 1 hour to initiate action, 7 hours for the unit to be placed in MODE 3, and 13 hours for the unit to be placed in MODE 4. If a train is inoperable, ITS 3.3.2 provides 6 hours to restore the train to OPERABLE status (ACTION C), and if not restored, provides a shutdown requirement (ACTION H). ITS 3.3.2 ACTION H requires the unit to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours. The proposed Completion Time of 6 hours in ITS 3.3.2 ACTION C is acceptable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. The Completion Time of 6 hours to reach MODE 3 and 12 hours to reach MODE 4, in a safe manner without challenging unit systems, is consistent with other CTS and ITS requirements. The 4 hour bypass time period is acceptable since it is considered an acceptable amount of time based on the risk analysis of WCAP-10271-P, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System." I&M has performed an evaluation to ensure that the conditions of the three NRC SERs supporting WCAP-10271-P, including Supplements 1 and 2 and Supplement 2, Rev. 1, have been met for the proposed ITS Completion Time and/or bypass time. Specifically, the NRC imposed five conditions on utilities seeking to implement the Technical Specification changes approved generically as a result of their review of WCAP-10271 and WCAP-10271 Supplement 1, and

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two conditions as a result of their review of WCAP-10271 Supplement 2 and Supplement 2, Rev. 1. Two of the conditions imposed in the Reactor Trip System (RTS) SER are now not applicable due to approvals given in the ESFAS SER. Conditions given in the RTS SER are considered to apply equally to the ESFAS Functions and equipment, and the conditions given in the ESFAS SER are considered to apply equally to the RTS Functions and equipment. I&M provided results of this evaluation to the NRC by application dated August 30, 2002, as supplemented by letters dated February 27, April 7, April 29, and May 2, 2003, that requested approval for increasing the CHANNEL OPERATIONAL TEST surveillance intervals for analog channels, logic cabinets, and reactor trip breakers, and increasing the Completion Time and bypass time for the reactor trip breakers, as allowed by WCAP-15376-P, Rev. 0, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," and the Nuclear Regulatory Commission (NRC) staff's approved Technical Specification Task Force (TSTF) Traveler TSTF-411, Rev. 1, "Surveillance Test Interval Extension for Components of the Reactor Protection System." The NRC granted approval for these new requirements based upon WCAP-15376 by issuing License Amendments 277 (Unit 1) and 260 (Unit 2) on May 23, 2003. In the NRC SER for these amendments, the NRC stated that the December 20, 2002 acceptance letter for WCAP-15376 noted that this topical report was built on the foundation established by WCAP 10271-P and WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times." As a result, the NRC staff's review of I&M's application, as supplemented, verified that the applicable implementation requirements associated with the NRC staff acceptance of WCAP-10271 was also adequately addressed by I&M. Therefore this change is considered acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.18 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 Functional Unit 7.b, Reactor Coolant Pump Bus Undervoltage, which actuates the Turbine Driven Auxiliary Feedwater Pumps, is required to be OPERABLE during MODES 1, 2, and 3. ITS Table 3.3.2-1 Function 6.f (AFW Undervoltage Reactor Coolant Pump) is required to be OPERABLE only in MODES 1 and 2. This changes the CTS by reducing the applicable MODES in which the Reactor Coolant Pump Bus Undervoltage channels must be OPERABLE.

The purpose of CTS Table 3.3-3 Functional Unit 7.b, Reactor Coolant Pump Bus Undervoltage, is to ensure that a loss of power on the buses that provide power to the reactor coolant pumps provides indication of a pending loss of reactor coolant pump forced flow in the Reactor Coolant System (RCS). This change is acceptable because the requirements continue to ensure that the components are maintained in the MODES and other specified conditions assumed in the safety analyses. In MODES 1 and 2, all reactor coolant loops are required to be OPERABLE and in operation (ITS 3.4.4). In MODES 3, two RCS loops are required to be OPERABLE, and either two RCS loops are required to be in operation when the Rod Control System is capable of rod withdrawal or one RCS loop is required to be in operation when the Rod Control System is not capable of rod withdrawal (ITS 3.4.5). Therefore, the Reactor Coolant Pump Bus

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

Undervoltage Function does not actually provide any protection in MODE 3 since all RCS loops are not required to be in operation. Therefore, reducing the applicable MODES from MODES 1, 2, and 3 to MODES 1 and 2 is acceptable. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.19 *(Category 9 – Surveillance Frequency Change Using GL 91-04 Guidelines, Non-24 Month Type Change)* CTS Table 4.3-2 requires a CHANNEL FUNCTIONAL TEST of the Motor Driven Auxiliary Feedwater Pumps 4 kv Bus Loss of Voltage and the Turbine Driven Auxiliary Feedwater Pump Reactor Coolant Pump Bus Undervoltage instrumentation every 31 days. ITS SR 3.3.2.6 requires the performance of a TADOT for the Auxiliary Feedwater Loss of Voltage and Undervoltage Reactor Coolant Pump instrumentation every 184 days. This changes the CTS by extending the Frequency of the Surveillance from 31 days (i.e., a maximum of 38.75 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 184 days (i.e., a maximum of 230 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change from a CHANNEL FUNCTIONAL TEST to a TADOT is discussed in DOC A.10.

The purpose of the CHANNEL FUNCTIONAL TEST requirement in CTS Table 4.3-2 is to ensure the channels of the Motor Driven Auxiliary Feedwater Pumps 4 kv Bus Loss of Voltage and the Turbine Driven Auxiliary Feedwater Pump Reactor Coolant Pump Bus Undervoltage Functions will function as designed during an analyzed event. An evaluation of the surveillance interval extension was performed, based on the same approach described in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for this CHANNEL FUNCTIONAL TEST (i.e., TADOT) is acceptable because the probability of significant variations of the pump power supply is remote, due to the plant electrical system and the offsite grid reliability. Based on the power supply reliability and on the inherent system and component reliability the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 184 day Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (230 days) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances may be performed less frequently under the ITS than under the CTS.

L.20 CTS Table 3.3-3, Functional Unit 9.a (Safety Injection, Manual Initiation) requires a total of two channels per train to be OPERABLE. ITS Table 3.3.2-1, Function 1.a requires only one channel per train to be OPERABLE. This changes the CTS by decreasing the number of manual channels required OPERABLE from two per train to one per train.

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

The purpose of Safety Injection (SI) Manual Initiation Function is to ensure the capability exists to manually initiate the Safety Injection trains. The SI Manual Initiation Function at CNP is provided by four switches, two per train. Each switch will actuate the associated SI train (i.e., the two train A switches are fully redundant to each other and the two train B switches are fully redundant to each other). The only difference between the two switches within a train are their location within the control room. NUREG-1431 only requires two Manual Initiation channels to be OPERABLE, since a typical Westinghouse plant only has two channels installed. This change is acceptable since each channel within a train is fully redundant to the other channel in that train for the SI Manual Initiation Function, and the fact that it is consistent with the NUREG-1431 requirements. In addition, if the single required manual initiation switch does not function, the associated SI train can still be initiated using the individual component control switches that exist in the control room. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.21 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Functional Unit 6.b (4 kV Bus Loss of Voltage) requires entry into Action 14, when one channel is inoperable. CTS Table 3.3-3 Action 14 requires the channel to be placed in the tripped condition within 1 hour. In addition, Note * states that the provisions of CTS 3.0.4 are not applicable. ITS Table 3.3.2-1 Function 6.e (Loss of Voltage) requires entry into ACTION B when a channel is inoperable, and ACTION B requires the channel be restored to OPERABLE status within 48 hours and no LCO 3.0.4 exemption is provided. This changes the CTS by deleting the requirement to trip the channel within 1 hour and continue to operate indefinitely and provides a Completion Time of 48 hours to restore the channel to OPERABLE status.

The purpose of the ITS 3.3.2 ACTION B is to provide a short period of time to restore the inoperable Loss of Voltage channel. Three undervoltage relays with time delays are provided for each 4.16 kV emergency bus to detect a loss of bus voltage. The relays are combined in a two-out-of-three logic to generate a loss of voltage signal (i.e., the required number of channels required to trip to generate a loss of voltage signal is two per bus). With one channel inoperable the remaining two channels associated with the bus can support the Loss of Voltage Function. The specified Completion Time is reasonable considering the nature of this Function, the available redundancy, and the low probability of an event occurring during this interval. In addition, this change is consistent with NUREG-1431. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.22 *(Category 14 – Changing Instrumentation Allowable Values)* CTS Table 3.3-4 provides the Allowable Values for Functional Unit 1.d (Pressurizer Pressure - Low), Functional Unit 1.f (Steam Line Pressure - Low) (Unit 2 only), Functional Unit 4.d (Steam Line Isolation Steam Flow in Two Steam Lines - High Coincident with T_{avg} - Low Low) (T_{avg} - Low Low portion only is covered by this change), Functional Unit 4.e (Steam Line Isolation Steam Line Pressure - Low) (Unit 2 only), Functional Unit 5.a (Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High) (Unit 2 only), Functional Unit 6.a (Motor

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DISCUSSION OF CHANGES
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Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low) (Unit 1 only), and Functional Unit 7.a (Turbine Driven Auxiliary Feedwater Pumps Steam Generator Water Level - Low Low) (Unit 1 only). CTS Table 3.3-3 provides the Setpoint (i.e., Allowable Value) for the P-12 Interlock (T_{avg} - Low Low). ITS Table 3.3.2-1 provides the Allowable Values for all the ESFAS Instrumentation Functions, including ITS Table 3.3.2-1 Functions 1.d, 1.e.(1), 4.d, 4.e, 5.b, 6.c, and 8.c. This change revises the above specified CTS ESFAS Table 3.3-4 Allowable Values to the ITS Allowable Values.

The purpose of the Allowable Values is to ensure the instruments function as assumed in the safety analyses. ITS 3.3.2 reflects Allowable Values consistent with the philosophy of Westinghouse ISTS, NUREG-1431. These Allowable Values have been established consistent with the methods described in AEP's Instrument Setpoint Methodology (EG-IC-004, "Instrument Setpoint Uncertainty," Rev. 4). For all cases where an S A L exists, the Allowable Value determinations were calculated using plant specific operating and surveillance trend data. For all other cases, existing Allowable Values were converted directly to the ITS Allowable Values.. The Allowable Value verification used actual plant operating and surveillance trend information to ensure the validity of the developed Allowable Value. There were no changes to SALs required due to instrument performance. All design limits applied in the methodologies were confirmed as ensuring that applicable design requirements of the associated systems and equipment are maintained. The methodologies used have been compared with the guidance of ANSI/ISA S67.04-Part I-1994 and ANSI/ISA RP67.04-Part II-1994. Plant calibration procedures will ensure that the assumptions regarding calibration accuracy, measurement and test equipment accuracy, and setting tolerance are maintained. Setpoints for each SAL have been established by accounting for the applicable instrument accuracy, calibration and drift uncertainties, environmental effects, power supply fluctuations, as well as uncertainties related to process and primary element measurement accuracy using the instrument setpoint methodology. The Allowable Values have also been established from each SAL by combining the errors associated with the COT (e.g., device accuracy, setting tolerance, and drift) with the calculated NTSP using the instrument setpoint methodology. Where a SAL exists, trigger values are used to ensure that the Allowable Value provides sufficient margin from the SAL to account for any associated errors not confirmed by the COTUse of the previously discussed methodologies for determining Allowable Values, NTSPs, and analyzing channel/instrument performance ensure that the design basis and associated SALs will not be exceeded during plant operation. These evaluations, determinations, and analyses now form a portion of the CNP design bases. Additionally, each applicable channel/instrument has been evaluated and analyzed to support a fuel cycle extension to a 24 month interval. These drift evaluations and drift analyses have been performed utilizing the guidance provided in EPRI TR-103335, "Statistical Analysis of Instrument Calibration Data/ Guidelines for Instrument Calibration Extension/Reduction Programs," Rev. 1. The EPRI guidance was used to demonstrate that the data collected by the operating plant (from surveillance testing) has remained acceptable and reasonable with regard to the manufacturers design specifications. Therefore, based on the above discussion, the changes to the Allowable Values are acceptable. This change is designated as less restrictive because the less stringent Allowable Values are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2.1

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

DOC A.2

- NOTE -

Separate Condition entry is allowed for each Function. ← INSERT 1 (4)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Actions a and b — 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
Action a, Table 3.3-3 Actions 18 and 20 — B. One required channel or train inoperable. (14)	INSERT 1A (1) — B.1 Restore required channel or train to OPERABLE status. (14)	48 hours (25)
	OR	
	B.2.1 Be in MODE 3. (2)	54 hours
	AND	
	B.2.2 Be in MODE 5.	84 hours

CTS

4 **INSERT 1**

In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 1.e.(2) on a steam line basis; (b) for Functions 5.b and 6.c on a steam generator basis; and (c) for Function 6.e on a bus basis.

1 **INSERT 1A**

CTS Table 3.3-3 Note *

-NOTE-
For Functions 6.d and 6.g, LCO 3.0.4 is not applicable.

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	- NOTE - One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE.	
	C.1 Restore train to OPERABLE status.	6 hours
	OR	
	C.2.1 Be in MODE 3.	12 hours
	AND	
	C.2.2 Be in MODE 5.	42 hours
D. One channel inoperable.	- NOTE - The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels.	
	D.1 Place channel in trip.	6 hours
	OR	
	D.2.1 Be in MODE 3.	12 hours
	AND	
	D.2.2 Be in MODE 4.	18 hours

Action a, Table 3.3-3 Action 13, DOCs A.7, L.8, L.16, and L.17

Action a, Table 3.3-3 Actions 14 and 19

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Action a, Table 3.3-3 Action 16

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. One [Containment Pressure] channel inoperable.		- NOTE - One additional channel may be bypassed for up to [4] hours for surveillance testing.	
	E.1	Place channel in bypass.	[6] hours 72
	OR		
	E.2.1	Be in MODE 3.	12 hours
	AND		
	E.2.2	Be in MODE 4.	18 hours
F. One channel or train inoperable.	F.1	Restore channel or train to OPERABLE status.	48 hours
	OR		
	F.2.1	Be in MODE 3.	54 hours
	AND		
	F.2.2	Be in MODE 4.	60 hours
G. One train inoperable.		- NOTE - One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.	
	G.1	Restore train to OPERABLE status.	6 hours
	OR		

6 12 3 TSTF - 418 6 3 2 2 2

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	G.2.1 Be in MODE 3. AND G.2.2 Be in MODE 4.	12 hours 18 hours
H. One train inoperable.	- NOTE - One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE. H.1 Restore train to OPERABLE status. OR H.2 Be in MODE 3.	 6 hours 12 hours
I. One channel inoperable.	- NOTE - The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels. I.1 Place channel in trip. OR I.2 Be in MODE 3.	 6 hours 12 hours
J. One Main Feedwater Pumps trip channel inoperable.	J.1 Restore channel to OPERABLE status. OR J.2 Be in MODE 3.	48 hours 54 hours

(2)

(2)

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CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
K. One channel inoperable.		- NOTE - One additional channel may be bypassed for up to [4] hours for surveillance testing.	
	K.1	Place channel in bypass.	6 hours
	OR		
	K.2.1	Be in MODE 3.	12 hours
	AND		
	K.2.2	Be in MODE 5.	42 hours
F L. One or more channels inoperable.	F L.1	Verify interlock is in required state for existing unit condition.	1 hour
	OR		
	L.2.1	Be in MODE 3.	7 hours
	AND		
	L.2.2	Be in MODE 4.	13 hours

(2) (2) (2)

DOC L.12

INSERT 2 (2)

SURVEILLANCE REQUIREMENTS

4.3.2.1.1

- 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

Table 4.3-2 Functions 1.c through 1.f, 2.c, 3.b.3), 4.c, 4.d, 4.e, 5.a, 6.a, 6.b, 7.a, 10.c

3.3.2

CTS

(2) **INSERT 2**

CTS	Condition	Required Action	Completion Time
Action a, Table 3.3-3 Action 18 DOC M.4	G. Required Action and associated Completion Time of Condition B not met for Function 6.g. OR Required Action and associated Completion Time of Condition D not met for Function 6.f.	G.1 Be in MODE 3.	6 hours

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3.3.2

CTS

(2)

INSERT 2 (continued)

Action a, Table 3.3-3 Action 18, DOC M.5	H. Required Action and associated Completion Time of Condition B not met for Function 6.d, 6.e, or 8.a. OR	H.1 Be in MODE 3. AND H.2 Be in MODE 4.	6 hours 12 hours
Action a, Table 3.3-3 Action 13, DOCs L.8, L.16, and L.17	Required Action and associated Completion Time of Condition C not met for Function 4.b, 5.a, 5.c, 6.a, 6.b, or 7.b. OR		
DOC M.4 DOC L.12	Required Action and associated Completion Time of Condition D not met for Function 1.c, 1.d, 1.e.(1), 1.e.(2), 4.d, 4.e, 5.b, 6.c, 7.c, or 8.c. OR		
DOC M.4	Required Action and associated Completion Time of Condition E not met for Function 2.c, 3.b.(3), or 4.c. OR		
DOC L.12	Required Action and associated Completion Time of Condition F not met for Function 8.b.		

3.3.2

CTS

2

INSERT 2 (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a, Table 3.3-3 Action 18 Action a, Table 3.3-3 Action 13, DOC A.7	I. Required Action and associated Completion Time of Condition B not met for Function 1.a, 2.a, 3.a.(1), 3.b.(1), or 7.a. OR Required Action and associated Completion Time of Condition C not met for Function 1.b, 2.b, 3.a.(2), 3.a.(3), or 3.b.(2).	I.1 Be in MODE 3. AND I.2 Be in MODE 5.	6 hours 36 hours
Action a, Table 3.3-3 Action 20	J. Required Action and associated Completion Time of Condition B not met for Function 4.a.	J.1 Declare associated SGSV inoperable.	Immediately

Insert Page 3.3.2-5c

CTS

INSERT 2B

ESFAS Instrumentation
3.3.2

(10)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.2	Perform ACTUATION LOGIC TEST. (92)	31 days on a STAGGERED TEST BASIS
SR 3.3.2.3	- NOTE - The continuity check may be excluded. Perform ACTUATION LOGIC TEST. TADOT	(92) 31 days on a STAGGERED TEST BASIS
SR 3.3.2.4	Perform MASTER RELAY TEST. (92)	31 days on a STAGGERED TEST BASIS
SR 3.3.2.5	Perform COT. INSERT 24 (27) (184)	92 days
SR 3.3.2.6 (5)	Perform SLAVE RELAY TEST.	92 days 24 months
SR 3.3.2.7 (6)	- NOTE - Verification of relay setpoints not required. Perform TADOT.	(184) 92 days
SR 3.3.2.8 (9)	- NOTE - Verification of setpoint not required for manual initiation functions. Perform TADOT.	(24) 18 months
SR 3.3.2.9 (10)	- NOTE - This Surveillance shall include verification that the time constants are adjusted to the prescribed values. Perform CHANNEL CALIBRATION.	(24) 18 months

INSERT 3 (7) (10)

Margin annotations (left): 4.3.2.1.2, Table 4.3-2 Functions 1.b, 2.b, 3.b.2), 4.b, 7.b, DOCs M.2, M.3, M.5, M.8; Table 4.3-2 Functions 3.a.2), 6.d, DOC M.7; DOCs M.2, M.3, M.6, M.8; Table 4.3-2 Functions 1.c, 1.d, 1.e, 1.f, 2.c, 3.b.3), 4.c, 4.d, 4.e, 5.a, 6.a, 7.a, 10.c; DOCs M.2, M.3, M.6, M.8; Table 4.3-2 Functions 6.b and 7.b; Table 4.3-2 Functions 6.d, 9.a, 9.b, 9.c, 9.d, 9.e, DOC M.5; Table 4.3-2 Functions 1.c through 1.f, 2.c, 3.b.3), 4.c, 4.d, 4.e, 5.a, 6.a, 6.b, 7.a, 7.b, 10.c

Margin annotations (right): TSTF-411 (7) (7) TSTF-411 TSTF-411 (3) (10) (26) (3) (8) (10) (3) (9) (10) (3) (10)

CTS

3.3.2

(27)

INSERT 2A

Table 4.3-2
Note (3)

-NOTE-

For Functions 1.c, 2.c, 3.b.(3), 4.c, and 7.c, the associated transmitters shall be exercised during the performance of SR 3.3.2.5.

----

(10)

INSERT 2B

Table 4.3-1 Functions 6.b and 7.b	SR 3.3.2.7	Perform CHANNEL CALIBRATION.	184 days

(7) (10)

INSERT 3

DOC M.3	SR 3.3.2.11	Perform ACTUATION LOGIC TEST.	24 months
4.3.2.1.2	SR 3.3.2.12	Perform COT.	24 months

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.3.2.1.3 SR 3.3.2.10 (13)	- NOTE - Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is ≥ 1000 psig. (850) (24) (in the steam generator) Verify ESFAS RESPONSE TIMES are within limit.	18 (24) months on a STAGGERED TEST BASIS (10) (3) (3) (24)
SR 3.3.2.11	- NOTE - Verification of setpoint not required. Perform TADOT.	Once per reactor trip breaker cycle (11)

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Table 3.3.2-1 (page 1 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure - High 1	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [3.86] psig	[3.6] psig
d. Pressurizer Pressure - Low	1,2,3(a)	[3]	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [1839] psig	[1850] psig
e. Steam Line Pressure						
(1) Low	1,2,3(a)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635](b) psig	[675](b) psig
(2) High Differential Pressure Between Steam Lines	1,2,3	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [100] psig	[97] psig

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

(b) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.

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

(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, and ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

CTS Tables
3.3.3 3.3.4 4.3-2

Table 3.3.2-1 (page 2 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Safety Injection						
f. High Steam Flow in Two Steam Lines	1,2,3 (c)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	(d)	(e)
Coincident with T_{avg} - Low Low	1,2,3 (c)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [550.6]°F	[553]°F
g. High Steam Flow in Two Steam Lines	1,2,3 (c)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	(d)	(e)
Coincident with Steam Line Pressure - Low	1,2,3 (c)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635](b) psig	[675] psig
2. Containment Spray						
a. Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure High - 3 (High High)	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [12.31] psig	[12.05] psig

(b) Time constants used in the lead/lag controller are $t_1 \geq [50]$ seconds and $t_2 \leq [5]$ seconds.

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

(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, and ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

Table 3.3.2-1 (page 3 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
2. Containment Spray						
c. Containment Pressure High - 3 (Two Loop Plants)	1,2,3	[3] sets of [2]	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [12.31] psig	[12.05] psig
3. Containment Isolation						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Containment Pressure High - 3 (High High)	1,2,3	[4]	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [12.31] psig	[12.05] psig

Table 3.3.2-1 (page 4 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4. Steam Line Isolation						
a. Manual Initiation	1, 2^(i), 3^(i)	2	F	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1, 2^(i), 3^(i)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure - High 2	1, 2^(i), 3^(i)	[4]	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [6.61] psig	[6.35] psig
d. Steam Line Pressure						
(1) Low	1, 2^(i), 3^(a)(i)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635]^(e) psig	[675]^(b) psig
(2) Negative Rate - High	3^(f)(h)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [121.6]^(g) psi/sec	[110]^(g) psi/sec

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

(e) Time constants used in the lead/lag controller are $t_1 \geq [50]$ seconds and $t_2 \leq [5]$ seconds.

(f) Below the P-11 (Pressurizer Pressure) interlock.

(g) Time constant utilized in the rate/lag controller is ≥ [50] seconds.

(i) Except when all MSIVs are closed and [de-activated].

Table 3.3.2-1 (page 5 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4. Steam Line Isolation						
e. High Steam Flow in Two Steam Lines	1, 2 (h), 3 (h)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	(d)	(e)
Coincident with T_{avg} - Low Low	1, 2 (h), 3 (h)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [550.6]°F	[553]°F
f. High Steam Flow in Two Steam Lines	1, 2 (h), 3 (h)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	(d)	(e)
Coincident with Steam Line Pressure - Low	1,2,(h) 3 (h)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [635](b) psig	[675](b) psig
g. High Steam Flow	1,2 (h), 3 (h)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [25]% of full steam flow at no load steam pressure	[ ] full steam flow at no load steam pressure
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
and						
Coincident with T_{avg} - Low Low	1,2 (h), 3 (c) (h)	[2] per loop	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [550.6]°F	[553]°F

(b) Time constants used in the lead/lag controller are $t_1 \geq$ [50] seconds and $t_2 \leq$ [5] seconds.

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

(d) Less than or equal to a function defined as ΔP corresponding to [44]% full steam flow below [20]% load, ΔP increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and ΔP corresponding to [114]% full steam flow above 100% load.

(e) Less than or equal to a function defined as ΔP corresponding to [40]% full steam flow between [0]% and [20]% load and then a ΔP increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

(h) Except when all MSIVs are closed and [de-activated].

CTS Tables

3.3-3 3.3-4 4.3-2

Table 3.3.2-1 (page 6 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS (16)	REQUIRED CHANNELS (3)	CONDITIONS (2)	SURVEILLANCE REQUIREMENTS (3)(7)(10)	ALLOWABLE VALUE (3)	NOMINAL TRIP SETPOINT (15)
4. Steam Line Isolation						
h. High High Steam Flow (17)	1,2 (h),3 (h)	2 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ [130]% of full steam flow at full load steam pressure	[ ] of full steam flow at full load steam pressure
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
5. Turbine Trip and Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays (DOCs A.12, M.2, L.8; 5.a 5.a 5.a)	1, 2 (i), [3] (i) (f)	2 trains	[H, G] (C)	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 (8)	NA	NA
b. SG Water Level - High High (P-14)	1,2 (i), [3] (i) (f) (f) 1,2,3	[3] per SG	[I, D] (C)	SR 3.3.2.1 SR 3.3.2.5 (10) SR 3.3.2.9 SR 3.3.2.10 (13)	≤ [84.2]% 68.0 (Unit 1) and 71.6 (Unit 2)	[82.4]% (15)
c. Safety Injection (SI Input from ESFAS) (DOCs A.8, M.7, L.15, L.16; 9.a 9.a 9.a)	Refer to Function 1 (Safety Injection) for all initiation functions and requirements. (2 trains) (C)			SR 3.3.2.9 SR 3.3.2.13 (5)	NA	(18)
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System) (DOC M.3)	1,2,3	2 trains	G (C)	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 (8)	NA	NA
b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) (DOC M.3)	1,2,3	2 trains	G (C)	SR 3.3.2.8 (11) (7)	NA	NA

(h) Except when all MSIVs are closed and [de-activated]. (16)

DOC L.7 (f) (i) Except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve]. (3) (16)

main feedwater isolation valves or main feedwater regulating valves (12)

CTS Tables
3.3-3 3.3-4 4.3-2

Table 3.3.2-1 (page 7 of 8)
Engineered Safety Feature Actuation System Instrumentation

CTS 3.3-3	CTS 3.3-4	CTS 4.3-2	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS (3)	CONDITIONS (2)	SURVEILLANCE REQUIREMENTS (3)(7)(10)	ALLOWABLE VALUE (3)	NOMINAL TRIP SETPOINT (15)
			6. Auxiliary Feedwater				4.0 (Unit 1) and 20.8 (Unit 2)		and ≤ 3328 V (Unit 1) and ≤ 3280 V (Unit 2)
6.a 7.a	6.a 7.a	6.a 7.a	c. SG Water Level - Low Low	1,2,3	[3] per SG	D	SR 3.3.2.1 SR 3.3.2.5 (10) SR 3.3.2.9 (7) SR 3.3.2.10 (13)	≥ [30.4]%	[32.2]%
6.c 9.a	6.c 9.a	6.c 9.a	d. Safety Injection (SI Input from ESFAS)	1,2,3	2	B	SR 3.3.2.3	NA	
				Refer to Function 1 (Safety Injection) for all initiation functions and requirements. (18)					
6.b	6.b	6.b	e. Loss of Offsite Power (Voltage) (13)	1,2,3	[3] per bus (1)	F (B)	SR 3.3.2.7 (6) SR 3.3.2.9 (7) SR 3.3.2.10 (13) SR 3.3.2.1	≥ [2912] V with ≤ [0.8] sec time delay (3245 V (Unit 1) and 3195 V (Unit 2)) (2.2)	[2975] V with ≤ 0.8 sec time delay (≥ 1.8 sec and) (3)
7.b	7.b	7.b	f. Undervoltage Reactor Coolant Pump	1,2	[1] per bus	I (D)	SR 3.3.2.7 (6) SR 3.3.2.9 (7) SR 3.3.2.10 (13)	≥ [69]% bus voltage (2725 V)	[70]% bus voltage (15)
6.d	6.d	6.d	g. Trip of all Main Feedwater Pumps	1,2	[2] per pump (2)	J (B)	SR 3.3.2.8 (9) SR 3.3.2.9 SR 3.3.2.10 (13)	≥ [ ] psig (NA)	[ ] psig
			h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low (17)	1,2,3	[2]	F	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9	≥ [20.53] [psia]	[ ] [psia]
			7. Automatic Switchover to Containment Sump (17)						
			a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
			b. Refueling Water Storage Tank (RWST) Level - Low Low	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [15]% and ≤ [ ]%	[ ]% and [ ]%
			Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

INSERT 4 (20)

3.3.2

(20)

CTS

INSERT 4

Tables 3.3-3, 3.3-4, 4.3-2 — 7. Containment Air Recirculation/Hydrogen Skimmer (CEQ) System

CTS							
9.e, 10.a	a.	Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
10.b	b.	Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.8	NA
10.c	c.	Containment Pressure - High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.10 SR 3.3.2.13	≤ 1.17 psig

CTS

Table 3.3.2-1 (page 8 of 8)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
7. Automatic Switchover to Containment Sump						
c. RWST Level - Low Low	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [15]%	[18]%
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
and						
Coincident with Containment Sump Level - High	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ [30] in. above el. [703] ft	[ ] in. above el. [ ]ft
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	F B	SR 3.3.2.11 SR 3.3.2.2	NA	NA
b. Pressurizer Pressure, P-11	1,2,3	2 3 1 per train	L F	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.8 11	≤ [1996] psig 1915	[ ] psig
c. T_{avg} - Low Low, P-12	1,2,3	[1] per loop	L D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.9	≥ [550.6]°F 538.8	[553]°F

DOC M.5

Table 3.3-3 P-11, 4.3.2.1.2

Table 3.3-3 P-12, 4.3.2.1.2

2 3 7 10 3 15 17 11 9 10 12 10 12 21 23 15 22

- REVIEWER'S NOTE -
Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

1. ITS ACTION B Note has been added which states that for Functions 6.d (Auxiliary Feedwater Safety Injection Input from ESFAS) and 6.g (Auxiliary Feedwater Trip of all Main Feedwater Pumps) that LCO 3.0.4 is not applicable. This allowance is consistent with the current licensing basis.

2. ISTS 3.3.2 ACTIONS B, C, D, E, F, G, H, I, J, K, and L provide Required Actions and associated Completion Times for various ESFAS instrumentation inoperabilities. Each of these ACTIONS include Required Actions to either trip a channel, bypass a channel, or restore a channel to OPERABLE status (depending on the associated ESFAS Instrumentation Function). Each of these ACTIONS also include Required Actions that require placing the unit outside the applicable MODE or condition of the associated ESFAS Instrumentation Function (i.e., default Required Action). In each of these ACTIONS, the Required Actions to restore, bypass, or trip the affected channels are connected to the default Required Action by the logical connector "OR." The Completion Times for the Required Actions to restore, bypass, or trip affected channels are inconsistent with the Completion Times for the default Required Actions. This presentation is inconsistent with the format and convention used in all but one other specification in ISTS 3.3, all other sections of the ISTS, and other NSSS vendor ISTS (e.g., NUREG-1433, Rev. 2 and NUREG-1434, Rev. 2). This presentation can also cause confusion with respect to the correct application of the requirements of ISTS Section 3.0, "LCO Applicability." For example, ISTS LCO 3.0.4 includes an exception that allows entry into an applicable MODE or other specified condition when an LCO is not met if the ACTIONS permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. However, with an ACTION that includes both the Required Action to trip (or bypass) a channel and the default Required Action to exit the applicable MODE, it could be argued that this ACTION would not allow continued operation. Therefore, these ACTIONS have been revised or deleted to eliminate the default Required Actions from the ACTIONS with Required Actions to restore or trip the affected channels. As a result, additional ACTIONS (ITS 3.3.2 ACTIONS G, H, I, and J) have been added which include the default Required Actions consistent with placing the unit outside the applicable MODE or other specified condition of the associated ESFAS Instrumentation Function. Subsequent Conditions and Required Actions have been renumbered, as necessary.

3. The brackets are removed and the proper plant specific information/value is provided. Subsequent SRs have been renumbered as necessary.

4. The ITS 3.3.2 Bases allows separate Condition entry for those Functions where the channels are specified on a steam line, loop, and steam generator basis. However, this allowance is not specified in the Specifications. As documented in Part 9900 of the NRC Inspection Manual, Technical Guidance - Licensee Technical Specifications Interpretations, and in the ITS Bases Control Program (ITS 5.5.12), neither the Technical Specifications Bases nor Licensee generated interpretations can be used to change the Technical Specification requirements. Thus, if the Technical Specifications do not allow separate Condition entry on a steam line, loop, or steam generator basis, the Bases cannot change the Technical Specifications requirement and allow separate Condition entry on a steam line, loop, or steam generator basis. Therefore, the appropriate allowance has been added to the Specification. The

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

ACTIONS NOTE has been revised to allow separate Condition entry for certain Functions specified on a steam line, steam generator, or bus basis.

5. An ESF RESPONSE TIME TEST (ITS SR 3.3.2.13) has been added for ITS Table 3.3.2-1 Function 5.c (SI Input from ESFAS), and deleted for ITS Table 3.3.2-1 Functions 1.e.(2) (High Differential Pressure Between Stream Lines), 3.b.(3) (Containment Pressure - High High), and 4.e (High Steam Flow in Two Steam Lines Coincident with T_{avg} - Low Low), consistent with the current licensing basis requirements.

6. ISTS 3.3.2 ACTION E (ITS 3.3.2 ACTION E) requires entry when one "Containment Pressure" channel is inoperable. ISTS Table 3.3.2-1 (ITS Table 3.3.2-1) Function 1.c, Containment Pressure – High, requires entry into ACTION D when one channel is inoperable. Therefore, to avoid confusion on what type of Containment Pressure channel applies to this action, the words "Containment Pressure" have been deleted. This change is acceptable since the other ACTIONS do not specify which types of channels apply for entry. In addition, ISTS 3.3.2 Required Action A.1 (ITS 3.3.2 Required Action A.1) requires, when one or more required channels or trains are inoperable, immediate entry into the Condition required by Table 3.3.2-1 for the affected channel(s) or train(s). This requires the user to review Table 3.3.2-1 to determine the applicable ACTIONS that must be entered for an inoperable containment pressure channel.

7. ISTS SR 3.3.2.3 is the performance of an ACTUATION LOGIC TEST every 31 days on a STAGGERED TEST BASIS and it applies to the ISTS Table 3.3.2-1 Function 6.b (Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)). This test is not currently required by the CTS, however ITS SR 3.3.2.11 has been added (perform ACTUATION LOGIC TEST every 24 months) for this Function. This testing Frequency is considered acceptable and the Note in ISTS 3.3.2.3 is not needed for ITS SR 3.3.2.11. ISTS SR 3.3.2.3 (ITS SR 3.3.2.3) has been modified to perform a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) instead of an ACTUATION LOGIC TEST. This test applies to ITS Table 3.3.2-1 Functions 3.a.(3) and 6.d (SI Input from ESFAS). For these Functions, the applicable Surveillance Requirement is the performance of a TADOT (ITS SR 3.3.2.3). The Frequency of ISTS SR 3.3.2.3 (ITS SR 3.3.2.3) is revised to be consistent with CTS requirements for testing instrumentation that receive input for safety injection (i.e., 92 days on a STAGGERED TEST BASIS).

8. ISTS SR 3.3.2.8 (ITS SR 3.3.2.9) requires the performance of a TADOT for ISTS Table 3.3.2-1 (ITS Table 3.3.2-1) Functions 1.a (Safety Injection Manual Initiation), 2.a (Containment Spray Manual Initiation), 3.a.(1) (Containment Isolation Phase A Isolation Manual Initiation), 3.b.(1) (Containment Isolation Phase B Isolation Manual Initiation) and 4.a (Steam Line Isolation Manual Initiation). ISTS SR 3.3.2.8 is modified by a Note, which states "Verification of setpoint is not required for manual initiation functions." ITS Table 3.3.2-1 Functions 1.a, 2.a, 3.a.(1), 3.b.(1), and 4.a do not have required setpoints. The ISTS definition of TADOT states "The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy." Since no required setpoints apply for ITS Table 3.3.2-1 Functions 1.a, 2.a, 3.a.(1), 3.b.(1), and 4.a, the TADOT

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

definition does not require verification of setpoints. Therefore, the Note to ISTS SR 3.3.2.8 is unnecessary and has been deleted.

9. A Note to ISTS SR 3.3.2.9 requires the CHANNEL CALIBRATION to include verification that time constants are adjusted to the prescribed values. ITS SR 3.3.2.10 does not include this Note since ITS SR 3.3.2.10 does not apply to any ITS Table 3.3.2-1 Functions that include time constants (time delays/constants are used, but they are listed in the Allowable Value column).

10. ITS SR 3.3.2.12 (a 24 month COT) has been added to ISTS 3.3.2 to be consistent with the CTS. In addition, ITS SR 3.3.2.7 (a 184 day CHANNEL CALIBRATION) has been added to ISTS 3.3.2 as discussed in DOC M.10. Subsequent SRs have been renumbered, as necessary. Also, ISTS SR 3.3.2.9 (CHANNEL CALIBRATION) has not been included for ITS Table 3.3.2-1 Function 6.g, consistent with current licensing basis.

11. ISTS SR 3.3.2.11 (performance of a TADOT once per reactor trip breaker cycle) has been deleted. This SR applies to ISTS Table 3.3.2-1 Function 8.a, Reactor Trip, P-4. This Function has been added to the Technical Specifications. SR 3.3.2.9 is assigned to this Function and requires the performance of a TADOT every 24 months. This Surveillance is considered acceptable for this Function. In addition, an ACTUATION LOGIC TEST (ITS SR 3.3.2.2) has been added and ISTS SR 3.3.2.1 (CHANNEL CHECK) has been deleted, for the P-11 and P-12 ESFAS Interlock Functions (ITS Table 3.3.2-1 Functions 8.b and 8.c), consistent with the current licensing basis.

12. Editorial changes made for enhanced clarity or to be consistent with the Writer's Guide for Improved Standard Technical Specifications, NEI 01-03.

13. ITS Table 3.3.2-1 Functions 1.c, 2.c, 3.b.(3), 4.c, and 6.e have been modified to reflect CNP specific nomenclature.

14. ITS Table 3.3.2-1 Functions 1.a (Safety Injection Manual Initiation) (as modified by a Discussion of Change), 1.e.(1) (Safety Injection Steam Line Pressure Low), 2.a (Containment Spray Manual Initiation), 3.a.(1) (Phase A Isolation Manual Initiation), 3.b.(1) (Phase B Isolation Manual Initiation), 4.a (Steam Line Isolation Manual Initiation), and 4.d (Steam Line Isolation Steam Line Pressure – Low) have been revised to reflect the appropriate number of required channels consistent with the CNP current licensing basis. In addition, the word "required" has been added to Condition B and Required Action B.1, since not all installed channels are required.

15. The Nominal Trip Setpoint column has been deleted as allowed by the Reviewer's Note at the end of ISTS Table 3.3.2-1. This Reviewer's Note allows the unit specific implementation to contain only the Allowable Value. The nominal trip setpoints for each of the applicable ITS Table 3.3.2-1 Functions will be controlled in accordance with the Note in the ISTS 3.3.2 Bases Background section.

16. ISTS Table 3.3.2-1 Footnotes (d) and (e) on page 3.3.2-8 have been deleted since they do not apply to the ITS Table 3.3.2-1 Functions listed on the page. Subsequent Footnotes have been renumbered as necessary. In addition, ISTS Table 3.3.2-1

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

Footnote (c) has been renumbered as Footnote (b) and assigned to ITS Table 3.3.2-1 Functions 1.e.(1) and 1.e.(2) consistent with the CTS. As a corresponding change, ISTS Table 3.3.2-1 Footnote (b) is renumbered as Footnote (c). ISTS Table 3.3.2-1 Footnotes (b), (c), (d), and (e) on page 3.3.2-9 have been deleted since they do not apply to any ITS Table 3.3.2-1 Functions on the page. ISTS Table 3.3.2-1 Footnote (a) on page 3.3.2-11 has been renumbered as Footnote (b) and changed from P-11 to P-12 since the P-11 interlock does not apply to the Functions on the page. ISTS Table 3.3.2-1 Footnotes (f) and (g) on page 3.3.2-11 have been deleted since they do not apply to any ITS Table 3.3.2-1 Functions on the page. As a corresponding change, ISTS Table 3.3.2-1 Footnote (b) is renumbered as Footnote (c). Subsequent Footnotes have been renumbered as necessary. ISTS Table 3.3.2-1 Footnotes (b) and (e) on page 3.3.2-12 have been deleted since they do not apply to any ITS Table 3.3.2-1 Functions on the page. Subsequent Footnotes have been renumbered as necessary. ISTS Table 3.3.2-1 Footnote (d) on page 3.3.2-12 has been renumbered as Footnote (e) and revised as necessary consistent with the current licensing basis. ISTS Table 3.3.2-1 Footnote (h) on page 3.3.2-13 has been deleted since it does not apply to any Functions on the page. The subsequent Footnote has been renumbered as necessary.

17. ISTS Table 3.3.2-1 Functions 1.f (High Steam Flow in Two Steam Lines Coincident with T_{avg} - Low Low), 1.g (High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure Low), 2.c (Containment Pressure High - 3 (Two Loop Plants)), 4.d.(2) (Negative Rate - High), 4.f (High Steam Flow in Two Steam Lines Coincident with Steam Line Pressure - Low), 4.g (High Steam Flow Coincident with Safety Injection and Coincident with T_{avg} - Low Low), 4.h (High High Steam Flow Coincident with Safety Injection), 6.h (Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low), and all Functions associated with Function 7 (Automatic Switchover to Containment Sump) have been deleted since they do not apply to the CNP design. Subsequent Functions have been renumbered as applicable.

18. ISTS Table 3.3.2-1 Functions 3.a.(3), 5.c, and 6.d are the Safety Injection Functions associated with Containment Isolation Phase A Isolation, Turbine Trip and Feedwater Isolation, and Auxiliary Feedwater Functions, respectively. In the ISTS these Functions simply include a cross reference to Function 1 (Safety Injection) for all initiation functions and requirements. ITS Table 3.3.2-1 Functions 3.a.(3) and 6.d have been revised to reflect the specific Applicability, Required Channels, Conditions, and Surveillance Requirements for the SI Input from ESFAS Function consistent with the CTS. The CTS implies that the requirement only includes an input from SI since there is only a CHANNEL FUNCTIONAL TEST (a TADOT in the ITS) associated with these Functions. ITS Table 3.3.2-1 Function 5.c (Turbine Trip and Feedwater Isolation SI Input from ESFAS) also receives an input from SI, however there was no explicit Function for it in the CTS. It was added in accordance with the Discussion of Changes for ITS 3.3.2.

19. The bracketed requirement "and de-activated" has been deleted, consistent with a change made in ITS 3.7.2, "Steam Generator Stop Valves (SGSVs)."

20. ITS Table 3.3.2-1 Function 7 (Containment Air Recirculation/Hydrogen Skimmer (CEQ) System) has been added consistent with the CTS.

JUSTIFICATION FOR DEVIATIONS
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21. ISTS Table 3.3.2-1 (ITS Table 3.3.2-1) Function 8 (ESFAS Interlocks) has been revised to reflect the CNP specific design and nomenclature.

22. The Reviewer's Note has been deleted since it is not intended to be included in the ITS.

23. When an ISTS Table 3.3.2-1 Function 8.c (ITS Table 3.3.2-1 Function 8.c) P-12 interlock channel is inoperable, ISTS 3.3.2 ACTION L must be taken, and requires verification that the interlock is in the required state for the existing unit condition. However, at CNP the P-12 interlock also prevents a steam line isolation from occurring on a high steam line flow when Tavg is above the Tavg - Low Low reset point. Thus, placing the P-12 interlock train in the required state for the existing unit condition is not always a conservative action, since if a steam line break were to occur, the reactor coolant temperature would decrease to below the Tavg - Low Low reset point. Since compliance with ISTS 3.3.2 ACTION L would result in placing the P-12 interlock in a condition that prevents the steam line isolation, the ACTION is not conservative. Therefore, ITS Table 3.3.2-1 will require ISTS 3.3.2 ACTION D (ITS 3.3.2 ACTION D) to be entered when one train of the P-12 interlock Function is inoperable, and this ACTION requires placing the channel in trip, which is conservative for the steam line break event (i.e., the steam line isolation will not be blocked).

24. The Note to ISTS SR 3.3.2.10 (ITS SR 3.3.2.13) has been changed to be consistent with similar Notes in ITS 3.7.5 (ITS SRs 3.7.5.2 and 3.7.5.4).

25. Changes are made to reflect plant specific nomenclature or design.

26. The Note to ISTS SR 3.3.2.7 (ITS SR 3.3.2.6) has been changed to be consistent with a similar Note in ITS 3.3.1 (ITS SR 3.3.1.12).

27. A Note has been added to ISTS SR 3.3.2.5 (ITS SR 3.3.2.5) consistent with the CTS.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.3 INSTRUMENTATION

B 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents.

The ESFAS instrumentation is segmented into three distinct but interconnected modules as identified below:

- Field transmitters or process sensors and instrumentation: provide a measurable electronic signal based on the physical characteristics of the parameter being measured; ① ①

Control and Protection System,

- Signal processing equipment including analog/digital protection system, field contacts, and protection channel sets: provide signal conditioning, bistable setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system devices, and control board/control room/miscellaneous indications; and ① ①

- Solid State Protection System (SSPS) including input, logic, and output bays: initiates the proper unit shutdown or engineered safety feature (ESF) actuation in accordance with the defined logic and based on the bistable outputs from the signal process control and protection system.

The Allowable Value in conjunction with the trip setpoint and LCO establishes the threshold for ESFAS action to prevent exceeding acceptable limits such that the consequences of Design Basis Accidents (DBAs) will be acceptable. The Allowable Value is considered a limiting value such that a channel is OPERABLE if the setpoint is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). Note that, although a channel is "OPERABLE" under these circumstances, the ESFAS setpoint must be left adjusted to within the established calibration tolerance band of the ESFAS setpoint in accordance with the uncertainty assumptions stated in the referenced setpoint methodology, (as-left criteria) and confirmed to be operating within the statistical allowances of the uncertainty terms assigned.

BASES

BACKGROUND (continued)

Field Transmitters or Sensors

To meet the design demands for redundancy and reliability, more than one, and often as many as four, field transmitters or sensors are used to measure unit parameters. In many cases, field transmitters or sensors that input to the ESFAS are shared with the Reactor Trip System (RTS). In some cases, the same channels also provide control system inputs. To account for calibration tolerances and instrument drift, which are assumed to occur between calibrations, statistical allowances are provided in the Trip Setpoint and Allowable Values. The OPERABILITY of each transmitter or sensor is determined by either "as-found" calibration data evaluated during the CHANNEL CALIBRATION or by qualitative assessment of field transmitter or sensor, as related to the channel behavior observed during performance of the CHANNEL CHECK.

Signal Processing Equipment Control and Protection System (1)

Generally, three or four channels of process control equipment are used for the signal processing of unit parameters measured by the field instruments. The process control equipment provides signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with setpoints established by safety analyses. These setpoints are defined in FSAR, (3)
INSERT 1 Chapter [6] (Ref. 1), Chapter [7] (Ref. 2), and Chapter [15] (Ref. 3). If the measured value of a unit parameter exceeds the predetermined setpoint, an output from a bistable is forwarded to the SSPS for decision evaluation. Channel separation is maintained up to and through the input bays. However, not all unit parameters require four channels of sensor measurement and signal processing. Some unit parameters provide input only to the SSPS, while others provide input to the SSPS, the main control board, the unit computer, and one or more control systems.

Generally, if a parameter is used only for input to the protection circuits, three channels with a two-out-of-three logic are sufficient to provide the required reliability and redundancy. If one channel fails in a direction that would not result in a partial Function trip, the Function is still OPERABLE with a two-out-of-two logic. If one channel fails such that a partial Function trip occurs, a trip will not occur and the Function is still OPERABLE with a one-out-of- two logic.

Generally, if a parameter is used for input to the SSPS and a control function, four channels with a two-out-of-four logic are sufficient to

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the Technical Requirements Manual (Ref. 1)

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BASES

BACKGROUND (continued)

INSERT 2

provide the required reliability and redundancy. The circuit must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation. (4)

These requirements are described in IEEE-279-1971 (Ref. 4). The actual number of channels required for each unit parameter is specified in Reference 2 (3). (4)

Allowable Values and ESFAS Setpoints

The trip setpoints used in the bistables are based on the analytical limits stated in Reference 2 (4). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Allowable Values specified in Table 3.3.2-1 in the accompanying LCO are conservative with respect to the analytical limits (or design limits). A detailed description of the methodology used to calculate the Allowable Value and ESFAS setpoints including their explicit uncertainties, is provided in the plant specific setpoint methodology study (Ref. 6) which incorporates all of the known uncertainties applicable to each channel. The magnitudes of these uncertainties are factored into the determination of each ESFAS setpoint and corresponding Allowable Value. The nominal ESFAS setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for measurement errors detectable by the COT. The Allowable Value serves as the Technical Specification OPERABILITY limit for the purpose of the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE. (4)

The ESFAS setpoints are the values at which the bistables are set and is (are) (8) the expected value to be achieved during calibration. The ESFAS setpoint value ensures the safety analysis limits are met for the surveillance interval selected when a channel is adjusted based on stated channel uncertainties. Any bistable is considered to be properly adjusted when the "as-left" setpoint value is within the band for CHANNEL CALIBRATION uncertainty allowance (i.e., calibration tolerance uncertainties). The ESFAS setpoint value is therefore considered a

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As described in Reference 2, where a unit condition that requires protective action can be brought on by a failure or malfunction of the control system, and the same failure or malfunction prevents proper action of a protection system channel or channels designed to protect against the resultant unsafe condition, the remaining portions of the protection system shall be independently capable of withstanding a single failure and automatically initiating appropriate protective action. For CNP, the protection system is designed to be independent of the status of the control system. However, the control system does derive signals from the protection systems through isolation amplifiers, which are part of the protection system. The isolation amplifiers prevent perturbation of the protection signal (input) due to disturbances of the isolated signal (output) which could occur near any termination of the output wiring external to the protection and safeguards racks. As such, other acceptable logic designs (e.g., two-out-of-three logic) exist for parameters that are used as inputs to SSPS and a control function. Also, additional redundancy is warranted for those Functions whose channels energize to trip, even if they are not used as a control function.

BASES

BACKGROUND (continued)

"nominal value" (i.e., expressed as a value without inequalities) for the purposes of the COT and CHANNEL CALIBRATION.

Setpoints adjusted consistent with the requirements of the Allowable Value ensure that the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA and the equipment functions as designed.

Each channel can be tested on line to verify that the signal processing equipment and setpoint accuracy is within the specified allowance requirements of Reference 4. Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. SRs for the channels are specified in the SR section.

Solid State Protection System

The SSPS equipment is used for the decision logic processing of outputs from the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for maintenance or test purposes, the second train will provide ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is packaged in its own cabinet for physical and electrical separation to satisfy separation and independence requirements.

The SSPS performs the decision logic for most ESF equipment actuation; generates the electrical output signals that initiate the required actuation; and provides the status, permissive, and annunciator output signals to the main control room of the unit.

The bistable outputs from the signal processing equipment are sensed by the SSPS equipment and combined into logic matrices that represent combinations indicative of various transients. If a required logic matrix combination is completed, the system will send actuation signals via master and slave relays to those components whose aggregate Function best serves to alleviate the condition and restore the unit to a safe condition. Examples are given in the Applicable Safety Analyses, LCO, and Applicability sections of this Bases.

Each SSPS train has a built in testing device that can automatically test the decision logic matrix functions and the actuation devices while the

BASES

BACKGROUND (continued)

unit is at power. When any one train is taken out of service for testing, the other train is capable of providing unit monitoring and protection until the testing has been completed. The testing device is semiautomatic to minimize testing time.

The actuation of ESF components is accomplished through master and slave relays. The SSPS energizes the master relays appropriate for the condition of the unit. Each master relay then energizes one or more slave relays, which then cause actuation of the end devices. The master and slave relays are routinely tested to ensure proper operation. The test of the master relays energizes the relay, which then operates the contacts and applies a low voltage to the associated slave relays. The low voltage is not sufficient to actuate the slave relays but only demonstrates signal path continuity. The SLAVE RELAY TEST actuates the devices if their operation will not interfere with continued unit operation. For the latter case, actual component operation is prevented by the SLAVE RELAY TEST circuit, and slave relay contact operation is verified by a continuity check of the circuit containing the slave relay. (4) (9)

- REVIEWER'S NOTE -

No one unit ESFAS incorporates all of the Functions listed in Table 3.3.2-1. In some cases (e.g., Containment Pressure - High 3, Function 2.c), the Table reflects several different implementations of the same Function. Typically, only one of these implementations are used at any specific unit. (5)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents. For example, Pressurizer Pressure - Low is a primary actuation signal for small loss of coolant accidents (LOCAs) and a backup actuation signal for steam line breaks (SLBs) outside containment. Functions such as manual initiation, not specifically credited in the accident safety analysis, are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions may also serve as backups to Functions that were credited in the accident analysis (Ref. 3). (4) (4) (7)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

listed in Table 3.3.2-1 (4)

The LCO requires all instrumentation performing an ESFAS Function to be OPERABLE. A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the calibration tolerance band of the Nominal Trip Setpoint. A trip setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. unit (4)

The LCO generally requires OPERABILITY of four or three channels in each instrumentation function and two channels in each logic and manual initiation function. The two-out-of-three and the two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing an ESFAS initiation. Two logic or manual initiation channels are required to ensure no single random failure disables the ESFAS. Normally, (4)

The required channels of ESFAS instrumentation provide unit protection in the event of any of the analyzed accidents. ESFAS protection functions are as follows:

1. Safety Injection

Safety Injection (SI) provides two primary functions:

1. Primary side water addition to ensure maintenance or recovery of reactor vessel water level (coverage of the active fuel for heat removal, clad integrity, and for limiting peak clad temperature to < 2200°F), and ; (1)

2. Boration to ensure recovery and maintenance of SDM (k_{eff} < 1.0).

These functions are necessary to mitigate the effects of high energy line breaks (HELBs) both inside and outside of containment. The SI signal is also used to initiate other Functions such as: DBAs (4)

- Phase A Isolation, Containment ; (4)(1)
- Containment Purge Isolation, Supply and Exhaust System ; (4)(1)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- Reactor Trip,
- Turbine Trip,
- Feedwater Isolation,
- Start of motor driven auxiliary feedwater (AFW) pumps,
- Control room ventilation isolation, and
- Enabling automatic switchover of Emergency Core Cooling Systems (ECCS) suction to containment sump.

These other functions ensure:

- Isolation of nonessential systems through containment penetrations,
- Trip of the turbine and reactor to limit power generation,
- Isolation of main feedwater (MFW) to limit secondary side mass losses,
- Start of AFW to ensure secondary side cooling capability,
- Isolation of the control room to ensure habitability, and
- Enabling ECCS suction from the refueling water storage tank (RWST) switchover on low low RWST level to ensure continued cooling via use of the containment sump.

a. Safety Injection - Manual Initiation

The LCO requires one channel per train to be OPERABLE. The operator can initiate SI at any time by using either of two switches in the control room. This action will cause actuation of all components in the same manner as any of the automatic actuation signals.

The LCO for the Manual Initiation Function ensures the proper amount of redundancy is maintained in the manual ESFAS actuation circuitry to ensure the operator has manual ESFAS initiation capability.

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INSERT 3

- Trip main feedwater pumps;
- Actuate Essential Service Water (ESW) System for Units 1 and Unit 2;
- Actuate Component Cooling Water (CCW) System; and
- Actuate Engineered Safety Features (ESF) Ventilation System.

4

INSERT 4

The Safety Injection Manual Initiation Function is designed with two manual panel switches in each train. One switch (channel) in a train must be placed in the actuate position for the associated components in the train to receive an SI initiation signal.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued) panel switch

Each channel consists of one push button and the interconnecting wiring to the actuation logic cabinet. Each push button actuates both trains. This configuration does not allow testing at power. 4

b. Safety Injection - Automatic Actuation Logic and Actuation Relays 4

INSERT 5

This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the ESF equipment.

Manual and automatic initiation of SI must be OPERABLE in MODES 1, 2, and 3. In these MODES, there is sufficient energy in the primary and secondary systems to warrant automatic initiation of ESF systems. Manual Initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA, but because of the large number of components actuated on a SI, actuation is simplified by the use of the manual actuation push buttons. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. 4 initiation panel switches 6

INSERT 5A

These Functions are not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting individual systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. Unit pressure and temperature are very low and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems. INSERT 6 4

c. Safety Injection - Containment Pressure - High 1 4

This signal provides protection against the following accidents:

- SLB inside containment, 1
- LOCA, and

4

INSERT 5

The Safety Injection Automatic Actuation Logic and Actuation Relays Function includes two trains. The actuation of the logic in any train will actuate the associated components in the same train.

6

INSERT 5A

for those required OPERABLE ECCS component in standby readiness

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INSERT 6

Emergency Core Cooling System (ECCS) Function is not required to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- Feed line break inside containment.

Containment Pressure - High 1 provides no input to any control functions. Thus, three OPERABLE channels are sufficient to satisfy protective requirements with a two-out-of-three logic. The transmitters (d/p cells) and electronics are located outside of containment with the sensing line (high pressure side of the transmitter) located inside containment.

Thus, the high pressure Function will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

Containment Pressure - High 1 must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary systems to pressurize the containment following a pipe break. In MODES 4, 5, and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment.

d. Safety Injection - Pressurizer Pressure - Low

This signal provides protection against the following accidents:

- Inadvertent opening of a steam generator (SG) relief or safety valve,
- SLB,
- A spectrum of rod cluster control assembly ejection accidents (rod ejection),
- Inadvertent opening of a pressurizer relief or safety valve,
- LOCAs, and
- SG Tube Rupture.

At some units pressurizer pressure provides both control and protection functions: input to the Pressurizer Pressure Control System, reactor trip, and SI. Therefore, the actuation logic must be able to withstand both an input failure to control system, which may then require the protection function

4

INSERT 7

The Safety Injection Containment Pressure - High Function design includes three channels. This LCO requires three channels to be OPERABLE.

4

INSERT 8

MODE 4, the ECCS equipment is not required to operate on an automatic actuation signal and in

4

INSERT 9

The Safety Injection Pressurizer Pressure - Low Function design includes three channels arranged in a two-out-of three logic. This LCO requires three channels to be OPERABLE.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

actuation, and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic. For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements. (4)

The transmitters are located inside containment, with the taps in the vapor space region of the pressurizer, and thus possibly experiencing adverse environmental conditions (LOCA, SLB inside containment, rod ejection). Therefore, the trip setpoint reflects the inclusion of both steady state and adverse environmental instrument uncertainties. (4) (2)

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-11) to mitigate the consequences of an HELB inside containment. This signal may be manually blocked by the operator below the P-11 setpoint. Automatic SI actuation below this pressure setpoint is then performed by the Containment Pressure - High 1 signal. accident previously described (4) (4)

This Function is not required to be OPERABLE in MODE 3 below the P-11 setpoint. Other ESF functions are used to detect accident conditions and actuate the ESF systems in this MODE. In MODES 4, 5, and 6, this Function is not needed for accident detection and mitigation.

e. Safety Injection - Steam Line Pressure

(1) Steam Line Pressure - Low

Steam Line Pressure - Low provides protection against the following accidents: (4)

- SLB, (1)
- Feed line break, and (5) Unit 2 only (1)
- Inadvertent opening of an SG relief or an SG safety valve. power operated main steam (4)

INSERT 10 → Steam Line Pressure - Low provides no input to any control functions. Thus, three OPERABLE channels are (10) (4)

4

INSERT 10

The Safety Injection Steam Line Pressure - Low Function design includes four channels (one on each steam line) arranged in a two-out-of-four logic. The LCO requires one channel per steam line for a total of four channels to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

each steam line are sufficient to satisfy the protective requirements with a two-out-of-three logic on each steam line.

With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during a secondary side break. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties.

This Function is anticipatory in nature and has a typical lead/lag ratio of 50/5.

Steam Line Pressure - Low must be OPERABLE in MODES 1, 2, and 3 (above P-11) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This signal may be manually blocked by the operator below the P-11 setpoint. Below P-11, feed line break is not a concern. Inside containment SLB will be terminated by automatic SI actuation via Containment Pressure - High 1, and outside containment SLB will be terminated by the Steam Line Pressure - Negative Rate - High signal for steam line isolation. This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to cause an accident.

(2) Steam Line Pressure - High Differential Pressure Between Steam Lines

Steam Line Pressure - High Differential Pressure Between Steam Lines provides protection against the following accidents:

- SLB,
- Feed line break, and
- Inadvertent opening of an SG relief or an SG safety valve.

Steam Line Pressure - High Differential Pressure Between Steam Lines provides no input to any control functions.

4

INSERT 11

The Steam Line Pressure - High Differential Pressure Between Steam Lines Function design includes three channels for each steam line with a two-out-of-three logic for each steam line. This LCO requires three channels per steam line to be OPERABLE. The pressure associated with a steam line is compared to the pressure in the three other steam lines. If two channels associated with any given steam line indicate high differential pressure, an SI signal is generated.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Thus, three OPERABLE channels on each steam line are sufficient to satisfy the requirements, with a two-out-of-three logic on each steam line. (4)

With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties. Steam line high differential pressure must be OPERABLE in MODES 1, 2, and 3 when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is not sufficient energy in the secondary side of the unit to cause an accident.

auxiliary building (4)
not
only (2) (4)
(above P-12) (7)
MODE 3 below P-12 and (7)

f, g. Safety Injection - High Steam Flow in Two Steam Lines Coincident With T_{avg} - Low Low or Coincident With Steam Line Pressure - Low

These Functions (1.f and 1.g) provide protection against the following accidents:

- SLB, and
- the inadvertent opening of an SG relief or an SG safety valve.

Two steam line flow channels per steam line are required OPERABLE for these Functions. The steam line flow channels are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the Function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements. The one-out-of-two configuration allows online testing because trip of one high steam flow channel is not sufficient to cause initiation. High steam flow in two steam lines is acceptable in the case of a single steam line fault due to the fact that the remaining intact steam lines will pick up the full turbine load. The increased steam flow in the remaining intact lines will actuate the required second high steam flow trip. Additional (7)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

protection is provided by Function 1.e.(2), High Differential Pressure Between Steam Lines.

One channel of T_{avg} per loop and one channel of low steam line pressure per steam line are required OPERABLE. For each parameter, the channels for all loops or steam lines are combined in a logic such that two channels tripped will cause a trip for the parameter. For example, for three loop units, the low steam line pressure channels are combined in two-out-of-three logic. Thus, the Function trips on one-out-of-two high flow in any two-out-of-three steam lines if there is one-out-of-one low low T_{avg} trip in any two-out-of-three RCS loops, or if there is a one-out-of-one low pressure trip in any two-out-of-three steam lines. Since the accidents that this event protects against cause both low steam line pressure and low low T_{avg}, provision of one channel per loop or steam line ensures no single random failure can disable both of these Functions. The steam line pressure channels provide no control inputs. The T_{avg} channels provide control inputs, but the control function cannot initiate events that the Function acts to mitigate.

The Allowable Value for high steam flow is a linear function that varies with power level. The function is a ΔP corresponding to 44% of full steam flow between 0% and 20% load to 114% of full steam flow at 100% load. The nominal trip setpoint is similarly calculated.

With the transmitters typically located inside the containment (T_{avg}) or inside the steam tunnels (High Steam Flow), it is possible for them to experience adverse steady state environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties. The Steam Line Pressure - Low signal was discussed previously under Function 1.e.(1).

This Function must be OPERABLE in MODES 1, 2, and 3 (above P-12) when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This signal may be manually blocked by the operator when below the P-12 setpoint. Above P-12, this Function is automatically unblocked. This Function is not required

7

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

OPERABLE below P-12 because the reactor is not critical, so feed line break is not a concern. SLB may be addressed by Containment Pressure High 1 (inside containment) or by High Steam Flow in Two Steam Lines coincident with Steam Line Pressure - Low, for Steam Line Isolation, followed by High Differential Pressure Between Two Steam Lines, for SI. This Function is not required to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to cause an accident. (7)

2. Containment Spray

Containment Spray provides three primary functions: (accident)

1. Lowers containment pressure and temperature after an HELB in containment, (4)

2. Reduces the amount of radioactive iodine in the containment atmosphere, and

3. Adjusts the pH of the water in the containment recirculation sump after a large break LOCA.

These functions are necessary to:

- Ensure the pressure boundary integrity of the containment structure,
- Limit the release of radioactive iodine to the environment in the event of a failure of the containment structure, and
- Minimize corrosion of the components and systems inside containment following a LOCA.

INSERT 12 (4)

(via the Phase B Isolation signal)

The containment spray actuation signal starts the containment spray pumps and aligns the discharge of the pumps to the containment spray nozzle headers in the upper levels of containment. Water is initially drawn from the RWST by the containment spray pumps and mixed with a sodium hydroxide solution from the spray additive tank. When the RWST reaches the low low level setpoint, the spray pump suctions are shifted to the containment sump if continued containment spray is required. Containment spray is actuated (recirculation) (4)

INSERT 13

4

INSERT 12

and aligns the valves associated with the Spray Additive System

4

INSERT 13

a level indicating a sufficient volume has been transferred to containment, the operator aligns

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

automatically manually by Containment Pressure - High 3 or Containment Pressure - High High. (4)

a. Containment Spray - Manual Initiation

The operator can initiate containment spray at any time from the control room by simultaneously turning two containment spray actuation switches in the same train. Because an inadvertent actuation of containment spray could have such serious consequences, two switches must be turned simultaneously to initiate containment spray. There are two sets of two switches each in the control room. Simultaneously turning the two switches in either set will actuate containment spray in both trains in the same manner as the automatic actuation signal. Two Manual Initiation switches in each train are required to be OPERABLE to ensure no single failure disables the Manual Initiation Function. Note that Manual Initiation of containment spray also actuates Phase B containment isolation. (4)

the / for / a / the associated

b. Containment Spray - Automatic Actuation Logic and Actuation Relays

INSERT 14

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b. (4)

Manual and automatic initiation of containment spray must be OPERABLE in MODES 1, 2, and 3 when there is a potential for an accident to occur, and sufficient energy in the primary or secondary systems to pose a threat to containment integrity due to overpressure conditions. Manual initiation is also required in MODE 4, even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA. However, because of the large number of components actuated on a containment spray, actuation is simplified by the use of the manual actuation push buttons. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. In MODES 5 and 6, there is insufficient energy in the primary and secondary systems to result in containment overpressure. In MODES 5 and 6, there is also adequate time for the operators to evaluate unit (4)

switches (4)

4

INSERT 14

The Containment Spray Automatic Actuation Logic and Actuation Relays design includes two trains. The actuation of a train will actuate the associated containment spray train. This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the Containment Spray System.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

conditions and respond, to mitigate the consequences of abnormal conditions by manually starting individual components. (4)

c. Containment Spray - Containment Pressure - High High (6)

This signal provides protection against a LOCA or an SLB inside containment. The transmitters (d/p cells) are located outside of containment with the sensing line (high pressure side of the transmitter) located inside containment. The transmitters and electronics are located outside of containment. Thus, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

This is one of the only Functions that requires the bistable output to energize to perform its required action. It is not desirable to have a loss of power actuate containment spray, since the consequences of an inadvertent actuation of containment spray could be serious. Note that this Function also has the inoperable channel placed in bypass rather than trip to decrease the probability of an inadvertent actuation. (4)

INSERT 15

The Two different logic configurations are typically used. Three and four loop units use four channels are arranged in a two-out-of-four logic configuration. This configuration may be called the Containment Pressure - High 3 Setpoint for three and four loop units, and Containment Pressure - High High Setpoint for other units. Some two loop units use three sets of two channels, each set combined in a one-out-of-two configuration, with these outputs combined so that two-out-of-three sets tripped initiates containment spray. This configuration is called Containment Pressure - High 3 Setpoint. Since containment pressure is not used for control, both of these arrangements exceed the minimum redundancy requirements. Additional redundancy is warranted because this Function is energize to trip. (4) (3)

Containment Pressure - [High 3] High High must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary sides to pressurize the containment following a pipe break. (4) INSERT 15A In MODES 4, 5, and 6, there is insufficient energy in the primary and secondary sides to pressurize the containment and reach the Containment Pressure - High 3 High High setpoints. (4)

4

INSERT 15

The Containment Spray Containment Pressure - High High Function design includes four channels. This LCO requires all four channels to be OPERABLE.

4

INSERT 15A

In MODE 4, the Manual Initiation Function provides the required method for initiating the Containment Spray System.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3. Containment Isolation

Containment Isolation provides isolation of the containment atmosphere, and all process systems that penetrate containment, from the environment. This Function is necessary to prevent or limit the release of radioactivity to the environment in the event of a large break LOCA.

There are two separate Containment Isolation signals, Phase A and Phase B. Phase A isolation isolates all automatically isolable process lines, except component cooling water (CCW), at a relatively low containment pressure indicative of primary or secondary system leaks. For these types of events, forced circulation cooling using the reactor coolant pumps (RCPs) and SGs is the preferred (but not required) method of decay heat removal. Since CCW is required to support RCP operation, not isolating CCW on the low pressure Phase A signal enhances unit safety by allowing operators to use forced RCS circulation to cool the unit. Isolating CCW on the low pressure signal may force the use of feed and bleed cooling, which could prove more difficult to control.

Phase A containment isolation is actuated automatically by SI, or manually via the automatic actuation logic. All process lines penetrating containment, with the exception of CCW, are isolated. CCW is not isolated at this time to permit continued operation of the RCPs with cooling water flow to the thermal barrier heat exchangers and air or oil coolers. All process lines not equipped with remote operated isolation valves are manually closed, or otherwise isolated, prior to reaching MODE 4.

Manual Phase A Containment Isolation is accomplished by either of two switches in the control room. Either switch actuates both trains. Note that manual actuation of Phase A Containment Isolation also actuates Containment Purge and Exhaust Isolation.

The Phase B signal isolates CCW. This occurs at a relatively high containment pressure that is indicative of a large break LOCA or an SLB. For these events, forced circulation using the RCPs is no longer desirable. Isolating the CCW at the higher pressure does not pose a challenge to the containment boundary because the CCW System is a closed loop inside containment. Although some system components do not meet all of the ASME Code requirements applied to the containment itself, the system is continuously

4 **INSERT 16**

component cooling water (CCW) to the reactor coolant pumps and non-essential service water (NESW) to the ventilation units

4 **INSERT 16A**

The NESW System supplies cooling water to the containment ventilation units. Since the NESW System is normally available to support containment cooling, not isolating NESW on the low pressure Phase A signal enhances unit safety by allowing operators to use the containment ventilation units to remove heat from the containment instead of using the Containment Spray System.

4 **INSERT 17**

CCW to the reactor coolant pumps and NESW to the ventilation units

4 **INSERT 17A**

The NESW System is not isolated at this time to permit continued operation of the containment ventilation units.

4 **INSERT 18**

one train while the other switch isolates the other train

4 **INSERT 18A**

In addition, containment cooling via the containment ventilation units is no longer desirable.

4

INSERT 18B

Isolating the NESW at the higher pressure does not pose a challenge to the containment boundary since under maximum containment heat load conditions during a DBA LOCA, the Phase A and Phase B isolation signals will occur in a short time and therefore release of the containment atmosphere to the site boundary is precluded.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

pressurized to a pressure greater than the Phase B setpoint. Thus, routine operation demonstrates the integrity of the system pressure boundary for pressures exceeding the Phase B setpoint. Furthermore, because system pressure exceeds the Phase B setpoint, any system leakage prior to initiation of Phase B isolation would be into containment. Therefore, the combination of CCW and NESW System design and Phase B isolation ensures the CCW System and the NESW System is not a potential path for radioactive release from containment. (4)

Phase B containment isolation is actuated by Containment Pressure - High 3 or Containment Pressure - High High, or manually, via the automatic actuation logic, as previously discussed. For containment pressure to reach a value high enough to actuate Containment Pressure - High 3 or Containment Pressure - High High, a large break LOCA or SLB must have occurred and containment spray must have been actuated. RCP operation will no longer be required and CCW to the RCPs is, therefore, no longer necessary. The RCPs can be operated with seal injection flow alone and without CCW flow to the thermal barrier heat exchanger. INSERT 18C (4)

Manual Phase B Containment Isolation is accomplished by the same switches that actuate Containment Spray. When the two switches in either set are turned simultaneously, Phase B Containment Isolation and Containment Spray will be actuated in both trains. INSERT 19A (4)

a. Containment Isolation - Phase A Isolation

(1) Phase A Isolation - Manual Initiation (One per train)

Manual Phase A Containment Isolation is actuated by either of two switches in the control room. Either switch actuates both trains. Note that manual initiation of Phase A Containment Isolation also actuates Containment Purge Isolation. (4)

(2) Phase A Isolation - Automatic Actuation Logic and Actuation Relays

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

4 **INSERT 18C**

Containment ventilation operation will no longer be required since the Containment Spray System will be able to remove the containment heat load.

4 **INSERT 19**

and Containment Purge Supply and Exhaust System isolation

4 **INSERT 19A**

A Phase B Containment Isolation signal will isolate Phase B containment isolation valves and actuates the Containment Spray System pumps.

In addition, the charcoal filter bypasses associated with the Engineered Safety Features Ventilation System filter trains are automatically closed and the air is directed through the charcoal filters in addition to the roughing and high efficiency particulate air filters, as described in the Bases for ITS 3.7.12.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Manual and automatic initiation of Phase A Containment Isolation must be OPERABLE in MODES 1, 2, and 3, when there is a potential for an accident to occur. Manual initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA, but because of the large number of components actuated on a Phase A Containment Isolation, actuation is simplified by the use of the manual actuation push buttons. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. In MODES 5 and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment to require Phase A Containment Isolation. There also is adequate time for the operator to evaluate unit conditions and manually actuate individual isolation valves in response to abnormal or accident conditions.

Switches (4) (4)

(3) Phase A Isolation - Safety Injection

SI Input from ESFAS (7)

Phase A Containment Isolation is also initiated by all Functions that initiate SI. The Phase A Containment Isolation requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating Functions and requirements.

INSERT 20 (7)

b. Containment Isolation - Phase B Isolation

Phase B Containment Isolation is accomplished by Manual Initiation, Automatic Actuation Logic and Actuation Relays, and by Containment Pressure channels (the same channels that actuate Containment Spray, Function 2). The Containment Pressure trip of Phase B Containment Isolation is energized to trip in order to minimize the potential of spurious trips that may damage the RCPs.

- High High, c (2) (4)

(1) Phase B Isolation - Manual Initiation

(2) Phase B Isolation - Automatic Actuation Logic and Actuation Relays

(7)

INSERT 20

The SI Input from ESFAS ensures that the ESFAS automatic actuation logic will actuate Phase A Containment Isolation upon any signal that initiates SI. Actuation of Phase A Containment Isolation on an SI signal ensures that, in the event of conditions that may result in a radiological release, containment isolation valves that receive a Phase A Containment Isolation signal will be isolated. The SI Input from ESFAS signal directly inputs to the Phase A Containment Isolation actuation logic. There are two trains of SI Input from ESFAS arranged in a one-out-of-two logic configuration. The LCO requires two trains of SI Input from ESFAS to be OPERABLE in MODE 1, 2, 3, or 4 when there is a potential for an accident to occur. In MODES 5 and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment to require Phase A Containment Isolation.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Manual and automatic initiation of Phase B containment isolation must be OPERABLE in MODES 1, 2, and 3, when there is a potential for an accident to occur. Manual initiation is also required in MODE 4 even though automatic actuation is not required. In this MODE, adequate time is available to manually actuate required components in the event of a DBA. However, because of the large number of components actuated on a Phase B containment isolation, actuation is simplified by the use of the manual actuation push buttons. Automatic actuation logic and actuation relays must be OPERABLE in MODE 4 to support system level manual initiation. In MODES 5 and 6, there is insufficient energy in the primary or secondary systems to pressurize the containment to require Phase B containment isolation. There also is adequate time for the operator to evaluate unit conditions and manually actuate individual isolation valves in response to abnormal or accident conditions.

(3) Phase B Isolation - Containment Pressure

The basis for containment pressure MODE applicability is as discussed for ESFAS Function 2.c above.

4. Steam Line Isolation

Isolation of the main steam lines provides protection in the event of an SLB inside or outside containment. Rapid isolation of the steam lines will limit the steam break accident to the blowdown from one SG, at most. For an SLB upstream of the main steam isolation valves (MSIVs), inside or outside of containment, closure of the MSIVs limits the accident to the blowdown from only the affected SG. For an SLB downstream of the MSIVs, closure of the MSIVs terminates the accident as soon as the steam lines depressurize. For units that do not have steam line check valves, Steam Line Isolation also mitigates the effects of a feed line break and ensures a source of steam for the turbine driven AFW pump during a feed line break.

a. Steam Line Isolation - Manual Initiation

Manual initiation of Steam Line Isolation can be accomplished from the control room. There are two switches in the control

7

INSERT 20A

Containment Pressure - High High must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the primary and secondary sides to pressurize the containment following a pipe break. In MODE 4, the Manual Initiation Function provides the required method for initiating containment isolation. In MODES 5 and 6, there is insufficient energy in the primary and secondary sides to pressurize the containment and reach the Containment Pressure - High High setpoint.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

room and either switch can initiate action to immediately close all MSIVs. The LCO requires two channels to be OPERABLE.

b. Steam Line Isolation - Automatic Actuation Logic and Actuation Relays

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

Manual and automatic initiation of steam line isolation must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the RCS and SGs to have an SLB or other accident. This could result in the release of significant quantities of energy and cause a cooldown of the primary system. The Steam Line Isolation Function is required in MODES 2 and 3 unless all MSIVs are closed and de-activated. In MODES 4, 5, and 6, there is insufficient energy in the RCS and SGs to experience an SLB or other accident releasing significant quantities of energy.

c. Steam Line Isolation - Containment Pressure - High 2

This Function actuates closure of the MSIVs in the event of a LOCA or an SLB inside containment to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment. The transmitters (d/p cells) are located outside containment with the sensing line (high pressure side of the transmitter) located inside containment. Containment Pressure - High 2 provides no input to any control functions. Thus, three OPERABLE channels are sufficient to satisfy protective requirements with two-out-of-three logic. However, for enhanced reliability, this Function was designed with four channels and a two-out-of-four logic. The transmitters and electronics are located outside of containment. Thus, they will not experience any adverse environmental conditions, and the Trip Setpoint reflects only steady state instrument uncertainties.

Containment Pressure - High 2 must be OPERABLE in MODES 1, 2, and 3, when there is sufficient energy in the primary and secondary side to pressurize the containment following a pipe break. This would cause a significant increase in the containment pressure, thus allowing detection and

4

INSERT 21

The Steam Line Isolation Containment Pressure - High High Function design includes four channels arranged in a two-out-of-four logic configuration, and are energized to trip. This LCO requires all four channels to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

closure of the MSIVs. The Steam Line Isolation Function remains OPERABLE in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. In MODES 4, 5, and 6, there is not enough energy in the primary and secondary sides to pressurize the containment to the Containment Pressure - High 2 setpoint.

d. Steam Line Isolation - Steam Line Pressure

(1) Steam Line Pressure - Low

Steam Line Pressure - Low provides closure of the MSIVs in the event of an SLB to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment. This Function provides closure of the MSIVs in the event of a feed line break to ensure a supply of steam for the turbine driven AFW pump. Steam Line Pressure - Low was discussed previously under SI Function 1.e.1.

Steam Line Pressure - Low Function must be OPERABLE in MODES 1, 2, and 3 (above P-11) with any main steam valve open, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This signal may be manually blocked by the operator below the P-11 setpoint. Below P-11, an inside containment SLB will be terminated by automatic actuation via Containment Pressure - High 2. Stuck valve transients and outside containment SLBs will be terminated by the Steam Line Pressure - Negative Rate - High signal for Steam Line Isolation below P-11 when SI has been manually blocked. The Steam Line Isolation Function is required in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

(2) Steam Line Pressure - Negative Rate - High

Steam Line Pressure - Negative Rate - High provides closure of the MSIVs for an SLB when less than the P-11 setpoint, to maintain at least one unfaulted SG as a heat

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

sink for the reactor, and to limit the mass and energy release to containment. When the operator manually blocks the Steam Line Pressure - Low main steam isolation signal when less than the P-11 setpoint, the Steam Line Pressure - Negative Rate - High signal is automatically enabled. Steam Line Pressure - Negative Rate - High provides no input to any control functions. Thus, three OPERABLE channels are sufficient to satisfy requirements with a two-out-of-three logic on each steam line.

Steam Line Pressure - Negative Rate - High must be OPERABLE in MODE 3 when less than the P-11 setpoint, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). In MODES 1 and 2, and in MODE 3, when above the P-11 setpoint, this signal is automatically disabled and the Steam Line Pressure - Low signal is automatically enabled. The Steam Line Isolation Function is required to be OPERABLE in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. In MODES 4, 5, and 6, there is insufficient energy in the primary and secondary sides to have an SLB or other accident that would result in a release of significant enough quantities of energy to cause a cooldown of the RCS.

While the transmitters may experience elevated ambient temperatures due to an SLB, the trip function is based on rate of change, not the absolute accuracy of the indicated steam pressure. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties.

e. Steam Line Isolation - High Steam Flow in Two Steam Lines Coincident with T_{avg} - Low Low or Coincident With Steam Line Pressure - Low (Three and Four Loop Units)

These Functions (4.e and 4.f) provide closure of the MSIVs during an SLB or inadvertent opening of an SG relief or a safety valve, to maintain at least one unfaulted SG as a heat sink for the reactor and to limit the mass and energy release to containment.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 22 These Functions were discussed previously as Functions 1.f. and 1.g. (7)

These Functions must be OPERABLE in MODES 1 and 2, and in MODE 3, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines unless all MSIVs are closed and de-activated. These Functions are not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

g. Steam Line Isolation - High Steam Flow Coincident With Safety Injection and Coincident With T_{avg} - Low Low (Two Loop Units)

This Function provides closure of the MSIVs during an SLB or inadvertent opening of an SG relief or safety valve to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment.

Two steam line flow channels per steam line are required OPERABLE for this Function. These are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements. The one-out-of-two configuration allows online testing because trip of one high steam flow channel is not sufficient to cause initiation.

The High Steam Flow Allowable Value is a ΔP corresponding to 25% of full steam flow at no load steam pressure. The Trip Setpoint is similarly calculated.

With the transmitters (d/p cells) typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoints reflect both steady state and adverse environmental instrument uncertainties.

The main steam line isolates only if the high steam flow signal occurs coincident with an SI and low low RCS average temperature. The Main Steam Line Isolation Function requirements for the SI Functions are the same as the

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INSERT 22

High Steam Flow in Two Steam Lines Function design includes two steam flow channels per steam line arranged in a one-out-of-two logic configuration per steam line. T_{avg} - Low Low Function design includes one channel per loop for a total of four channels arranged in a two-out-of-four logic configuration. Logic actuation will occur when two steam lines indicate high flow coincident with T_{avg} - Low Low exceeding its trip setpoint (two of the four channels). Two steam line flow channels per steam line and one T_{avg} - Low Low channel per loop are required to be OPERABLE to ensure no single failure will disable this Function.

The one-out-of-two logic configuration allows online testing because trip of one high steam flow channel is not sufficient to cause initiation. High steam flow in two steam lines is acceptable in the case of a single steam line fault due to the fact that the remaining intact steam lines will pick up the full turbine load. The increased steam flow in the remaining intact lines will actuate the required second high steam flow trip.

The Allowable Value for high steam flow is a linear function that varies with power level. The high steam flow and T_{avg} transmitters are located inside containment thus, it is not possible for them to experience adverse environmental conditions during a rupture of a steam line. Therefore, the trip setpoint only reflects steady state environmental instrument uncertainties.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

Two channels of T_{avg} per loop are required to be OPERABLE. The T_{avg} channels are combined in a logic such that two channels tripped cause a trip for the parameter. The accidents that this Function protects against cause reduction of T_{avg} in the entire primary system. Therefore, the provision of two OPERABLE channels per loop in a two-out-of-four configuration ensures no single random failure disables the T_{avg} - Low Low Function. The T_{avg} channels provide control inputs, but the control function cannot initiate events that the Function acts to mitigate. Therefore, additional channels are not required to address control protection interaction issues.

With the T_{avg} resistance temperature detectors (RTDs) located inside the containment, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrumental uncertainties. (7)

This Function must be OPERABLE in MODES 1 and 2, and in MODE 3, when above the P-12 setpoint, when a secondary side break or stuck open valve could result in rapid depressurization of the steam lines. Below P-12 this Function is not required to be OPERABLE because the High High Steam Flow coincident with SI Function provides the required protection. The Steam Line Isolation Function is required to be OPERABLE in MODES 2 and 3 unless all MSIVs are closed and [de-activated]. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

h. <u>Steam Line Isolation - High High Steam Flow Coincident With Safety Injection (Two Loop Units)</u>

This Function provides closure of the MSIVs during a steam line break (or inadvertent opening of a relief or safety valve) to maintain at least one unfaulted SG as a heat sink for the reactor, and to limit the mass and energy release to containment.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Two steam line flow channels per steam line are required to be OPERABLE for this Function. These are combined in a one-out-of-two logic to indicate high steam flow in one steam line. The steam flow transmitters provide control inputs, but the control function cannot cause the events that the Function must protect against. Therefore, two channels are sufficient to satisfy redundancy requirements.

The Allowable Value for high steam flow is a ΔP, corresponding to 130% of full steam flow at full steam pressure. The Trip Setpoint is similarly calculated.

With the transmitters typically located inside the steam tunnels, it is possible for them to experience adverse environmental conditions during an SLB event. Therefore, the Trip Setpoint reflects both steady state and adverse environmental instrument uncertainties. (7)

The main steam lines isolate only if the high steam flow signal occurs coincident with an SI signal. The Main Steam Line Isolation Function requirements for the SI Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

This Function must be OPERABLE in MODES 1, 2, and 3 when a secondary side break or stuck open valve could result in rapid depressurization of the steam lines unless all MSIVs are closed and [de-activated]. This Function is not required to be OPERABLE in MODES 4, 5, and 6 because there is insufficient energy in the secondary side of the unit to have an accident.

5. Turbine Trip and Feedwater Isolation

The primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines, and to stop the excessive flow of feedwater into the SGs. These Functions are necessary to mitigate the effects of a high water level in the SGs, which could result in carryover of water into the steam lines and excessive cooldown of the primary system. The SG high water level is due to excessive feedwater flows.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The Function is actuated when the level in any SG exceeds the high high setpoint, and performs the following functions:

- Trips the main turbine;
- Trips the MFW pumps;
- Initiates feedwater isolation; and
- Shuts the MFW regulating valves and the bypass feedwater regulating valves.

INSERT 22A

This Function is actuated by SG Water Level - High High, or by an SI signal. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation and the AFW System is automatically started. The SI signal was discussed previously.

a. Turbine Trip and Feedwater Isolation - Automatic Actuation Logic and Actuation Relays

INSERT 23

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b. Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic. For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements. For other units that have only three channels, a median signal selector is provided or justification is provided in NUREG-1218 (Ref. 7).

INSERT 24

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INSERT 22A

(main feedwater regulating valves (MFRVs) and main feedwater isolation valves (MFIVs)).

4

INSERT 23

The Turbine Trip and Feedwater Isolation Automatic Actuation Logic and Actuation Relays Function includes two trains. The actuation of the logic in any train will isolate the MFW System and trip the turbine.

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INSERT 24

The Function is monitored by three channels on each steam generator arranged in a two-out-of-three logic arrangement for each steam generator. This LCO requires all three Steam Generator Water Level - High High channels on each SG to be OPERABLE. A SG Water Level - High High actuation signal will be generated when two of three channels associated with any one SG exceeds the trip setpoint.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties.

c. Turbine Trip and Feedwater Isolation - Safety Injection

Turbine Trip and Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

Turbine Trip and Feedwater Isolation Functions must be OPERABLE in MODES 1 and 2 [and 3] except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve] when the MFW System is in operation and the turbine generator may be in operation. In MODES [3,] 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE.

6. Auxiliary Feedwater

The AFW System is designed to provide a secondary side heat sink for the reactor in the event that the MFW System is not available. The system has two motor driven pumps and a turbine driven pump, making it available during normal unit operation, during a loss of AC power, a loss of MFW, and during a Feedwater System pipe break. The normal source of water for the AFW System is the condensate storage tank (CST) (normally not safety related). A low level in the CST will automatically realign the pump suctions to the Essential Service Water (ESW) System (safety related). The AFW System is aligned so that upon a pump start, flow is initiated to the respective SG(s) immediately.

a. Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays (Solid State Protection System)

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

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INSERT 25

The SI Input from ESFAS ensures that the ESFAS automatic actuation logic will actuate Turbine Trip and Feedwater Isolation upon any signal that initiates SI. Actuation of Turbine Trip and Feedwater Isolation on an SI signal ensures that, if an event that results in an SI could also result in excessive feedwater flow, the main turbine and all main feedwater pumps will be tripped and MFW will be isolated. The SI Input from ESFAS signal directly inputs to the Turbine Trip and Feedwater Isolation actuation logic. There are two trains of SI Input from ESFAS arranged in a one-out-of-two logic.

4

INSERT 26

In MODE 3 when all MFIVs or MFRVs are closed and de-activated or isolated by a closed manual valve and

4

INSERT 27

An emergency water source is provided from the Essential Service Water System. Transfer is accomplished by a remotely operated, motor-operated valve and a manual valve.

4

INSERT 28

The Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays (Solid State Protection System) Function design includes two trains. The actuation of the logic in any train will actuate the turbine driven AFW pump and valves or the associated motor driven AFW pump and valves, as applicable. Each AFW Function, except the Loss of Voltage and Trip of all Main Feedwater Functions, input into this logic arrangement.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

b. Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

c. Auxiliary Feedwater - Steam Generator Water Level - Low Low

SG Water Level - Low Low provides protection against a loss of heat sink. A feed line break, inside or outside of containment, or a loss of MFW, would result in a loss of SG water level. SG Water Level - Low Low provides input to the SG Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system which may then require a protection function actuation and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with two-out-of-four logic. For units that have dedicated protection and control channels, only three protection channels are necessary to satisfy the protective requirements. For other units that have only three channels, a median signal selector is provided or justification is provided in Reference 7.

With the transmitters (d/p cells) located inside containment and thus possibly experiencing adverse environmental conditions (feed line break), the Trip Setpoint reflects the inclusion of both steady state and adverse environmental instrument uncertainties.

d. Auxiliary Feedwater - Safety Injection

An SI signal starts the motor driven and turbine driven AFW pumps. The AFW initiation functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating functions and requirements.

e. Auxiliary Feedwater - Loss of Offsite Power

A loss of offsite power to the service buses will be accompanied by a loss of reactor coolant pumping power and the subsequent

(4) **INSERT 29**

The Auxiliary Feedwater - Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS) Function design includes two trains. The actuation of the logic in any train will actuate the associated motor driven AFW pump and valves. The Loss of Voltage and Trip of All Main Feedwater Pumps Functions input into this logic arrangement.

(4) **INSERT 30**

The Function is monitored by three channels on each SG arranged in a two-out-of-three logic arrangement for each SG. This LCO requires all three SG Water Level - Low Low channels on each SG to be OPERABLE. A SG Water Level - Low Low motor driven AFW actuation signal will be generated when two of three channels associated with any one SG exceeds the trip setpoint. A SG Water Level - Low Low turbine driven AFW actuation signal will be generated when two of three channels associated with any two SGs exceeds the trip setpoint.

(4) **INSERT 30A (Unit 1 only)**

With the transmitter (d/p cells) located inside containment, the trip setpoint only reflects the inclusion of steady state instrument uncertainties.

(7) **INSERT 31**

The SI Input from ESFAS ensures that the ESFAS automatic actuation logic will actuate the motor driven AFW pumps upon any signal that initiates SI. Actuation of the motor driven AFW pumps on an SI signal ensures that, in the event of conditions that may result in loss of heat sink, auxiliary feedwater flow will be provided to the SGs. The SI Input from ESFAS signal directly inputs to the AFW actuation logic. There are two trains of SI Input from ESFAS arranged in a one-out-of-two logic. The LCO requires two trains of SI Input from ESFAS to be OPERABLE.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

need for some method of decay heat removal. The loss of offsite power is detected by a voltage drop on each service bus. Loss of power to either service bus will start the turbine driven AFW pumps to ensure that at least one SG contains enough water to serve as the heat sink for reactor decay heat and sensible heat removal following the reactor trip.

Functions 6.a through 6.e must be OPERABLE in MODES 1, 2, and 3 to ensure that the SGs remain the heat sink for the reactor. SG Water Level - Low Low in any operating SG will cause the motor driven AFW pumps to start. The system is aligned so that upon a start of the pump, water immediately begins to flow to the SGs. SG Water Level - Low Low in any two operating SGs will cause the turbine driven pumps to start. These Functions do not have to be OPERABLE in MODES 5 and 6 because there is not enough heat being generated in the reactor to require the SGs as a heat sink. In MODE 4, AFW actuation does not need to be OPERABLE because either AFW or residual heat removal (RHR) will already be in operation to remove decay heat or sufficient time is available to manually place either system in operation.

f. Auxiliary Feedwater - Undervoltage Reactor Coolant Pump

A loss of power on the buses that provide power to the RCPs provides indication of a pending loss of RCP forced flow in the RCS. The Undervoltage RCP Function senses the voltage downstream of each RCP breaker. A loss of power, or an open RCP breaker, on two or more RCPs, will start the turbine driven AFW pump to ensure that at least one SG contains enough water to serve as the heat sink for reactor decay heat and sensible heat removal following the reactor trip.

g. Auxiliary Feedwater - Trip of All Main Feedwater Pumps

A Trip of all MFW pumps is an indication of a loss of MFW and the subsequent need for some method of decay heat and sensible heat removal to bring the reactor back to no load temperature and pressure. A turbine driven MFW pump is equipped with two pressure switches on the control air/oil line for the speed control system. A low pressure signal from either of these pressure switches indicates a trip of that pump. Motor driven MFW pumps are equipped with a breaker position sensing device. An open supply breaker indicates that the

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INSERT 32

Three undervoltage relays with time delays are provided for each 4.16 kV emergency bus to detect a loss of bus voltage. The relays are combined in a two-out-of-three logic to generate a loss of voltage signal (i.e., the required number of channels required to trip to generate a loss of voltage signal is two per bus). A Loss of Voltage signal on T11A (Unit 1) and T21A (Unit 2) (Train B) or T11D (Unit 1) and T21D (Unit 2) (Train A) will start the associated motor driven feedwater pump. A Loss of Voltage signal on T11A and T11B (Unit 1) and T21A and T21B (Unit 2) (Train B) or T11C and T11D (Unit 1) and T21C and T21D (Unit 2) (Train A) will actuate the valves associated with the motor driven feedwater pumps on both trains.

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INSERT 33

A bus undervoltage signal is generated by one out of two undervoltage relays (channels) per reactor coolant pump bus, however the LCO requires only one per bus to be OPERABLE. While not assumed in the accident analysis,

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INSERT 34 (Unit 1 only)

Each turbine driven MFW pump is equipped with a low and high pressure steam stop valve. Each stop valve contains a limit switch, which actuates when the associated stop valve is closed. Both of the stop valve limit switches associated with a turbine driven MFW provide input into one of the two channels and both limit switches must actuate for the channel to indicate a turbine driven MFW pump has tripped. Since the unit includes two turbine driven MFW pumps, both channels must trip to start the motor driven auxiliary feedwater pumps (i.e., a two-out-of-two logic configuration). The LCO requires both channels to be OPERABLE. This Function does not meet the single failure criteria, however this is acceptable since the SG Water Level - Low Low Function is credited to start the AFW System in the design basis accidents and transients that result in a loss of MFW.

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4

INSERT 34 (Unit 2 only)

Each turbine driven MFW pump is equipped with a steam stop valve. The stop valve contains a limit switch (i.e., a channel), which actuates when the stop valve is closed. Since the unit includes two turbine driven MFW pumps both channels must trip to start the motor driven auxiliary feedwater pumps (i.e., a two-out-of-two logic configuration). The LCO requires both channels to be OPERABLE. This Function does not meet the single failure criteria, however this is acceptable since the SG Water Level - Low Low Function is credited to start the AFW System in the design basis accidents and transients that result in a Loss of MFW.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 34A

INSERT 34B

pump is not running. Two OPERABLE channels per pump satisfy redundancy requirements with one-out-of-two taken twice logic. A trip of all MFW pumps starts the motor driven and turbine driven AFW pumps to ensure that at least one SG is available with water to act as the heat sink for the reactor. (4) (4)

Functions 6.f and 6.g must be OPERABLE in MODES 1 and 2. This ensures that at least one SG is provided with water to serve as the heat sink to remove reactor decay heat and sensible heat in the event of an accident. In MODES 3, 4, and 5, the RCPs and MFW pumps may be normally shut down, and thus neither pump trip is indicative of a condition requiring automatic AFW initiation. (the) (s) (are) (4)

h. Auxiliary Feedwater - Pump Suction Transfer on Suction Pressure - Low

A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal supply of water for the pumps, the CST. Two pressure switches are located on the AFW pump suction line from the CST. A low pressure signal sensed by any one of the switches will cause the emergency supply of water for both pumps to be aligned, or cause the AFW pumps to stop until the emergency source of water is aligned. ESW (safety grade) is then lined up to supply the AFW pumps to ensure an adequate supply of water for the AFW System to maintain at least one of the SGs as the heat sink for reactor decay heat and sensible heat removal. (7) (4)

Since the detectors are located in an area not affected by HELBs or high radiation, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

This Function must be OPERABLE in MODES 1, 2, and 3 to ensure a safety grade supply of water for the AFW System to maintain the SGs as the heat sink for the reactor. This Function does not have to be OPERABLE in MODES 5 and 6 because there is not enough heat being generated in the reactor to require the SGs as a heat sink. In MODE 4, AFW automatic suction transfer does not need to be OPERABLE because RHR will already be in operation, or sufficient time is available to place RHR in operation, to remove decay heat.

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INSERT 34A

However, the signal is not credited in the safety analysis.

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INSERT 34B

since the reactor coolant pumps and MFW pumps are in operation

BASES

(7)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 35

7. Automatic Switchover to Containment Sump

At the end of the injection phase of a LOCA, the RWST will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is automatically switched to the containment recirculation sump. The low head residual heat removal (RHR) pumps and containment spray pumps draw the water from the containment recirculation sump, the RHR pumps pump the water through the RHR heat exchanger, inject the water back into the RCS, and supply the cooled water to the other ECCS pumps. Switchover from the RWST to the containment sump must occur before the RWST empties to prevent damage to the RHR pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support ESF pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST. This ensures the reactor remains shut down in the recirculation mode.

a. Automatic Switchover to Containment Sump - Automatic Actuation Logic and Actuation Relays

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

b, c. Automatic Switchover to Containment Sump - Refueling Water Storage Tank (RWST) Level - Low Low Coincident With Safety Injection and Coincident With Containment Sump Level - High

During the injection phase of a LOCA, the RWST is the source of water for all ECCS pumps. A low low level in the RWST coincident with an SI signal provides protection against a loss of water for the ECCS pumps and indicates the end of the injection phase of the LOCA. The RWST is equipped with four level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-four logic is adequate to initiate the protection function actuation. Although only three channels would be sufficient, a fourth channel has been added for increased reliability.

The RWST - Low Low Allowable Value/Trip Setpoint has both upper and lower limits. The lower limit is selected to ensure

7 **INSERT 35**

7. Containment Air Recirculation/Hydrogen Skimmer (CEQ) System

The CEQ System functions to assist in cooling the containment atmosphere and limiting pressure and temperature in containment to less than design values. Limiting pressure and temperature reduces the release of fission product radioactivity from the containment to the environment in the event of a DBA.

CEQ Actuation is accomplished by Manual Initiation, Automatic Actuation Logic and Actuation Relays, and by Containment Pressure - High channels (the same channels that actuate SI, Function 1.c).

a. CEQ - Manual Initiation

The CEQ Manual Initiation Function is designed with one manual switch in each train. One switch (channel) in a train must be placed in the actuate position for the associated components in the train to receive an CEQ initiation signal. The LCO requires one channel per train to be OPERABLE. The operator can initiate CEQ at any time by using either of two switches in the control room. This action will cause actuation of components in the same manner as any of the automatic actuation signals.

The LCO for the Manual Initiation Function ensures the proper amount of redundancy is maintained to ensure the operator has manual CEQ System initiation capability.

b. CEQ - Automatic Actuation Logic and Actuation Relays

The CEQ Automatic Actuation Logic and Actuation Relays Function includes two trains. The actuation of the logic in any train will actuate the associated components in the same train. This LCO requires two trains to be OPERABLE. Actuation logic consists of all circuitry housed within the actuation subsystems, including the initiating relay contacts responsible for actuating the CEQ System.

c. CEQ - Containment Pressure - High

This signal provides protection against the following accidents:

- SLB inside containment; and
- LOCA.

The CEQ Containment Pressure - High Function design includes three channels. This LCO requires three channels to be OPERABLE. Three OPERABLE channels are sufficient to satisfy protective requirements with a two-out-of-three logic.

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INSERT 35 (continued)

The transmitters (d/p cells) and electronics are located outside of containment with the sensing line (high pressure side of the transmitter) located inside containment. Thus, the high pressure Function will not experience any adverse environmental conditions and the trip setpoint reflects only steady state instrument uncertainties.

These Functions must be OPERABLE in MODES 1, 2, and 3. In these MODES, a DBA could cause an increase in containment pressure and temperature requiring the operation of the CEQ System. In MODE 4, only the Manual Initiation Function is required. These Functions are not required to be OPERABLE in MODES 5 and 6 because the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the CEQ System instrumentation is not required to be OPERABLE in these MODES.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

(7)

switchover occurs before the RWST empties, to prevent ECCS pump damage. The upper limit is selected to ensure enough borated water is injected to ensure the reactor remains shut down. The high limit also ensures adequate water inventory in the containment sump to provide ECCS pump suction.

The transmitters are located in an area not affected by HELBs or post accident high radiation. Thus, they will not experience any adverse environmental conditions and the Trip Setpoint reflects only steady state instrument uncertainties.

Automatic switchover occurs only if the RWST low low level signal is coincident with SI. This prevents accidental switchover during normal operation. Accidental switchover could damage ECCS pumps if they are attempting to take suction from an empty sump. The automatic switchover Function requirements for the SI Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead, Function 1, SI, is referenced for all initiating Functions and requirements.

- REVIEWER'S NOTE -

In some units, additional protection from spurious switchover is provided by requiring a Containment Sump Level - High signal as well as RWST Level - Low Low and SI. This ensures sufficient water is available in containment to support the recirculation phase of the accident. A Containment Sump Level - High signal must be present, in addition to the SI signal and the RWST Level - Low Low signal, to transfer the suctions of the RHR pumps to the containment sump. The containment sump is equipped with four level transmitters. These transmitters provide no control functions. Therefore, a two-out-of-four logic is adequate to initiate the protection function actuation. Although only three channels would be sufficient, a fourth channel has been added for increased reliability. The containment sump level Trip Setpoint/Allowable Value is selected to ensure enough borated water is injected to ensure the reactor remains shut down. The high limit also ensures adequate water inventory in the containment sump to provide ECCS pump suction. The transmitters are located inside containment and thus possibly experience adverse environmental conditions. Therefore, the trip setpoint reflects the inclusion of both steady state and environmental instrument uncertainties.

Units only have one of the Functions, 7.b or 7.c.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

These Functions must be OPERABLE in MODES 1, 2, 3, and 4 when there is a potential for a LOCA to occur, to ensure a continued supply of water for the ECCS pumps. These Functions are not required to be OPERABLE in MODES 5 and 6 because there is adequate time for the operator to evaluate unit conditions and respond by manually starting systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. System pressure and temperature are very low and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems.

8. Engineered Safety Feature Actuation System Interlocks

To allow some flexibility in unit operations, several interlocks are included as part of the ESFAS. These interlocks permit the operator to block some signals, automatically enable other signals, prevent some actions from occurring, and cause other actions to occur. The interlock Functions back up manual actions to ensure bypassable functions are in operation under the conditions assumed in the safety analyses.

a. Engineered Safety Feature Actuation System Interlocks - Reactor Trip, P-4

The P-4 interlock is enabled when a reactor trip breaker (RTB) and its associated bypass breaker is open. Once the P-4 interlock is enabled, automatic SI initiation is blocked after a [ ] second time delay. This Function allows operators to take manual control of SI systems after the initial phase of injection is complete. Once SI is blocked, automatic actuation of SI cannot occur until the RTBs have been manually closed. The functions of the P-4 interlock are:

- Trip the main turbine,
- Isolate MFW with coincident low T_{avg},
- Prevent reactuation of SI after a manual reset of SI,
- Transfer the steam dump from the load rejection controller to the unit trip controller, and

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INSERT 36

There are two Reactor Trip, P-4 interlock channels (one per train). Each channel receives input from one reactor trip breaker (RTB) and its associated bypass breaker position.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- Prevent opening of the MFW isolation valves if they were closed on SI or SG Water Level - High High. (4)

INSERT 36A

Each of the above Functions is interlocked with P-4 to avert or reduce the continued cooldown of the RCS following a reactor trip. An excessive cooldown of the RCS following a reactor trip could cause an insertion of positive reactivity with a subsequent increase in generated power. To avoid such a situation, the noted Functions have been interlocked with P-4 as part of the design of the unit control and protection system. (4)

None of the noted Functions serves a mitigation function in the unit licensing basis safety analyses. Only the turbine trip Function is explicitly assumed since it is an immediate consequence of the reactor trip Function. Neither turbine trip, nor any of the other four Functions associated with the reactor trip signal, is required to show that the unit licensing basis safety analysis acceptance criteria are not exceeded.

The RTB position switches that provide input to the P-4 interlock only function to energize or de-energize or open or close contacts. Therefore, this Function has no adjustable trip setpoint with which to associate a Trip Setpoint and Allowable Value. (2)

This Function must be OPERABLE in MODES 1, 2, and 3 when the reactor may be critical or approaching criticality. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because the main turbine, the MFW System, and the Steam Dump System are not in operation. (4)

INSERT 36B

b. Engineered Safety Feature Actuation System Interlocks - Pressurizer Pressure, P-11

INSERT 37 (4)

The P-11 interlock permits a normal unit cooldown and depressurization without actuation of SI or main steam line isolation. With two-out-of-three pressurizer pressure channels (discussed previously) less than the P-11 setpoint, the operator can manually block the Pressurizer Pressure - Low and Steam Line Pressure - Low SI signals and the Steam Line Pressure - Low steam line isolation signal (previously discussed). When the Steam Line Pressure - Low steam line isolation signal is manually blocked, a main steam isolation signal on Steam Line (4)

4 **INSERT 36A**

However, none of these additional Functions are assumed in the safety analysis, thus they are not require for OPERABILITY of the P-4 interlock.

4 **INSERT 36B**

automatic SI initiation is not required.

4 **INSERT 37**

There are two Pressurizer Pressure, P-11 interlock channels (one per train). Each channel receives input from three Pressurizer Pressure channels. Each P-11 interlock channel actuates to provide the interlock function for its associated ESFAS logic train.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Pressure - Negative Rate - High is enabled. This provides protection for an SLB by closure of the MSIVs. With two-out-of-three pressurizer pressure channels above the P-11 setpoint, the Pressurizer Pressure - Low and Steam Line Pressure - Low SI signals and the Steam Line Pressure - Low steam line isolation signal are automatically enabled. The operator can also enable these trips by use of the respective manual reset buttons. When the Steam Line Pressure - Low steam line isolation signal is enabled, the main steam isolation on Steam Line Pressure - Negative Rate - High is disabled. The Trip Setpoint reflects only steady state instrument uncertainties.

INSERT 37A

This Function must be OPERABLE in MODES 1, 2, and 3 to allow an orderly cooldown and depressurization of the unit without the actuation of SI or main steam isolation. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because system pressure must already be below the P-11 setpoint for the requirements of the heatup and cooldown curves to be met.

INSERT 37B

c. Engineered Safety Feature Actuation System Interlocks - T_{avg} - Low Low, P-12

INSERT 38 INSERT 38A

On increasing reactor coolant temperature, the P-12 interlock reinstates SI on High Steam Flow Coincident With Steam Line Pressure - Low or Coincident With T_{avg} - Low Low and provides an arming signal to the Steam Dump System. On decreasing reactor coolant temperature, the P-12 interlock allows the operator to manually block SI on High Steam Flow Coincident With Steam Line Pressure - Low or Coincident with T_{avg} - Low Low. On a decreasing temperature, the P-12 interlock also removes the arming signal to the Steam Dump System to prevent an excessive cooldown of the RCS due to a malfunctioning Steam Dump System.

INSERT 39 INSERT 40 INSERT 41 INSERT 42

Since T_{avg} is used as an indication of bulk RCS temperature, this Function meets redundancy requirements with one OPERABLE channel in each loop. In three loop units, these channels are used in two-out-of-three logic. In four loop units, they are used in two-out-of-four logic.

4

INSERT 37A

automatically reinstate SI during normal unit startup and to

4

INSERT 37B

the Pressurizer Pressure - Low Function is not required in MODE 4, 5, or 6.

4

INSERT 38

There are two Tavg - Low Low, P-12 interlock channels (one per train). Each channel receives input from four T_{avg} - Low Low channels. Each P-12 interlock channel actuates to provide the interlock function for its associated ESFAS logic train.

4

INSERT 38A

and with three of four T_{avg} - Low Low channels above the reset point

4

INSERT 39

prevents or defeats the manual block of

4

INSERT 40

In addition, the interlock will prevent or defeat a steam line isolation from occurring if steam line flow reaches the trip setpoint associated with Steam Line Flow - High.

4

INSERT 41

and with two of four T_{avg} - Low Low channels below the Allowable Value

4

INSERT 42

and will cause a Main Steam Line Isolation on Steam Line Flow - High.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

This Function must be OPERABLE in MODES 1, 2, and 3 when a secondary side break or stuck open valve could result in the rapid depressurization of the steam lines. This Function does not have to be OPERABLE in MODE 4, 5, or 6 because there is insufficient energy in the secondary side of the unit to have an accident.

The ESFAS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

(7) INSERT 42A

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.2-1.

(2)

In the event a channel's Trip Setpoint is found nonconservative with respect to the Allowable Value, or the transmitter, instrument Loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition(s) entered for the protection Function(s) affected. When the Required Channels in Table 3.3.2-1 are specified (e.g., on a per steam line, per loop, per SG, etc., basis), then the Condition may be entered separately for each steam line, loop, SG, etc., as appropriate. (7)

When the number of inoperable channels in a trip function exceed those specified in one or other related Conditions associated with a trip function, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 should be immediately entered if applicable in the current MODE of operation.

- REVIEWER'S NOTE -

Certain LCO Completion Times are based on approved topical reports. In order for a licensee to use these times, the licensee must justify the Completion Times as required by the staff Safety Evaluation Report (SER) for the topical report. (5)

A.1

Condition A applies to all ESFAS protection functions.

Condition A addresses the situation where one or more channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required

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INSERT 42A

In addition, separate Condition entry is allowed within a Function as follows: (a) for Function 1.e.(2) on a steam line basis; (b) for Functions 5.b and 6.c on a steam generator basis; and (c) for Function 6.e on a bus basis. The Completion Time(s) of the inoperable channel(s) of a Function (i.e., steam line basis for Function 1.e.(2), steam generator basis for Functions 5.b and 6.c, and bus basis for Function 6.e will be tracked separately for each Function starting from the time the Condition was entered for that Function.

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BASES

ACTIONS (continued)

Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1, B.2.1 and B.2.2

Condition B applies to manual initiation of:

- SI,
- Containment Spray,
- Phase A Isolation, and
- Phase B Isolation.

This action addresses the train orientation of the SSPS for the functions listed above. If a channel or train is inoperable, 48 hours is allowed to return it to an OPERABLE status. Note that for containment spray and Phase B isolation, failure of one or both channels in one train renders the train inoperable. Condition B, therefore, encompasses both situations. The specified Completion Time is reasonable considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each Function, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (54 hours total time) and in MODE 5 within an additional 30 hours (84 hours total time). The allowable Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

C.1, C.2.1 and C.2.2

Condition C applies to the automatic actuation logic and actuation relays for the following functions:

- SI,
- Containment Spray,
- Phase A Isolation,

7

INSERT 43

Condition B applies to Manual Initiation, Auxiliary Feedwater SI Input from ESFAS, Loss of Voltage Trip of all Main Feedwater Pumps, and the Reactor Trip P-4 interlock Functions.

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INSERT 43A

For the Manual Initiation, Auxiliary Feedwater SI Input from ESFAS, and the Reactor Trip P-4 interlock Functions,

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INSERT 43B

For the Loss of Voltage and Trip of all Main Feedwater Pump Functions, this action recognizes the lack of manual trip provisions for a failed channel. The specified Completion Times are reasonable, considering the nature of these Functions (i.e., Main Feedwater Pump Function is not credited in the safety analysis), the available redundancy, and the low probability of an event occurring during this interval.

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INSERT 43C

Required Action B.1 is modified by a Note that applies to Functions 6.d and 6.g and excludes the restriction of LCO 3.0.4. For these Functions, this exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a unit shutdown.

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BASES

ACTIONS (continued)

- Phase B Isolation, and
- Automatic Switchover to Containment Sump.

INSERT 44

This action addresses the train orientation of the SSPS and the master and slave relays. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The specified Completion Time is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (12 hours total time) and in MODE 5 within an additional 30 hours (42 hours total time). The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

INSERT 45 (TSTF 418)

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. This allowance is based on the reliability analysis assumption of WCAP-10271-P-A (Ref. 8) that 4 hours is the average time required to perform channel surveillance.

D.1, D.2.1, and D.2.2

Condition D applies to:

- Containment Pressure - High 1,
- Pressurizer Pressure - Low (two, three, and four loop units),
- Steam Line Pressure - Low,
- Steam Line Differential Pressure - High,
- High Steam Flow in Two Steam Lines Coincident With T_{avg} - Low Low or Coincident With Steam Line Pressure - Low,
- Containment Pressure - High 2,
- Steam Line Pressure - Negative Rate - High,

B 3.3.2

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INSERT 44

- Steam Line Isolations;
- Turbine Trip and Feedwater Isolation;
- Auxiliary Feedwater; and
- CEQ System.

Condition C also applies to the Phase A Isolation SI Input from ESFAS and Turbine Trip and Feedwater Isolation SI Input from ESFAS Functions.

TST-418

INSERT 45

6

6

The ~~24~~ hours allowed for restoring the inoperable train to OPERABLE status is justified in Reference ~~8~~.

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6

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BASES

ACTIONS (continued)

- High Steam Flow Coincident With Safety Injection Coincident With T_{avg} - Low Low,
- High High Steam Flow Coincident With Safety Injection,
- High Steam Flow in Two Steam Lines Coincident With T_{avg} - Low Low,
- SG Water level - Low Low (two, three, and four loop units), and
- SG Water level - High High (P-14) (two, three, and four loop units).

If one channel is inoperable, 6 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Generally this Condition applies to functions that operate on two-out-of-three logic. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-three configuration that satisfies redundancy requirements.

Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 4 hours for surveillance testing of other channels. The 6 hours allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 4 hours allowed for testing, are justified in Reference 8.

E.1, E.2.1, and E.2.2

Condition E applies to:

- Containment Spray Containment Pressure - High 3 (High, High) (two, three, and four loop units), and

BASES

ACTIONS (continued)

- Containment Phase B Isolation Containment Pressure - High High, High

None of these signals has input to a control function. Thus, two-out-of-three logic is necessary to meet acceptable protective requirements. However, a two-out-of-three design would require tripping a failed channel. This is undesirable because a single failure would then cause spurious containment spray initiation. Spurious spray actuation is undesirable because of the cleanup problems presented. Therefore, these channels are designed with two-out-of-four logic so that a failed channel may be bypassed rather than tripped. Note that one channel may be bypassed and still satisfy the single failure criterion. Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray.

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel should not be placed in the tripped condition. Instead it is bypassed. Restoring the channel to OPERABLE status, or placing the inoperable channel in the bypass condition within 6 hours, is sufficient to assure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The Completion Time is further justified based on the low probability of an event occurring during this interval. Failure to restore the inoperable channel to OPERABLE status, or place it in the bypassed condition within 6 hours, requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows one additional channel to be bypassed for up to 4 hours for surveillance testing. Placing a second channel in the bypass condition for up to 4 hours for testing purposes is acceptable based on the results of Reference 8.

F.1, F.2.1, and F.2.2

Condition F applies to:

- Manual Initiation of Steam Line Isolation,

BASES

ACTIONS (continued)

- Loss of Offsite Power,
- Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low, and
- P-4 Interlock.

For the Manual Initiation and the P-4 Interlock Functions, this action addresses the train orientation of the SSPS. For the Loss of Offsite Power Function, this action recognizes the lack of manual trip provision for a failed channel. For the AFW System pump suction transfer channels, this action recognizes that placing a failed channel in trip during operation is not necessarily a conservative action. Spurious trip of this function could align the AFW System to a source that is not immediately capable of supporting pump suction. If a train or channel is inoperable, 48 hours is allowed to return it to OPERABLE status. The specified Completion Time is reasonable considering the nature of these Functions, the available redundancy, and the low probability of an event occurring during this interval. If the Function cannot be returned to OPERABLE status, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems. In MODE 4, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

⑦

G.1, G.2.1 and G.2.2

Condition G applies to the automatic actuation logic and actuation relays for the Steam Line Isolation [,Turbine Trip and Feedwater Isolation,] and AFW actuation Functions.

The action addresses the train orientation of the SSPS and the master and slave relays for these functions. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. If the train cannot be returned to OPERABLE status, the unit must be brought to MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly

⑦

⟨TSTF-418 not shown⟩

BASES

ACTIONS (continued)

manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.

The Required Actions are modified by a Note that allows one train to be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform channel surveillance.

7

[H.1 and H.2

Condition H applies to the automatic actuation logic and actuation relays for the Turbine Trip and Feedwater Isolation Function.

This action addresses the train orientation of the SSPS and the master and slave relays for this Function. If one train is inoperable, 6 hours are allowed to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the following 6 hours. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. These Functions are no longer required in MODE 3. Placing the unit in MODE 3 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.

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TSTF-418 not shown

The Required Actions are modified by a Note that allows one train to be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform channel surveillance.]

I.1 and I.2

Condition I applies to:

BASES

ACTIONS (continued)

- [• SG Water Level - High High (P-14) (two, three, and four loop units), and]
- Undervoltage Reactor Coolant Pump.

If one channel is inoperable, 6 hours are allowed to restore one channel to OPERABLE status or to place it in the tripped condition. If placed in the tripped condition, the Function is then in a partial trip condition where one-out-of-two or one-out-of-three logic will result in actuation. The 6 hour Completion Time is justified in Reference 8. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 6 hours requires the unit to be placed in MODE 3 within the following 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to [4] hours for surveillance testing of other channels. The 6 hours allowed to place the inoperable channel in the tripped condition, and the 4 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 8.

J.1 and J.2

Condition J applies to the AFW pump start on trip of all MFW pumps.

This action addresses the train orientation of the SSPS for the auto start function of the AFW System on loss of all MFW pumps. The OPERABILITY of the AFW System must be assured by allowing automatic start of the AFW System pumps. If a channel is inoperable, 48 hours are allowed to return it to an OPERABLE status. If the function cannot be returned to an OPERABLE status, 6 hours are allowed to place the unit in MODE 3. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above. The allowance of 48 hours to return the train to an OPERABLE status is justified in Reference 8.

(7)

⟨TSTF-418 not shown⟩

BASES

ACTIONS (continued)

K.1, K.2.1 and K.2.2

Condition K applies to:

- RWST Level - Low Low Coincident with Safety Injection, and
- RWST Level - Low Low Coincident with Safety Injection and Coincident with Containment Sump Level - High.

RWST Level - Low Low Coincident With SI and Coincident With Containment Sump Level - High provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action. The failure of up to two channels will not prevent the operation of this Function. However, placing a failed channel in the tripped condition could result in a premature switchover to the sump, prior to the injection of the minimum volume from the RWST. Placing the inoperable channel in bypass results in a two-out-of-three logic configuration, which satisfies the requirement to allow another failure without disabling actuation of the switchover when required. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass condition within 6 hours is sufficient to ensure that the Function remains OPERABLE, and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The 6 hour Completion Time is justified in Reference 8. If the channel cannot be returned to OPERABLE status or placed in the bypass condition within 6 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the protection functions noted above.

The Required Actions are modified by a Note that allows placing a second channel in the bypass condition for up to [4] hours for surveillance testing. The total of 12 hours to reach MODE 3 and 4 hours for a second channel to be bypassed is acceptable based on the results of Reference 8.

(7)

<TSTF-418 not shown>

BASES

ACTIONS (continued)

F 7 L.1, L.2.1 and L.2.2

Condition L applies to the P-11 and P-12 and P-14 interlocks. 3

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks. 7

INSERT 46

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

TSTF-418 not shown

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II, channel III, and channel IV (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

\- REVIEWER'S NOTE -

Certain Frequencies are based on approved topical reports. In order for a licensee to use these times, the licensee must justify the Frequencies as required by the staff SER for the topical report. 5

SR 3.3.2.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a

(7) **INSERT 46**

G.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

H.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

I.1

If any Required Action and associated Completion Time cannot be met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

J.1

If any Required Action and associated Completion Time of Condition B cannot be met, the associated SGSV must be declared inoperable. This will required entry into the associated Conditions and Required Actions of LCO 3.7.2, “Steam Generator Stop Valves.”

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BASES

SURVEILLANCE REQUIREMENTS (continued)

similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and reliability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 31 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and that there is an intact voltage signal path to the master relay coils. The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.3

SR 3.3.2.3 is the performance of an ACTUATION LOGIC TEST as described in SR 3.3.2.2, except that the semiautomatic tester is not used and the continuity check does not have to be performed, as explained in the Note. This SR is applied to the balance of plant actuation logic and relays that do not have the SSPS test circuits installed to utilize the semiautomatic tester or perform the continuity check. This test is also

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INSERT 47

and it is performed every 92 days on a STAGGERED TEST BASIS. This test applies to the SI Input to ESFAS Functions. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The Frequency 92 days on a STAGGERED TEST BASIS is justified in Reference 9. 10 4

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BASES

SURVEILLANCE REQUIREMENTS (continued)

performed every 31 days on a STAGGERED TEST BASIS. The Frequency is adequate based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.4

SR 3.3.2.4 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but large enough to demonstrate signal path continuity. This test is performed every 31 days on a STAGGERED TEST BASIS. The time allowed for the testing (4 hours) and the surveillance interval are justified in Reference 8.

SR 3.3.2.5

SR 3.3.2.5 is the performance of a COT.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.1-1. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis (Ref. 8) when applicable.

The Frequency of 92 days is justified in Reference 8.

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The Frequency of 92 days on a STAGGERED TEST BASIS is justified in Reference 9. 4

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SR 3.3.2.5 is modified by a Note which applies to the SI Containment Pressure - High Containment Spray Containment Pressure - High High, Phase B Isolation Containment Pressure - High High, Steam Line Isolation Containment Pressure - High High, and CEQ System Containment Pressure - High Functions. This Note requires, during the performance of SR 3.3.2.5, the associated transmitters of these Functions to be exercised by applying either a vacuum or pressure to the appropriate side of the transmitter. Exercising the associated transmitters during the performance of the COT is necessary to ensure Functions 1.c, 2.c, 3.b.(3), 4.c, and 7.c remain OPERABLE between each CHANNEL CALIBRATION.

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.6

SR 3.3.2.6 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the SLAVE RELAY TEST circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. This test is performed every 92 days. The Frequency is adequate, based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.7

SR 3.3.2.7 is the performance of a TADOT every 92 days. This test is a check of the Loss of Offsite Power, Undervoltage RCP, and AFW Pump Suction Transfer on Suction Pressure - Low Functions. Each Function is tested up to, and including, the master transfer relay coils. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The test also includes trip devices that provide actuation signals directly to the SSPS. The SR is modified by a Note that excludes verification of setpoints for relays. Relay setpoints require elaborate bench calibration and are verified during CHANNEL CALIBRATION. The Frequency is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.8

SR 3.3.2.8 is the performance of a TADOT. This test is a check of the Manual Actuation Functions and AFW pump start on trip of all MFW pumps. It is performed every 18 months. Each Manual Actuation Function is tested up to, and including, the master relay coils. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of

7 **INSERT 50**

SR 3.3.2.7

SR 3.3.2.7 is the performance of a CHANNEL CALIBRATION. A CHANNEL CALIBRATION is performed every 184 days. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of 184 days is based on the assumption of an 184 day calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

7 **INSERT 50A**

, the SI Input from ESFAS Function associated with Turbine Trip and Feedwater Isolation, the

BASES

SURVEILLANCE REQUIREMENTS (continued)

the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.). The Frequency is adequate, based on industry operating experience and is consistent with the typical refueling cycle. The SR is modified by a Note that excludes verification of setpoints during the TADOT for manual initiation Functions. The manual initiation Functions have no associated setpoints.

SR 3.3.2.9

SR 3.3.2.9 is the performance of a CHANNEL CALIBRATION.

A CHANNEL CALIBRATION is performed every [18] months or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of [18] months is based on the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

This SR is modified by a Note stating that this test should include verification that the time constants are adjusted to the prescribed values where applicable.

SR 3.3.2.10

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. Response Time testing acceptance criteria are included in the Technical Requirements Manual, Section 15 (Ref. 9). Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter

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SR 3.3.2.11

SR 3.3.2.11 is the performance of an ACTUATION LOGIC TEST. This SR is applied to the balance of plant actuation logic and relays that do not have the SSPS test circuits installed to utilize the semiautomatic tester or perform the continuity check. All possible logic combinations are tested for Table 3.3.2-1 Functions 6.e and 6.g. The Frequency of 24 months is adequate, based on operating experience, considering instrument reliability and operating history data.

SR 3.3.2.12

SR 3.3.2.12 is the performance of a COT on the Pressurizer Pressure, P-11, and T_{avg} - Low Low, P-12, ESFAS Interlock channels every 24 months. A COT is performed on each required channel to ensure the entire channel will perform the intended Function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 6.

The Frequency of 24 months is adequate, based on operating experience, considering instrument reliability and operating history data.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

exceeds the Trip Setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate FSAR response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured. (4)

- REVIEWER'S NOTE -
Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A. and/or WCAP-14036-P. (5)

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g., vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," dated January 1996, (Ref. 12) provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. Response time verification for other sensor types must be demonstrated by test. (2)

WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," (Ref. 13) provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact (2) (3)

BASES

SURVEILLANCE REQUIREMENTS (continued)

response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

ESF RESPONSE TIME tests are conducted every [18] 24 months on a STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every [18] 24 months. The [18] month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. (6) (3) (3) (4)

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching [1000] 850 psig in the SGs. (3)

SR 3.3.2.11

SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor Trip Interlock, and the Frequency is once per RTB cycle. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled. (7)

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. FSAR, Chapter [6].
2. FSAR, Chapter [7].
3. FSAR, Chapter [15].
4. IEEE-279-1971.

INSERT 52 (4)

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INSERT 52

1. Technical Requirements Manual.
2. IEEE-279, "Proposed Criteria for Nuclear Power Plant Protection Systems," August 1968.
3. UFSAR, Table 7.2-1.
4. UFSAR, Table 14.1-2 (Unit 1) and UFSAR Table 14.1.0-4 (Unit 2).
5. 10 CFR 50.49.
6. EG-IC-004,"Instrument Setpoint Uncertainty," Revision 4.
7. UFSAR, Chapter 14.
8. WCAP-14333-P-A, Revision 1, October 1998.

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REFERENCES (continued)

5. 10 CFR 50.49.

6. Plant-specific setpoint methodology study.

7. NUREG-1218, April 1988.

INSERT 52A

8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

INSERT 53

9. Technical Requirements Manual, Section 15, "Response Times."

10. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation."

11. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

12. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995.

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INSERT 52A

"Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," including Supplement 1, May 1986, and

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6. WCAP-15376, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Intervals and Reactor Trip Breaker Test and Completion Times," October 2000. TSTF-411

11. UFSAR, Table 7.2-7.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2 BASES, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

2. Editorial change to be consistent with other places in the Bases.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. The Reviewer's Notes are deleted because they are not intended to be included in the plant specific ITS submittal.

6. Changes are made to reflect the Specifications.

7. Changes are made to reflect changes made to the Specification.

8. Grammatical error corrected.

9. This information is describing how to perform Surveillances and is more appropriate to be located in the applicable Surveillance Requirements Bases.

10. This statement has been deleted since it is not relevant to the discussion.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.20

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS Table 3.3-3, Functional Unit 9.a (Safety Injection, Manual Initiation) requires a total of two channels per train to be OPERABLE. ITS Table 3.3.2-1, Function 1.a requires only one channel per train to be OPERABLE. This changes the CTS by decreasing the number of manual channels required OPERABLE from two per train to one per train.

The purpose of Safety Injection (SI) manual initiation function is to ensure the capability exists to manually initiate the Safety Injection trains. The SI Manual Initiation Function at CNP is provided by four switches, two per train. Each switch will actuate the associated SI train (i.e., the two train A switches are fully redundant to each other and the two train B switches are fully redundant to each other). The only difference between the two switches within a train are their location within the control room. NUREG-1431 only requires two Manual Initiation channels to be OPERABLE, since a typical Westinghouse plant only has two channels installed. This change is acceptable since each channel within a train is fully redundant to the other channel in that train for the SI Manual Initiation Function, and the fact that it is consistent with the NUREG-1431 requirements. In addition, if the single required manual initiation switch does not function, the associated SI train can still be initiated using the individual component control switches that exist in the control room. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. **Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   Response: No.

   The proposed change decreases the number of manual channels required OPERABLE from two per train to one per train. This change will not affect the probability of an accident, since the manual initiation instrumentation is not considered as an initiator of an analyzed accident. The consequences of an analyzed accident are not affected by this change since manual initiation instrumentation is not assumed to mitigate the consequences of an accident previously evaluated. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

2. **Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   Response: No.

   The proposed change decreases the number of manual channels required OPERABLE from two per train to one per train. This change will not physically alter the plant (no new or different type of equipment will be installed). Both channels per train will remain installed in the plant and will normally be available to manually actuate the associated Safety Injection train. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. **Does the proposed change involve a significant reduction in a margin of safety?**

   Response: No.

   The proposed change decreases the number of manual channels required OPERABLE from two per train to one per train. The margin of safety is not affected by this change because the safety analysis assumptions are not affected. In addition, if the single required manual initiation switch does not function, the associated SI train can still be initiated using the individual component control switches that exist in the control room. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, I&M concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

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