Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-15-156

July 24, 2015

10 CFR 50.90

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Subject: **Sequoyah Nuclear Plants, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) - Supplement 3**

References:

1. TVA Letter to NRC, "Sequoyah Nuclear Plants, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10)," dated November 22, 2013. (ADAMS Accession No. ML13329A717)

2. TVA Letter to NRC, "Sequoyah Nuclear Plants, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) - Supplement 1," dated December 16, 2014. (ADAMS Accession No. ML14350B364)

3. TVA Letter to NRC, "Sequoyah Nuclear Plants, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) - Supplement 2," dated June 19, 2015. (ADAMS Accession No. ML15176A678)

By letter dated November 22, 2013, Tennessee Valley Authority (TVA) requested a license amendment to revise the current Technical Specifications for Sequoyah Nuclear Plant (SQN), Units 1 and 2, to the Improved Technical Specifications (ITS) consistent with the Improved Standard Technical Specifications described in NUREG-1431, "Standard Technical Specifications - Westinghouse Plants," Revision 4.0 (Reference 1).

By letter dated December 16, 2014 (Reference 2), TVA provided a supplement to the ITS license amendment request (LAR). The supplement provided information regarding the revised SQN fuel handling accident radiological consequences analysis using the alternative source term. TVA is withdrawing Supplement 1 (Reference 2) as described in Enclosure 3 in TVA's response to the staff's request for additional information (RAI) MHC003. Therefore, TVA no longer requests the staff's review of Supplement 1 nor the review of proposed changes associated with the analysis provided in Supplement 1.

By letter dated June 19, 2015 (Reference 3), TVA provided a supplement to the ITS license amendment request (LAR). The supplement contained: 1) proposed changes to the original ITS LAR resulting from TVA responses to the ITS LAR RAIs; 2) proposed changes resulting from TVA self-identified issues discovered during review of the ITS LAR; and 3) docketed submittal of NRC staff RAIs, TVA responses and NRC staff RAI closures posted as of May 31, 2015. The supplement contained changes associated with the Summary Disposition Matrix for Sequoyah Nuclear Plant Unit 1 and Unit 2; ITS Chapter 1.0, Use and Application; ITS Chapter 2.0, Safety Limits; ITS Section 3.0, LCO and SR Applicability; ITS Section 3.1, Reactivity Control Systems; ITS Section 3.2, Power Distribution Limits; ITS Section 3.4, Reactor Coolant System (RCS); ITS Section 3.5, Emergency Core Cooling Systems (ECCS); ITS Chapter 4.0, Design Features; and ITS Chapter 5.0, Administrative Controls.

The purpose of this letter is to supplement the original ITS LAR (Reference 1). Specifically, this letter complements and revises the original LAR for ITS Sections 3.3, Instrumentation; 3.6, Containment Systems; 3.7, Plant Systems; 3.8, Electrical Power Systems; and 3.9, Refueling Operations, based on responses to NRC staff requests for additional information (RAIs). The RAIs and the associated responses are posted on a publicly available website, the NRC and SQN ITS Conversion Website (http://www.excelservices.com). The RAIs that were closed as of May 31, 2015, were submitted as part of Supplement 2. This supplement provides the remaining RAIs and associated responses, and are hereby docketed by submittal of this letter.

This supplement contains: 1) proposed changes to the original ITS LAR resulting from TVA responses to the ITS LAR RAIs; 2) proposed changes resulting from TVA self-identified issues discovered during review of the ITS LAR; and 3) docketed submittal of the remaining NRC staff RAIs, TVA responses and NRC staff RAI closures.

Enclosure 1, "Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) – Revision 1," provides a revision of Enclosure 2 (Volumes 8, 11, 12, 13, and 14) of the original ITS LAR with changes annotated on the affected pages. ITS LAR revisions associated with a TVA response to an RAI are identified on the revised page with a red text box indicating the applicable RAI number (e.g., KAB044). ITS LAR revisions associated with a TVA self-identified issue are identified on the revised page with a red text box with an SII indicator.

Additionally, Enclosure 1 contains a revision to ITS 3.6.12, Ice Bed. ITS 3.6.12 is revised to reflect current technical specification (CTS) requirements for CTS 3.6.5, Ice Condenser - Ice Bed, in ITS format. Proposed changes to ITS 3.6.12 were previously submitted in response to RAI CSS-022; however, based on recent discussions between TVA and NRC staff concerning the status of the SQN LAR, Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (SQN-TS-12-04), ITS 3.6.12 no longer reflects changes associated with the Ice Condenser LAR. ITS revisions associated with the removal of the Ice Condenser LAR are annotated with a red text box with an ICE indicator. In addition to ITS 3.6.12, revisions were necessary in ITS 5.5.14 and the Bases of ITS 3.6.4 and ITS 3.6.6 where discussion is made concerning the calculated peak containment pressure resulting from a loss of coolant accident.

Enclosure 2, “SQN Self-Identified Issues,” provides a list of self-identified issues discovered during review of the ITS LAR (Reference 1). The list provides a brief description of each self-identified issue, the ITS Section affected by the issue, and the page numbers for affected pages.

Enclosure 3, “SQN ITS Conversion RAI Database,” contains the remaining NRC staff RAIs and the associated TVA responses not submitted in Supplement 2. Each RAI/response includes the question asked by the NRC staff reviewer, the TVA response, proposed changes to pages contained in the ITS LAR (Reference 1), any attached supporting documentation, and RAI closure documentation.

Enclosure 4, “ITS 5.5.14, Containment Leakage Rate Testing Program, Revision 2,” contains a revision to ITS 5.5.14, Containment Leakage Rate Testing Program as submitted in Supplement 2. The revision is based on discussion between TVA and NRC staff in a public meeting on July 8, 2015.

The information provided by this supplement to the original ITS LAR does not change the intent or the justification for the requested ITS license amendment. TVA has further determined that this supplement does not affect the basis for concluding that the proposed license amendment does not involve a Significant Hazards Consideration. As such, the 10 CFR 50.92 evaluation provided in the November 22, 2013, ITS LAR remains valid. In addition, the ITS LAR, including this supplement, continues to be exempt from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9).

The SQN Plant Operations Review Committee has reviewed this supplemental information and determined that operation of SQN in accordance with the Technical Specifications as proposed in the original ITS LAR and this supplement, will not endanger the health and safety of the public.

Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the enclosure to the Tennessee State Department of Environment and Conservation.

There are no new regulatory commitments associated with this submittal. If there are any questions or if additional information is needed, please contact Mr. Tom Hess at 423-751-3487.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 24th day of July 2015.

Respectfully,

J. W. Shea
Vice President, Nuclear Licensing

Enclosures:

Enclosure 1 - Sequoyah Nuclear Plants, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) - Revision 1
Enclosure 2 - SQN Self-Identified Issues
Enclosure 3 - SQN ITS Conversion RAI Database
Enclosure 4 - ITS 5.5.14, Containment Leakage Rate Testing Program, Revision 2

Enclosure
cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Sequoyah Nuclear Plant
Director, Division of Radiological Health - Tennessee State Department of Environment and Conservation
NRC Project Manager - Sequoyah Nuclear Plant

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications Conversion to NUREG-1431, Rev. 4.0 (SQN-TS-11-10) - Revision 1

ENCLOSURE 2

VOLUME 8

SEQUOYAH NUCLEAR PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.3
INSTRUMENTATION

Revision 0

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

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

ITS A01 ITS 3.3.1

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 APPLICABILITY: As shown in Table 3.3-1.

ACTION:

Add proposed ACTIONS Note A02

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR Table Note 4.3.1.1.1 Each reactor trip system instrumentation channel and interlock 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. M01

~~92 days on a STAGGERED TEST BASIS~~ M02

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 preceeding 92 days~~. The total interlock function shall be demonstrated
SR 3.3.1.10 SR 3.3.1.11 OPERABLE at least once per 18 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.

In accordance with the Surveillance Frequency Control Program LA01

SR 3.3.1.14 4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit ~~at least once per 18 months~~. Neutron detectors are exempt from response time testing. ~~Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified 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.~~ A03

~~18 months on a STAGGERED TEST BASIS~~ A04

In accordance with the Surveillance Frequency Control Program LA01

ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02 A05 A06

ITS		FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS ~~OPERABLE~~	APPLICABLE MODES	ACTION	ITS ACTIONS
1	1.	Manual Reactor Trip	~~2~~	~~1~~	2	1, 2, and *	1	B, C
2.a 2.b	2.	Power Range, Neutron Flux	~~4~~	~~2~~	~~3~~ 4	1, 2	2	D, E
3.a	3.	Power Range, Neutron Flux High Positive Rate	~~4~~	~~2~~	~~3~~ 4	1, 2	2	E
3.b	4.	Power Range, Neutron Flux, High Negative Rate	~~4~~	~~2~~	~~3~~ 4	1, 2	2	E
4	5.	Intermediate Range, Neutron Flux	~~2~~	~~1~~	2	1, 2~~, and *~~	3, ~~17~~	F, G
5	6.	Source Range, Neutron Flux						
		A. Startup	~~2~~	~~1~~	2	2##, and *	4	H, I, J
		B. Shutdown	2	0	1	3, 4 and 5	5	See ITS 3.3.9
6	7.	Overtemperature ΔT Four Loop Operation	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
7	8.	Overpower ΔT Four Loop Operation	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
8.a	9.	Pressurizer Pressure-Low	~~4~~	~~2~~	~~3~~ 4	1(g)~~, 2~~	6	K
8.b	10.	Pressurizer Pressure—High	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
9	11.	Pressurizer Water Level—High	~~3~~	~~2~~	~~2~~ 3	1(g)~~, 2~~	6	K

A06 L01 A07 A08 L02 A05 LA02

Add proposed footnote (g) L02

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ITS | A01 | ITS 3.3.1

Table 3.3.1-1 | ITS ACTIONS

TABLE 3. 3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02 A05 REQUIRED

ITS		FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS ~~OPERABLE~~ REQUIRED	APPLICABLE MODES	ACTION	ITS ACTIONS
10	12.	Loss of Flow ~~- Single Loop (Above P-8)~~ LA03	~~3/loop~~	~~2/loop in any operating loop~~	~~2~~ 3/loop ~~in each operating loop~~ A05	1 (g) L02	6	K
10	13.	Loss of Flow ~~- Two Loops (Above P-7 and below P-8)~~	~~3/loop~~	~~2/loop in two operating loops~~	~~2~~ 3/loop ~~in each operating loop~~	1 (g)	6	K
13	14.	Main Steam Generator Water Level--Low-Low						
13.a	A.	Steam Generator Water Level--Low-Low (Adverse)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen~~	~~2~~ 3/Stm. Gen. ~~in each Operating Stm. Gen.~~ A05	1,2	9	R
13.b	B.	Steam Generator Water Level--Low-Low (EAM)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen.~~	~~2~~ 3/Stm. Gen. ~~in each operating Stm. Gen.~~	1,2	9	R
13.a 13.b	C.	RCS Loop ΔT	~~4 (1/loop)~~	~~2~~	~~3~~ 1 per loop A05	1,2	10	T
13.a	D.	Containment Pressure (EAM)	~~4~~	~~2~~	~~3~~ 4 A05	1,2	11	S
	15.	Deleted						
11	16.	Undervoltage-Reactor Coolant Pumps	~~4-1/bus~~	~~2~~	~~3~~ 1 per bus A05	1 (g) L02	6	K
12	17.	Underfrequency-Reactor Coolant Pumps	~~4-1/bus~~	~~2~~	~~3~~ 1 per bus	1 (g)	6	K
14	18.	Turbine Trip						
14.a	A.	Low Fluid Oil Pressure	~~3~~	~~2~~	~~2~~ 3 A05	1**	6	L
14.b	B.	Turbine Stop Valve Closure	~~4~~	~~4~~	4	1**	7	L

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02 A05 REQUIRED

ITS	FUNCTIONAL UNIT A09	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS ~~OPERABLE~~	APPLICABLE MODES	ACTION	ITS ACTIONS
15	19. Safety Injection Input from ESF	~~2~~	~~1~~	2	1, 2	12	M
17 18	20. Reactor Trip Breakers (i)						
	A. Startup and Power Operation	~~2~~	~~1~~	2	1, 2	12, 15	N, Q A10
	B. Shutdown	~~2~~	~~1~~	2	3*,4* and 5*	16	C
19	21. Automatic Trip Logic						
	A. Startup and Power Operation	~~2~~	~~1~~	2	1, 2	12	M
	B. Shutdown	~~2~~	~~1~~	2	3*,4* and 5*	16	C
16	22. Reactor Trip System Interlocks						
16.a	A. Intermediate Range Neutron Flux, P-6	~~2~~	~~1~~	2	2~~, and*~~ (f)	8a	O L03
16.b	B. Power Range Neutron Flux, P-7	4	~~2~~	~~3~~ 1 per train	1	8b	P A11
16.c	C. Power Range Neutron Flux, P-8	4	~~2~~	~~3~~ 4	1	8c	P M03
16.e	D. Power Range Neutron Flux, P-10	4	~~2~~	~~3~~ 4	1, 2	8d	O
16.f	E. Turbine Impulse Chamber Pressure, P-13	~~2~~	~~1~~	2	1	8b	P
16.d	F. Power Range Neutron Flux, P-9	4	~~2~~	~~3~~ 4	1	8e	P
	G. Reactor Trip P-4	2	1	2	1, 2, and *	14	See ITS 3.3.2

Add Function 18, Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms A10

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 3.3-1 (Continued)

A12

TABLE NOTATION

MODES 3, 4, and 5 LA04

Footnote (a) *With ~~the reactor trip system breakers in the closed position,~~ the control rod drive system capable of rod withdrawal ~~, and fuel in the reactor vessel~~. or one or more rods not fully inserted M04 A13

Footnote (h) ** Above the P-9 (Power Range Neutron Flux) interlock.

Footnote (f) ##Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.

Add proposed Table 3.3-1 footnote (i) A09

ACTION STATEMENTS

ACTION B
ACTION C
ACTION B

ACTION 1 - 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 C.2.1 and C.2.2 L04

ACTION D
ACTION E

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

Required Action D.1.1 and D.2.1
Required Action E.1

a. The inoperable channel is placed in the tripped condition within ~~6~~ 72 hours. L05

Required Action D.1.1 Note
Required Action E.1 Note

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels per Specification 4.3.1.1.1. L06

Required Action D.2.2

c. The QUADRANT POWER TILT RATIO is monitored in accordance with Technical Specification 3.2.4.

Add proposed Required Action D.1.2 L07

Add proposed Required Action D.2.2 Note L08

Add proposed Required Actions D.3 and E.2 M05

ITS — A01 — ITS 3.3.1

TABLE 3.3-1 (Continued)

ACTION F — ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level: A07

Function 4 Applicability — ~~a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.~~

ACTION F — ~~b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, 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.~~ L09

Add proposed Required Actions F.1 and F.2 — M06

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

Add proposed ACTION G — M07

Function 4 Applicability — ~~d. Above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.~~ A07

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

Add proposed Required Action H.1 for MODE 2 below P-6 — M08

ACTIONS H, J — a. ~~Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.~~

Add proposed Required Actions J.1, J.2.1, and J.2.2 for MODES 3[(a)], 4[(a)], 5[(a)]

Add proposed ACTION I — M09

Function 5 Applicability — b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, 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. — See ITS 3.3.9

ACTIONS E, K, and L — 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:

Required Actions E.1, K.1, and L.1 — a. The inoperable channel is placed in the tripped condition within ~~6~~ 72 hours. L05

Add proposed Required Action K.2 — M10

Required Actions E.1, K.1, L.1 Note — b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels per Specification 4.3.1.1.1. L06

Add proposed Required Action L.2 — M11

ACTION L — ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within ~~6~~ 72 hours or THERMAL POWER is reduced to less than P-9 within ~~10~~ 76 hours. L05 A14

Add proposed Required Action L Note — L10

ITS | A01 | ITS 3.3.1

TABLE 3.3-1 (Continued)

Add proposed Required Actions O.1 and P.1 | M12

ACTIONS O, P

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, ~~declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE~~ ~~or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:~~

Add proposed Required Actions O.2 and P.2 | A15

~~a.~~ ~~Source Range Reactor Trip~~

~~b.~~ ~~Reactor Trip~~

~~Low Reactor Coolant Loop Flow (2 loops)~~
Undervoltage
~~Underfrequency~~
~~Pressurizer Low Pressure~~
~~Pressurizer High Level~~

~~c.~~ ~~Reactor Trip~~

~~Low Reactor Coolant Loop Flow (1 loop)~~

~~d.~~ ~~Reactor Trip~~

~~Intermediate Range~~
~~Low Power Range~~
~~Source Range~~

~~e.~~ ~~Reactor Trip~~

~~Turbine Trip~~

ACTION R

ACTION 9 - 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 Action R.2

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

Required Action R.1

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M) within 4 hours.

Required Action R Note

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

Add proposed ACTION U | M13

ACTION T

ACTION 10 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

Add proposed Required Action T.2 | L11

Add proposed Required Action T.3 | M14

ITS A01 ITS 3.3.1

TABLE 3.3-1 (Continued)

ACTION S — ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

Add proposed Required Action S.2 — L12

Add proposed Required Action S.3 — M15

ACTION M, N — ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore train to OPERABLE status within 24 hours, or be in at least HOT STANDBY within ~~6~~ 30 hours; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE. — L13

ACTION 13 - Deleted

ACTION 14 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours. — See ITS 3.3.2

ACTION Q — ACTION 15 - With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to operable status within 48 hours or Add proposed Required Action Q.2 ~~declare the breaker inoperable and apply ACTION 12~~. — A16

ACTION Q Note — The breaker shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status.

ACTION C — ACTION 16 - 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 Add proposed Required Actions C.2.1 and C.2.2 ~~open the reactor trip breakers within the next hour~~. — L04

Function 4 Applicability — ~~ACTION 17 - With the number of OPERABLE channels two less than the minimum channels OPERABLE requirement and with the THERMAL POWER level above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.~~ — A07

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ITS | A01 | ITS 3.3.1

Table 3.3.1-1

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M01 | ~~A16~~ | A17 | KAB007

ITS		FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1	1.	Manual Reactor Trip	N.A.	A18 N.A.	L14 ~~S/U(1)and~~ ~~R(9)~~ SR 3.3.1.12	1, 2, and *
2.a 2.b	2.	Power Range, Neutron Flux	SR 3.3.1.1 ~~S~~	SR 3.3.1.2 ~~D~~(2), (3) and ~~Q~~(6) SR 3.3.1.11 ~~18 months~~ SR 3.3.1.3	~~Q~~ SR 3.3.1.7 SR 3.3.1.8, INSERT 2	1, 2
3.a	3.	Power Range, Neutron Flux, High Positive Rate	N.A.	~~R~~(6) SR 3.3.1.11	~~Q~~ SR 3.3.1.7	1, 2
3.b	4.	Power Range, Neutron Flux, High Negative Rate	N.A.	~~R~~(6) SR 3.3.1.11 M17 ~~184 days thereafter~~	~~Q~~ SR 3.3.1.7 INSERT 2 M16	1, 2
4	5.	Intermediate Range, Neutron Flux	SR 3.3.1.1 ~~S~~	~~R~~(6) SR 3.3.1.11	S/U(1) SR 3.3.1.8 INSERT 1	1, 2, and *
5	6.	Source Range, Neutron Flux	SR 3.3.1.1 ~~S~~(7)	~~R~~(6) SR 3.3.1.11	~~M~~ and S/U(1) SR 3.3.1.7 SR 3.3.1.8	2, 3, 4, 5, and *
6	7.	Overtemperature Delta T	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
7	8.	Overpower Delta T (M18: Add proposed SR 3.3.1.6 and Note at a Frequency of ~~92 EFPD~~)	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
8.a	9.	Pressurizer Pressure--Low	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
8.b	10.	Pressurizer Pressure--High	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
9	11.	Pressurizer Water Level—High	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
10	12.	Loss of Flow - Single Loop	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1
10	13.	Loss of Flow - Two Loops	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	N.A.	1
13	14.	Steam Generator Water Level--Low-Low				
13.a		A. Steam Generator Water Level--Low-Low (Adverse)	SR 3.3.1.1 ~~S~~	SR 3.3.1.10 ~~R~~	~~Q~~ SR 3.3.1.7	1, 2
13.b		B. Steam Generator Water Level--Low-Low (EAM)	SR 3.3.1.1 ~~S~~	SR 3.3.1.10 ~~R~~	~~Q~~ SR 3.3.1.7	1, 2
13.a 13.b		C. RCS Loop ΔT	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
13.a		D. Containment Pressure (EAM)	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2

LA05

SII

L15 ~~184 days~~

LA01 In accordance with the Surveillance Frequency Control Program

M16

INSERT 1

Four hours after reducing power below P-6 for source range instrumentation

M16

INSERT 2

Twelve hours after reducing power below P-10 for power and intermediate range instrumentation

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ITS — A01 — ITS 3.3.1

Table 3.3.1-1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M01 — A17 — L16 — M19 — L17 — M02 — LA01 — A09

ITS		FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE IS REQUIRED
	15.	Deleted				
11	16.	Undervoltage - Reactor Coolant Pumps	N.A.	~~R~~ SR 3.3.1.10	SR 3.3.1.9 ~~Q~~	1
12	17.	Underfrequency - Reactor Coolant Pumps	N.A.	SR 3.3.1.10 ~~R~~	SR 3.3.1.9 ~~Q~~	1
14	18.	Turbine Trip			~~62 days on a STAGGERED TEST BASIS~~	
14.a		A. Low Fluid Oil Pressure	N.A.	SR 3.3.1.10 ~~N.A.~~ ~~18 months~~	(1) (12) SR 3.3.1.13	1**
14.b		B. Turbine Stop Valve Closure	N.A.	~~N.A.~~ SR 3.3.1.10	(1) (12) SR 3.3.1.13	1**
15	19.	Safety Injection Input from ESF	N.A.	N.A.	~~R~~ SR 3.3.1.12	1, 2
17	20.	Reactor Trip Breaker	N.A.	N.A.	~~M(5) and S/U(1)~~ SR 3.3.1.4	1, 2, and *
19	21.	Automatic Trip Logic	N.A.	N.A.	SR 3.3.1.5 ~~M(5)~~ ~~92 days on a STAGGERED TEST BASIS~~	1, 2, and *
16	22.	Reactor Trip System Interlocks				
16.a		A. Intermediate Range Neutron Flux, P-6	N.A.	~~R~~ SR 3.3.1.11	N.A.	2, and *
16.b		B. Power Range Neutron Flux, P-7	N.A.	N.A.	~~N.A.~~ SR 3.3.1.5 Add proposed SR 3.3.1.5	1
16.c		C. Power Range Neutron Flux, P-8	N.A.	~~R~~ SR 3.3.1.11	N.A.	1
16.e		D. Power Range Neutron Flux, P-10	N.A.	~~R~~ SR 3.3.1.11	N.A.	1, 2
16.f		E. Turbine Impulse Chamber Pressure, P-13	N.A.	~~R~~ SR 3.3.1.10	N.A.	1
16.d		F. Power Range Neutron Flux, P-9	N.A.	~~R~~ SR 3.3.1.11	N.A.	1
		G. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, and *
17 Footnote (i)	23.	Reactor Trip Bypass Breaker	N.A.	N.A.	SR 3.3.1.4 ~~M(10)~~ ~~R(11)~~ SR 3.3.1.12 ~~62 days on a STAGGERED TEST BASIS~~	1, 2, and *

In accordance with the Surveillance Frequency Control Program

See ITS 3.3.2

In accordance with the Surveillance Frequency Control Program

ITS | A01 | ITS 3.3.1

Table 3.3.1-1

TABLE 4.3-1 (Continued)

NOTATION

LA04

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 M04

Footnote (h) ** - Above the P-9 (Power Range Neutron Flux) interlock.

184 days for ITS Functions 4 and 5. Otherwise 31 days L18

SR 3.3.1.8 and SR 3.3.1.13 Frequency Note (1) - If not performed in previous ~~31~~ days.

12 hours after M20

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 FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is ≥ 15% RTP.

~~92 days on a STAGGERED TEST BASIS for Automatic Trip Logic~~ L17

(4) - Deleted.

In accordance with the Surveillance Frequency Control Program LA01

SR 3.3.1.4 SR 3.3.1.5 (5) - Each train or logic channel shall be tested at least every ~~62 days on a STAGGERED TEST BASIS~~. ~~The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.~~

SR 3.3.1.4

LA05

SR.3.3.1.11 Note (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

L19

Footnote (f) (7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.

(8) - Deleted.

SR 3.3.1.12 ~~(9)~~ - ~~The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.~~ LA05

SR 3.3.1.4 (10) - Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every ~~62 days on a STAGGERED TEST BASIS~~.

In accordance with the Surveillance Frequency Control Program LA01

SR 3.3.1.12 ~~(11)~~ - ~~Automatic and manual undervoltage trip.~~

LA05

SR 3.3.1.13 (12) - Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.

Add proposed SR 3.3.1.7 Note L20

Add proposed SR 3.3.1.10 Note A19

Add proposed SR 3.3.1.9, SR 3.3.1.12, and SR 3.3.1.13 Note A20

Add proposed SR 3.3.1.8 Note M21

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2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

LCO 3.3.1

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

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

ACTION:

Add proposed Table 3.3.1-1 Footnote (b)

M22

ACTION A

With a reactor trip system instrumentation or interlock ~~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 until the channel is restored to OPERABLE status ~~with its trip setpoint adjusted consistent with the Nominal Trip Setpoint value~~.

Add proposed Table 3.3.1-1 Footnote (c)

M23

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS		FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
1	1.	Manual Reactor Trip	Not Applicable	Not Applicable
2.a 2.b	2.	Power Range Neutron Flux	Low Setpoint - 25% of RATED THERMAL POWER High Setpoint - 109% of RATED THERMAL POWER	Low Setpoint - ≤ 27.4% of RATED THERMAL POWER High Setpoint - ≤ 111.4% of RATED THERMAL POWER
3.a	3.	Power Range Neutron Flux High Positive Rate	5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second
3.b	4.	Power Range Neutron Flux, High Negative Rate	5% of RATED THERMAL POWER with a time constant ≥ 2 second	≤ 6.3% of RATED THERMAL POWER with a time constant ≥ 2 second
4	5.	Intermediate Range, Neutron Flux	25% of RATED THERMAL POWER	≤ 45.20% of RATED THERMAL POWER
5	6.	Source Range Neutron Flux	10^5 counts per second	≤ 1.45 x 10^5 counts per second
6	7.	Overtemperature ΔT	See Note 1	See Note 3
7	8.	Overpower ΔT	See Note 2	See Note 4
8.a	9.	Pressurizer Pressure--Low	1970 psig	≥ 1964.8 psig
8.b	10.	Pressurizer Pressure--High	2385 psig	≤ 2390.2 psig
9	11.	Pressurizer Water Level—High	92% of instrument span	≤ 92.7% of instrument span
10.	12.	Loss of Flow	90% ~~of design flow per loop*~~	≥ 89.6% ~~of design flow per loop*~~

LA06

~~* Design flow is 94,600 (91,400 X 1.035) gpm per loop.~~

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ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
13 13. Steam Generator Water Level--Low-Low		
a. RCS Loops ΔT Equivalent to Power ≤ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP
Coincident with		
Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
and		
Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
or		
Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument span
with		
A time delay (T_S) if one Steam Generator is affected	T_S (Note 5)	≤ (1.01) T_S (Note 5)
or		
A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5)	≤ (1.01) T_M (Note 5)
b. RCS Loop ΔT Equivalent to Power > 50% RTP		
Coincident with		
Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
and		
Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
or		
Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument

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ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

KAB064

M25

M24

KAB065

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	14. Deleted		
11	15. Undervoltage-Reactor Coolant Pumps	5022 volts-each bus	≥ ~~4739~~ 4952 volts-each bus
12	16. Underfrequency-Reactor Coolant Pumps	~~56.0~~ 57.0 Hz - each bus	≥ ~~55.9~~ ~~56.3~~ 56.973 Hz - each bus
14	17. Turbine Trip A. Low Trip System Pressure B. Turbine Stop Valve Closure	 45 psig 1% open	 ≥ 39.5 psig ≥ 1% open
15	18. Safety Injection Input from ESF	Not Applicable	Not Applicable
16.a	19. Intermediate Range Neutron Flux - (P-6) ~~Enable Block Source Range Reactor Trip~~	1 x 10^{-4}% of RATED THERMAL POWER	≥ 6 x 10^{-5}% of RATED THERMAL POWER
16.e	20. Power Range Neutron Flux (~~not~~ P-10) ~~Input to Low Power Reactor Trips Block P-7~~	10% of RATED THERMAL POWER	≤ 12.4% of RATED THERMAL POWER

LA07

A21

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
16.f	21. Turbine Impulse Chamber Pressure - (P-13) ~~Input to Low Power Reactor Trips Block P-7~~	10% Turbine Impulse Pressure Equivalent	≤ 12.4% Turbine Impulse Pressure Equivalent
16.c	22. Power Range Neutron Flux - (P-8) ~~Low Reactor Coolant Loop Flow, and Reactor Trip~~	35% of RATED THERMAL POWER	≤ 37.4% of RATED THERMAL POWER
16.e	23. Power Range Neutron Flux - (P-10) ~~- Enable Block of Source, Intermediate, and Power Range (low setpoint) Reactor Trips~~	10% of RATED THERMAL POWER	≥ 7.6% of RATED THERMAL POWER
	24. Reactor Trip P-4	Not Applicable	Not Applicable
16.d	25. Power Range Neutron Flux - (P-9) ~~- Blocks Reactor Trip for Turbine Trip Below 50% Rated Power~~	50% of RATED THERMAL POWER	≤ 52.4% of RATED THERMAL POWER

LA07

See ITS 3.3.2

LA07

NOTATION

Note 1 NOTE 1:

$$\text{Overtemperature } \Delta T \left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_1 - K_2\left(\frac{1+\tau_1 S}{1+\tau_2 S}\right)[T - T'] + K_3(P - P') - f_1(\Delta I)\right\}$$

Where:

~~$\frac{1+\tau_4 S}{1+\tau_5 S}$~~ = ~~Lead-lag compensator on measured ΔT~~

~~τ4, τ5~~ = ~~Time constants utilized in the lead-lag controller for ΔT,~~ τ4 ≥ ~~5~~ secs, τ5 ≤ ~~3~~ sec.

LA08

STET

SII

ΔT0 = Indicated ΔT at RATED THERMAL POWER

K1 ≤ ~~1.15~~

K2 ≥ ~~0.011~~

STET STET STET

~~LA09~~ ~~*~~

ITS

ITS 3.3.1

A01

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

Note 1 NOTE 1: (Continued)

~~$\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation~~ LA08

~~τ_1, & τ_2 = Time constants utilized in the lead-lag controller for T_{avg},~~ $\tau_1 \geq$ ~~33~~ secs., $\tau_2 \leq$ ~~4~~ secs. LA09

STET STET SII

T = Average temperature °F

STET

T' ≤ ~~578.2~~°F (T_{avg} at RATED THERMAL POWER)

STET

K_3 = ~~0.00055~~ LA09

P = Pressurizer pressure, psig

STET

P' = ~~2235~~ psig (Nominal RCS operating pressure) LA09

S = Laplace transform operator (sec^{-1})

and f_1 (ΔI) 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: LA08

(i) for q_t - q_b between QTNL* and QTPL* f_1 (ΔI) = 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).

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Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

Note 1 NOTE 1: (Continued)

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QTPL*, the ΔT nominal trip setpoint shall be automatically reduced by QTPS* of its value at RATED THERMAL POWER.

Note 2 NOTE 2: Overpower

$$\Delta T\left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right) T - K_6 \; (T - T'') - f_2 \; (\Delta I)\right\}$$

Where:

$\cancel{\frac{1+\tau_4 S}{1+\tau_5 S}}$	~~=~~	~~as defined in Note 1~~
τ_4, τ_5	=	as defined in Note 1
ΔT_0	=	as defined in Note 1
K_4	≤	~~1.087~~ *
K_5	≥	~~0.02~~ */°F for increasing average temperature and ~~0~~ * for decreasing average temperature
$\cancel{\frac{\tau_3 S}{1+\tau_3 S}}$	~~=~~	~~The function generated by the rate-lag controller for T_{avg} dynamic compensation~~

LA08

STET

STET

SII

LA09

STET

LA08

~~These values denoted with * (including~~ ~~)~~

LA09

*QTNL, QTPL, QTNS, and QTPS are specified in the COLR per Specification 6.9.1.14.

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

LA08 STET

Note 2 NOTE 2: (Continued)

τ_3 = ~~Time constant utilized in the rate-lag controller for T_{avg},~~ $\tau_3 \geq$ ~~10~~ secs.

LA09

K_6 ≥ ~~0.0011~~ for $T > T''$ and $K_6 \geq$ ~~0~~ for $T \leq T''$

STET STET SII

T = as defined in Note 1

T'' = Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, ≤ ~~578.2~~ °F)

LA09 STET

S = as defined in Note 1

and $f_2(\Delta I)$ 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:

LA08

(i) for q_t - q_b between QPNL* and QPPL* $f_2(\Delta I)$ = 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).

(ii) for each percent that the magnitude of (q_t - q_b) exceeds QPNL* the ΔT nominal trip setpoint shall be automatically reduced by QPNS* of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QPPL* the ΔT nominal trip setpoint shall be automatically reduced by QPPS* of its value at RATED THERMAL POWER.

Note 1 NOTE 3: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.9 percent ΔT span.

Note 2 NOTE 4: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.7 percent ΔT span.

~~These values denoted with * (including~~) LA09

*QPNL, QPPL, QPNS, and QPPS are specified in the COLR per Specification 6.9.1.14.

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ITS

ITS 3.3.1

A01

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS
NOTATION (Continued)

Note 3

NOTE 5: Trip Time Delay - Steam Generator Water Level -- Low-Low

T_s = $\{(-0.00583)(P)^3 + (0.735)(P)^2 - (33.560)(P) + 649.5\}$ 0.99 secs.

T_m = $\{(-0.00532)(P)^3 + (0.678)(P)^2 - (31.340)(P) + 589.5\}$ 0.99 secs.

Where:

P = RCS Loop ΔT Equivalent to Power (% RTP), $P \leq 50\%$ RTP

T_s = Time delay for Steam Generator Water level -- Low-Low Reactor Trip, one Steam Generator affected. (Secs.)

T_m = Time delay for Steam Generator Water Level -- Low-Low Reactor Trip, two or more Steam Generators affected. (Secs.)

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ITS

A01

ITS 3.3.1

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.1

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

Applicability

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

Add proposed ACTIONS Note

A02

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 and interlock 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.

M01

~~92 days on a STAGGERED TEST BASIS~~

M02

SR 3.3.1.5

SR 3.3.1.10

SR 3.3.1.11

4.3.1.1.2 The logic for the interlocks shall be demonstrated OPERABLE ~~prior to each reactor startup unless performed during the preceeding 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.

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.3.1.14

4.3.1.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit ~~at least once per 18 months~~. Neutron detectors are exempt from response time testing. ~~Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified 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.~~

A03

~~18 months on a staggered test basis~~

A04

In accordance with the Surveillance Frequency Control Program

LA01

ITS
Table 3.3.1-1

A01

ITS 3.3.1
ITS ACTIONS

TABLE 3.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02 A05 REQUIRED A06

		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 *	1	B, C
2.a 2.b	2.	Power Range, Neutron Flux	~~4~~	~~2~~	~~3~~ 4	1, 2	2	D, E
3.a	3.	Power Range, Neutron Flux High Positive Rate	~~4~~	~~2~~	~~3~~ 4	1, 2	2	E
3.b	4.	Power Range, Neutron Flux, High Negative Rate	~~4~~	~~2~~	~~3~~ 4	1, 2	2	E
4	5.	Intermediate Range, Neutron Flux	~~2~~	~~1~~	2	1, 2, ~~and *~~	3, ~~17~~	F, G
5	6.	Source Range, Neutron Flux A. Startup	~~2~~	~~1~~	2	2##, and *	4	H, I, J
		B. Shutdown	2	0	1	3, 4 and 5	5	See ITS 3.3.9
6	7.	Overtemperature ΔT Four Loop Operation	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
7	8.	Overpower ΔT Four Loop Operation	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
8.a	9.	Pressurizer Pressure-Low	~~4~~	~~2~~	~~3~~ 4	1(g)~~, 2~~	6	K
8.b	10.	Pressurizer Pressure—High	~~4~~	~~2~~	~~3~~ 4	1, 2	6	E
9	11.	Pressurizer Water Level—High	~~3~~	~~2~~	~~2~~ 3	1(g)~~, 2~~	6	K

A06 L01 A07 A08 L02 A05 LA02

Add proposed footnote (g) L02

SEQUOYAH - UNIT 2 3/4 3-2 December 21, 2010
Amendment No. 33, 132, 290, 321

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ITS

A01

ITS 3.3.1

ITS ACTIONS

TABLE 3. 3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02

A05

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS ~~OPERABLE~~	APPLICABLE MODES	ACTION	ITS ACTIONS
10 Footnote (g)	12. Loss of Flow ~~- Single Loop (Above P-8)~~ LA03	~~3/loop~~	~~2/loop in any operating loop~~	~~2~~ 3/loop ~~in each operating loop~~	1 (g)	6	K
10 Footnote (g)	13. Loss of Flow ~~- Two Loops (Above P-7 and below P-8)~~	~~3/loop~~	~~2/loop in two operating loops~~	~~2~~ 3/loop ~~in each operating loop~~	1 (g)	6	K
13	14. Main Steam Generator Water Level--Low-Low	~~-~~					
13.a	A. Steam Generator Water Level--Low-Low (Adverse)	~~3/Stm. Gen~~	~~2/Stm. Gen. in any operating Stm. Gen~~	~~2~~ 3/Stm. Gen. ~~in each Operating Stm. Gen.~~	1,2	9	R
13.b	B. Steam Generator Water Level--Low-Low (EAM)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen~~	~~2~~ 3/Stm. Gen. ~~in each operating Stm. Gen~~.	1,2	9	R
13.a 13.b	C. RCS Loop ΔT	~~4 (1/loop)~~	~~2~~	~~3~~ 1 per loop	1,2	10	T
13.a	D. Containment Pressure (EAM)	~~4~~	~~2~~	~~3~~ 4	1,2	11	S
	15. Deleted						

A05 L02 A05 A05 A05

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ITS — A01 — ITS 3.3.1

Table 3.3.1-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

LA02 A05 A05 L02 A05 A09 A10 L03 A11

ITS		FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS ~~OPERABLE~~	APPLICABLE MODES	ACTION	ITS ACTIONS
11	16.	Undervoltage-Reactor Coolant Pumps	~~4-1/bus~~	~~2~~	~~3~~ 1 per bus	1 (g)	6	K
12	17.	Underfrequency-Reactor Coolant Pumps	~~4-1/bus~~	~~2~~	~~3~~ 1 per bus	1 (g)	6	K
14	18.	Turbine Trip						
14.a		A. Low Fluid Oil Pressure	~~3~~	~~2~~	~~2~~ 3	1**	6	L
14.b		B. Turbine Stop Valve Closure	4	4	4	1**	7	L
15	19.	Safety Injection Input from ESF	~~2~~	~~1~~	2	1, 2	12	M
17 18	20.	Reactor Trip Breakers (i)						
		A. Startup and Power Operation	~~2~~	~~1~~	2	1, 2	12, 15	N, Q
		. Shutdown	~~2~~	~~1~~	2	3*,4* and 5*	16	C
19	21.	Automatic Trip Logic						
		A. Startup and Power Operation	~~2~~	~~1~~	2	1, 2	12	M
		B. Shutdown	~~2~~	~~1~~	2	3*,4* and 5*	16	C
16	22.	Reactor Trip System Interlocks						
16.a		A. Intermediate Range Neutron Flux, P-6	~~2~~	~~1~~	2	2~~, and*~~ (f)	8a	O
16.b		B. Power Range Neutron Flux, P-7	4	~~2~~	~~3~~ 1 per train	1	8b	P

Add Function 18, Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms — A10

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ITS | A01 | ITS 3.3.1

Table 3.3.1-1

TABLE 3.3-1 (Continued)

ITS ACTIONS

LA02

REACTOR TRIP SYSTEM INSTRUMENTATION

REQUIRED | A05

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS ~~OPERABLE~~	APPLICABLE MODES	ACTION	ITS ACTIONS
16.c	C. Power Range Neutron Flux, P-8	~~4~~	~~2~~	~~3~~ 4	1	8c	P
16.e	D. Power Range Neutron Flux, P-10	~~4~~	~~2~~	~~3~~ 4	1, 2	8d	O
16.f	E. Turbine Impulse Chamber Pressure, P-13	~~2~~	~~1~~	2	1	8b	P
16.d	F. Power Range Neutron Flux, P-9	~~4~~	~~2~~	~~3~~ 4	1	8e	P
	G. Reactor Trip P-4	2	1	2	1, 2, and *	14	See ITS 3.3.2

M03

ITS

A01

ITS 3.3.1

TABLE 3.3-1 (Continued)

A12

TABLE NOTATION

MODES 3, 4, and 5

LA04

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

or one or more rods not fully inserted

M04

Footnote (h) ** Above the P-9 (Power Range Neutron Flux) interlock.

A13

Footnote (f) ## Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.

Add proposed Table 3.3-1 footnote (i)

A09

ACTION STATEMENTS

ACTION B
ACTION C

ACTION 1 - With the number of OPERABLE channels 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~~.

ACTION B

Add proposed Required Actions C.2.1 and C.2.2

L04

ACTION D
ACTION E

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:

72

L05

Required Action D.1.1 and D.2.1
Required Action E.1

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

Required Action D.1.1 Note
Required Action E.1 Note

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

12

L06

Required Action D.2.2

c. The QUADRANT POWER TILT RATIO is monitored in accordance with Technical Specification 3.2.4.

Add proposed Required Action D.1.2

L07

Add proposed Required Action D.2.2 Note

L08

Add proposed Required Actions D.3 and E.2

M05

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ITS | A01 | ITS 3.3.1

TABLE 3.3-1 (Continued)

ACTION F

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

A07

Function 4 Applicability

~~a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.~~

ACTION F

~~b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, 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.~~

L09

Add proposed Required Actions F.1 and F.2 — M06

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

Add proposed ACTION G — M07

Function 4 Applicability

~~d. Above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.~~

A07

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

ACTIONS H, J

Add proposed Required Action H.1 for MODE 2 below P-6 — M08

a. ~~Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.~~

Add proposed Required Actions J.1, J.2.1, and J.2.2 for MODES 3[(a)], 4[(a)], 5[(a)]

Add proposed ACTION I — M09

Function 5 Applicability

b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, operation may continue.

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

See ITS 3.3.9

ACTIONS E, K, and L

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:

L05

Required Actions E.1, K.1, and L.1

a. The inoperable channel is placed in the tripped condition within ~~6~~ 72 hours.

Add proposed Required Action K.2 — M10

Required Actions E.1, K.1, L.1 Note

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels per Specification 4.3.1.1.1.

L06

Add proposed Required Action L.2 — M11

ACTION L

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within ~~6~~ 72 hours or THERMAL POWER is reduced to less than P-9 within ~~10~~ 76 hours.

.

L05

A14

Add proposed Required Action L Note — L10

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A01

TABLE 3.3-1 (Continued)

Add proposed Required Actions O.1 and P.1

M12

ACTIONS O, P

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, ~~declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:~~

Add proposed Required Actions O.2 and P.2

A15

~~a. Source Range Reactor Trip.~~

~~b. Reactor Trip~~

~~Low Reactor Coolant Loop Flow (2 loops)~~
~~Undervoltage~~
~~Underfrequency~~
~~Pressurizer Low Pressure~~
~~Pressurizer High Level~~

~~c. Reactor Trip~~

~~Low Reactor Coolant Loop Flow (1 loop)~~

~~d. Reactor Trip~~

~~Intermediate Range~~
~~Low Power Range~~
~~Source Range~~

~~e. Reactor Trip~~

~~Turbine Trip~~

ACTION R

ACTION 9 - 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 Action R.2

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

Required Action R.1

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for Multiple affected steam generators (T_M) within 4 hours.

Required Action R Note

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

Add proposed ACTION U

M13

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ITS

A01

ITS 3.3.1

TABLE 3.3-1 (Continued)

ACTION T

ACTION 10 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

Add proposed Required Action T.2 — L11

Add proposed Required Action T.3 — M14

ACTION S

ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

Add proposed Required Action S.2 — L12

Add proposed Required Action S.3 — M15

ACTION M, N

ACTION 12 - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, restore train to OPERABLE status within 24 hours, or be in at least HOT STANDBY within ~~6~~ 30 hours; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.1.1.1 provided the other channel is OPERABLE.

L13

ACTION 13 - Deleted

ACTION 14 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours.

See ITS 3.3.2

ACTION Q

ACTION 15 - 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 12~~ Add proposed Required Action Q.2. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status.

A16

ACTION Q Note

ACTION C

ACTION 16 - 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 C.2.1 and C.2.2

L04

Function 4 Applicability

~~ACTION 17 - With the number of OPERABLE channels two less than the minimum channels OPERABLE requirement and with the THERMAL POWER level above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.~~

A07

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ITS

Table 3.3.1-1

A01

ITS 3.3.1

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M01 LA05 ~~A16~~ A17 KAB007 A18 L14 M16 M17 M18

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1	1. Manual Reactor Trip	N.A.	N.A.	~~S/U(1)and R(9)~~ SR 3.3.1.12	1, 2, and *
2.a 2.b	2. Power Range, Neutron Flux	SR 3.3.1.1 ~~S~~	SR 3.3.1.2 ~~D~~(2), SR 3.3.1.3 (3) and ~~Q~~(6) SR 3.3.1.11 ~~18 months~~	~~Q~~ SR 3.3.1.7 SR 3.3.1.8 INSERT 2	1, 2
3.a	3. Power Range, Neutron Flux, High Positive Rate	N.A	~~R~~(6) SR 3.3.1.11	SR 3.3.1.7 ~~Q~~	1, 2
3.b	4. Power Range, Neutron Flux, High Negative Rate	N.A	SR 3.3.1.11 ~~R~~(6) ~~184 days thereafter~~	SR 3.3.1.7 ~~Q~~ INSERT 2	1, 2
4	5. Intermediate Range, Neutron Flux	SR 3.3.1.1 ~~S~~	~~R~~(6) SR 3.3.1.11	S/U(1) SR 3.3.1.8 INSERT 1	1, 2, and *
5	6. Source Range, Neutron Flux	SR 3.3.1.1 ~~S~~(7)	~~R~~(6) SR 3.3.1.11	~~M~~ and S/U(1) SR 3.3.1.7 SR 3.3.1.8	2, 3, 4, 5, and *
6	7. Overtemperature ΔT	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	SR 3.3.1.7 ~~Q~~	1, 2
7	8. Overpower ΔT	Add proposed SR 3.3.1.6 and Note at a Frequency of ~~92 EFPD~~ SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
8.a	9. Pressurizer Pressure--Low	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
8.b	10. Pressurizer Pressure--High	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
9	11. Pressurizer Water Level—High	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
10	12. Loss of Flow - Single Loop	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1
10	13. Loss of Flow - Two Loops	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	N.A.	1
13	14. Steam Generator Water Level--Low-Low				
13.a	A. Steam Generator Water Level--Low-Low (Adverse)	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
13.b	B. Steam Generator Water Level--Low-Low (EAM)	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
13.a 13.b	C. RCS Loop ΔT	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2
13.a	D. Containment Pressure (EAM)	SR 3.3.1.1 ~~S~~	~~R~~ SR 3.3.1.10	~~Q~~ SR 3.3.1.7	1, 2

SII

~~184 days~~ L15

In accordance with the Surveillance Frequency Control Program LA01

M16

INSERT 1

Four hours after reducing power below P-6 for source range instrumentation

M16

INSERT 2

Twelve hours after reducing power below P-10 for power and intermediate range instrumentation

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ITS A01 ITS 3.3.1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M01 A17

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
	15. Deleted				
11	16. Undervoltage - Reactor Coolant Pumps	N.A.	SR 3.3.1.10 ~~R~~	SR 3.3.1.9 ~~Q~~	1
12	17. Underfrequency - Reactor Coolant Pumps	N.A.	SR 3.3.1.10 ~~R~~	SR 3.3.1.9 ~~Q~~ L16 ~~62 days on a STAGGERED TEST BASIS~~	1
14	18. Turbine Trip				
14.a	A. Low Fluid Oil Pressure	N.A.	SR 3.3.1.10 ~~N.A.~~ M19 ~~18 months~~	(1) (12) SR 3.3.1.13	1**
14.b	B. Turbine Stop Valve Closure	N.A.	~~N.A.~~ SR 3.3.1.10	(1) (12) SR 3.3.1.13	1**
15	19. Safety Injection Input from ESF	N.A.	N.A.	R SR 3.3.1.12	1, 2
17	20. Reactor Trip Breaker	N.A.	N.A.	SR 3.3.1.4 ~~M(5) and S/U(1)~~	1, 2, and *
19	21. Automatic Trip Logic	N.A.	N.A.	SR 3.3.1.5 ~~M(5)~~ L17 ~~92 days on a STAGGERED TEST BASIS~~	1, 2, and *
16	22. Reactor Trip System Interlocks				
16.a	A. Intermediate Range Neutron Flux, P-6	N.A.	SR 3.3.1.11 ~~R~~	N.A.	2, and *
16.b	B. Power Range Neutron Flux, P-7	N.A.	N.A.	~~N.A.~~ SR 3.3.1.5 M02 Add proposed SR 3.3.1.5	1
16.c	C. Power Range Neutron Flux, P-8	N.A.	SR 3.3.1.11 ~~R~~	N.A.	1
16.e	D. Power Range Neutron Flux, P-10	N.A.	SR 3.3.1.11 ~~R~~	N.A.	1, 2
16.f	E. Turbine Impulse Chamber Pressure, P-13	N.A.	SR 3.3.1.11 ~~R~~	N.A.	1
16.d	F. Power Range Neutron Flux, P-9	N.A.	SR 3.3.1.11 ~~R~~	N.A.	1
	G. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, and *
17 Footnote (k)	23. Reactor Trip Bypass Breaker A09	N.A.	N.A.	SR 3.3.1.12 ~~M(10)R(11)~~ SR 3.3.1.4 L16 ~~62 days on a STAGGERED TEST BASIS~~	1, 2, and * A17

In accordance with the Surveillance Frequency Control Program LA01

See ITS 3.3.2

In accordance with the Surveillance Frequency Control Program LA01

ITS | A01 | ITS 3.3.1

Table 4.3-1 (Continued)

NOTATION

LA04

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] (M04)
Footnote (h)	**	-	Above the P-9 (Power Range Neutron Flux) interlock.
SR 3.3.1.8 and SR 3.3.1.13 Frequency Note	(1)	-	If not performed in previous ~~31~~ [184 days for ITS Functions 4 and 5. Otherwise 31 days] (L18) days.
SR 3.3.1.2	(2)	-	Heat balance only, [12 hours after] (M20) 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 FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is $\geq$ 15% RTP.
	(4)	-	Deleted.
SR 3.3.1.4 SR 3.3.1.5	(5)	-	Each train or logic channel shall be tested at least every [~~92 days on a STAGGERED TEST BASIS for Automatic Trip Logic~~] (L17) [In accordance with the Surveillance Frequency Control Program] (LA01) ~~62 days on a STAGGERED TEST BASIS~~. ~~The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.~~ (LA05) (L19)
SR 3.3.1.4			
SR.3.3.1.11 Note	(6)	-	Neutron detectors may be excluded from CHANNEL CALIBRATION.
Footnote (f)	(7)	-	Below P-6 (Block of Source Range Reactor Trip) setpoint.
	(8)	-	Deleted.
SR 3.3.1.12	~~(9)~~	-	~~The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.~~ (LA05)
SR 3.3.1.4	(10)	-	Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every ~~62 days on a STAGGERED TEST BASIS~~ [In accordance with the Surveillance Frequency Control Program] (LA01).
SR 3.3.1.12	~~(11)~~	-	~~Automatic and manual undervoltage trip.~~ (LA05)
SR 3.3.1.13	(12)	-	Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.

Add proposed SR 3.3.1.7 Note (L20)

Add proposed SR 3.3.1.10 Note (A19)

Add proposed SR 3.3.1.9, SR 3.3.1.12, and SR 3.3.1.13 Note (A20)

Add proposed SR 3.3.1.8 Note (M21)

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

LCO 3.3.1 2.2.1 The reactor trip system instrumentation and interlocks setpoints shall be set consistent with the Nominal Trip Setpoint values shown in Table 2.2-1.

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

ACTION:

Add proposed Table 3.3.1-1 Footnote (b) M22

ACTION A With a reactor trip system instrumentation or interlock ~~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 until the channel is restored to OPERABLE status ~~with its trip setpoint adjusted consistent with the Nominal Trip Setpoint value~~.

Add proposed Table 3.3.1-1 Footnote (c) M23

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ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
1	1. Manual Reactor Trip	Not Applicable	Not Applicable
2.a 2.b	2. Power Range, Neutron Flux	Low Setpoint - 25% of RATED THERMAL POWER High Setpoint - 109% of RATED THERMAL POWER	Low Setpoint - ≤ 27.4% of RATED THERMAL POWER High Setpoint - ≤ 111.4% of RATED THERMAL POWER
3.a	3. Power Range, Neutron Flux, High Positive Rate	5% of RATED THERMAL POWER with a time constant ≥2 seconds	≤ 6.3% of RATED THERMAL POWER with a time constant ≥2 seconds
3.b	4. Power Range, Neutron Flux, High Negative Rate	5% of RATED THERMAL POWER with a time constant ≥2 seconds	≤ 6.3% of RATED THERMAL POWER with a time constant ≥2 seconds
4	5. Intermediate Range, Neutron Flux	25% of RATED THERMAL POWER	≤ 45.20% of RATED THERMAL POWER
5	6. Source Range, Neutron Flux	10^5 counts per second	≤ 1.45 x 10^5 counts per second
6	7. Overtemperature ΔT	See Note 1	See Note 3
7	8. Overpower ΔT	See Note 2	See Note 4
8.a	9. Pressurizer Pressure--Low	1970 psig	≥ 1964.8 psig
8.b	10. Pressurizer Pressure--High	2385 psig	≤ 2390.2 psig
9	11. Pressurizer Water Level--High	92% of instrument span	≤ 92.7% of instrument span
10	12. Loss of Flow	90% ~~of design flow per loop*~~	≥ 89.6% ~~of design flow per loop*~~

LA06

~~*Design flow is 94,600 (91,400 x 1.035) gpm per loop.~~

ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
13 13. Steam Generator Water Level--Low-Low		
a. RCS Loops ΔT Equivalent to Power ≤ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP
Coincident with		
Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
and		
Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
or		
Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument span
with		
A time delay (T_S) if one Steam Generator is affected	T_S (Note 5)	≤ (1.01) T_S (Note 5)
or		
A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5)	≤ (1.01) T_M (Note 5)

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ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	b. RCS Loop ΔT Equivalent to Power > 50% RTP		
	Coincident with		
	Steam Generator Water Level -- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
	and		
	Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
	or		
	Steam Generator Water Level -- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument
	14. Deleted		KAB064
11	15. Undervoltage-Reactor Coolant Pumps	5022 volts-each bus	≥ ~~4739~~ 4952 volts - each bus M25
12	16. Underfrequency-Reactor Coolant Pumps	~~56.0~~ 57.0 Hz - each bus	≥ ~~55.9~~ ~~56.9~~ 56.973 Hz - each bus M24 KAB065
14	17. Turbine Trip		
14.a	A. Low Trip System Pressure	45 psig	≥ 39.5 psig
14.b	B. Turbine Stop Valve Closure	1% open	> 1% open
15	18. Safety Injection Input from ESF	Not Applicable	Not Applicable

ITS | A01 | ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES	
16.a	19. Intermediate Range Neutron Flux, P-6, ~~Enable Block Source Range Reactor Trip~~	1 x 10 $^{-4}$ % of RATED THERMAL POWER	≥ 6 x 10 $^{-5}$ % of RATED THERMAL POWER	LA07
16.e	20. Power Range Neutron Flux (~~not~~ P-10) ~~Input to Low Power Reactor Trips Block P-7~~	10% of RATED THERMAL POWER	≤ 12.4% of RATED THERMAL POWER	A21
16.f	21. Turbine Impulse Chamber Pressure -(P-13) ~~Input to Low Power Reactor Trips Block P-7~~	10% Turbine Impulse Pressure Equivalent	≤ 12.4% Turbine Impulse Pressure Equivalent	
16.c	22. Power Range Neutron Flux - (P-8) ~~Low Reactor Coolant Loop Flow, and Reactor Trip~~	35% of RATED THERMAL POWER	≤ 37.4% of RATED THERMAL POWER	LA07
16.e	23. Power Range Neutron Flux - (P-I0) - ~~Enable block of Source, Intermediate, and Power Range (low setpoint) Reactor Trips~~	10% of RATED THERMAL POWER	≥ 7.6% of RATED THERMAL POWER	
	24. Reactor Trip P-4	Not Applicable	Not Applicable	See ITS 3.3.2
16.d	25. Power Range Neutron Flux - (P-9) ~~Blocks Reactor Trip for Turbine - Trip Below 50% Rated Power~~	50% of RATED THERMAL POWER	≤ 52.4% of RATED THERMAL POWER	LA07

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ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION

Note 1

NOTE 1:

$$\text{Overtemperature } \Delta T \left(\frac{1 + \tau_4 S}{1 + \tau_5 S}\right) \leq \Delta T_0 \left\{K_1 - K_2 \left(\frac{1 + \tau_1 S}{1 + \tau_2 S}\right) [T - T'] + K_3 (P - P') - f_1 (\Delta I)\right\}$$

Where:

$\cancel{\frac{1+\tau_4 S}{1+\tau_5 S}}$ = ~~Lead-lag compensator on measured ΔT~~

LA08

~~τ_4, τ_5~~ = ~~Time constants utilized in the lead-lag controller for ΔT~~, $\tau_4 \geq$ ~~5~~ secs, $\tau_5 \leq$ ~~3~~ sec.

STET

STET

SII

ΔT_0 = Indicated ΔT at RATED THERMAL POWER

K_1 ≤ ~~1.15~~

STET

~~*~~ LA09

KAB010 K_2 ≥ ~~≤~~ ~~0.011~~

STET

$\cancel{\frac{1+\tau_1 S}{1+\tau_2 S}}$ = ~~The function generated by the lead-lag controller for T_{avg} dynamic compensation~~

LA08

~~τ_1, & τ_2~~ = ~~Time constants utilized in the lead-lag controller for T_{avg}~~, $\tau_1 \geq$ ~~33~~ secs., $\tau_2 \leq$ ~~4~~ secs.

STET

STET

~~*~~ ~~LA09~~

T = Average temperature °F

SII

STET

T' ≤ ~~578.2~~°F (T_{avg} at RATED THERMAL POWER)

STET

K_3 = ~~0.00055~~

P = Pressurizer pressure, psig

STET

P' = ~~2235~~ psig (Nominal RCS operating pressure)

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ITS A01 ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

Note 1 NOTE 1: (Continued)

S = Laplace transform operator (sec^{-1})

and f_1 (ΔI) 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: LA08

(i) for q_t - q_b between QTNL* and QTPL* f_1 (ΔI) = 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).

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QTPL*, the ΔT nominal trip setpoint shall be automatically reduced by QTPS* of its value at RATED THERMAL POWER.

Note 2 NOTE 2: Overpower

$$\Delta T\left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right) T - K_6 \ (T - T'') - f_2 \ (\Delta I)\right\}$$

Where: $\cancel{\frac{1+\tau_4 S}{1+\tau_5 S}}$ $\cancel{=}$ ~~as defined in Note 1~~ LA08

~~These values denoted with * (including~~ ~~)~~ LA09

*QTNL, QTPL, QTNS, and QTPS are specified in the COLR per Specification 6.9.1.14.

SII

ITS

A01

ITS 3.3.1

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

Note 2

NOTE 2: (Continued)

τ_4, τ_5 = as defined in Note 1

ΔT_0 = as defined in Note 1

STET

SII

K_4 ≤ ~~1.087~~

STET

LA09 ~~*~~

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

STET

~~$\frac{\tau_3 S}{1 + \tau_3 S}$~~ ~~=~~ ~~The function generated by the rate-lag controller for T_{avg} dynamic compensation~~

LA08

τ_3 = ~~Time constant utilized in the rate-lag controller for T_{avg},~~ τ_3 ≥ ~~10~~ secs.

STET

SII

STET

LA09 ~~*~~

K_6 ≥ ~~0.0011~~ for T > T" and K_6 ≥ ~~0~~ for T ~~≥~~ T"

STET ≤

T = as defined in Note 1

T" = Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, ≤ ~~578.2~~°F)

SII

STET

LA09 ~~*~~

S = as defined in Note 1

and $f_2(\Delta I)$ 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:

LA08

(i) for q_t - q_b between QPNL* and QPPL* $f_2(\Delta I)$ = 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).

(ii) for each percent that the magnitude of (q_t - q_b) exceeds QPNL* the ΔT nominal trip setpoint shall be automatically reduced by QPNS* of its value at RATED THERMAL POWER.

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QPPL* the ΔT nominal trip setpoint shall be automatically reduced by QPPS* of its value at RATED THERMAL POWER.

SII

~~These values denoted with * (including~~)

LA09

*QPNL, QPPL, QPNS, and QPPS are specified in the COLR per Specification 6.9.1.14.

Table 3.3.1-1

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

Note 1

NOTE 3: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.9 percent ΔT span.

Note 2

NOTE 4: The channel's maximum trip setpoint shall not exceed its computed nominal trip setpoint by more than 1.7 percent ΔT span.

Note 3

NOTE 5: Trip Time Delay - Steam Generator Water Level--Low-Low

$T_s = \{(-0.00583)(P)^3 + (0.735)(P)^2 - (33.560)(P) + 649.5\}\{0.99\}$ secs.

$T_m = \{(-0.00532)(P)^3 + (0.678)(P)^2 - (31.340)(P) + 589.5\}\{0.99\}$ secs.

Where:

P = RCS Loop ΔT Equivalent to Power (% RTP), P * 50% RTP

T_s = Time delay for Steam Generator Water Level--Low-Low Reactor Trip, one Steam Generator affected (secs).

T_m = Time delay for Steam Generator Water Level--Low-Low Reactor Trip, two or more Steam Generators affected (secs).

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

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) 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. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 Unit 1 CTS 3.3.1.1 and Unit 2 CTS 3.3.1 ACTION and CTS Table 3.3-1 provide the compensatory actions to take when reactor trip system (RTS) instrumentation is inoperable. ITS 3.3.1 ACTIONS similarly provide the compensatory actions for inoperable RTS Instrumentation. ITS 3.3.1 ACTIONS includes a Note that allows separate Condition entry for each Function. In addition, due to the manner in which the Required Channel's description modifies Functions 10, 11, 12, 13, and 18, separate Condition entry is allowed within a Function on a per bases for Function 10 (Reactor Coolant Flow - Low) on a per loop basis; for Function 11 (Undervoltage RCPs) on a per bus basis; for Function 12 (Underfrequency RCPs) on a per bus basis; for Function 13 (Steam Generator (SG) Water Level Low-Low) on a per SG basis; and for Function 18 (Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms) on a per RTB basis. This changes the CTS by providing a specific allowance to enter the Action for each inoperable RTS instrumentation Function and for certain Functions on a loop, steam generator, or train 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, 11, 12, 13, and 18 are allowed separate Condition entry on the specified basis (i.e., loop, SG, or RTB) because 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.

A03 CTS 4.3.1.1.3 requires REACTOR TRIP SYSTEM RESPONSE TIME testing of "each" reactor trip function. ITS SR 3.3.1.14 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 Neutron Flux - Low), 3.b (Power Range Neutron Flux Rate - High Negative Rate), 6 (Overtemperature ΔT), 7 (Overpower ΔT), 8.a Pressurizer Pressure - Low), 8.b (Pressurizer Pressure - High), 10 (Reactor Coolant Flow - Low), 11 (Undervoltage RCPs), 12 (Underfrequency RCPs), and 13 (Steam Generator Water Level - Low Low). This changes the CTS by specifically stating that the Surveillance is only applicable to certain Functions, not "each" function.

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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 Table 7.2.1-5 specifies response times for those RTS Functions assumed in the SQN safety analyses. The Functions requiring a response time test are those Functions requiring ITS SR 3.3.1.14. This change is acceptable because ITS 3.3.1 requires REACTOR TRIP SYSTEM RESPONSE TIME testing (ITS SR 3.3.1.14) for only those Functions listed with response times in UFSAR Table 7.2.1-5. Although the tables containing the specific response time requirements are located in the UFSAR, any changes must continue to be evaluated in accordance with 10 CFR 50.59. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 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 3.3.1.14 requires the verification of RTS RESPONSE TIME every 18 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.

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.

A05 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, 16, 17, and 18.A, 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, 7, 9, 10, and 11, 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, 8, 12, and 16, 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, including only one column titled "REQUIRED CHANNELS," and ITS 3.3.1 ACTION A specifies the action to take under the CONDITION where one or more Functions have one or more "Required Channels" or trains inoperable. For CTS Table 3.3-1 Functional Unit 12, 13, 14.A, and 14.B, the description in the "MINIMUM CHANNELS OPERABLE" column includes the phrase "in each operating loop," or "in each Operating Stm. Gen." These descriptions are not included in ITS Table 3.3.1-1 Functions 10, 13.a, and 13.b. For Functional Units 14.C, 16, and 17 the "TOTAL NO. OF CHANNELS" column contains two equivalent description of either a value (e.g., 4) or a per basis (e.g., 1/loop); the per basis is chosen for these Functional Units as listed for similar ISTS Functions

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

12, 13, and 14. This changes the CTS by a) changing the title of the "MINIMUM CHANNELS OPERABLE" column to "REQUIRED CHANNELS," b) matching the number of channels listed in the "REQUIRED CHANNELS" column to the number listed in the "TOTAL NO. OF CHANNELS" column where action is required if the number of OPERABLE channels are less than the Total Number of Channels, c) deleting the description "in each operating loop" and "in each Operating Stm. Gen".

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. For CTS Functional Units 1, 5, 6.A, 19, 20.A, 20.B, 21.A, 21.B, 22.A, 22.B, and 22.E, action is required when the number of OPERABLE channels falls below the "MINIMUM CHANNELS OPERABLE" column, the number entered into the ITS "REQUIRED CHANNELS" column. For CTS Functional Units 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14.A, 14.B, 14.C, 14.D, 16, 17, 18.A, and 18.B, action is required when the number of OPERABLE channels falls below the "TOTAL NO. OF CHANNELS" column, the number entered into the ITS "REQUIRED CHANNELS" column. For CTS Table 3.3-1 Functional Units 12, 13, 14.A, and 14.B, the description "in each operating loop" or "in each operating Stm. Gen." is not necessary because all loops, including steam generators, are required to be operating in MODES 1 and 2. This change is designated as administrative because it does not result in technical changes to the CTS.

A06 CTS Table 3.3-1 Functional Unit 2 requires the Power Range Neutron Flux channels to be OPERABLE 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 (d)) 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 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 permits power escalation by allowing the block of the Power Range Neutron Flux – Low Setpoint reactor trip function above the P-10 interlock after satisfactory operation and permissive information are obtained from two of four power range channels. 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.

A07 CTS Table 3.3-1, Functional Unit 5 requires 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 the P-6 setpoint 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

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ACTION 3.d, for one inoperable channel, and ACTION 17, for two inoperable channels, states that above 10% of RTP the provisions of Specification 3.0.3 are not applicable. ITS Table 3.3.1-1, including Footnotes (d) and (e), 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 ACTIONS 3.a, 3.d, and 17 into the Applicability statement.

The purpose of the Intermediate Range function is to provide protection against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This change is acceptable because the P-10 interlock 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 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. In addition, because the Applicability limits the LCO to conditions below P-10 it is unnecessary to state that the provisions of Specification 3.0.3 do not apply. The change is administrative because 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.

A08 CTS Table 3.3-1 Functional Unit 6.A 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 Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint. ITS Table 3.3.1-1, including Footnote (f), 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.

The purpose of the source range neutron flux trip function is to ensure that protection is provided against an uncontrolled RCCA bank rod withdrawal accident from a subcritical condition during startup. This change is acceptable because the P-6 interlock prevents the block of the Source Range Neutron Flux reactor trip function below the P-6 interlock. Above the P-6 interlock setpoint the applicable safety analyses do not assume the source range function is OPERABLE to mitigate an event. Furthermore, CTS Table 3.3-1 Note ## specifically states that the Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint, which renders the Source Range Neutron Flux channels inoperable. This change is designated as administrative because it does not result in a technical change to the CTS.

A09 CTS Table 3.3-1 does not include LCO requirements for the reactor trip bypass breakers; none are listed in CTS Table 3.3-1. 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 (Functional Unit 20). ITS Table 3.3.1-1 Function 17

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DISCUSSION OF CHANGES
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(Reactor Trip Breakers) includes Footnote (i), 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; otherwise they are not racked in or closed. This change is acceptable because CTS 3.3.1.1, Unit 1, and CTS 3.3.1, Unit 2, do not explicitly require the reactor trip bypass breakers to be OPERABLE as they are not listed in CTS Table 3.3-1. However, the reactor trip bypass breakers are required to be OPERABLE 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, because 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.

A10 CTS Table 3.3-1 Functional Unit 20 requires the Reactor Trip Breakers to be OPERABLE, while CTS Table 4.3-1 Functional Unit 20 specifies Surveillance Requirements for the Reactor Trip Breakers as well as the Shunt Trip and Undervoltage Trip Functions. CTS 3.3-1 ACTION 15 provides compensatory actions for when the undervoltage or shunt trip feature is inoperable, while ACTION 12 specifies the compensatory actions for when the Reactor Trip Breakers are inoperable or when there is an inoperable diverse trip feature for greater than 48 hours. ITS 3.3.1-1 Function 17 specifies the requirements for the Reactor Trip Breakers, while Function 18 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 17) and Reactor Trip Breaker Undervoltage and Shunt Trip Mechanism Function (Function 18).

This change is considered acceptable because 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 separated requirements are consistent with the CTS. This change is designated as administrative because it does not result in a technical change to the CTS.

A11 CTS Table 3.3-1 Functional Unit 22.B (Power Range Neutron Flux, P-7), Minimum Channels OPERABLE column, requires three (3) channels OPERABLE. ITS Table 3.3.1-1, Function 16.b (Low Power Reactor Trips Block, P-7), Required Channels column, requires "1 per train" OPERABLE. This changes the CTS by identifying the P-7 interlock as a logic Function with train and not channel identity.

The purpose of the P-7 interlock is to permit startup by blocking Pressurizer Pressure - Low, Pressurizer Water Level - High, Reactor Coolant Flow - Low (low flow in two or more RCS loops), Undervoltage Reactor Coolant Pumps (RCPs), and Underfrequency RCPs reactor trips below the P-7 interlock setpoint

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ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

(approximately 10% power) and to enable these functions when above the P-7 interlock setpoint to provide protection against violating the DNBR limit. The Low Power Reactor Trips Block, P-7 interlock is actuated by input from the Power Range Neutron Flux, P-10 interlock, or the Turbine Impulse Pressure, P-13 interlock. The P-10 and P-13 interlocks retain the channel identity associated with the P-7 interlock in CTS. The P-7 interlock receives four inputs from nuclear instrumentation and two inputs from turbine impulse pressure. These inputs are combined such that the actual P-7 interlock has a single channel per RPS logic train. The ITS reflects this design. This change is designated as administrative because it does not result in any technical changes to the CTS.

A12 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 LA04 and the change that adds the requirement concerning the position of the rods is discussed in DOC M04.

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.

A13 CTS Table 3.3-1 and Table 4.3-1 Note * modifies the Applicable MODES and MODES for which surveillances are required by stating, in part, "and fuel in the reactor vessel." ITS Table 3.3.1-1 contains a similar MODE modifying note, Note (a), but does not contain the phrase, "and fuel in the reactor vessel". ITS Section 1.1, Definitions, includes the definition of a MODE and states that a MODE corresponds to specific conditions specified in Table 1.1-1 with fuel in the reactor vessel. This changes the CTS by moving the modifying statement concerning fuel in the reactor vessel from the note to the MODE definition.

The purpose of the statement in CTS Table 3.3-1 and Table 4.3-1 Note * modifying the Applicable MODE to only when fuel is in the reactor vessel is to limit the Applicable MODES or other specified conditions the associated Functional Units are required to be OPERABLE or their associated surveillances

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required. ITS includes this same limitation in the definition of MODES. This change is designated as administrative because it does not result in technical changes to the CTS.

A14 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/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours or THERMAL POWER is reduced to less than P-9 within 10 hours. Thus, if after 6 hours the inoperable channel has not been placed in the tripped condition 4 hours is allotted to reduce THERMAL POWER to less than P-9. ITS LCO 3.3.1 ACTION L, requires that if one turbine trip channel is inoperable to place the channel in the tripped condition within 72 hours or reduce THERMAL POWER to < P-9 within 76 hours. Thus, if after 72 hours the inoperable channel has not been placed in the tripped condition 4 hours is allotted to reduce THERMAL POWER to less than P-9. Refer to DOC L05 for increasing the time to place an inoperable channel in trip. This changes the CTS by compensating for the increase Completion Time for placing a channel in a tripped condition retaining the same allotted time for power reduction.

The purpose to CTS Table 3.3-1, ACTION 7 Completion Time of 10 hours is to provide for the period allocated to placing the channel in a tripped condition then allow a period to reduce THERMAL POWER to less than the P-9 setpoint. This period for power reduction, allows for an orderly shutdown without challenging unit systems. Once the allotted period for placing the channel in a tripped condition has expired without the channel in the tripped condition a power reduction is required such that the unit is < P-9 within an additional 4 hours, 10 hours total. ITS continues to require this power reduction within 4 hours once the period allowed to place the channel in the tripped condition has expired. This change is designated as administrative because it does not result in a technical change to the CTS.

A15 CTS Table 3.3-1 ACTION 8, requires that with less than the Minimum Number of Channels OPERABLE to declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE "or apply the appropriate ACTION statement(s) for those functions," then lists the Functions to be evaluated. ACTION 8 is applicable to the Functional Units 22.A, (Intermediate Range Neutron Flux, P-6); 22.B, (Power Range Neutron Flux, P-7); 22.C (Power Range Neutron Flux, P-8); 22.D (Power Range Neutron Flux, P-10); 22.E (Turbine Impulse Chamber Pressure, P-13); and 22.F (Power Range Neutron Flux, P-9). ITS 3.3.1 ACTIONS O and P require that when one or more applicable channels are inoperable to verify the interlock is in the required state for existing plant conditions within one hour from discovery "or to be in MODE 3, for Required Action O.2, or MODE 2, for Required Action P.2, within 7 hours from discovery." ITS 3.3.1 ACTION O is applicable to Functions 16.a, Intermediate Range Neutron Flux, P-6 and 16.e Power Range Neutron Flux, P-10. ITS 3.3.1 ACTION P is applicable to 16.b, Low Power Reactor Trips Block, P-7; 16.c, Power Range Neutron Flux, P-8; 16.d Power Range Neutron Flux, P-9; and 16.f, Turbine Impulse Pressure, P-13. This changes the CTS by providing specific Required Actions when any of the applicable Functional Units are inoperable and the interlock is not in the required state for existing plant conditions.

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The purpose of the Reactor Trip System interlocks is to ensure the associated RTS instrumentation is automatically enabled or disabled when required. This change is acceptable because the proposed ACTIONS ensure that the interlock is in the correct state for the existing unit conditions, manually places the interlock in the correct state for the existing unit conditions, or places the unit in a MODE or specified Condition outside the Applicability of the associated interlock. ITS 3.3.1 Required Action O.1 and P.1 require the interlock to be placed in the same state as it would be in if it were functioning properly (i.e., this performs the intended function of the interlock). If Required Actions O.1 or P.1 are not completed within 1 hour, then ITS 3.3.1 Required Actions O.2 and P.2 require the unit to be placed in a MODE or specified condition that is outside the Applicability of the associated interlock. 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 OPERABILITY of the associated RTS Instrumentation Function. The Required Actions and Completion Times for placing the unit in the MODES or specified conditions outside the Applicability of the interlocks are consistent with the Required Actions and Completion Times associated with exiting the Applicability for CTS RTS Interlock Functions supported by the interlocks. In CTS, if an RTS Interlock Functional Unit is inoperable and cannot be placed in the correct state for the existing unit conditions CTS 3.0.3 is entered. CTS 3.0.3 would be entered because multiple channels for the affected Functional Units would be inoperable and the associated CTS ACTIONS, except for Functional Unit 5 (Intermediate Range, Neutron Flux), do not contain Actions for multiple inoperable channels. Although CTS Table 3.3-1 Functional Unit 5 has associated ACTIONS for multiple channels inoperable, the other associated Functional Units do not and CTS 3.0.3 would be entered. When CTS 3.0.3 is entered, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in: 1) At least HOT STANDBY [MODE 3] within the next 6 hours, 2) At least HOT SHUTDOWN [MODE 4] within the following 6 hours, and 3) At least COLD SHUTDOWN [MODE 5] within the subsequent 24 hours. For CTS Table 3.3-1 Functional Units 22.A (Intermediate Range Neutron Flux, P-6) and 22.D (Power Range Neutron Flux, P-10) that have a MODE of Applicably of MODE 2 and MODES 1 and 2, respectively, once CTS 3.0.3 is entered 7 hours is allowed to reach MODE 3, exiting the MODE of Applicability. In ITS, Table 3.3.1-1 for Functions 16.a (Intermediate Range Neutron Flux, P-6) and 16.e (Power Range Neutron Flux, P-10) requires entry into Required Action O.1 verifying the interlock is in the required state for plant conditions or performing Required Action O.2, placing the unit in MODE 3 within 7 hours. Similarly, for CTS Table 3.3-1 Functional Units 22.B (Power Range Neutron Flux, P-7), 22.C (Power Range Neutron Flux, P-8), 22.E (Turbine Impulse Chamber Pressure, P-13), and 22.F (Power Range Neutron Flux, P-9) have a MODE of Applicably of MODE 1 and once CTS 3.0.3 is entered 7 hours is allowed to reach MODE 2, exiting the MODE of Applicability. In ITS Table 3.3.1-1 Functions 16.b (Low Power Reactor Trips Block, P-7), 16.c (Power Range Neutron Flux, P-8), 16.f (Turbine Impulse Pressure, P-13), and 16.d (Power Range Neutron Flux, P-9) require performing Required Action P.1 verifying the interlock is in the required state for plant conditions or performing Required Action P.2, placing the unit in MODE 2 within 7 hours. Therefore, the Required Actions and associated Completion Times for an inoperable RTS Interlock Function are the same in CTS

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

A16 CTS Table 3.3-1, ACTION 15, associated with Functional Unit 20.A (Reactor Trip Breakers, Startup and Power Operation), in part, states, "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 12." CTS ACTION 12, in part, states, "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours." ITS LCO 3.3.1, ACTION Q, associated with Function 18 (Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms), requires that with one trip mechanism inoperable for one RTB to restore the inoperable trip mechanism to OPERABLE status within 48 hours or be in MODE 3 within 54 hours. This changes the CTS by combining the actions required when a RTB diverse trip mechanism is inoperable into one ITS ACTION.

This change is acceptable because the Required Actions for an inoperable RTB diverse trip mechanism (undervoltage or shunt trip attachment) are the same in CTS as in ITS. In CTS if a diverse trip mechanism is inoperable ACTION 15 allows 48 hours to restore trip mechanism to OPERABLE. In ITS, if a diverse trip mechanism is inoperable Required Action Q.1 allows 48 hours to restore the trip mechanism to OPERABLE. In CTS, once the 48-hour restoration completion time has expired ACTION 12 requires placing the plant in MODE 3 within six (6) hours. In ITS, Required Action Q.2 is an alternative to restoring the inoperable diverse trip mechanism to OPERABLE and requires placing the unit in MODE 3 within 54 hour (48 hours + 6 hours = 54 hours). This change results in a format change only to comply with the manner in which the ISTS presents the requirements. This change is designated as an administrative change because it does not result is any technical changes to the CTS.

A17 CTS Table 4.3-1 provides a column designating "MODES FOR (IN) WHICH SURVEILLANCE IS REQUIRED." ITS Table 3.3.1-1 does not provide this specific column but includes this information in the "Applicable MODES or other Specified Conditions" column. This changes the CTS by combining the information stating when a Surveillance is required with the information stating the Applicable MODES the instruments are required to be OPERABLE into one column in the ITS that indicates both when the functions are required to be OPERABLE and when the SRs are required to be met.

CTS 4.0.1 states that Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. ITS SR 3.0.1 states that surveillance requirements (SRs) shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. For these Functional Units the "MODES for which Surveillance is Required" from CTS Table 4.3-1 are the same as that in the "Applicable MODES" column from CTS Table 3.3-1. Any changes to the "Applicable MODES" from CTS to ITS are covered by DOCs identified in CTS Table 3.3-1. This change is designated as administrative because it does not result in technical changes to the CTS.

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and Function 7 (Overpower ΔT)

SII

A18 CTS Table 4.3-1 Functional Unit 2 (Power Range, Neutron Flux) requires a CHANNEL CALIBRATION to compare incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER (Note 3). ITS Table 3.3.1-1, Function 6 (Overtemperature ΔT) ~~requires~~ a similar surveillance SR 3.3.1.3, to compare results of the incore detector measurements to Nuclear Instrument System (NIS) AFD and to adjust the NIS if the absolute difference is ≥ 3%. This changes the CTS by moving the requirement comparing the incore to excore Axial Flux Difference from the Power Range Neutron Flux Functional Unit to the Overtemperature ΔT Function.

and Overpower ΔT s

The purpose of CTS Table 4.3-1 Note 3 is to compare incore to excore AXIAL FLUX DIFFERENCE and recalibrate if the absolute difference is greater than or equal to 3 percent. ITS SR 3.3.1.3 provides a similar surveillance. The difference is that the CTS surveillance is associated with Power Range Neutron Flux while the ITS surveillance is associated with Overtemperature ΔT. The Power Range AFD output provides a signal to the Overtemperature ΔT channel.

and Overpower ΔT s

In CTS, as in ITS, if this surveillance was not met the Power Range Instrument would still be able to accurately provide the high and low trip functions while the Overtemperature ΔT would not. Because CTS Table 4.3-1 Note 3 and ITS SR 3.3.1.3 support the OPERABILITY of the Overtemperature ΔT function, ITS lists this Surveillance Requirement as associated with the Overtemperature ΔT Function. This change is acceptable because a similar surveillance is being performed in ITS as was performed in CTS and the affected Function remains the same. This change is designated as administrative because it does not result in technical changes to the CTS.

SII s s

A19 CTS Table 4.3-1 requires CHANNEL CALIBRATION for Functional Units 7 (Overtemperature Delta T), 8 (Overpower Delta T), 9 (Pressurizer Pressure—Low), 10 (Pressurizer Pressure—High), 11 (Pressurizer Water Level—High), 12 (Loss of Flow - Single Loop), 13 (Loss of Flow - Two Loops), 14.A (Steam Generator Water Level--Low-Low – Steam Generator Water Level—Low-Low (Adverse)), 14.B (Steam Generator Water Level--Low-Low – Steam Generator Water Level Low-Low (EAM)), 14.C (Steam Generator Water Level--Low-Low – RCS Loop ΔT), 14.D (Steam Generator Water Level--Low-Low – Containment Pressure (EAM)), 16 (Undervoltage - Reactor Coolant Pumps), 17 (Underfrequency - Reactor Coolant Pumps), and 18.A (Turbine Trip – Low Fluid Oil Pressure), and 18.B (Turbine Trip – Turbine Stop Valve Closure). ITS SR 3.3.1.10 requires similar CHANNEL CALIBRATION for Functions 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), 11 (Undervoltage RCPs), 12 (Underfrequency RCPs), 13.a (Steam Generator Water Level--Low-Low (Adverse)), 13.b (Steam Generator Water Level--Low-Low (EAM)), and 18.a (Turbine Trip - Low Fluid Oil Pressure), and 18.b (Turbine Trip - Turbine Stop Valve Closure). ITS SR 3.3.1.10 is modified by a Note stating, "This Surveillance shall include verification that the time constants are adjusted to the prescribed values." This changes the CTS by adding specific guidance that the time constant adjustment, as applicable, is part of the CHANNEL CALIBRATION for these Functional Units.

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CTS 1.19, OPERABLE-OPERABILITY definition, in part, states, "A system, subsystem, train, or component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation . . . . to perform its function(s) are also capable of performing their related support function(s)." ITS OPERABLE-OPERABILITY definition, in part, states, "A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation . . . to perform its specified safety function(s) are also capable of performing their related support function(s). For CTS, as in ITS, the related time constants of an instrument channel are required to be set properly. To ensure they are set properly verification is required. By stating in the surveillance requirement that the CHANNEL CALIBRATION requires verification of the time constants restates what OPERABILITY requires. This change is designated as administrative because it does not result in technical changes to the CTS.

A20 CTS Table 4.3-1 requires CHANNEL FUNCTIONAL TEST for Functional Units 1 (Manual Reactor Trip), 16 (Undervoltage - Reactor Coolant Pumps), 17 (Underfrequency - Reactor Coolant Pumps), 18.A (Turbine Trip, Low Fluid Oil Pressure), 18.B (Turbine Trip, Turbine Stop Valve Closure), and 19 (Safety Injection Input from ESF). ITS Table 3.3.1-1 requires similar tests; ITS SR 3.3.1.9 (TADOT) to be performed for Functions 11 (Undervoltage RCPs) and 12 (Underfrequency RCPs); ITS SR 3.3.1.12 (TADOT) to be performed for Functions 1 (Manual Reactor Trip) and 15 (Safety Injection (SI) from Engineered Safety Feature Actuation System (ESFAS)); and ITS SR 3.3.1.13 (TADOT) to be performed for Functions 14.a (Turbine Trip, Low Fluid Oil Pressure) and 14.b (Turbine Trip, Turbine Stop Valve Closure) with the addition of a Note that states, "Verification of setpoint is not required." This changes the CTS by requiring a TADOT without setpoint verification instead of a CHANNEL FUNCTIONAL TEST.

CTS 1.6 states that for an analog channel a CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions. ITS 1.1 defines a TADOT as consisting of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. ITS further states that the TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. Because the TADOT includes adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy, which is not included in the CTS CHANNEL FUNCTIONAL TEST, ITS SR 3.3.1.9, SR 3.3.1.12, and SR 3.3.1.13 include the Note, "Verification of setpoint is not required." A TADOT without setpoint verification provides a similar test for these channels as the CTS CHANNEL FUNCTIONAL TEST. This change is designated as administrative because it does not result in technical changes to the CTS.

A21 CTS Table 2.2-1 Functional Unit 20 (Power Range Neutron Flux (not P-10) Input to Low Power Reactor Trips Block P-7) includes in its description a parenthetical statement "not P-10". The Allowable Value and Nominal Trip Setpoint for CTS Table 2.2-1 Functional Unit 20 is ≤ 12.4% RTP and 10% RTP, respectively. CTS

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Table 2.2-1 Functional Unit 23 (Power Range Neutron Flux - (P-10) - Enable Block of Source, Intermediate, and Power Range (low setpoint) Reactor Trips) Allowable Value and Nominal Trip Setpoint is ≥ 7.6% RTP and 10% RTP, respectively. ITS Table 3.3.1-1 Function 16.e (Power Range Neutron Flux, P-10) is the ITS equivalent of these CTS Functional Units with an Allowable Value of ≥ 7.6% RTP and ≤ 12.4% RTP, and a Nominal Trip Setpoint of 10% RTP. This changes the CTS by combining CTS Table 2.2-1 Functional Units 20 and 23, and removing "not" from the Functional Unit 20 description.

The purpose of separating CTS Table 2.2-1 Functional Units 20 and 23 is to ensure the proper Allowable Value is assigned to the Power Range Neutron Flux bistable associated with P-7 and P-10. One Functional Unit operates when the bistable is set, the other operates when the bistable is reset. CTS Table 2.2-1 Functional Unit 23 is associated with P-10 and has an Allowable Value of ≥ 7.6% RTP. CTS Table 2.2-1 Functional Unit 20 is associated with P-7 and has an Allowable Value of ≤ 12.4% RTP. Both of these Functional Units operate from the same bistable with a Nominal Setpoint of 10%. ITS Table 3.3.1-1 combines these CTS Functional Units into one ITS Function presenting the different Allowable Values as an upper Allowable Value limit (≤ 12.4% RTP) and a lower Allowable Value limit (≥ 7.6% RTP). Because the upper Allowable Value limit is associated with P-7 CTS Table 2.2-1 Functional Unit 20 added the exclusion statement of "not P-10" thus avoiding confusion over the setting of the bistable. ITS avoids this confusion by including both Allowable Values. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.3.1.1.1 requires each reactor trip system instrumentation channel and interlock 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. Table 4.3-1 requires performance of a CHANNEL FUNCTIONAL TEST at the Frequencies shown on Table 4.3-1. ITS 3.3.1 requires the performance of a CHANNEL OPERATIONAL TEST (COT), a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT), or an ACTUATION LOGIC TEST. This changes the CTS by changing the CHANNEL FUNCTIONAL TEST requirements to a COT, a TADOT, or an ACTUATION LOGIC TEST.

This change is acceptable because the COT, a TADOT, or an ACTUATION LOGIC TEST continue to perform tests similar to the current CHANNEL FUNCTIONAL TEST. CTS defines a CHANNEL FUNCTIONAL TEST based on the type of channel. In CTS a CHANNEL FUNCTIONAL TEST shall be: for Analog channels, the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions; for Bistable channels, the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions; and for Digital channels, the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions. This does not include the adjustment, as necessary,

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of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors as does the CHANNEL CALIBRATION. The ITS ACTUATION LOGIC TEST (ALT), CHANNEL OPERATIONAL TEST (COT), and TRIP ACTUATING DEVICE OPERATION TEST (TADOT) provide similar tests with the addition that the COT and TADOT include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. This change is designated as more restrictive because the ITS requires an additional acceptance criteria that is not currently required in the CTS.

M02 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 Function 19 (Automatic Trip Logic) and Function 16.B (Reactor Trip System Interlock, Low Power Trips Block, P-7) 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 and explicitly states this requirement for CTS Functional Unit 22.B (Reactor Trip System Interlock, Low Power Trips Block, P-7).

The purpose of the CTS ~~Table~~ 4.3.1.1.2 ~~CHANNEL FUNCTIONAL TEST~~ interlock logic test requirement is to ensure the Reactor Trip System interlocks are OPERABLE. The change is acceptable because 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. This change is designated as more restrictive since the ITS will require the test to be performed more frequently than in the CTS. KAB002

M03 CTS Table 3.3-1, Functional Units 22.C (Power Range Neutron Flux, P-8), 22.D (Power Range Neutron Flux, P-10), and 22.F (Power Range Neutron Flux, P-9), and ACTION 8 require action be taken with less than the Minimum Number of Channels OPERABLE. CTS Functional Units 22.C, 22.D, and 22.F, Minimum Channels OPERABLE column requires three (3) channels to be OPERABLE for each Functional Unit. ITS Table 3.3.1-1, Functions 16.c (Power Range Neutron Flux, P-8), 16.e (Power Range Neutron Flux, P-10), and 16.d (Power Range Neutron Flux, P-9), Required Channels column, requires four (4) channels to be OPERABLE with ITS LCO 3.3.1 ACTION A requiring action taken if one or more required channels are inoperable. This changes the CTS by requiring more P-8, P-9, and P-10 interlock channels to be OPERABLE and by providing ACTIONS to take when the additional required channel is inoperable.

The purpose of the ITS LCO 3.3.1 channel requirement is to ensure that appropriate compensatory actions are taken if any of the installed channels are inoperable. This change is acceptable because the channel requirement in ITS Table 3.3.1-1 will ensure that all of the installed RPS channels are required OPERABLE and will ensure sufficient channels are required OPERABLE to account for a single failure. The proposed ITS ACTION for when one channel is inoperable will ensure that the inoperable channel is not allowed to be inoperable

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for an indefinite period. This change is also acceptable because the Required Actions and Completion Times 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. This change is designated as more restrictive because more stringent LCO requirements and associated Required Actions and Completion Times are being applied in the ITS than were applied in the CTS.

M04 CTS Table 3.3-1 requires Functional Units 1 (Manual Reactor Trip), 6.A (Source Range, Neutron Flux, Startup), 20.B (Reactor Trip Breakers – Shutdown), and 21.B (Automatic Trip Logic – Shutdown) channels to be OPERABLE with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel as stated in Table 3.3-1 Note *. CTS Table 4.3-1 specifies the same note, Note *, for designating when the Surveillance Requirements for these Functional Units are required. ITS Table 3.3.1-1, including Footnote (a), requires the Functions 1 (Manual Reactor Trip), 5 (Source Range Neutron Flux), 17 (Reactor Trip Breakers (RTBs)), 18 (Reactor Trip Breaker Undervoltage and Shut Trip Mechanisms), and 19 (Automatic Trip Logic) 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 LA04 and the change that adds MODES 3, 4, and 5 is discussed in DOC A12.

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.

M05 CTS Table 3.3-1 ACTIONS 2 and 6 provide the actions to be taken when their associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. These ACTIONS state that STARTUP (similar to ITS MODE 2) and/or POWER OPERATION (similar to ITS MODE 1) may proceed, provided the listed conditions are satisfied ~~(Note: Unit 1 CTS Table 3.3-1 ACTION 2 only states, in part, that STARTUP and POWER OPERATION may proceed~~). However, no action is specified if the listed conditions are not satisfied. Therefore, CTS 3.0.3 applies requiring the plant to be in MODE 3 in 7 hours. Under similar conditions, ITS 3.3.1 Required Actions D.3 and E.2 require the unit to be in MODE 3 within 6 hours. This changes the CTS by reducing the amount of time allowed to place the unit outside the LCO Applicability. KAB003

The purpose of CTS Table 3.3-1 ACTIONS 2 and 6 is to provide the actions to be taken when their associated Functional Units OPERABLE channels are one less

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than the number of channels listed in the Total Number of Channels column. CTS 3.0.3 provides actions when a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements. Because CTS Table 3.3-1 ACTIONS 2 and 6 do not provide any further actions if those listed are not satisfied, CTS 3.0.3 would be entered. CTS 3.0.3 states that within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply. CTS Table 3.3-1 ACTIONS 2 and 6 state that STARTUP and POWER OPERATION (MODES 2 and 1, respectively) may proceed if the listed conditions are satisfied ~~(Note: Unit 1 CTS Table 3.3-1 ACTION 2 only states, in part, that STARTUP and POWER OPERATION may proceed)~~. Therefore, in accordance with CTS 3.0.3, the MODE reached first that the Specification does not apply would be MODE 3. CTS 3.0.3 states, in part, that within one hour, action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in at least HOT STANDBY (MODE 3) within the next 6 hours (a total of 7 hours to reach MODE 3). ITS LCO 3.3.1 Required Actions D.3 and E.2 allow 6 hours to reach MODE 3. This change is acceptable because the time allowed to reach MODE 3 from full power conditions can be accomplished in an orderly manner and without challenging plant systems. This change is designated as more restrictive because it reduces the amount of time within which the plant must be placed outside the LCO Applicability. KAB003

M06 With one Intermediate Range Neutron Flux channel inoperable, CTS Table 3.3-1 ACTION 3.b, when above the P-6 interlock (Block of the Source Range Reactor Trip) 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 F, 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. Refer to L09 for discussion of allowing the change in THERMAL POWER to exit MODE of Applicability as an option to restoring the inoperable Intermediate Range channel. 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 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.

M07 CTS Table 3.3-1 does not provide an ACTION for two inoperable Intermediate Range Neutron Flux channels when less than or equal to 10% RTP; 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 (HOT STANDBY). ITS 3.3.1

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ACTION G provides actions for two inoperable Intermediate Range Neutron Flux channels. ITS 3.3.1 Required Action G.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 G.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 when less than or equal to 10% RTP.

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, limited to below the P-10 interlock and above the P-6 interlock by the Intermediate Range Applicability. The proposed ACTION precludes a power level increase and allows a reasonable period for a slow and controlled power adjustment with no Intermediate Range channels OPERABLE. 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.

M08 With one Source Range Neutron Flux channel inoperable in MODE 2 below P-6 or with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel, 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 H, 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. A Note modifies the requirement 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 J 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. ITS 3.3.1 ACTION J requires the channel to be restored to OPERABLE status within 48 hours or initiate action to fully insert all rods and place the Rod Control System 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 with Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

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 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.

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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.

M09 CTS Table 3.3-1 does not provide an ACTION 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 I provides actions for two inoperable Source Range Neutron Flux channels and requires the reactor trip breakers to be opened immediately. This changes the CTS by requiring the reactor trip breakers 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 reactor trip breakers, which inserts all rods. This change is designated as more restrictive because the actions added are more restrictive than are required by the CTS.

M10 CTS Table 3.3-1, ACTION 6 provides the actions to be taken when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. These ACTIONS state that STARTUP (similar to ITS MODE 2) and/or POWER OPERATION (similar to ITS MODE 1) may proceed, provided the listed conditions are satisfied. If those conditions are not satisfied, no specific actions are prescribed; therefore, CTS 3.0.3 would require the unit be placed in a MODE that the Specification does not apply. Several of the Functional Units associated with CTS Table 3.3-1, ACTION 6 have an Applicability of MODE 1 or MODES 1 and 2, and are blocked at low RTP by interlock P-7. The Functional Units blocked at low power by interlock P-7 are 9, Pressurizer Pressure-Low; 11, Pressurizer Water Level-High; 13, Loss of Flow-Two Loops (Above P-7 and below P-8); 16, Undervoltage-Reactor Coolant Pumps; and 17, Underfrequency-Reactor Coolant Pumps. ITS LCO 3.3.1, Required Action K.2, provides a specific action if similar specified conditions are not satisfied for Functions 8.a, Pressurizer Pressure, Low; 9, Pressurizer Water Level – High; 10, Reactor Coolant Flow – Low; 11, Undervoltage RCPs; and 12, Underfrequency RCPs. ITS LCO 3.3.1, Required Action K.2, requires a reduction in THERMAL POWER to < P-7. This changes the CTS by reducing the time allowed to exit the LCO Applicability.

The purpose of CTS Table 3.3-1 ACTION 6 is to prescribe remedial measures required under designated conditions when the associated features are needed to mitigate a design basis accident or transient. 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, Loss of Flow-Two Loops, Undervoltage - Reactor Coolant Pumps, and Underfrequency – Reactor Coolant Pumps, above the P-7 interlock. Below the

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P-7 interlock, the reactor trips associated with these functions are blocked. This change is designated as more restrictive because less time is allowed for completion of Required Actions in the ITS than were allowed in the CTS.

M11 CTS Table 3.3-1 Functional Unit 18.A (Turbine Trip – Low Fluid Oil Pressure) applicable ACTION is ACTION 6. ACTION 6 states, in part, that with the number of OPERABLE channels one less than the value listed in the Total Number of Channels column STARTUP (MODE 2) and/or POWER OPERATION (MODE 1) may proceed provided the listed conditions that follow are satisfied. For ACTION 6, if those conditions are not satisfied, no specific ACTIONS are prescribed therefore, CTS 3.0.3 would be followed to place the unit in a MODE in which the Specification does not apply. CTS Table 3.3-1 Functional Unit 18.A Applicability is MODE 1 modified by Note **. Note ** states, "Above the P-9 (Power Range Neutron Flux) interlock." CTS 3.0.3 requires, in part, that within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in at least HOT STANDBY within the next 6 hours. Therefore, CTS allows 7 hours from the time the listed conditions are not satisfied until RTP is required to be reduced below the P-9 power level. ITS LCO 3.3.1, Required Action L.2, provides a specific action if similar specified conditions are not satisfied for Function 14.a, Turbine Trip, Low Fluid Oil Pressure. ITS LCO 3.3.1, Required Action L.2, requires a reduction in THERMAL POWER to < P-9 within 4 hours. This changes the CTS by reducing the amount of time allowed to exit the LCO Applicability.

The purpose of CTS Table 3.3-1 ACTIONS 6 is to provide remedial ACTIONS 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. For CTS Table 3.3-1 ACTION 6 if the specified conditions are not satisfied, CTS 3.0.3 is followed to place the unit in a MODE in which the Specification does not apply within a total of 7 hours (i.e., < P-9 for Functional Unit 18.A). ITS LCO 3.3.1 Required Action L.2 requires THERMAL POWER to be reduced to < P-9 within 4 hours. This change is also acceptable because the time allowed to reduce THERMAL POWER to < P-9 from full power operations can be accomplished in an orderly manner and without challenging plant systems. This change is designated as more restrictive because explicit ACTIONS are being added which require the unit to be at a specific condition sooner in ITS than in CTS.

M12 CTS Table 3.3-1 Functional Units 22.A, (Intermediate Range Neutron Flux, P-6); 22.B, (Power Range Neutron Flux, P-7); 22.C (Power Range Neutron Flux, P-8); 22.D (Power Range Neutron Flux, P-10); 22.E (Turbine Impulse Chamber Pressure, P-13); and 22.F (Power Range Neutron Flux, P-9) associated ACTION 8 requires, in part, that with less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed are OPERABLE. ITS Table 3.3.1-1 Functions 16.a (Intermediate Range Neutron Flux, P-6) and 16.e (Power Range Neutron Flux, P-10) associated Condition when one or more required channels of these Functions are inoperable is Condition O. ITS 3.3.1 Table 3.3.1-4 Functions 16.b (Low Power Reactor Trips Block, P-7), 16.c (Power Range Neutron Flux, P-8), 16.d (Power Range Neutron Flux, P-9), and 16.f (Turbine Impulse Pressure, P-13) associated Condition when one or more required channels of these

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Functions are inoperable is Condition P. ITS 3.3.1 Required Action O.1 and P.1 require verifying the interlock is in the required state for existing unit conditions within one hour. This changes the CTS by providing an explicit Completion Time for verification of an inoperable interlock's state.

The purpose of CTS Table 3.3-1 ACTION 8 is to provide remedial ACTIONS that must be taken in response to a degraded RTS interlock condition in order to minimize risk associated with continued operation while providing time to repair the inoperable interlock. CTS and ITS provide similar Required Actions to verify that the failed interlock will not prevent the associated Functional Units from performing their required function. CTS does not provide a Completion Time for verification of the inoperable interlock's state whereas ITS provides a Completion Time of one hour. This change is designated as more restrictive because an explicit Completion Time is added to verify an inoperable RTS interlock is in its required state for unit conditions.

M13 CTS Table 3.3-1 Functional Units 14.A (Steam Generator Water Level—Low-Low (Adverse)) and 14.B (Steam Generator Water Level—Low-Low (EAM)) require entry into ACTION 9 if one channel is inoperable. If the inoperable channel is not placed in the tripped condition within the time specified, entry into CTS 3.0.3 is required because 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 Table 3.3.1-1 Functions 13.a (Steam Generator (SG) Water Level Low-Low (Adverse)) and 13.b (Steam Generator (SG) Water Level Low-Low (EAM)) require entry into Condition R if one required channel is inoperable. ITS LCO 3.3.1 Required Action R.1 requires adjusting the Trip Time Delay for one affected steam generator (T_S) to match the Trip Time Delay for multiple affected steam generators (T_M) for the affected protection set and Required Action R.2 requires placing the inoperable channel in the tripped condition within a specified Completion Time. If either Required Action R.1 or R.2 cannot be completed within the required Completion Time, ACTION U is entered and requires the unit 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.

The purpose of CTS Table 3.3-1 ACTION 9 is to provide remedial ACTIONS 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. 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 Completion Time of 6 hours to reach MODE 3 from 100% RTP, in a safe manner without challenging unit systems, is consistent with current requirements. This change is designated as more restrictive because it reduces the amount of time required to place the unit outside the LCO Applicability.

M14 CTS Table 3.3-1 Functional Unit 14.C (Main Steam Generator Water Level Low-Low, RCS Loop ΔT) requires entry into ACTION 10 if one channel is inoperable. If the requirements of CTS Table 3.3-1 ACTION 10 are not met, entry into CTS 3.0.3 is required because 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

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MODE 3. ITS Table 3.3.1-1 Functions 13.a (Steam Generator (SG) Water Level Low-Low (Adverse)) and 13.b (Steam Generator (SG) Water Level Low-Low (EAM)) require entry into Condition T if one required RCS Loop ΔT channel is inoperable. ITS LCO 3.3.1 Required Actions T.1 and T.2 require that for the affected protection set, to adjust the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP or trip the affected channels within a specified Completion Time. If the requirements of ITS 3.3.1 Required Actions T.1 or T.2 cannot be met, similar to CTS Table 3.3-1 ACTION 10, ITS 3.3.1 Required Action T.3 is entered. ITS LCO 3.3.1 Required Action T.3 requires the unit be in MODE 3 within an additional 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.

The purpose of CTS Table 3.3-1 ACTION 10 is to provide remedial ACTIONS 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. This change is acceptable because the proposed Required Action will require the unit to be in a condition where the RTS instrumentation is no longer required to be OPERABLE. 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 it reduces the amount of time required to place the unit outside the LCO Applicability.

M15 CTS Table 3.3-1 Functional Unit 14.D (Containment Pressure (EAM)) requires entry into ACTION 11 if one channel is inoperable. If the requirements of ACTION 11 are not met, entry into CTS 3.0.3 is required because 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 Table 3.3.1-1 Function 13.a (Steam Generator (SG) Water Level Low-Low (Adverse)) requires entry into Condition S if one required Containment Pressure (EAM) channel is inoperable. ITS LCO 3.3.1 Required Actions S.1 and S.2 require that for the affected protection set, to adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level - Low-Low (Adverse) or trip the affected channels within a specified Completion Time. If the requirements of ITS 3.3.1 Required Action S.1 or S.2 cannot be met, similar to CTS Table 3.3-1 ACTION 11, ITS 3.3.1 Required Action S.3 is entered. ITS LCO 3.3.1 Required Action S.3 requires the unit be in MODE 3 within an additional 6 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 after the Required Actions and associated Completion Times are not met from 7 hours in the CTS to 6 hours in the ITS.

The purpose of CTS Table 3.3-1 ACTION 11 is to provide remedial ACTIONS 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. This change is acceptable because the proposed default will require the unit to be in a condition where the RTS instrumentation is no longer required to be OPERABLE. 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

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because it reduces the amount of time required to place the unit outside the LCO Applicability.

M16 CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST for Functional Unit 2 (Power Range, Neutron Flux) quarterly, and Functional Units 5 (Intermediate Range, Neutron Flux) and 6 (Source Range, Neutron Flux) prior to each reactor startup. ITS SR 3.3.1.8 requires performance of a similar test, a COT, for Function 2.b (Power Range Neutron Flux – Low), Function 4 (Intermediate Range Neutron Flux), and Function 5 (Source Range Neutron Flux), but modifies the Frequency stating, "AND, Four hours after reducing power below P-6 for source range instrumentation, AND, twelve hours after reducing power below P-10 for power and intermediate range instrumentation." This changes the CTS requirement by the addition of requirements to perform the surveillance during a shutdown; within twelve hours after reducing power below P-10 for the power range - low setpoint and for the intermediate range instrumentation, and within four hours after reducing power below P-6 for source range instrumentation.

The purpose of the surveillance requirement is to confirm the OPERABILITY of the affected RTS Functions when they are required. During operation in this low power condition the Power Range Neutron Flux - Low Setpoint, the Intermediate Range Neutron Flux, and the Source Range Neutron Flux RTS trip Functions are required to be OPERABLE. The P-6 and P-10 interlocks function to enable the appropriate RTS Functions depending on the power. The CTS requirements only specify a single CHANNEL FUNCTIONAL TEST prior to startup or Quarterly for the Power Range, Neutron Flux. As the plant is not typically operated in MODE 2 and MODE 1 < 10% RTP for extended periods, the CTS requirements are generally adequate to ensure the OPERABILITY of the required RTS Functions. However, the ITS provides additional requirements that provide additional OPERABILITY verifications in the event that the plant is operated within a low power condition for an extended time. The proposed changes are acceptable because they confirm that the required protection Functions are enabled and maintained OPERABLE in the event that the plant is operated in this low power range for an extended period. As such, the proposed changes provide assurance that the plant continues to be operated consistent with the applicable safety analysis assumptions. This change is designated as more restrictive because additional surveillance requirements not in the CTS are included in the ITS.

M17 CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST for Functional Unit 5 (Intermediate Range, Neutron Flux) be performed prior to each reactor startup (S/U) if not performed in previous 31 days. ITS Table 3.3.1-1 for Functional Unit 4 (Intermediate Range Neutron Flux) requires a COT (SR 3.3.1.8) similarly prior to reactor startup but adds an additional periodicity for the COT of every 184 days thereafter. This changes the CTS by adding an additional surveillance frequency to the performance of the CHANNEL FUNCTIONAL TEST.

This change is acceptable because it continues to ensure 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 because the Surveillance must be performed

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every 184 days instead of only during a startup if not performed in previous 31 days.

SII

and Function 7 (Overpower ΔT)

and Overpower ΔT

SII

KAB008

after

92 EFPD with a Note that states that the Surveillance is not required to be performed until 24 hours after THERMAL POWER ≥ 50% RTP

M18 CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Unit 7 (Overtemperature ΔT) at a Frequency of at least once per 18 months. However, the CTS does not include a requirement to calibrate the excore channels to agree with the incore channels, which is needed to determine the f_t (delta I) penalty. ITS Table 3.3.1-1 Function 6 (Overtemperature ΔT) requires the performance of ITS SR 3.3.1.6, calibrate excore channels to agree with incore detector measurements, for the Overtemperature ΔT channels. ITS SR 3.3.1.6 requires the calibration of excore channels to agree with incore detector measurements every 92 effective full power days (EFPD). ITS SR 3.3.1.6 is modified by a Note that states that the Surveillance is not required to be performed until 24 hours THERMAL POWER is ≥ 50% RTP. This changes the CTS by adding an explicit Surveillance to calibrate the excore channels to agree with incore detector measurements.

KAB008

SII

and Overpower ΔT

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The purpose of the excore to incore calibration is to ensure that the excore detectors are accurately measuring power. The change adds an explicit Surveillance to calibrate the excore channels to agree with incore detector measurements every ~~18 months with a Note which allows a delay in the requirement that the Surveillance performance be current until core average burnup is ≥ 500 MWD/MTU~~. This change is acceptable because the proposed Surveillance is consistent with current plant practice and ensures the incore to excore detector calibration is performed periodically. This Surveillance is performed to verify the f(ΔI) input to the Overtemperature ΔT Function. This change is designated as more restrictive because a new Surveillance with an explicit Frequency has been added to the Technical Specifications.

M19 CTS Table 4.3-1 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 Table 3.3.1-1 Functions 14.a and 14.b require a CHANNEL CALIBRATION (ITS SR 3.3.1.10) of these channels every 18 months. 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 18 months. See DOC LA01 for discussion of moving Frequencies to the Surveillance Frequency Control Program (SFCP).

This change is acceptable because it ensures the channel output responds within the necessary range and accuracy to known values of the parameter that the channel monitors for the Turbine Trip - Low Fluid Oil Pressure and Turbine Trip - Turbine Stop Valve Closure Trip Functions. The CHANNEL CALIBRATION Frequency (18 months) is consistent with the current refueling outage cycle. This change is designated as more restrictive because a new Surveillance Requirement has been added to the Turbine Trip Functions.

M20 CTS Table 4.3-1 requires a CHANNEL CALIBRATION of Functional Unit 2 (Power Range, Neutron Flux) by performance of a heat balance ((D(2)) at least once per 24 hours when above 15% RATED THERMAL POWER. ITS Table

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3.3.1-1 requires a similar test for Function 2.a (Power Range Neutron Flux, High) ITS SR 3.3.1.2, performed on a Frequency of 24 hours that is modified by a Note stating, " Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP. This changes the CTS by requiring the performance of the test within 12 hours of reaching or exceeding 15% RTP.

The purpose of the heat balance is to compare the calorimetric heat balance calculation to the power range channel output. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid. This Note adds a 12 hour restriction for performing the first Surveillance after reaching 15% RTP that CTS did not contain. This change is designated more restrictive because new requirements are being included in the ITS that are not required in the CTS.

M21 CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST for Functional Units 2 (Power Range Neutron Flux) and 5 (Intermediate Range Neutron Flux). ITS Table 3.3.1-1 requires a similar test, a COT (ITS SR 3.3.1.8), for Functions 2.b (Power Range Neutron Flux-Low), 4 (Intermediate Range Neutron Flux) and 5 (Source Range, Neutron Flux) adding a Note stating," This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions." This changes the CTS by adding an additional requirement to the test.

This test ensures that the Source Range Neutron Flux, Intermediate Range Neutron Flux, and Power Range Neutron Flux-Low functions are OPERABLE before taking the reactor critical. By verifying the interlocks are in the required state, confirmation is made that if a trip setting was exceeded these instruments would provide a reactor trip as designed. This change is designated as more restrictive because the ITS requires an additional acceptance criteria that is not currently required in the CTS.

M22 CTS 2.2.1 ACTION states, in part, that with a reactor trip system instrumentation or interlock setpoint less conservative than the value shown in the Allowable Values column of Table 2.2-1, declare the channel inoperable. ITS Table 3.3.1-1 Footnote (b) states, "If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service." ITS Bases Section 3.3-1 states, "The Allowable Value serves as the as-found Technical Specification OPERABILITY limit for the purpose of the COT." ITS Section 3.3.1 Bases also states, "If the actual setting of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE but degraded. The degraded condition of the channel will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the nominal trip setpoint (NTSP) (within the allowed tolerance), and evaluating the channel's response. If the channel is functioning as required and is expected to pass the next surveillance, then the channel is OPERABLE and can be restored to service at the completion of the surveillance." This changes the CTS by requiring an evaluation of channel functionality (extent of which is expanded on in the TS Bases) prior to returning it to service in addition to the as-found value being conservative to the Allowable Value.

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The purpose of this Note is to address a concern that the Technical Specification requirements for Limiting Safety System Settings (LSSS) may not be fully in compliance with the intent of 10 CFR 50.36. Specifically, the concern is that the existing Surveillance Requirements may not provide adequate assurance that instruments will always actuate safety functions at the point assumed in the applicable safety analysis. 10 CFR 50.36(c)(1)(ii)(A) states, "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the settings must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor." The proposed change clarifies the Technical Specification requirements to ensure that the automatic protective action will correct the abnormal situation before a safety limit is exceeded. This change is consistent with TSTF-493 Option A. This change is considered a more restrictive change because additional requirements have been added to Surveillance Requirements.

M23 CTS 2.2.1 ACTION states, in part, to declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1 until the channel is restored to OPERABLE status "with its trip setpoint adjusted consistent with the Nominal Trip Setpoint value." ITS Table 3.3.1-1 Footnote (c) states, "The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and as-left tolerances will be specified in UFSAR Section 7.1.2." This changes the CTS by providing more detailed information describing what "consistent with the Nominal Trip Setpoint" means and states a specific location where the methodology for determining these tolerance is located.

The purpose of this Note is to address a concern that the Technical Specification requirements for Limiting Safety System Settings (LSSS) may not be fully in compliance with the intent of 10 CFR 50.36. Specifically, the concern is that the existing Surveillance Requirements may not provide adequate assurance that instruments will always actuate safety functions at the point assumed in the applicable safety analysis. 10 CFR 50.36(c)(1)(ii)(A) states, "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the settings must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor." The proposed change clarifies the Technical Specification

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requirements to ensure that the automatic protective action will correct the abnormal situation before a safety limit is exceeded. This change is consistent with TSTF-493 Option A. This change is considered a more restrictive change because additional requirements have been added to Surveillance Requirements.

56.973 KAB065

M24 CTS Table 2.2-1 for Functional Unit 16 (Underfrequency-Reactor Coolant Pumps) lists the Nominal Trip Setpoint as 56.0 Hz – each bus, and the Allowable Value as ≥ 55.9 Hz – each bus. ITS Table 3.3.1-1 for Function 12 (Underfrequency RCPs) lists the Nominal Trip Setpoint as 57.0 Hz and the Allowable Value as ≥ ~~56.3~~ Hz. This changes the CTS by increasing the Nominal Trip Setpoint and the Allowable Value for the Underfrequency RCP reactor trip.

Additionally, TVA is proposing to change the Allowable Value based on TVA's revised calculations necessary to support the implementation of TSTF-493.

KAB065

The purpose of the Underfrequency RCP reactor trip is to ensure 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. TVA has determined that to provide adequate protection changes to the Underfrequency RCP Nominal Trip Setpoint and the Allowable Value are needed. This change was previously proposed in SQN license amendment request TVA-SQN-TS-02-01, Revision 1 (ADAMS Accession No. 042430467) but later withdrawn in TVA-SQN-TS-02-01, Revision 2 (ADAMS Accession No. ML061990303) pending resolution of issues with TSTF-493. In Revision 2 TVA stated that a new TS amendment request would be submitted to the NRC once TSTF-493 receives NRC approval. As TSTF-493 has been approved by the NRC and is being adopted under this conversion, TVA is proposing to change the ~~setpoints~~ to ~~these~~ proposed in the previous submittal. ~~This change is~~ acceptable because the revised Allowable Value and Nominal Trip Setpoint continue to provide assurance that the safety limit for the underfrequency reactor trip function is not impacted. In addition, this change ensures instrument uncertainties have been included in the as-found tolerance calculations in a manner that is acceptable and the surveillance Note requirements also ensure that there will be a reasonable expectation that these instruments will perform their safety function if required. This change is designated as more restrictive because more stringent acceptance requirements are being applied in the ITS than were applied in the CTS.

value KAB065

Nominal Trip S KAB065

These changes are

Insert M25

KAB064

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* The proposed change removes all designated periodic Surveillance Frequencies from CTS 4.3.1.1.1, as addressed in CTS Table 4.3-1, CTS 4.3.1.1.2, and CTS 4.3.1.1.3, and places the Frequencies under licensee control in accordance with a new program, the Surveillance Frequency Control Program. ITS 3.3.1 Surveillance Requirements require similar Surveillances and, except for special or conditional frequencies stated in the individual surveillance, specifies the periodic Frequency as, "In accordance with the Surveillance Frequency

M25 CTS Table 2.2-1 for Functional Unit 15 (Undervoltage-Reactor Coolant Pumps) lists the Allowable Value as ≥ 4739 volts – each bus. ITS Table 3.3.1-1 for Function 11 (Undervoltage RCPs) lists the Allowable Value as ≥ 4952 volts. This changes the CTS by increasing the Allowable Value for the Undervoltage RCP reactor trip. KAB064

The purpose of the Undervoltage RCP reactor trip is to ensure that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops. TVA has determined that to provide adequate protection, a change to the Undervoltage Allowable Value is needed. This change was previously proposed in SQN license amendment request TVA-SQN-TS-02-01, Revision 1 (ADAMS Accession No. ML042430467) but later withdrawn in TVA-SQN-TS- 02-01, Revision 2 (ADAMS Accession No. ML061990303) pending resolution of issues with TSTF-493. In Revision 2, TVA stated that a new license amendment request would be submitted to the NRC once TSTF-493 received NRC approval. TSTF-493 has since been approved by the NRC and is being adopted under this conversion. Therefore, TVA is proposing to change the Undervoltage RCPs Allowable Value to those proposed in the previous submittal. This change is acceptable because the revised Allowable Value continues to provide assurance that the safety limit for the undervoltage reactor trip function is not impacted. In addition, this change ensures instrument uncertainties have been included in the as-found tolerance calculations in a manner that is acceptable and the surveillance Note requirements also ensure that there will be a reasonable expectation that these instruments will perform their safety function if required. This change is designated as more restrictive because more stringent acceptance requirements are being applied in the ITS than were applied in the CTS.

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Control Program." This changes the CTS by moving designated specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies 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 existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(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.

LA03 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 Function 12 (Loss of Flow - Single Loop) and Function 13 (Loss of Flow - Two Loops) contain operational descriptions of how these Functions work. CTS Function 12 is interlocked with the Reactor Trip System Interlock P-8 (Power Range Neutron Flux) to provide a reactor trip with low flow in a single RCS loop when above a nominal 35% RTP. CTS Function 13 is interlocked with the Reactor Trip System Interlock P-7 and provides a reactor trip with low flow in two RCS loops when above a nominal 10% RTP.

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However, these CTS Functions utilize the same flow instrumentation and flow setpoints. ITS does not include this information but describes these Functions interaction with the interlocks in the ITS bases and the ITS only specifies a single low flow Function that requires the affected instrument channels OPERABLE above the P-7 interlock. This changes the CTS by moving the description of the Function design and operation into the associated ITS bases.

The proposed change is acceptable because the information removed from the CTS Table 3.3-1 is not required in ITS to ensure the affected instrumentation is maintained OPERABLE. The ITS still requires the affected instrumentation to be OPERABLE in the applicable MODES or specifies the appropriate Action to be taken in a similar manner as before. The description of how this function is designed to operate above or below the associated interlock is not required in the ITS to ensure the appropriate instrumentation is maintained OPERABLE. Also, this change is acceptable since changes to the ITS Bases are controlled by the Technical Specification Bases Control. 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.

LA04 *(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 be OPERABLE "with the reactor trip system breakers in the closed position" and the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel. CTS Table 3.3-1 requires Functional Units 20 and 21 to be OPERABLE in MODES 3, 4, and 5 as modified by Note *. CTS Table 4.3-1 specifies the Surveillance Requirements for Functional Units 1, 6, 20, and 21 and includes a similar Note *. ITS Table 3.3.1-1, including Footnote (a), requires Functions 1 (Manual Reactor Trip), 5 (Source Range Neutron Flux), 17 (Reactor Trip Breakers), 18 (Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms), and 19 (Automatic Trip Logic) 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 procedural details of placing 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 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.

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LA05 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.3-1 Notes (5), (9), and (11) contain information associated with testing of the Reactor Trip Breakers and Reactor Trip Bypass Breakers undervoltage and shut trip mechanisms. CTS Table 4.3-1 Note (5) states, in part, "The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits," and is applicable to the CHANNEL FUNCTIONAL TESTS for Functional Units 20 (Reactor Trip Breaker) and 21 (Automatic Trip Logic). CTS Table 4.3-1 Note (9) states, "The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the manual reactor trip function," and is applicable to the CHANNEL FUNCTIONAL TESTS for Functional Unit 1 (Manual Reactor Trip). CTS Table 4.3-1 Note (11) states, "Automatic and manual undervoltage trip," and is applicable to Functional Unit 23 (Reactor Trip Bypass Breaker. ITS 3.3.1 requires similar Surveillances (ITS SR 3.3.1.4 and SR 3.3.1.12) to be performed; however, the Surveillances do 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.

LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 2.2-1 Functional Unit 12 (Loss of Flow) states the required percentage of design flow per loop and includes a footnote that states, "Design flow is 94,600 (91,400 X 1.035) gpm per loop." ITS Table 3.3.1-1 Function 10 (Reactor Coolant Flow – Low) does not contain this information. This changes the CTS by removing the details of the system design 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 to provide adequate protection of public health and safety. The ITS still maintains the requirement for the number of required channels that must be OPERABLE and the appropriate Condition to enter if a required channel is inoperable. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. The Technical Specification Bases Control Program in Chapter 5 controls changes to the Bases. 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.

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LA07 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 2.2-1 Functional Units 19 (Intermediate Range Neutron Flux - (P-6) Enable Block Source Range Reactor Trip), 20 (Power Range Neutron Flux (not P-10) Input to Low Power Reactor Trips Block P-7), 21 (Turbine Impulse Chamber Pressure - (P-13) Input to Low Power Reactor Trips Block P-7, 22 (Power Range Neutron Flux - (P-8) Low Reactor Coolant Loop Flow, and Reactor Trip, 23, Power Range Neutron Flux - (P-10) - Enable Block of Source, Intermediate, and Power Range (low setpoint) Reactor Trips, and 25 (Power Range Neutron Flux - (P-9) - Blocks Reactor Trip for Turbine Trip Below 50% Rated Power) include a description of what the Functional Unit does. ITS Table 3.3.1-1 does not contain this description information in Functions 16.a (Intermediate Range Neutron Flux, P-6), 16.c (Power Range Neutron Flux, P-8), 16.d (Power Range Neutron Flux, P-9), 16.e (Power Range Neutron Flux, P-10), and 16.f (Turbine Impulse Pressure, P-13). This changes the CTS by removing the details of the system design to the Bases.

The removal of these details 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 adequate information to identify the Function. In addition, 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 related to system design is being removed from the Technical Specifications.

LA08 *(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 Tavg 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.

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.

SII

Not Used

LA09 ~~*(Type 6 – Removal of Cycle – Specific Limits from the Technical Specifications to the Core Operating Limits Report)* CTS Table 2.2-1 for the Limiting Safety~~

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SII

Not Used

~~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 5.6.3, "CORE OPERATING LIMITS REPORT." ITS 5.6.3 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~~.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-1 requires Functional Unit 5 (Intermediate Range Neutron Flux) channels to be OPERABLE with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor, as stated in CTS Table 3.3-1 Note *. ITS Table 3.3.1-1 does not include this Applicability for Function 4 (Intermediate Range Neutron Flux). This changes the CTS by deleting the requirements for OPERABILITY of the 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 Unit 5 is to ensure the Intermediate Range Neutron Flux channels are OPERABLE. 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. 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

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P-6 setpoint, the Source Range Neutron Flux Trip provides the core protection for reactivity accidents. 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. In addition, 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.

L02 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-1 Functional Units 9, 11, 12, 13, 16, and 17 specify the requirements for Pressurizer Pressure - Low, Pressurizer Water Level - High, Loss of Flow - Single Loop, Loss of Flow - Two Loops, Undervoltage - Reactor Coolant Pumps, and Underfrequency - Reactor Coolant Pumps. 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 12, 13, 16, and 17 in CTS Table 3.3-1 is MODE 1. ITS Table 3.3.1-1 Functions 8.a, 9, 10, 11, and 12, require the same Functions to be OPERABLE in MODE 1 above the P-7 interlock (Footnote (g)). This changes the CTS by limiting the Applicability of these Functional Units to MODE 1 above the P-7 interlock.

The purpose of CTS Table 3.3-1 Functional Units 9, 11, 12, 13, 16, and 17 is to open the reactor trip breakers whenever a condition monitored by these Functions reaches a preset level. To permit plant startup Functional Units 9, 11, 13, 16, and 17 trips are blocked below P-7 as safety analysis has shown operation within the limits of these trips below P-7 is not required to assure plant safety. In addition, to permit plant startup to continue above P-7 but below P-8, Functional Unit 13 trip is blocked below P-8 as safety analysis has shown operation within the limits of this trip below P-8 is not required to assure plant safety. Because the RCS flow instrumentation associated with Functional Units 12 and 13 are the same, inoperability of one channel affects both CTS Functional Units requiring a power operation to be limited to the most restrictive value, that of P-7. Therefore, although CTS Functional Unit 12 is blocked below P-8 the ACTIONS associated with CTS Functional Unit 13 must also be followed and ITS combines these Functional Units into Function 10 (Reactor Coolant Flow - Low) with an Applicability of MODE 1 above P-7 (footnote (g)). 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. In addition, this change is considered acceptable because the plant design below the P-7 interlock, defeats the automatic reactor trip on Pressurizer Pressure - Low, Pressurizer Water Level - High, Loss of Flow - Two Loops, Undervoltage - Reactor Coolant Pumps, and Underfrequency – Reactor Coolant Pumps and below the P-8 interlock, defeats the automatic reactor trip on Loss of Flow - Single Loop essentially rendering the trips inoperable. Therefore, the Applicability for these Functions is limited to when each Function provides protection. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L03 (*Category 2 – Relaxation of Applicability)* CTS Table 3.3-1 Functional Unit 22.A (Intermediate Range Neutron Flux, P-6) Applicable MODES column states "2, and *" where Note * states, "With the reactor trip system breakers in the closed

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position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel". ITS Table 3.3.1-1, Function 16.a (Intermediate Range Neutron Flux, P-6), Applicable MODES or Other Specified Conditions column states "2[(f)]," where Footnote (f) states, "Below the P-6 (Intermediate Range Neutron Flux) interlocks." This changes the CTS MODE of Applicability from MODE 2, with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor to MODE 2, below the P-6 (Intermediate Range Neutron Flux) interlocks.

The purpose of the P-6 interlock is to allow the manual block of the NIS Source Range Neutron Flux reactor trip on increasing power and then automatically enable the NIS Source Range Neutron Flux reactor trip on decreasing power. 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. CTS and ITS both require the P-6 interlock to be OPERABLE in MODE 2 under slightly different conditions. CTS modifies the MODE 2 Applicability by only requiring P-6 to be OPERABLE with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel; while ITS modifies the MODE 2 Applicability by only requiring OPERABILITY when below the P-6 interlocks. This is acceptable because 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. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L04 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 1, for Functional Unit 1 (Manual Reactor Trip) and ACTION 16, for Functional Units 20 (Reactor Trip Breakers) and 21 (Automatic Trip Logic) require, in part, the restoration of an inoperable channel within 48 hours or opening the reactor trip breakers. ITS LCO 3.3.1 ACTION C; for Functions 1 (Manual Reactor Trip), 17 (Reactor Trip Breakers), 18 (Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms), and 19 (Automatic Trip Logic); require the restoration of an inoperable channel or to initiate action to fully insert all rods in 49 hours and place the Rod Control System in a condition incapable of rod withdrawal. This changes the CTS by allowing alternatives to opening the reactor trip breakers to ensure the rods cannot be withdrawn.

The purpose of the CTS Action to open the reactor trip breakers is to assure the rods are maintained fully inserted and to reduce the potential for a reactivity event when an RTS Function is degraded. 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 ITS ACTION requires that the rod control system be placed in a condition where it is incapable of rod withdrawal. The ITS ACTION provides an equivalent level of assurance that the rods are maintained fully inserted and that the potential for a reactivity event is minimized. The CTS ACTION to open the reactor trip breakers is intended to prevent rod withdrawal. The ITS ACTION accomplishes the same thing by placing the rod control system in a condition where it is incapable of rod withdrawal. The ITS ACTION may consist of opening the

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reactor trip breakers or other Action to defeat the rod control system. In addition to accomplishing the intent of the CTS Action, the proposed change also conforms more closely to the revised Applicability for the affected RTS Functions. The ITS Applicability for the reactor trip breakers and automatic trip logic in MODES 3, 4, and 5 is "With the rod control system capable of rod withdrawal or one or more rods not fully inserted." The revised CTS Actions correspond to the ITS MODE of Applicability for these RTS Functions and ensure the plant is removed from the Applicable MODE if the restoration Action is not met. As such, the revised CTS ACTIONS do not introduce unacceptable risk or a condition that adversely affects the safe operation of the plant. The proposed change is designated as less restrictive because less stringent Required Actions are applied in the ITS than were applied in the CTS.

L05 *(Category 3 – Relaxation of Completion Time)* CTS Table 3.3-1 ACTION 2 for Unit 1 requires, in part, that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours. CTS Table 3.3-1 ACTION 2 for Unit 1 is applicable to Unit 1 CTS Functional Units 2, Power Range, Neutron Flux; 3, Power Range, Neutron Flux High Positive Rate; 4, Power Range, Neutron Flux High Negative Rate. CTS Table 3.3-1 ACTION 2 for Unit 2 requires, in part, that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/<u>or</u> POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours (Note underlining to show Unit 1/Unit 2 difference). CTS Table 3.3-1 ACTION 2 for Unit 2 is applicable to Unit 2 CTS Functional Units 2, Power Range, Neutron Flux; 3, Power Range, Neutron Flux High Positive Rate; 4, Power Range, Neutron Flux High Negative Rate. CTS Table 3.3-1 ACTION 6 and ACTION 7 for Unit 1 and Unit 2 require, in part, that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours. Table 3.3-1 ACTION 6 and ACTION 7 for Unit 1 and Unit 2 is applicable to CTS Functional Units; 7, Overtemperature ΔT Four Loop Operation; 8, Overpower ΔT Four Loop Operation; 9, Pressurizer Pressure-Low; 10, Pressurizer Pressure-High; 11, Pressurizer Water Level-High; 12, Loss of Flow - Single Loop (Above P-8); 13, Loss of Flow - Two Loops (Above P-7 and below P-8); 16, Undervoltage-Reactor Coolant Pump; 17, Underfrequency-Reactor Coolant Pumps; 18.A, Turbine Trip, Low Fluid Oil Pressure; and 18.B, Turbine Trip, Turbine Stop Valve Closure. ITS Required Actions D.1.1, D.2.1, E.1, K.1, and L.1, require placing the associated channel in trip with a Completion Time of 72 hours for Functions 2.a, Power Range Neutron Flux, High; 2.b, Power Range Neutron Flux, Low; 3.a, Power Range Neutron Flux Rate, High Positive Rate; 3.b, Power Range Neutron Flux Rate, High Negative Rate; 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; 11, Undervoltage RCPs; 12, Underfrequency RCPs; 14.a, Turbine Trip, Low Fluid Oil Pressure; and 14.b, Turbine Trip, Turbine Stop Valve Closure. This changes the CTS by increasing the Completion Time for placing an inoperable channel in a tripped condition for these Functional Units from six (6) hours to 72 hours.

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The purpose of CTS Table 3.3-1 ACTION 2.a and ACTION 6.a is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable, prior to being placed in a tripped state. This change is acceptable because the Completion Time is 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 allowed Completion Time. Additionally, this change is acceptable based on TVA's confirmation of applicability and incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L06 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 2, and ACTION 6 allow, in part, that with the number of OPERABLE channels one less than the Total Number of Channels and the Minimum Channels OPERABLE requirement met, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.1. This action is applicable to CTS Functional Units 2, Power Range, Neutron Flux; 3, Power Range, Neutron Flux High Positive Rate; 4, Power Range, Neutron Flux High Negative Rate; 7, Overtemperature ΔT Four Loop Operation; 8, Overpower ΔT Four Loop Operation; 9, Pressurizer Pressure-Low; 10, Pressurizer Pressure-High; 11, Pressurizer Water Level-High; 12, Loss of Flow - Single Loop (Above P-8); 13, Loss of Flow - Two Loops (Above P-7 and below P-8); 16, Undervoltage-Reactor Coolant Pump; 17, Underfrequency-Reactor Coolant Pumps; and 18.A, Turbine Trip, Low Fluid Oil Pressure. ITS 3.3.1 ACTIONS D, E, K, and L, Required Actions are modified by a Note that states, "The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. This action is applicable to ITS Functional Units 2.a, Power Range Neutron Flux, High; 2.b, Power Range Neutron Flux, Low; 3.a, Power Range Neutron Flux Rate, High Positive Rate; 3.b, Power Range Neutron Flux Rate, High Negative Rate; 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; 11, Undervoltage RCPs; 12, Underfrequency RCPs; 14.a, Turbine Trip, Low Fluid Oil Pressure; and 14.b, Turbine Trip, Turbine Stop Valve Closure. This changes the CTS by increasing the time allowed for these functions to be bypassed from 4 hours to 12 hours.

The purpose of CTS Table 3.3-1 ACTION 2 and ACTION 6 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable, prior to being placed in a tripped state. 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 proposed bypass time of 12 hours in ITS 3.3.1 ACTIONS D, E, K, and L is a sufficient time to perform train or channel surveillances. The 12 hour period is acceptable based on TVA's confirmation of applicability and

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incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is designated as less restrictive because additional time is allowed for an inoperable channel to be bypassed for maintenance than was allowed in the CTS.

L07 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1, ACTION 2 is applicable to Functional Units 2 (Power Range, Neutron Flux), 3 (Power Range Neutron Flux High Positive Rate), and 4 (Power Range Neutron Flux, High Negative Rate). With the number of OPERABLE channels, of any of these Functional Units, one less than the value listed in the Total Number of Channels column, ACTION 2 requires, in part, that the QUADRANT POWER TILT RATIO is monitored in accordance with CTS Technical Specification 3.2.4. ITS LCO 3.3.1, ACTION D, is applicable to Function 2.a (Power Range Neutron Flux, High). ITS LCO 3.3.1, Required Action D.2.2 provides a similar action stating, "Perform SR 3.2.4.2 (Verify QPTR is within limit using the movable incore detectors) but Required Action D.1.2 provides an alternative action to performing ITS SR 3.2.4.2 allowing for a power reduction to ≤ 75% RTP. This changes the CTS by added an alternative action to the ACTIONS allowing for a reduction in RTP instead of performance of QPTR verification.

The purpose of CTS Table 3.3-1 ACTION 2 to limit the maximum time allowed for maintenance activities, in which the channel is inoperable, prior to being placed in a tripped state. 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. CTS 4.2.4.2, one of the Surveillance Requirements associated with CTS 3.2.4, states, "The QUADRANT POWER TILT RATIO shall be determined to be within the limit when above 75 percent of RATED THERMAL POWER with one Power Range Channel inoperable by using the movable incore detectors to confirm that the normalized symmetric power distribution, obtained from the 4 pairs of symmetric thimble locations or from performance of a full core map, is consistent with the indicated QUADRANT POWER TILT RATIO at least once per 12 hours." CTS Table 3.3-1, ACTION 2, directs the performance of this SR when a Power Range channel is inoperable. Similarly, ITS LCO 3.3.1, ACTION D, directs the performance of ITS SR 3.2.4.2, "Verify QPTR is within limit using the movable incore detectors," while providing an alternative action to reduce RTP to ≤ 75% RTP (Required Action D.1.2). Required Action D.1.2 simply takes the stipulation presented in CTS SR 4.2.4.2 (when above 75 percent of RATED THERMAL POWER) and duplicates this allowance in ITS LCO 3.3.1, ACTION D. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS.

L08 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 2, applicable to Functional Units 2 (Power Range, Neutron Flux), 3 (Power Range, Neutron Flux High Positive Rate), and 4 (Power Range, Neutron Flux, High Negative Rate), requires, in part, performance of CTS 4.2.4.2 (QPTR verification)

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with any of the applicable Functional Units number of OPERABLE channels one less than the value listed in the Total Number of Channels column. ITS LCO 3.3.1, Required Action D.2.2, applicable to Function 2.a (Power Range Neutron Flux, High) requires performance of ITS SR 3.2.4.2 (QPTR Verification) when one channel is inoperable but is modified by a Note stating, "Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable." This changes the CTS by limiting the requirement to verify QPTR to when the Power Range Neutron Flux input to QPTR is inoperable.

The purpose of CTS Table 3.3-1 ACTION 2 (QPTR verification by incore detectors) is to verify gross radial power distribution remains consistent with the design values used in the safety analyses. Calculating QPTR every 12 hours compensates for the lost monitoring capability due to the inoperable power range channel and allows continued unit operation at power levels > 75% RTP. Failure of a component in the Power Range Neutron Flux Channel may not affect the capability to monitor QPTR. As such, determining QPTR using movable incore detectors once per 12 hours may not be necessary. 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 features. This includes the capacity and capability of remaining features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L09 *(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 F, which provides the actions when one Intermediate Range Neutron Flux channel is inoperable, provides two optional Required Actions. Required Action F.1 requires the reduction of THERMAL POWER to < P-6 within 24 hours, while Required Action F.2 requires the increase of THERMAL POWER to > P-10 within 24 hours. Refer to DOC M06 for discussion of limiting operation > 5% RTP and < P-10 to 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

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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.

L10 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-1, ACTION 7 for Functional Unit 18.B (Turbine Trip, Turbine Stop Valve Closure) states, "With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours or THERMAL POWER is reduced to less than P-9 within 10 hours." ITS ACTION L for Function 14.b (Turbine Trip, Turbine Stop Valve Closure) provides similar actions but adds a Note that states, "The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels." This changes the CTS by allowing an inoperable Turbine Trip, Turbine Stop Valve Closure channel to be bypassed up to 12 hours to perform surveillance testing of other channels.

The purpose of CTS Table 3.3-1, ACTION 7 is to allow some time to restore the inoperable channel prior to placing the channel in a tripped condition or requiring a unit shutdown. The Required Actions Note allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. These changes are acceptable and are the result of WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the two WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because more time is allowed in the ITS for the testing of channels than was allowed in the CTS.

L11 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 10 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP. This action is applicable to CTS Functional Unit 14.C (Main Steam Generator Water Level—Low-Low, RCS Loop ΔT). ITS 3.3.1 Required Action T.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low

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channel in trip instead of adjusting the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP with the same Completion Time. This changes the CTS by adding an alternative to adjusting the TTD threshold power level for zero seconds.

Once the channel is placed in the tripped condition, the RCS ΔT TTD input has no effect on the circuit, and these actions are no longer necessary.

The purpose of CTS Table 3.3-1 ACTION 10 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the affected protection sets Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP. With the trip time delay adjusted to zero seconds the additional operational margin that allows the operator time to recover SG Water level is removed and the associated SG Water level channel is returned to OPERABLE. If the threshold power level for zero seconds time delay is not adjusted from 50% RTP to 0% RTP within the specified Completion Time this proposed change allows placing the affected protection sets SG Water Level Low-Low channels in the tripped condition. ~~Once the channel is placed in the tripped condition the RCS ΔT TTD circuitry is removed from the active portion of the Steam Generator Low-Low Level channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20 and this action is no longer necessary.~~ The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. This change is considered less restrictive because an addition required action is added to the CTS that provides acceptable protection when a channel is inoperable. KAB004

L12 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 11 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse). This action is applicable to CTS Functional Unit 14.D (Main Steam Generator Water Level—Low-Low, Containment Pressure (EAM)). ITS 3.3.1 Required Action S.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low channel in trip instead of adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse) with the same Completion Time for placing the channel in trip. This changes the CTS by adding an alternative to adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse).

Once the channel is placed in the tripped condition, the Steam Generator Low-Low EAM/Adverse input has no effect on the circuit, and these actions are no longer necessary.

The purpose of CTS Table 3.3-1 ACTION 11 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse). If the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is not adjusted to the same value as Steam Generator Water Level -- Low-Low (Adverse) within the specified Completion Time this proposed change allows placing the affected protection sets SG Water Level -- Low-Low level channels in the tripped condition. ~~Once the channel is placed in the tripped condition the Steam Generator Water Level -- Low-Low EAM/Adverse circuitry is removed from the active portion of the Steam Generator Water Level -- Low-Low~~ KAB005

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~~channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20, and these actions are no longer necessary.~~ The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. This change is considered less restrictive because an additional required action is added to the CTS that provides acceptable protection when a channel is inoperable. KAB005

L13 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-1, ACTION 12 for Functional Units 19 (Safety Injection Input from ESF), 20.A (Reactor Trip Breakers, Startup and Power Operation), and 21.A (Automatic Trip Logic, Startup and Power Operation) states, "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least 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 provided the other channel is OPERABLE." ITS LCO 3.3.1, ACTION M for Functions 15 (Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) and 19 (Automatic Trip Logic); and ACTION N for Function 17 (Reactor Trip Breakers) requires restoration of the inoperable train to OPERABLE status within 24 hours or be in MODE 3 within 30 hours and is modified by a Note stating, "One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE." This changes the CTS by allowing 24 hours for train maintenance to restore the train to an OPERABLE status before requiring a power reduction to MODE 3 within an additional 6 hours for an inoperable Safety Injection Input from ESF train, Reactor Trip Breaker train, or an Automatic Trip Logic train, plus increasing the allowed time a train can be bypassed for surveillance testing from 2 hours to 4 hours.

The purpose of CTS Table 3.3-1, ACTION 12 is to allow some time to restore the inoperable train before requiring a unit shutdown. ITS LCO 3.3.1 ACTION M allows 24 hours to restore the train to an OPERABLE status and the Required Actions Note allows placing one train in the bypassed condition for up to 4 hours while performing routine surveillance testing provided the other train is OPERABLE. These changes are acceptable and are the result of WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the two WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because more time is allowed in the ITS for the maintenance and testing of trains than was allowed in the CTS.

L14 *(Category 7 – Relaxation of Surveillance Frequency)* The CTS surveillance requirements specified In Table 4.3-1 for Functional Unit 2 (Power Range, Neutron Flux) include a CHANNEL CALIBRATION performed every quarter. The surveillance is modified by Note 6 that excludes the neutron detectors. ITS Function 2.a (Power Range Neutron Flux, High) and Function 2.b (Power Range Neutron Flux, Low) require a CHANNEL CALIBRATION (SR 3.3.1.11) to be

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performed every 18 months. ITS SR 3.3.1.11 also contains a note that excludes the neutron detectors from the test. This changes the CTS by reducing the frequency of the required CHANNEL CALIBRATION from quarterly to once per 18 months.

The existing surveillance requirements for the Power Range nuclear instrumentation (NIS) include a daily adjustment by calorimetric heat balance calculation, a 31 effective full power day (EFPD) comparison of incore to excore axial flux difference, a quarterly CHANNEL FUNCTIONAL TEST (CFT), and a quarterly CHANNEL CALIBRATION. The CTS CFT defined term in Section 1.0 of the CTS does not require setpoints to be verified during performance of the test. The new ITS CHANNEL OPERATIONAL TEST (COT) that replaces the CTS CFT explicitly requires that setpoints be verified. The COT is required to be performed every 184 days on the Power Range NIS channels. Therefore, the channel setpoints are required to be verified on a 184 day basis. The significant difference between a CHANNEL CALIBRATION and a COT is that the CHANNEL CALIBRATION includes the instrument channel sensors. As the sensors (neutron detectors) are not included in the CTS CHANNEL CALIBRATION requirement, the new COT effectively accomplishes the same function as the CTS CHANNEL CALIBRATION requirement.

The proposed change is acceptable considering the number and frequency of surveillances that are performed on the NIS (daily, monthly, semi-annually) and the fact that the new ITS COT definition specifically requires setpoints to be verified. Considering that the new COT requirement is effectively the same as the CTS CHANNEL CALIBRATION requirement, (changes to the COT frequency from quarterly to 184 days are discussed in DOC L15) the proposed change does not significantly reduce the surveillance testing performed on the Power Range NIS. In addition, the CHANNEL CALIBRATION requirement is normally required on an 18 month interval for all other RTS and ESFAS instrument channels and has been proven to provide adequate assurance of instrument OPERABILITY when performed on this interval for all other RTS and ESFAS instrumentation. As such, the proposed change continues to provide adequate assurance that the Power Range NIS channels are appropriately calibrated and maintained OPERABLE consistent with the requirements for the other RTS and ESFAS instrument channels. The proposed change is designated less restrictive because less stringent surveillance requirements are applied in the ITS than in the CTS.

L15 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST on a monthly basis (M) for Functional Unit 6 (Source Range , Neutron Flux). CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST on a quarterly basis (Q) for Functional Units 2 (Power Range, Neutron Flux), 3 (Power Range, Neutron Flux, High Positive Rate), 4 (Power Range, Neutron Flux, High Negative Rate), 7 (Overtemperature Delta T), 8 (Overpower Delta T), 9 (Pressurizer Pressure—Low), 10 (Pressurizer Pressure—High), 11 (Pressurizer Water Level—High), 12 (Loss of Flow - Single Loop), 14.A (Steam Generator Water Level-- Low-Low (Adverse)), 14.B (Steam Generator Water Level-- Low-Low (EAM)), 14.C (RCS Loop ΔT), and 14.D (Containment Pressure (EAM). ITS Table 3.3.1-1 Functions 2.a (Power Range

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Neutron Flux – High), 2.b (Power Range Neutron Flux – Low), 3.a (Power Range Neutron Flux Rate – High Positive Rate), 3.b (Power Range Neutron Flux Rate – High Negative Rate), 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), 13.a (Steam Generator (SG) Water Level – Low Low (Adverse)), 13.b (Steam Generator (SG) Water Level – Low Low (EAM)), 13.a (Containment Pressure (EAM)), and 13.a/13.b (RCS Loop ΔT) requires performance of a COT (ITS SR 3.3.1.7 or SR 3.3.1.8) every 184 days. This changes the CTS by changing the frequency of the Surveillances from monthly and quarterly to 184 days.

The purpose of the CHANNEL FUNCTIONAL TEST/COT is to ensure that the instrumentation is functioning properly. These changes are acceptable and are the result of WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the three WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because less stringent Frequencies are being applied in the ITS than were applied in the CTS.

L16 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST on a monthly basis (M) and prior to each reactor startup for Functional Unit 20 (Reactor Trip Breaker) and on a monthly basis (M) for Functional Unit 23 (Reactor Trip Bypass Breaker). A Note (Note 5 for Functional Unit 20 and Note 10 for Functional Unit 23) that, in part, states, "Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS," modifies the monthly CHANNEL FUNCTIONAL TEST for each of these Functional Units. The monthly CHANNEL FUNCTIONAL TEST in combination with the modifying Note requires testing each reactor trip breaker and reactor trip bypass breaker every two months. In addition, another Note (Note 1 for Functional Unit 20) modifies the "Prior to each reactor Startup" Frequency by stating, "If not performed in previous 31 days." ITS Table 3.3.1-1 Function 17 (Reactor Trip Breakers) requires performance of a TADOT (ITS SR 3.3.1.4) every 62 days on a STAGGERED TEST BASIS. A footnote modifies ITS Table 3.3.1-1 Function 17, Footnote (i), stating, "Including any reactor trip bypass breakers that are racked in and closed for bypassing a reactor trip breaker." This changes the CTS by changing the Frequency of the Surveillances from monthly on a STAGGERED TEST BASIS for the reactor trip breakers and reactor trip bypass breakers and prior to each reactor startup if not performed in the previous 31 day for the reactor trip breakers; to every 62 days on a STAGGERED TEST BASIS for the reactor trip breakers and reactor trip bypass breakers when racked in and closed for bypassing a reactor trip breaker.

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The purpose of the CHANNEL FUNCTIONAL TEST/COT is to ensure that the instrumentation is functioning properly. An important concept in this change is that the definition of STAGGERED TEST BASIS (STB) in CTS is not the same as in ITS. In CTS STAGGERED TEST BASIS is defined as, "A STAGGERED TEST BASIS shall consist of: a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals, b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval. For example; for Functional Unit 20 (Reactor Trip Breaker) a CHANNEL FUNCTIONAL TEST is required monthly as modified by Note 5 stating, "Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS." Using the CTS STB definition there are two (2) reactor trip breaker trains with the Note 5 frequency of 62 days on a STB, 62 days/2 trains = 31 days/train (or monthly), Table 4.3-1 frequency. Therefore, in CTS, each month (31 days) a reactor trip breaker is tested, e.g., month 1 – reactor trip breaker A, month 2 – reactor trip breaker B, month 3 – RTB A, Month 4 – reactor trip breaker B, etc. So monthly a reactor trip breaker is tested, and each reactor trip breaker is tested every two (2) months (62 days). In ITS, STB is defined as, "A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function." Using the ITS definition for the ITS SR 3.3.1.4 Frequency of "62 days on a STAGGERED TEST BASIS," changes the testing of each reactor trip breaker to every 4 months (124 days). The ITS STB definition requires a reactor trip breaker to be tested every 62 days. Because there are two (2) reactor trip breakers and the STB definition states that all designated components are tested during *n* Surveillance Frequency intervals where *n* is the number of designated components, 62 days x 2 components = 124 days (or every 4 months or quarterly). Therefore, this change decreases the frequency for testing of each reactor trip breaker and Reactor Trip Bypass Breaker from every two months to every 4 months with the interaction between trains controlled by the STB definition and removes the conditional requirement. These changes are acceptable and are the result of WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the three WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because less stringent Frequencies are being applied in the ITS than were applied in the CTS.

L17 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 4.3-1 requires a CHANNEL FUNCTIONAL TEST on a monthly basis (M) for Functional Unit 21

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(Automatic Trip Logic). A Note (Note 5 for Functional Unit 21) that, in part, states, "Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS," modifies the monthly CHANNEL FUNCTIONAL TEST for this Functional Unit. The monthly CHANNEL FUNCTIONAL TEST in combination with the modifying Note requires testing each Automatic Trip Logic train every two months. ITS Table 3.3.1-1 Function 19 (Automatic Trip Logic) requires performance of an ACTUATION LOGIC TEST (ITS SR 3.3.1.5) every 92 days on a STAGGERED TEST BASIS. This changes the CTS by changing the Frequency of the Surveillance from monthly on a STAGGERED TEST BASIS for the Automatic Trip Logic to every 92 days on a STAGGERED TEST BASIS.

The purpose of the ACTUATION LOGIC TEST is to ensure that when various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit are applied the required logic output is obtained. An important concept in this change is that the definition of STAGGERED TEST BASIS (STB) in CTS is not the same as in ITS. In CTS STAGGERED TEST BASIS is defined as, "A STAGGERED TEST BASIS shall consist of: a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals, b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval. Using the CTS STB definition there are two (2) Automatic Trip Logic trains with the Note 5 Frequency of 62 days on a STB, 62 days/2 trains = 31 days/train (or monthly), Table 4.3-1 frequency. Therefore, in CTS, each month (31 days) an Automatic Trip Logic train is tested and each Automatic Trip Logic train is tested every two (2) months (62 days). In ITS, STB is defined as, "A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function." Using the ITS definition for the ITS SR 3.3.1.5 Frequency of "92 days on a STAGGERED TEST BASIS," changes the testing of each Automatic Trip Logic train to every 6 months (184 days). The ITS STB definition requires an Automatic Trip Logic Function to be tested every 92 days. Because there are two (2) Automatic Trip Logic trains and the STB definition states that all designated trains are tested during *n* Surveillance Frequency Intervals where *n* is the number of trains, 92 days x 2 components = 184 days (or every 6 months). Therefore, this change decreases the Frequency for testing of each Automatic Trip Logic train from every two months to every 6 months with the interaction between trains controlled by the STB definition. These changes are acceptable and are the result of WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the three WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This

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change is designated as less restrictive because less stringent Frequencies are being applied in the ITS than were applied in the CTS.

L18 *(Category 7 – Relaxation of Surveillance Frequency)* CTS Table 4.3-1 requires performance of a CHANNEL FUNCTIONAL TEST for Functions 5 (Intermediate Range, Neutron Flux) and 6 (Source Range, Neutron Flux) prior to each reactor startup (S/U) if not performed in previous 31 days (Note (1)). ITS Table 3.3.1-1 requires performance of a CHANNEL OPERATIONAL TEST (COT), SR 3.3.1.8, for Functions 4 (Intermediate Range Neutron Flux) and 5 (Source Range Neutron Flux) prior to reactor startup if not performed in the previous 184 days. This changes the CTS by extending the requirement to perform the test from "if not performed within the previous 31 days" to "if not performed within the previous 184 days."

The purpose of the CHANNEL FUNCTIONAL TEST/COT is to ensure the instrumentation is functioning properly. The Surveillance Frequency allows for a period between testing where assurance that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met for that period has been found acceptable. SQN CTS initially required performance of CHANNEL FUNCTIONAL TESTS for the nuclear instrument monthly. During a normal cycle, the unit is in MODE 1 for a period in excess of 31 days and the Surveillance is not performed nor required; the plant is not in the Functions' MODE of Applicability and the Functions are blocked. If a plant shutdown were to occur and the Function had been tested within the periodicity of the surveillance there was no need to perform the surveillance again to provide the necessary assurance the Function would perform as required thus the Note relaxing the performance requirement if previously performed within its normal frequency. Because of changes approved in WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs) the Surveillance Frequency for these channels was extended to 184 days. Therefore, this change is acceptable because extending the allowance for excluding performance of this surveillance on reactor startup if performed within the previous 184 days provides the necessary assurance the function will perform as required. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L19 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-1 Note (5), applies to the CHANNEL FUNCTIONAL TEST for Functional Unit 21 (Automatic Trip Logic). Note (5), in part, states, "The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits." ITS SR 3.3.1.5 requires an ACTUATION LOGIC TEST and applies to Function 19 (Automatic Trip Logic) but does not contain the requirement for independent verification of the OPERABILITY of the undervoltage and automatic shunt trip circuits. This changes the CTS by deleting the verification of the undervoltage

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

and automatic shunt trip circuits from the Automatic Trip Logic ACTUATION LOGIC TEST.

The purpose of this part of CTS Table 4.3-1, Note (5) is to ensure each diverse trip mechanism is tested to prevent a reduction in the reliability of the reactor trip system. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. TVA added this requirement for independent testing of the reactor trip breaker undervoltage and shunt trip circuits in response to NRC Generic Letter 85-09, "Technical Specifications for Generic Letter 83-28, Item 4.3," (GL 85-09). This change is acceptable because it is consistent with GL 85-09 and the reactor trip breaker test will continue to include separate verification of the undervoltage and shunt trip mechanisms under ITS SR 3.3.1.4. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L20 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS Table 4.3-1, in part, requires a FUNCTIONAL TEST for Functional Unit 6 (Source Range, Neutron Flux) in MODES 2, 3, 4, 5, and with the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. When in the required MODES, the FUNCTIONAL TEST is required to be performed on a monthly basis (M) and prior to startup (S/U) if not performed in the previous 31 days (Note (1)). ITS Table 3.3.1-1 requires a CHANNEL OPERATIONAL TEST (COT) for Function 5 (Source Range Neutron Flux) in MODE 2 below the P-6 interlocks; and MODES 3, 4, and 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. The COT required to be performed in MODES 3, 4, or 5 is ITS SR 3.3.1.7 (MODE 2 is discussed in DOC M16). ITS SR 3.3.1.7 is modified by a note stating, "Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until ~~2~~4 hours after entry into MODE 3." This changes the CTS by allowing for a delay in performance of the surveillance. KAB009

The purpose of the CTS FUNCTIONAL TEST for the Source Range Neutron Flux Function is to ensure the entire channel will perform the intended Function. This change is acceptable because the delay in surveillance performance is similar to that allowed under SR 3.0.3 when it is determined a surveillance has been missed. The function of the Source Range Neutron flux trip is to backup the Power Range Neutron Flux-Low Setpoint Reactor Trip, providing protection against an uncontrolled rod cluster control assembly bank withdrawal from a subcritical condition. The addition of the 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 reactor trip breakers 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 reactor trip breakers closed for greater than 24 hours this Surveillance must be performed prior to 24 hours after entry into MODE 3. This change is designated as less restrictive because a Surveillance will be performed less frequently under the ITS than under the CTS.

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

3.3 INSTRUMENTATION

3.3.1~~A~~ Reactor Trip System (RTS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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

Applicability APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

---NOTE---

DOC A02 Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION	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
ACTION 1	B. One Manual Reactor Trip channel inoperable.	B.1	Restore channel to OPERABLE status.	48 hours
		OR		
		B.2	Be in MODE 3.	54 hours
ACTIONS 1, 16	C. One channel or train inoperable.	C.1	Restore channel or train to OPERABLE status.	48 hours
		OR		
DOC L04		C.2.1	Initiate action to fully insert all rods.	48 hours
		AND		

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L04		C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours	
ACTION 2	D. One Power Range Neutron Flux - High channel inoperable.	~~[~~ -------------------NOTE------------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ---		3
		~~----------REVIEWER'S NOTE---------- The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.~~ ~~---]~~		4 3
ACTION 2.a		D.1.1 Place channel in trip.	72 hours	
		AND		
DOC L07		D.1.2 Reduce THERMAL POWER to ≤ 75% RTP.	78 hours	
		OR		
ACTION 2.a		D.2.1 Place channel in trip.	72 hours	
		AND		

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION 2.c DOC L08		D.2.2 --------------NOTE-------------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. --------------------------------------	
ACTION 2.c		Perform SR 3.2.4.2.	Once per 12 hours
		OR	
DOC M05		D.3 Be in MODE 3.	78 hours
ACTIONS 2, 6 ACTION 2.b ACTION 6.b	E. One channel inoperable.	~~[~~ ------------------NOTE------------------ 3 The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -- ~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~---]~~ 4 3	
ACTION 2.a ACTION 6.a		E.1 Place channel in trip.	72 hours
		OR	
DOC M05		E.2 Be in MODE 3.	78 hours
ACTION 3 DOC L09	F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6.	24 hours
		OR	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M06		F.2 Increase THERMAL POWER to > P-10.	24 hours
DOC M07	G. Two Intermediate Range Neutron Flux channels inoperable.	G.1 --------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ------------------------------------- Suspend operations involving positive reactivity additions.	Immediately
		AND	
		G.2 Reduce THERMAL POWER to < P-6.	2 hours
ACTION 4 DOC M08	H. One Source Range Neutron Flux channel inoperable.	H.1 --------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ------------------------------------- Suspend operations involving positive reactivity additions.	Immediately
DOC M09	I. Two Source Range Neutron Flux channels inoperable.	I.1 Open reactor trip breakers ~~(RTBs)~~.	Immediately 2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 4	J. One Source Range Neutron Flux channel inoperable.	J.1 Restore channel to OPERABLE status.	48 hours	
		OR		
DOC M08		J.2.1 Initiate action to fully insert all rods.	48 hours	
		AND		
DOC M08		J.2.2. Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours	
ACTION 6 ACTION 6.b	K. One channel inoperable.	~~[~~ ------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --- ~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~---]~~		3 4 3
ACTION 6.a		K.1 Place channel in trip.	72 hours	
		OR		
DOC M10		K.2 Reduce THERMAL POWER to < P-7.	78 hours	

1

ACTIONS (continued)

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

2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTIONS 6, 7 DOC L10 ACTION 6.b — L ~~N~~. One Turbine Trip channel inoperable.	~~[~~ ------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -- ~~----------REVIEWER'S NOTE---------- The below Note should be used for plants with installed bypass test capability. One channel may be bypassed for up to 12 hours for surveillance testing. --]~~	2 3 4 3
ACTION 6.a, 7	L ~~N~~.1 Place channel in trip.	72 hours 2
	OR	
DOC M11	L ~~N~~.2 Reduce THERMAL POWER to < ~~[~~P-9~~]~~.	76 hours 2 3
ACTION 12 DOC L13 — M ~~O~~. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. --	2 3
DOC L13	M ~~O~~.1 Restore train to OPERABLE status.	24 hours 2
	OR	
ACTION 12	M ~~O~~.2 Be in MODE 3.	30 hours 2

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RTS Instrumentation ~~(Without Setpoint Control Program)~~
3.3.1~~A~~ 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION 12: N ~~P~~. One reactor trip breaker ~~RTB~~ train inoperable.	--------------------NOTE------------------ One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. ---	2
DOC L13	N ~~P~~.1 Restore train to OPERABLE status.	~~[~~24~~]~~ hours 2 3
	OR	
ACTION 12	N ~~P~~.2 Be in MODE 3.	~~[~~30~~]~~ hours 2 3
ACTION 8, DOC M12: O ~~Q~~. One or more channels inoperable.	O ~~Q~~.1 Verify interlock is in required state for existing unit conditions.	1 hour 2
	OR	
	O ~~Q~~.2 Be in MODE 3.	7 hours 2
ACTION 8, DOC M12: P ~~R~~. One or more channels inoperable.	P ~~R~~.1 Verify interlock is in required state for existing unit conditions.	1 hour 2
	OR	
	P ~~R~~.2 Be in MODE 2.	7 hours 2
ACTION 15: Q ~~S~~. One trip mechanism inoperable for one reactor trip breaker ~~RTB~~.	Q ~~S~~.1 Restore inoperable trip mechanism to OPERABLE status. INSERT 1 2	48 hours 2
	OR	
DOC A16	Q ~~S~~.2 Be in MODE 3.	54 hours 2

INSERT 2
INSERT 3
5

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ITS 3.3.1

2

INSERT 1

Table 3.3-1
ACTION 15

--------------------NOTE------------------
The reactor trip breaker train shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status
----

CTS

ITS 3.3.1

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INSERT 2

ACTION 9 ACTION 9c	R. One channel inoperable.	-------------------NOTE------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ---	
ACTION 9b		R.1 For the affected protection set, adjust the Trip Time Delay for one affected steam generator (T_S) to match the Trip Time Delay for multiple affected steam generators (T_M). AND	4 hours
ACTION 9a		R.2 Place channel in trip.	6 hours
ACTION 11	S. One channel inoperable.	S.1 For the affected protection set, adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level - Low-Low (Adverse). OR	6 hours
DOC L12		S.2 For the affected protection set, place the Steam Generator Water level--Low-Low channel(s) in trip OR	6 hours
DOC M15		S.3 Be in MODE 3.	12 hours

Insert Page 3.3.1-8b

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ITS 3.3.1

5

INSERT 3

ACTION 10	T. One channel inoperable.	T.1 For the affected protection set, adjust the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP. OR	6 hours
DOC L11		T.2 For the affected protection set, place the Steam Generator Water Level--Low-Low channel(s) in trip. OR	6 hours
DOC M14		T.3 Be in MODE 3.	12 hours
DOC M13	U. Required Action and associated Completion Time of Condition R not met.	U.1 Be in MODE 3.	6 hours

CTS

SURVEILLANCE REQUIREMENTS

4.3.1.1.1

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

	SURVEILLANCE		FREQUENCY	
Table 4.3-1 Functions 2, 5-14	SR 3.3.1.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
Table 4.3-1 Function 2, including Note (2) DOC M20	SR 3.3.1.2	-----NOTE----- Not required to be performed until ~~[~~12~~]~~ hours after THERMAL POWER is ≥ 15% RTP. ----- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if ~~calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP~~ absolute difference is > 2%.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 6 2 6

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
Table 4.3-1 Function 2, including Note (3)	SR 3.3.1.3	----------NOTE---------- Not required to be performed until ~~[24]~~ 96 hours after THERMAL POWER is ≥ ~~[~~15~~]~~% RTP. -------------------- Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	~~[31 effective full power days (EFPD)~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 6 6
Table 4.3-1 Function 20, including Note (5) Function 23, including Note (10)	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 days on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.3.1.1.2 Function 22.B Table 4.3-1 Function 21 including Note (5)	SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	~~[92 days on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
DOC M18	SR 3.3.1.6	------------------------------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~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 6 6
DOC L20 Table 4.3-1 Functions 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 14,	SR 3.3.1.7	------------------------------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. ~~24~~ stet --- Perform COT.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	~~2~~ KAB009 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.8	------------------------------NOTE------------------------------ This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. -- Perform COT.	--------NOTE-------- Only required when not performed within ~~[~~ the Frequency specified in the Surveillance Frequency Control Program ~~or previous 184 days]~~ 6 ------------------------ Prior to reactor startup AND Four hours after reducing power below P-6 for source range instrumentation AND ~~[~~Twelve~~]~~ hours after reducing power below P-10 for power and intermediate range instrumentation 3 AND

DOC M21

Table 4.3-1 Functions 5 and 6

Table 4.3-1 Note (1)

DOC M16

DOC M16

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
			~~[Every 184 days thereafter~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
DOC A20 Table 4.3-1 Functions 16 and 17	SR 3.3.1.9	---NOTE--- Verification of setpoint is not required. --- Perform TADOT.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
DOC A19 Table 4.3-1 Functions 7, 8, 9, 10, 11, 12, 13, 14.A, 14.B,14C, 14.D, 16, 17, 18.A, 18B, and 22.E	SR 3.3.1.10	---NOTE--- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.11	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~
~~SR 3.3.1.12~~	~~----------NOTE----------~~ ~~This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate.~~ ~~----------~~ ~~Perform CHANNEL CALIBRATION.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.3.1.13~~	~~Perform COT.~~	~~[18 months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~

Table 4.3-1 Note (6)

Table 4.3-1 Functions 2, 3, 4, 5, 6, 22.A, 22.C 22.D, and 22.F

6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
DOC A20 Table 4.3-1 Functions 1, 22.A, 22.C, 22.D, 22.E, and 22.F	SR 3.3.1.~~14~~ 12	-----------------------------NOTE------------------------------ Verification of setpoint is not required. --- Perform TADOT.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	9 6 6
DOC A20 Table 4.3-1 , Functions 18.A and 18.B, including Note (1) and Note (12)	SR 3.3.1.~~15~~ 13	-----------------------------NOTE------------------------------ Verification of setpoint is not required. --- Perform TADOT.	Prior to exceeding the ~~[~~P-9~~]~~ interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days	9 3

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.3.1.1.3	SR 3.3.1.~~16~~ 14	------------------------------NOTE------------------------------ Neutron detectors are excluded from response time testing. --- Verify RTS RESPONSE TIME is within limits.	~~[[18] months on a STAGGERED TEST BASIS~~ OR In accordance with the Surveillance Frequency Control Program]	9 6 6

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1

Table 3.3.1-1 (page 1 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(I)~~ TRIP SETPOINT~~]~~	
								3
1	1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.~~14~~ 12	NA	NA	9
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	2	C	SR 3.3.1.~~14~~ 12	NA	NA	9
	2. Power Range Neutron Flux							
2	a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7$^{(b)(c)}$ SR 3.3.1.11$^{(b)(c)}$ SR 3.3.1.~~16~~ 14	≤ ~~[111.2]~~ 111.4% RTP	~~[~~109~~]~~% RTP	3 9
2	b. Low	$1^{(d)}$,2	4	E	SR 3.3.1.1 SR 3.3.1.8$^{(b)(c)}$ SR 3.3.1.11$^{(b)(c)}$ SR 3.3.1.~~16~~ 14	≤ ~~[27.2]~~ 27.4% RTP	~~[~~25~~]~~% RTP	3 9
	3. Power Range Neutron Flux Rate							
3	a. High Positive Rate	1,2	4	E	SR 3.3.1.7$^{(b)(c)}$ SR 3.3.1.11$^{(b)(c)}$	≤ ~~[6.8]~~ 6.3% RTP with time constant ≥ ~~[~~2~~]~~ sec	~~[~~5~~]~~% RTP with time constant ≥ ~~[~~2~~]~~ sec	3
4	b. High Negative Rate	1,2	4	E	SR 3.3.1.7$^{(b)(c)}$ SR 3.3.1.11$^{(b)(c)}$ SR 3.3.1.~~16~~ 14	≤ ~~[6.8]~~ 6.3% RTP with time constant ≥ ~~[~~2~~]~~ sec	~~[~~5~~]~~% RTP with time constant ≥ ~~[~~2~~]~~ sec	9

Note * (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert ed. 12

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC A06 (d) Below the P-10 (Power Range Neutron Flux) interlocks.

~~REVIEWER'S NOTE~~

~~(I) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1

Table 3.3.1-1 (page 2 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(I)~~ TRIP SETPOINT~~]~~	
5	4. Intermediate Range Neutron Flux	1(d), 2(e)	2	F,G	SR 3.3.1.1 SR 3.3.1.8(b)(c) SR 3.3.1.11(b)(c)	≤ ~~[31]~~ 45.20% RTP	~~[~~25~~]~~% RTP	3
6.A	5. Source Range Neutron Flux	2(f)	2	H,I	SR 3.3.1.1 SR 3.3.1.8(b)(c) SR 3.3.1.11(b)(c) ~~SR 3.3.1.16~~	≤ ~~[1.4 E5]~~ 1.45 x 10^5 cps	~~[1.0 E5]~~ 10^5 cps	3 11
6.A		3(a), 4(a), 5(a)	2	I,J	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.11(b)(c) ~~SR 3.3.1.16~~	≤ ~~[1.4 E5]~~ 1.45 x 10^5 cps	~~[1.0 E5]~~ 10^5 cps	3 11
7	6. Overtemperature ΔT	1,2	~~[~~4~~]~~	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6(b)(c) SR 3.3.1.7(b)(c) SR 3.3.1.~~12~~ 10 SR 3.3.1.~~16~~ 14	Refer to Note 1 (Page 3.3.1-~~19~~ 23)	Refer to Note 1 (Page 3.3.1-~~19~~ 23)	3 12 7 9
8 SII	7. Overpower ΔT	1,2	~~[~~4~~]~~	E	SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.~~12~~ 10(b)(c) SR 3.3.1.~~16~~ 14	Refer to Note 2 (Page 3.3.1-~~20~~ 24)	Refer to Note 2 (Page 3.3.1-~~20~~ 24)	3 15 7 12 9

Note * (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert~~.~~ ed. 12

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC A06 (d) Below the P-10 (Power Range Neutron Flux) interlocks.

DOC A07 (e) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

Note ##
Note (6) (f) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

~~REVIEWER'S NOTE~~

~~(I) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1 (unless otherwise noted)

Table 3.3.1-1 (page 3 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(f)~~ TRIP SETPOINT~~]~~	
	8. Pressurizer Pressure							
9	a. Low	1~~(f)~~ (g)	~~[~~4~~]~~	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[1886]~~ 1964.8 psig	~~[1900]~~ 1970 psig	13 3 9
10	b. High	1,2	~~[~~4~~]~~	E	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≤ ~~[2396]~~ 2390.2 psig	~~[~~2385~~]~~ psig	3 9
11	9. Pressurizer Water Level - High	1(g)	3	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≤ ~~[93.8]~~ 92.7%	~~[~~92~~]~~%	3
12 13	10. Reactor Coolant Flow - Low	1(g)	3 per loop	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[89.2]~~ 89.6%	~~[~~90~~]~~%	3 9
	~~11. Reactor Coolant Pump (RCP) Breaker Position~~						KAB064	2
	~~a. Single Loop~~	~~1(h)~~	~~1 per RCP~~	~~L~~	~~SR 3.3.1.14~~	~~NA~~	~~NA~~	
	~~b. Two Loops~~	~~1(i)~~	~~1 per RCP~~	~~M~~	~~SR 3.3.1.14~~	~~NA~~	~~NA~~	
16 Table 2.2-1 Function 15	~~12~~ 11. Undervoltage RCPs	1(g)	~~[3]~~ 1 per bus	K	SR 3.3.1.9 SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[4760]~~ ~~4739~~ 4952 V	~~[4830]~~ 5022 V	2 3 9

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC L02 (g) Above the P-7 (Low Power Reactor Trips Block) interlock.

~~(h) Above the P-8 (Power Range Neutron Flux) interlock.~~ 2

~~(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.~~

~~REVIEWER'S NOTE~~

~~(f) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

56.973 KAB065

Table 3.3-1
Table 4.3-1

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
17 Table 2.2-1 Function 16 — 12 ~~13~~. Underfrequency RCPs	1(g)	~~[3]~~ per bus 1	K	SR 3.3.1.9 SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[57.1]~~ 56.3 Hz	~~[57.5]~~ 57.0 Hz	2 3 9
14 Table 2.2-1 Function 13 — 13 ~~14~~. Steam Generator (SG) Water Level ~~- Low Low~~ INSERT 4	~~1,2~~	~~[4 per SG]~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≥ [30.4]%~~	~~[32.3]%~~	14 2
INSERT 5 ~~15. SG Water Level - Low~~	~~1,2~~	~~2 per SG~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≥ [30.4]%~~	~~[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(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≤ [42.5]% full steam flow at RTP~~	~~[40]% full steam flow at RTP~~	
18 Table 2.2-1 Function 17 — 14 ~~16~~. Turbine Trip							2
a. Low Fluid Oil Pressure	1(~~j~~ h)	3	~~N~~ L	SR 3.3.1.10(b)(c) SR 3.3.1.~~15~~ 13	≥ ~~[750]~~ 39.5 psig	~~[800]~~ 45 psig	2 3
b. Turbine Stop Valve Closure	1(~~j~~ h)	4	~~N~~ L	SR 3.3.1.10 SR 3.3.1.~~15~~ 13	≥ ~~[~~1~~]~~% open	~~[~~1~~]~~% open	2 3 2
19 Table 2.2-1 Function 18 — 15 ~~17~~. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	~~O~~ M	SR 3.3.1.~~14~~ 12	NA	NA	2

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC L02 (g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Note ** (~~j~~ h) Above the P-9 (Power Range Neutron Flux) interlock. 2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ITS 3.3.1

14

INSERT 4

CTS		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-1, 14.A Table 4.3-1, 14.A Table 2,2-1, 13.a Table 2,2-1, 13.b	a.	Low-Low (Adverse)	1,2	3 per SG	R	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≥ 14.4% NR Span	15.0% NR Span
Table 3.3-1, 14.D Table 4.3-1, 14.D Table 2.2-1, 13.a Table 2.2-1, 13.b		Coincident with Containment Pressure (EAM)	1,2	4	S	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≤ 0.6 psig	0.5 psig
Table 3.3-1, 14.C Table 4.3-1, 14.C Table 2.2-1, 13.a Table 2,2-1, 13.b		and RCS Loop ΔT	1,2	4	T	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 2.2-1 13.a		with Time Delay T_S if one SG is affected					≤ (1.01)T_s (Note 3)	T_S (Note 3)
Table 2.2-1 13.a		or Time Delay T_m if two or more SGs are affected					≤ (1.01)T_m (Note 3)	T_m (Note 3)

Insert Page 3.3.1-20a

CTS ITS 3.3.1

14

INSERT 5

		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-1, 14.B Table 4.3-1, 14.B Table 2.2-1, 13.a Table 2,2-1, 13.b	b.	Low-Low (EAM)	1,2	3 per SG	R	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≥ 10.1% NR Span	10.7% NR Span
Table 3.3-1, 14.C Table 4.3-1, 14.C Table 2.2-1, 13.a Table 2,2-1, 13.b		Coincident with RCS Loop ΔT	1,2	4	T	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 2.2-1 13.a		with Time Delay T_S if one SG is affected					≤ $(1.01)T_s$ (Note 3)	T_S (Note 3)
Table 2.2-1 13.a		or Time Delay T_m if two or more SGs are affected					≤ $(1.01)T_m$ (Note 3)	T_m (Note 3)

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Table 3.3-3-1
Table 4.3-1

Table 3.3.1-1 (page 5 of 8)
Reactor Trip System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL TRIP SETPOINT[~~(l)~~]~~]~~	3
22	~~18~~ 16. Reactor Trip System Interlocks							2
22.A Table 2.2-1 Function 19	a. Intermediate Range Neutron Flux, P-6	$2^{(f)}$	2	~~Q~~ O	SR 3.3.1.11 ~~SR 3.3.1.13~~	≥ ~~[6E-11] amp~~ 6 x 10^{-5}% RTP	~~[1E-10] amp~~ 1 x 10^{-4}% RTP	2 3
22.B	b. Low Power Reactor Trips Block, P-7	1	1 per train	~~R~~ P	SR 3.3.1.5	NA	NA	2
22.C Table 2.2-1 Function 22	c. Power Range Neutron Flux, P-8	1	4	~~R~~ P	SR 3.3.1.11 ~~SR 3.3.1.13~~	≤ ~~[50.2]~~ 37.4% RTP	~~[48]~~ 35% RTP	2 3
22.F Table 2.2-1 Function 25	d. Power Range Neutron Flux, P-9	1	4	~~R~~ P	SR 3.3.1.11 ~~SR 3.3.1.13~~	≤ ~~[52.2]~~ 52.4% RTP	~~[~~50~~]~~% RTP	2 3
22.D Table 2.2-1 Function 20 and 23	e. Power Range Neutron Flux, P-10	1,2	4	~~Q~~ O	SR 3.3.1.11 ~~SR 3.3.1.13~~	≥ ~~[7.8]~~ 7.6% RTP and ≤ ~~[12.2]~~ 12.4% RTP	~~[~~10~~]~~% RTP	2 3
22.E Table 2.2-1 Function 21	f. Turbine Impulse Pressure, P-13	1	2	~~R~~ P	~~[SR 3.3.1.1]~~ SR 3.3.1.10 ~~SR 3.3.1.13~~	≤ ~~[12.2]~~ 12.4% turbine power	~~[~~10~~]~~% turbine power	2 3 2
20	~~19~~ 17. Reactor Trip Breakers$^{(\cancel{k}\,i)}$ ~~(RTBs)~~	1,2	2 trains	~~P~~ N	SR 3.3.1.4	NA	NA	2
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	2 trains	C	SR 3.3.1.4	NA	NA	

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

Note ## (f) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

DOC A09 (~~k~~ i) Including any reactor trip bypass breakers that are racked in and closed for bypassing a~~n RTB~~ reactor trip breaker. 2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1 T

Table 3.3.1-1 (page 6 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	3
20	18 ~~20~~. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per ~~RTB~~ reactor trip breaker	~~S~~ Q	SR 3.3.1.4	NA	NA	2
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	1 each per ~~RTB~~ reactor trip breaker	C	SR 3.3.1.4	NA	NA	2
21	19 ~~21~~. Automatic Trip Logic	1,2	2 trains	~~O~~ M	SR 3.3.1.5	NA	NA	2
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	2 trains	C	SR 3.3.1.5	NA	NA	

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

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 2.2-1

Table 3.3.1-1 (page 7 of 8)
Reactor Trip System Instrumentation

Note 1

Note 1: Overtemperature ΔT

Note 3

The Overtemperature ΔT Function Allowable Value shall not exceed the following ~~[~~Nominal Trip Setpoint~~]~~ by more than ~~[3.8]~~ 1.9% of ΔT span. 3

INSERT 6

$$\cancel{\Delta T\frac{(1+T_1S)}{(1+T_2S)}\left(\frac{1}{1+T_3S}\right)\le\Delta T_Q\left\{K_1-K_2\frac{(1+T_4S)}{(1+T_5S)}\left[T\frac{1}{(1+T_6S)}-T'\right]+K_3(P-P')-f_1(\Delta I)\right\}}$$ 2

SII

Where: ΔT is measured RCS ΔT,°F. 2
ΔT_{Q} is the indicated ΔT at RTP,°F. 2
~~s~~ S is the Laplace transform operator, sec^{-1}. 0
T is the measured RCS average temperature,°F.
T' is the nominal T_{avg} at RTP, ≤ ~~[*]~~ 578.2°F. 3

P is the measured pressurizer pressure, psig 2235
P' is the nominal RCS operating pressure, ~~≥ [*]~~ = 2235 psig 2 3

K_1 ≤ ~~[*]~~ 1.15 K_2 ≥ ~~[*]~~ 0.011/°F K_3 ~~≥~~ = ~~[*]~~ 0.00055/psig 2
~~T~~ τ$_1$ ≥ ~~[*]~~ 33 sec   ~~T~~ τ$_2$ ≤ ~~[*]~~ 4 sec   ~~T_3 ≤ [*] sec~~ 3
~~T~~ τ$_4$ ≥ ~~[*]~~ 5 sec   ~~T~~ τ$_5$ ≤ ~~[*]~~ 3 sec   ~~T_6 ≤ [*] sec~~

INSERT 7

~~$f_1(\Delta I)$ = [*] {[*] - (q_t - q_b)} when q_t - q_b ≤ [*]% RTP~~ 2
~~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~~ ~~[*]~~ QTNL, QTPL, QTNS, and QTPS are specified in the COLR. 3 ~~2~~

~~* (including QTNL, QTPL, QTNS, and QTPS)~~

SII

2

INSERT 6

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

2

INSERT 7

and f_1 (ΔI) is a function such that:

(i) for q_t - q_b between QTNL* and QTPL* f_1 (ΔI) = 0

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QTPL*, the ΔT nominal trip setpoint shall be automatically reduced by QTPS* of its value at RATED THERMAL POWER.

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~
3.3.1~~A~~ 1

Table 2.2-1

Table 3.3.1-1 (page 8 of 8)
Reactor Trip System Instrumentation

Note 2 Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following ~~[~~Nominal Trip Setpoint~~]~~ by more than ~~[3]~~ 1.7% of ΔT span. 3

Note 4

INSERT 8

$$\cancel{\Delta T \frac{(1+T_1S)}{(1+T_2S)}\left(\frac{1}{1+T_3S}\right) \le \Delta T_Q \left\{K_4 - K_5 \frac{T_7S}{1+T_7S}\left(\frac{1}{1+T_6S}\right)T - K_6\left[T\frac{1}{1+T_6S} - T''\right] - f_2(\Delta I)\right\}}$$ 2

SII

Where: ΔT is measured RCS ΔT,°F. 2

ΔT~~Q~~0 is the indicated ΔT at RTP,°F. 2

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

T is the measured RCS average temperature,°F.

T" is the nominal T_{avg} at RTP, ≤ ~~[*]~~ 578.2°F. 3

K4 ≤ ~~[*]~~ 1.087

K5 ≥ ~~[*]~~ 0.02/°F for increasing T_{avg}

~~[*]~~ 0/°F for decreasing T_{avg}

K6 ≥ ~~[*]~~ 0.0011/°F when T > T"

~~[*]~~ 0/°F when T ≤ T" 3

τ

~~T1~~ τ3 ≥ ~~[*]~~ 10 sec

~~T6 ≤ [*] sec~~

~~T2~~ τ4 ~~≤~~ ≥ ~~[*]~~ 5 sec

~~T7 ≥ [*] sec~~

KAB053

~~T3~~ τ5 ~~≤~~ ≥ ~~[*]~~ 3 sec

stet

KAB053 2

~~f2(ΔI) = [*]~~

INSERT 9

INSERT 10

*~~These values denoted with~~ ~~[*]~~ QPNL, QPPL, QPNS, and QPPS are specified in the COLR. 3 ~~2~~

~~* (including QPNL, QPPL, QPNS, and QPPS)~~

Note 5

INSERT 11

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2

INSERT 8

$$\Delta T\left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right)T - K_6\left(T - T"\right) - f_2(\Delta I)\right\}$$

2

INSERT 9

and f_2 (ΔI) is a function such that:

(i) for q_t - q_b between QPNL* and QPPL* f_2 (ΔI) = 0

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QPPL*, the ΔT nominal trip setpoint shall be automatically reduced by QPPS* of its value at RATED THERMAL POWER.

2

INSERT 10

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.

2

INSERT 11

Note 3: Trip Time Delay - Steam Generator Water Level -- Low-Low

T_s = $\{(-0.00583)(P)^3 + (0.735)(P)^2 - (33.560)(P) + 649.5\}$ 0.99 secs.

T_m = $\{(-0.00532)(P)^3 + (0.678)(P)^2 - (31.340)(P) + 589.5\}$ 0.99 secs.

Where:

P = RCS Loop ΔT Equivalent to Power (% RTP), $P \leq 50\%$ RTP

T_s = Time delay for Steam Generator Water level -- Low-Low Reactor Trip, one Steam Generator affected. (Secs.)

T_m = Time delay for Steam Generator Water Level -- Low-Low Reactor Trip, two or more Steam Generators affected. (Secs.)

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3.3 INSTRUMENTATION

3.3.1~~A~~ Reactor Trip System (RTS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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

Applicability APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

--NOTE--

DOC A02 Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	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
ACTION 1	B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status. OR B.2 Be in MODE 3.	48 hours 54 hours
ACTIONS 1, 16 DOC L04	C. One channel or train inoperable.	C.1 Restore channel or train to OPERABLE status. OR C.2.1 Initiate action to fully insert all rods. AND	48 hours 48 hours

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ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L04		C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours	
ACTION 2	D. One Power Range Neutron Flux - High channel inoperable.	~~[~~ -------------------NOTE------------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. --- ~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.~~ ~~---]~~		3 4 3
ACTION 2.a		D.1.1 Place channel in trip. AND	72 hours	
DOC L07		D.1.2 Reduce THERMAL POWER to ≤ 75% RTP. OR	78 hours	
ACTION 2.a		D.2.1 Place channel in trip. AND	72 hours	

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 2.c DOC L08		D.2.2 --------------NOTE-------------- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. -------------------------------------		
ACTION 2.c		Perform SR 3.2.4.2.	Once per 12 hours	
		OR		
DOC M05		D.3 Be in MODE 3.	78 hours	
ACTIONS 2, 6 ACTION 2.b ACTION 6.b	E. One channel inoperable.	~~[~~ ------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---		3
		~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~--]~~		4 3
ACTION 2.a ACTION 6.a		E.1 Place channel in trip.	72 hours	
		OR		
DOC M05		E.2 Be in MODE 3.	78 hours	
ACTION 3 DOC L09	F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6. OR	24 hours	

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~
3.3.1A 1

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
DOC M06		F.2	Increase THERMAL POWER to > P-10.	24 hours
DOC M07	G. Two Intermediate Range Neutron Flux channels inoperable.	G.1	--------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. -------------------------------------	
			Suspend operations involving positive reactivity additions.	Immediately
		AND		
		G.2	Reduce THERMAL POWER to < P-6.	2 hours
ACTION 4 DOC M08	H. One Source Range Neutron Flux channel inoperable.	H.1	--------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. -------------------------------------	
			Suspend operations involving positive reactivity additions.	Immediately
DOC M09	I. Two Source Range Neutron Flux channels inoperable.	I.1	Open reactor trip breakers ~~(RTBs)~~.	Immediately 2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 4	J. One Source Range Neutron Flux channel inoperable.	J.1 Restore channel to OPERABLE status.	48 hours	
		OR		
DOC M08		J.2.1 Initiate action to fully insert all rods.	48 hours	
		AND		
DOC M08		J.2.2. Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours	
ACTION 6 ACTION 6.b	K. One channel inoperable.	~~[~~ -------------------NOTE------------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --- ~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~---]~~		3 4 3
ACTION 6.a		K.1 Place channel in trip.	72 hours	
		OR		
DOC M10		K.2 Reduce THERMAL POWER to < P-7.	78 hours	

ACTIONS (continued)

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

2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTIONS 6, 7 DOC L10 ACTION 6.b	L ~~N~~. One Turbine Trip channel inoperable.	~~[~~ ------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --- ~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~--]~~		2 3 4 3
ACTION 6.a, 7		L ~~N~~.1 Place channel in trip.	72 hours	2
		OR		
DOC M11		L ~~N~~.2 Reduce THERMAL POWER to < ~~[~~P-9~~]~~.	76 hours	2 3
ACTION 12 DOC L13	M ~~O~~. One train inoperable.	------------------NOTE------------------ One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. ---		2 3
DOC L13		M ~~O~~.1 Restore train to OPERABLE status.	24 hours	2
		OR		
ACTION 12		M ~~O~~.2 Be in MODE 3.	30 hours	2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 12	N ~~P~~. One ~~RTB~~ reactor trip breaker train inoperable.	--------------------NOTE------------------ One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. --		2
DOC L13		N ~~P~~.1 Restore train to OPERABLE status.	~~[~~24~~]~~ hours	2 3
		OR		
ACTION 12		N ~~P~~.2 Be in MODE 3.	~~[~~30~~]~~ hours	2 3
ACTION 8 DOC M12	O ~~Q~~. One or more channels inoperable.	O ~~Q~~.1 Verify interlock is in required state for existing unit conditions.	1 hour	2
		OR		
		O ~~Q~~.2 Be in MODE 3.	7 hours	2
ACTION 8 DOC M12	P ~~R~~. One or more channels inoperable.	P ~~R~~.1 Verify interlock is in required state for existing unit conditions.	1 hour	2
		OR		
		P ~~R~~.2 Be in MODE 2.	7 hours	2
ACTION 15	Q ~~S~~. One trip mechanism inoperable for one ~~RTB~~ reactor trip breaker.	INSERT 1 Q ~~S~~.1 Restore inoperable trip mechanism to OPERABLE status.	48 hours	2 2
		OR		
DOC A16		Q ~~S~~.2 Be in MODE 3.	54 hours	2

INSERT 2
INSERT 3 5

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CTS

ITS 3.3.1

2

INSERT 1

Table 3.3-1
ACTION 15

--------------------NOTE------------------
The reactor trip breaker train shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status
----

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CTS

ITS 3.3.1

5

INSERT 2

ACTION 9 ACTION 9c	R. One channel inoperable.	-------------------NOTE------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. --		
ACTION 9b		R.1	For the affected protection set, adjust the Trip Time Delay for one affected steam generator (T_S) to match the Trip Time Delay for multiple affected steam generators (T_M). AND	4 hours
ACTION 9a		R.2	Place channel in trip.	6 hours
ACTION 11	S. One channel inoperable.	S.1	For the affected protection set, adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level - Low-Low (Adverse). OR	6 hours
DOC L12		S.2	For the affected protection set, place the Steam Generator Water level--Low-Low channel(s) in trip OR	6 hours
DOC M15		S.3	Be in MODE 3.	12 hours

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CTS

ITS 3.3.1

5

INSERT 3

ACTION 10	T. One channel inoperable.	T.1 For the affected protection set, adjust the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP. OR	6 hours
DOC L11		T.2 For the affected protection set, place the Steam Generator Water Level--Low-Low channel(s) in trip. OR	6 hours
DOC M14		T.3 Be in MODE 3.	12 hours
DOC M13	U. Required Action and associated Completion Time of Condition R not met.	U.1 Be in MODE 3.	6 hours

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SURVEILLANCE REQUIREMENTS

4.3.1.1.1

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

	SURVEILLANCE		FREQUENCY	
Table 4.3-1 Functions 2, 5-14	SR 3.3.1.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
Table 4.3-1 Function 2, including Note (2) DOC M20	SR 3.3.1.2	----------------NOTE---------------- Not required to be performed until ~~[~~12~~]~~ hours after THERMAL POWER is ≥ 15% RTP. --- Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if ~~calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP~~ absolute difference is > 2%.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 6 2 6

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
Table 4.3-1 Function 2, including Note (3)	SR 3.3.1.3 -----NOTE----- (96) Not required to be performed until ~~[24]~~ hours after THERMAL POWER is ≥ ~~[~~15~~]~~% RTP. ----- (3)	
	Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	~~[31 effective full power days (EFPD)~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6
Table 4.3-1 Function 20, including Note (5) Function 23, including Note (10)	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 days on a STAGGERED TEST BASIS~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.3.1.1.2 Function 22.B Table 4.3-1 Function 21 including Note (5)	SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	~~[92 days on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
DOC M18	SR 3.3.1.6	-----------------------------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~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 6 6
DOC L20 Table 4.3-1 Functions 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 14,	SR 3.3.1.7	-----------------------------NOTE------------------------------ Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until ~~4~~ 24 hours after entry into MODE 3. -- stet ~~24~~ Perform COT.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	~~2~~ KAB009 6 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
DOC M21	SR 3.3.1.8 ------------------------------NOTE------------------------------ This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. --		
Table 4.3-1 Functions 5 and 6	Perform COT.	--------NOTE-------- Only required when not performed within ~~[~~ the Frequency specified in the Surveillance Frequency Control Program ~~or previous 184 days]~~ ------------------------	6 6
Table 4.3-1 Note (1)		Prior to reactor startup	
		AND	
DOC M16		Four hours after reducing power below P-6 for source range instrumentation	
		AND	
DOC M16		~~[~~Twelve~~]~~ hours after reducing power below P-10 for power and intermediate range instrumentation	3
		AND	

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
		~~[Every 184 days thereafter~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6
DOC A20 Table 4.3-1 Functions 16 and 17	SR 3.3.1.9 ------------------------------NOTE------------------------------ Verification of setpoint is not required. --- Perform TADOT.	~~[[92] days~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6
DOC A19 Table 4.3-1 Functions 7, 8, 9, 10, 11, 12, 13, 14.A, 14.B,14C, 14.D, 16, 17, 18.A, 18B, and 22.E	SR 3.3.1.10 ------------------------------NOTE------------------------------ This Surveillance shall include verification that the time constants are adjusted to the prescribed values. --- Perform CHANNEL CALIBRATION.	~~[[18] months~~ 6 ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.11	------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	6 6
~~SR 3.3.1.12~~	~~------------------------------NOTE------------------------------~~ ~~This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate.~~ ~~--~~ ~~Perform CHANNEL CALIBRATION.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	7
~~SR 3.3.1.13~~	~~Perform COT.~~	~~[18 months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	8

Table 4.3-1 Note (6)

Table 4.3-1 Functions 2, 3, 4, 5, 6, 22.A, 22.C 22.D, and 22.F

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DOC A20 Table 4.3-1 Functions 1, 22.A, 22.C, 22.D, 22.E, and 22.F	SR 3.3.1.~~14~~ 12 ------------------------------NOTE------------------------------ Verification of setpoint is not required. -- Perform TADOT.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~
DOC A20 Table 4.3-1 , Functions 18.A and 18.B, including Note (1) and Note (12)	SR 3.3.1.~~15~~ 13 ------------------------------NOTE------------------------------ Verification of setpoint is not required. -- Perform TADOT.	Prior to exceeding the ~~[~~P-9~~]~~ interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days

9 6 6 9 3

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CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.3.1.1.3	SR 3.3.1.~~16~~ 14	------------------------------NOTE------------------------------ Neutron detectors are excluded from response time testing. ---		9
		Verify RTS RESPONSE TIME is within limits.	~~[[18] months on a STAGGERED TEST BASIS~~ OR In accordance with the Surveillance Frequency Control Program]	6 6

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1

Table 3.3.1-1 (page 1 of 8)
Reactor Trip System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
1	1. Manual Reactor Trip	1,2	2	B	SR 3.3.1.~~14~~ 12	NA	NA	9
		3(a), 4(a), 5(a)	2	C	SR 3.3.1.~~14~~ 12	NA	NA	9
	2. Power Range Neutron Flux							
2	a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7(b)(c) SR 3.3.1.11(b)(c) SR 3.3.1.~~16~~ 14	≤ ~~[111.2]~~ 111.4% RTP	~~[~~109~~]~~% RTP	3, 9
2	b. Low	1(d),2	4	E	SR 3.3.1.1 SR 3.3.1.8(b)(c) SR 3.3.1.11(b)(c) SR 3.3.1.~~16~~ 14	≤ ~~[27.2]~~ 27.4% RTP	~~[~~25~~]~~% RTP	3, 9
	3. Power Range Neutron Flux Rate							
3	a. High Positive Rate	1,2	4	E	SR 3.3.1.7(b)(c) SR 3.3.1.11(b)(c)	≤ ~~[6.8]~~ 6.3% RTP with time constant ≥ ~~[~~2~~]~~ sec	~~[~~5~~]~~% RTP with time constant ≥ ~~[~~2~~]~~ sec	3
4	b. High Negative Rate	1,2	4	E	SR 3.3.1.7(b)(c) SR 3.3.1.11(b)(c) SR 3.3.1.~~16~~ 14	≤ ~~[6.8]~~ 6.3% RTP with time constant ≥ ~~[~~2~~]~~ sec	~~[~~5~~]~~% RTP with time constant ≥ ~~[~~2~~]~~ sec	3, 9

Note * (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert ed. 12

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC A06 (d) Below the P-10 (Power Range Neutron Flux) interlocks.

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1

Table 3.3.1-1 (page 2 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
5	4. Intermediate Range Neutron Flux	1(d), 2(e)	2	F,G	SR 3.3.1.1 SR 3.3.1.8(b)(c) SR 3.3.1.11(b)(c)	≤ ~~[31]~~ 45.20% RTP	~~[~~25~~]~~% RTP	3 3
6.A	5. Source Range Neutron Flux	2(f)	2	H,I	SR 3.3.1.1 SR 3.3.1.8(b)(c) SR 3.3.1.11(b)(c) ~~SR 3.3.1.16~~	≤ ~~[1.4 E5]~~ 1.45 x 10^5 cps	~~[1.0 E5]~~ 10^5 cps	3 11
6.A		3(a), 4(a), 5(a)	2	I,J	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.11(b)(c) ~~SR 3.3.1.16~~	≤ ~~[1.4 E5]~~ 1.45 x 10^5 cps	~~[1.0 E5]~~ 10^5 cps	3 11
7	6. Overtemperature ΔT	1,2	~~[~~4~~]~~	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6(b)(c) SR 3.3.1.7(b)(c) SR 3.3.1.~~12~~ 10(b)(c) SR 3.3.1.~~16~~ 14	Refer to Note 1 (Page 3.3.1-~~19~~ 23)	Refer to Note 1 (Page 3.3.1-~~19~~ 23)	3 12 7 9
8 SII	7. Overpower 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(b)(c) SR 3.3.1.~~12~~ 10(b)(c) SR 3.3.1.~~16~~ 14	Refer to Note 2 (Page 3.3.1-~~20~~ 24)	Refer to Note 2 (Page 3.3.1-~~20~~ 24)	3 15 7 12 9

Note * (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert~~ed~~. 12

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC A06 (d) Below the P-10 (Power Range Neutron Flux) interlocks.

DOC A07 (e) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

Note ##
Note (6) (f) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1
Table 2.2-1 (unless otherwise noted)

Table 3.3.1-1 (page 3 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
	8. Pressurizer Pressure							
9	a. Low	1(~~f~~ (g))	~~[~~4~~]~~	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[1886]~~ 1964.8 psig	~~[1900]~~ 1970 psig	13 3 9
10	b. High	1,2	~~[~~4~~]~~	E	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≤ ~~[2396]~~ 2390.2 psig	~~[~~2385~~]~~ psig	3 9
11	9. Pressurizer Water Level - High	1(g)	3	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c)	≤ ~~[93.8]~~ 92.7%	~~[~~92~~]~~%	3
12 13	10. Reactor Coolant Flow - Low	1(g)	3 per loop	K	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[89.2]~~ 89.6%	~~[~~90~~]~~%	3 9
	~~11. Reactor Coolant Pump (RCP) Breaker Position~~						KAB064	2
	~~a. Single Loop~~	~~1(h)~~	~~1 per RCP~~	~~L~~	~~SR 3.3.1.14~~	~~NA~~	~~NA~~	
	~~b. Two Loops~~	~~1(i)~~	~~1 per RCP~~	~~M~~	~~SR 3.3.1.14~~	~~NA~~	~~NA~~	
16 Table 2.2-1 Function 15	~~12~~ 11. Undervoltage RCPs	1(g)	~~[3]~~ 1 per bus	K	SR 3.3.1.9 SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[4760]~~ ~~4739~~ 4952 V	~~[4830]~~ 5022 V	2 3 9

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC L02 (g) Above the P-7 (Low Power Reactor Trips Block) interlock.

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

~~(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.~~ 2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

56.973 KAB065

Table 3.3-1
Table 4.3-1

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
								3
17 Table 2.2-1 Function 16	12 ~~13~~. Underfrequency RCPs	1(g)	~~[3]~~ 1 per bus	K	SR 3.3.1.9 SR 3.3.1.10(b)(c) SR 3.3.1.~~16~~ 14	≥ ~~[57.1]~~ 56.3 Hz	~~[57.5]~~ 57.0 Hz	2 3 9
14 Table 2.2-1 Function 13	13 ~~14~~. Steam Generator (SG) Water Level ~~- Low Low~~ INSERT 4	~~1,2~~	~~[4 per SG]~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≥ [30.4]%~~	~~[32.3]%~~	14 2
	INSERT 5 ~~15. SG Water Level - Low~~	~~1,2~~	~~2 per SG~~	~~E~~	~~SR 3.3.1.1~~ ~~SR 3.3.1.7(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≥ [30.4]%~~	~~[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(b)(c)~~ ~~SR 3.3.1.10(b)(c)~~ ~~SR 3.3.1.16~~	~~≤ [42.5]% full steam flow at RTP~~	~~[40]% full steam flow at RTP~~	
18 Table 2.2-1 Function 17	14 ~~16~~. Turbine Trip							2
	a. Low Fluid Oil Pressure	1(~~j~~ h)	3	~~N~~ L	SR 3.3.1.10(b)(c) SR 3.3.1.~~15~~ 13	≥ ~~[750]~~ 39.5 psig	~~[800]~~ 45 psig	2 3
	b. Turbine Stop Valve Closure	1(~~j~~ h)	4	~~N~~ L	SR 3.3.1.10 SR 3.3.1.~~15~~ 13	≥ ~~[~~1~~]~~% open	~~[~~1~~]~~% open	2 3 2
19 Table 2.2-1 Function 18	15 ~~17~~. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	~~O~~ M	SR 3.3.1.~~14~~ 12	NA	NA	2

DOC M22 (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

DOC M23 (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 10 3

DOC L02 (g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Note ** h (~~j~~) Above the P-9 (Power Range Neutron Flux) interlock. 2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS ITS 3.3.1

14

INSERT 4

CTS		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-1, 14.A Table 4.3-1, 14.A Table 2,2-1, 13.a Table 2,2-1, 13.b	a.	Low-Low (Adverse)	1,2	3 per SG	R	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≥ 14.4% NR Span	15.0% NR Span
Table 3.3-1, 14.D Table 4.3-1, 14.D Table 2.2-1, 13.a Table 2.2-1, 13.b		Coincident with Containment Pressure (EAM)	1,2	4	S	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≤ 0.6 psig	0.5 psig
Table 3.3-1, 14.C Table 4.3-1, 14.C Table 2.2-1, 13.a Table 2,2-1, 13.b		and RCS Loop ΔT	1,2	4	T	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 2.2-1 13.a		with Time Delay T_S if one SG is affected					≤ (1.01)T_s (Note 3)	T_S (Note 3)
Table 2.2-1 13.a		or Time Delay T_m if two or more SGs are affected					≤ (1.01)T_m (Note 3)	T_m (Note 3)

CTS ITS 3.3.1

14

INSERT 5

CTS		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-1, 14.B Table 4.3-1, 14.B Table 2.2-1, 13.a Table 2,2-1, 13.b	b.	Low-Low (EAM)	1,2	3 per SG	R	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	≥ 10.1% NR Span	10.7% NR Span
Table 3.3-1, 14.C Table 4.3-1, 14.C Table 2.2-1, 13.a Table 2,2-1, 13.b		Coincident with RCS Loop ΔT	1,2	4	T	SR 3.3.1.1 SR 3.3.1.7(b)(c) SR 3.3.1.10(b)(c) SR 3.3.1.14	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 2.2-1 13.a		with Time Delay T_S if one SG is affected					≤ $(1.01)T_s$ (Note 3)	T_S (Note 3)
Table 2.2-1 13.a		or Time Delay T_m if two or more SGs are affected					≤ $(1.01)T_m$ (Note 3)	T_m (Note 3)

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1

Table 3.3.1-1 (page 5 of 8)
Reactor Trip System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL[(l)] TRIP SETPOINT~~]~~	
								3
22	16 ~~18~~. Reactor Trip System Interlocks							2
22.A Table 2.2-1 Function 19	a. Intermediate Range Neutron Flux, P-6	2(f)	2	O ~~Q~~	SR 3.3.1.11 ~~SR 3.3.1.13~~	≥ 6 x 10^{-5}% RTP ~~[6E-11] amp~~	1 x 10^{-4}% RTP ~~[1E-10] amp~~	2 3
22.B	b. Low Power Reactor Trips Block, P-7	1	1 per train	P ~~R~~	SR 3.3.1.5	NA	NA	2
22.C Table 2.2-1 Function 22	c. Power Range Neutron Flux, P-8	1	4	P ~~R~~	SR 3.3.1.11 ~~SR 3.3.1.13~~	≤ 37.4 ~~[50.2]~~% RTP	35 ~~[48]~~% RTP	2 3
22.F Table 2.2-1 Function 25	d. Power Range Neutron Flux, P-9	1	4	P ~~R~~	SR 3.3.1.11 ~~SR 3.3.1.13~~	≤ 52.4 ~~[52.2]~~% RTP	~~[~~50~~]~~% RTP	2 3
22.D Table 2.2-1 Function 20 and 23	e. Power Range Neutron Flux, P-10	1,2	4	O ~~Q~~	SR 3.3.1.11 ~~SR 3.3.1.13~~	≥ 7.6 ~~[7.8]~~% RTP and ≤ 12.4 ~~[12.2]~~% RTP	~~[~~10~~]~~% RTP	2 3
22.E Table 2.2-1 Function 21	f. Turbine Impulse Pressure, P-13	1	2	P ~~R~~	~~[SR 3.3.1.1]~~ SR 3.3.1.10 ~~SR 3.3.1.13~~	≤ ~~[~~12.2~~]~~% turbine power	~~[~~10~~]~~% turbine power	2 3 2
20	17 ~~19~~. Reactor Trip Breakers(i) ~~(k)~~ ~~(RTBs)~~	1,2	2 trains	N ~~P~~	SR 3.3.1.4	NA	NA	2
		3(a), 4(a), 5(a)	2 trains	C	SR 3.3.1.4	NA	NA	

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

Note ## (f) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

DOC A09 (i ~~k~~) Including any reactor trip bypass breakers that are racked in and closed for bypassing a~~n~~ reactor trip breaker ~~RTB~~. 2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 3.3-1
Table 4.3-1 T

Table 3.3.1-1 (page 6 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~	
								3
20	18 ~~20~~. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per ~~RTB~~ reactor trip breaker	~~S~~ Q	SR 3.3.1.4	NA	NA	2
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	1 each per ~~RTB~~	C	SR 3.3.1.4	NA	NA	2
21	19 ~~21~~. Automatic Trip Logic	1,2	2 trains	~~O~~ M	SR 3.3.1.5	NA	NA	2
		$3^{(a)}$, $4^{(a)}$, $5^{(a)}$	2 trains	C	SR 3.3.1.5	NA	NA	

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

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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Table 2.2-1

Table 3.3.1-1 (page 7 of 8)
Reactor Trip System Instrumentation

Note 1

Note 1: Overtemperature ΔT

Note 3

The Overtemperature ΔT Function Allowable Value shall not exceed the following ~~[~~Nominal Trip Setpoint~~]~~ by more than ~~[3.8]~~ 1.9% of ΔT span. 3

INSERT 6

$$\cancel{\Delta T \frac{(1+T_1 S)}{(1+T_2 S)}\left(\frac{1}{1+T_3 S}\right) \leq \Delta T_Q \left\{K_1 - K_2 \frac{(1+T_4 S)}{(1+T_5 S)}\left[T \frac{1}{(1+T_6 S)} - T'\right] + K_3 (P - P') - f_1(\Delta I)\right\}}$$ 2

SII

Where: ΔT is measured RCS ΔT,°F. 2

$\Delta T_{\cancel{Q}}$ is the indicated ΔT at RTP,°F.

0 ~~s~~ S is the Laplace transform operator, sec^{-1}. 2

T is the measured RCS average temperature,°F.

T' is the nominal T_{avg} at RTP, ≤ ~~[*]~~ 578.2°F. 3

P is the measured pressurizer pressure, psig

P' is the nominal RCS operating pressure, ~~≥~~ = ~~[*]~~ 2235 psig 2 3

K_1 ≤ ~~[*]~~ 1.15 K_2 ≥ ~~[*]~~ 0.011/°F K_3 ~~≥~~ = ~~[*]~~ 0.00055/psig 2

~~T~~ τ $_1$ ≥ ~~[*]~~ 33 sec ~~T~~ τ $_2$ ≤ ~~[*]~~ 4 sec ~~T_3 ≤ [*] sec~~ 3

~~T~~ τ $_4$ ≥ ~~[*]~~ 5 sec ~~T~~ τ $_5$ ≤ ~~[*]~~ 3 sec ~~T_6 ≤ [*] sec~~

INSERT 7

~~$f_1(\Delta I)$ = [*] {[*] - (q_t - q_b)} when q_t - q_b ≤ [*]% RTP~~ 2

~~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~~ ~~[*]~~ QTNL, QTPL, QTNS, and QTPS ~~ (including QTNL, QTPL, QTNS, and QTPS)~~ are specified in the COLR. SII 3 ~~2~~

2

INSERT 6

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

2

INSERT 7

and f_1 (ΔI) is a function such that:

(i) for q_t - q_b between QTNL* and QTPL* f_1 (ΔI) = 0

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QTPL*, the ΔT nominal trip setpoint shall be automatically reduced by QTPS* of its value at RATED THERMAL POWER.

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CTS

RTS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.1~~A~~

Table 2.2-1

Table 3.3.1-1 (page 8 of 8)
Reactor Trip System Instrumentation

Note 2 Note 2: Overpower ΔT

Note 4 The Overpower ΔT Function Allowable Value shall not exceed the following ~~[~~Nominal Trip Setpoint~~]~~ by more than ~~[3]~~ 1.7% of ΔT span. 3

INSERT 8

$$\Delta T\frac{(1+T_1S)}{(1+T_2S)}\left(\frac{1}{1+T_3S}\right)\leq\Delta T_Q\left\{K_4 - K_5\frac{T_7S}{1+T_7S}\left(\frac{1}{1+T_6S}\right)T - K_6\left[T\frac{1}{1+T_6S} - T''\right] - f_2(\Delta I)\right\}$$

2 SII

Where: ΔT is measured RCS ΔT,°F.
$\Delta T_{\cancel{Q}}$ 0 is the indicated ΔT at RTP,°F.
~~s~~ S is the Laplace transform operator, sec^{-1}.
T is the measured RCS average temperature,°F.
T" is the nominal T_{avg} at RTP, ≤ ~~[*]~~ 578.2°F.

2 2 3

K_4 ≤ ~~[*]~~ 1.087
K_5 ≥ ~~[*]~~ 0.02/°F for increasing T_{avg}
~~[*]~~ 0/°F for decreasing T_{avg}
K_6 ≥ ~~[*]~~ 0.0011/°F when T > T"
~~[*]~~ 0/°F when T ≤ T"

τ ~~T_1~~ 3 ≥ ~~[*]~~ 10 sec
~~T_6 ≤ [*] sec~~

τ ~~T_2~~ 4 ≤ ~~[*]~~ 5 sec
~~T_7 ≥ [*] sec~~ ≥ KAB053

τ ~~T_3~~ 5 ~~≤~~ ≥ stet ~~[*]~~ 3 sec KAB053

3 2 SII

~~$f_2(\Delta I)$ = [*]~~ INSERT 9

INSERT 10

~~These values denoted with [*]~~ QPNL, QPPL, QPNS, and QPPS are specified in the COLR. ~~ (including QPNL, QPPL, QPNS, and QPPS)~~

3 ~~2~~

Note 5 INSERT 11

2

INSERT 8

$$\Delta T\left(\frac{1+\tau_4 S}{1+\tau_5 S}\right) \leq \Delta T_0 \left\{K_4 - K_5\left(\frac{\tau_3 S}{1+\tau_3 S}\right)T - K_6\left(T - T''\right) - f_2(\Delta I)\right\}$$

2

INSERT 9

and f_2 (ΔI) is a function such that:

(i) for q_t - q_b between QPNL* and QPPL* f_2 (ΔI) = 0

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

(iii) for each percent that the magnitude of (q_t - q_b) exceeds QPPL*, the ΔT nominal trip setpoint shall be automatically reduced by QPPS* of its value at RATED THERMAL POWER.

2

INSERT 10

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.

2

INSERT 11

Note 3: Trip Time Delay - Steam Generator Water Level -- Low-Low

T_s = $\{(-0.00583)(P)^3 + (0.735)(P)^2 - (33.560)(P) + 649.5\}$ 0.99 secs.

T_m = $\{(-0.00532)(P)^3 + (0.678)(P)^2 - (31.340)(P) + 589.5\}$ 0.99 secs.

Where:

P = RCS Loop ΔT Equivalent to Power (% RTP), $P \leq 50\%$ RTP

T_s = Time delay for Steam Generator Water level -- Low-Low Reactor Trip, one Steam Generator affected. (Secs.)

T_m = Time delay for Steam Generator Water Level -- Low-Low Reactor Trip, two or more Steam Generators affected. (Secs.)

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

1. NUREG 1431, Standard Technical Specifications - Westinghouse Plants, Revision 4.0 provides two sets of specifications for Section 3.3.1; one for adoption "Without a Setpoint Control Program," (3.3.1.A) the other for adoption "With a Setpoint Control Program," (3.3.1.B). This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation and is removed.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description. Where a deletion has occurred, subsequent alpha-numeric designators have been changed for any applicable affected ACTIONS, SURVEILLANCE REQUIREMENTS, FUNCTIONS, and Footnotes.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

5. ISTS 3.3.1 ACTIONS has been modified to include new ACTIONS R and U, S, and T. These new ITS ACTIONS reflect CTS Table 3.3-1 ACTION 9, ACTION 11, and ACTION 10, respectively.

6. ISTS SR 3.3.1.1, ISTS SR 3.3.1.2, ISTS SR 3.3.1.3, ISTS SR 3.3.1.4, ISTS SR 3.3.1.5, ISTS SR 3.3.1.6, ISTS SR 3.3.1.7, ISTS SR 3.3.1.8, ISTS SR 3.3.1.9, ISTS SR 3.3.1.10, ISTS SR 3.3.1.11, ISTS SR 3.3.1.14, and ISTS SR 3.3.1.16 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, except for those Frequencies that are event driven or related to specific conditions, the Frequencies for ITS SR 3.3.1.1, ITS SR 3.3.1.2, ITS SR 3.3.1.3, ITS SR 3.3.1.4, ITS SR 3.3.1.5, ITS SR 3.3.1.6, ITS SR 3.3.1.7, ITS SR 3.3.1.8, ITS SR 3.3.1.9, ITS SR 3.3.1.10, ITS SR 3.3.1.11, ITS SR 3.3.1.12, and ITS SR 3.3.1.14 are "In accordance with the Surveillance Frequency Control Program."

7. ISTS LCO 3.3.1 contains three Surveillance Requirements requiring performance of a CHANNEL CALIBRATION. ISTS SR 3.3.1.12 is one of these three SRs with the difference being it contains a Note stating, "This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate." ISTS associates this Note with ISTS Table 3.3.1-1 Functions 6 (Overtemperature ΔT) and 7 (Overpower ΔT). TVA modified SQN to remove the bypass manifolds and installation of thermowell mounted fast response RTDs installed directly into the reactor coolant piping. The NRC approved this change under License Amendment 141 for Unit 1 (ADAMS Accession No. ML013310103) and License Amendment 132 for Unit 2 (ADAMS Accession NO. ML013330076). Because these Functions no longer use bypass loops, the Note requiring verification of flow is no longer necessary. Therefore, this CHANNEL CALIBRATION has been

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

eliminated and the associated CHANNEL CALIBRATION for Functions 6 and 7 has been changed to SR 3.3.1.10.

8. ISTS LCO 3.3.1 Table 3.3.1-1 requires performance of a COT (SR 3.3.1.13) for Functions 18.a (Reactor Trip System Interlocks, Intermediate Range Neutron Flux, P-6), 18.c (Reactor Trip System Interlocks, Power Range Neutron Flux, P-8), 18.d (Reactor Trip System Interlocks, Power Range Neutron Flux, P-9), 18.e, (Reactor Trip System Interlocks Power Range Neutron Flux, P-10), and 18.f (Reactor Trip System Interlocks, Turbine Impulse Pressure, P-13). CTS required a similar test (CHANNEL FUNCTIONAL TEST) before License Amendment 141 for Unit 1 (ADAMS Accession No. ML013310103) and License Amendment 132 for Unit 2 (ADAMS Accession NO. ML013330076) where TVA requested and NRC approved deletion of the CHANNEL FUNCTIONAL TESTs for the Reactor Trip System Interlocks. Therefore, this COT has been deleted.

9. Due to the deletion of ISTS SR 3.3.1.12 and ISTS SR 3.3.1.13, subsequent SRs have been renumbered.

10. TSTF-493-A, Rev. 4, "Clarify Application of Setpoint Methodology for LSSS Functions," (TSTF-493-A) (ADAMS Accession Numbers ML100060064 and ML101160026) provides two options for columns in ISTS Table 3.3.1-1. These options are either listing only the Allowable Valve (single column option) or listing the Allowable Value and the Nominal Trip Setpoint (multiple column option). If the multiple column option is chosen TSTF-493-A states, "Those plants that utilize the "multiple column" format are not required to incorporate the NTSP value in the last sentence in Note 2 because any change to the value requires prior NRC review and the values cannot be changed by the licensee under 10 CFR 50.59." Note 2 in the "Proposed Change" section of TSTF-493-A is the same Note as Note (c) in ISTS Table 3.3.1-1. Because SQN ITS uses the multiple column option, NTSP is deleted from Note (c).

11. ISTS SR 3.3.1.16 (ITS SR 3.3.1.14) requires verification that RTS RESPONSE TIME is within limits. This requirement has been deleted from ITS Table 3.3.1-1 Function 5 (Source Range Neutron Flux). This change is made to achieve consistency with the SQN Units 1 and 2 current licensing basis reflected in UFSAR Table 7.2.1-5.

12. Editorial changes made for consistency within the Specification.

13. ISTS Table 3.3.1-1 Function 8.a (Pressurizer Pressure, Low) Applicable MODES or other Specified Conditions is listed as MODE $1^{(h)}$, where Footnote (h) states, "Above the P-8 (Power Range Neutron Flux) interlock." The Pressurizer Pressure, Low reactor trip is interlocked with the P-7 interlock not the P-8 interlock and is therefore changed to MODE $1^{(g)}$ to reflect the associations with the P-7 interlock.

14. CTS Table 3.3-1, Table 4.3-1, and Table 2.2-1 include Functional Unit 14 (Main Steam Generator Water Level—Low-Low). ISTS includes a similar Function, ISTS Function 14 (Steam Generator (SG) Water Level – Low Low), but does not include the Environmental Allowance Modifier (EAM) or the Trip Time Delay (TTD) features. Changes are made to present the CTS Functional Unit 14 in ISTS format.

SII

15. ISTS SR 3.3.1.3 and 3.3.1.6 compare the incore system to the excore NIS to verify the f(ΔI) input for the overtemperature ΔT function. In ITS, the f(ΔI) input is also used for the Overpower ΔT function. This change adds these SRs to Function 7 (Overpower ΔT).

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

B 3.3 INSTRUMENTATION

B 3.3.1~~A~~ Reactor Trip System (RTS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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 include LSSS ~~for variables that have significant safety functions~~. LSSS are defined by the regulation as INSERT 1 "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a protective 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 Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur. 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The term "[Limiting Trip Setpoint (LTSP)]" is generic terminology for the calculated field setting (setpoint) value calculated by means of the plant specific setpoint methodology documented in a document controlled under 10 CFR 50.59. The term [LTSP] indicates that no additional margin has been added between the Analytical Limit and the calculated trip setting.~~ 3

~~For most Westinghouse plants the term [Nominal Trip Setpoint (NTSP)] is used in place of the term [LTSP] and [NTSP] will replace [LTSP] in the Bases descriptions. "Field setting" is the suggested terminology for the actual setpoint implemented in the plant surveillance procedures where~~

2 **INSERT 1**

settings for automatic protective devices related to those variables having significant safety functions. The regulation also states,

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~~margin has been added to the calculated field setting. The as-found and as-left tolerances will apply to the field setting implemented in the Surveillance procedures to confirm channel performance.~~

~~Licensees are to insert the name of the document(s) controlled under 10 CFR 50.59 that contain the methodology for calculating the as-left and as-found tolerances, in Note c of Table 3.3.1-1 for the phrase "[insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]" throughout these Bases.~~ 3

~~Where the [NTSP] is not included in Table 3.3.1-1, the plant specific location for the [NTSP] must be cited in Note c of Table 3.3.1-1. The brackets indicate plant specific terms may apply, as reviewed and approved by the NRC.~~

~~---~~

The ~~[~~Nominal Trip Setpoint (NTSP)~~]~~ specified in Table 3.3.1-1 is a predetermined setting for a protection channel chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded. As such, the ~~[~~NTSP~~]~~ accounts for uncertainties in setting the channel (e.g., calibration), uncertainties in how the channel might actually perform (e.g., repeatability), changes in the point of action of the channel 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 ~~[~~NTSP~~]~~ ensures that SLs are not exceeded. Therefore, the ~~[~~NTSP~~]~~ meets the definition of an LSSS (Ref. 1). 4 4 4 4

Technical Specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is defined in Technical Specifications as "...being capable of performing its safety functions(s)." Relying solely on the ~~[~~NTSP~~]~~ to define OPERABILITY in Technical Specifications would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as-found" value of a protection channel 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 protection channel with a setting that has been found to be different from the ~~[~~NTSP~~]~~ 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 ~~[~~NTSP~~]~~ and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as-found" setting of the protection channel. 4 4 4

 1

BASES

BACKGROUND (continued)

Therefore, the channel would still be OPERABLE since it would have performed its safety function and the only corrective action required would be to reset the channel within the established as-left tolerance around the ~~[~~NTSP~~]~~ to account for further drift during the next surveillance interval. 4

~~[Note: Alternatively, a Technical Specification format incorporating an Allowable Value only column may be proposed by a licensee. In this, case, the [NTSP] value and the methodologies used to calculate the as-found and as-left tolerances must be specified in [insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]. Changes to the actual plant trip setpoint or [NTSP] value would be controlled by 10 CFR 50.59 or administratively as appropriate, and adjusted per the setpoint methodology and applicable surveillance requirements.]~~ 4

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

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

2. Fuel centerline melt shall not occur, and

3. The RCS pressure SL of ~~[~~2735~~]~~ psig shall not be exceeded. 4

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.

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.

The RTS instrumentation is segmented into four distinct but interconnected modules as illustrated in Figure ~~[ ]~~ 7.2.2-2, U FSAR, Chapter ~~[~~7~~]~~ (Ref. 2), and as identified below: 4 2

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

1

BASES

BACKGROUND (continued)

Process

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 channels, and control board/control room/miscellaneous indications,

analog to digital conversion (Digital Protection System),

, setpoint comparator, or contact

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.

reactor trip breakers

<u>Field Transmitters or Sensors</u>

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 ~~[~~NTSP~~]~~ and Allowable Value. 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.

<u>Signal Process Control and Protection System</u>

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 ~~[~~NTSPs~~]~~ derived from Analytical Limits established by the safety analyses. Analytical Limits are defined in FSAR, Chapter ~~[~~7~~]~~ (Ref. 2), Chapter ~~[~~6~~]~~ (Ref. 3), and Chapter ~~[~~15~~]~~ (Ref. 4). 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

analog to digital conversion (Digital Protection System),

U

, setpoint comparator, or contact

BASES

BACKGROUND (continued)

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. 5). The actual number of channels required for each unit parameter is specified in Reference 2.

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.

<u>Allowable Values and Nominal Trip Setpoints</u>

, setpoint comparators, or contacts

4 The trip setpoints used in the bistables are based on the analytical limits stated in Reference ~~2~~. The calculation of the ~~[~~NTSP~~]~~ specified in Table 3.3.1-1 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. 6), 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 Values and ~~[~~NTSP~~]~~, including their explicit uncertainties, is provided in the ~~"RTS/ESFAS~~ 2 2 4 4 2

plant specific

BASES

BACKGROUND (continued)

Setpoint Methodology Study" (Ref. 7) which incorporates all of the known uncertainties applicable to each channel. The as-left tolerance and as-found tolerance band methodology is provided in ~~"[insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]~~." UFSAR Section 7.1.2 The magnitudes of these uncertainties are factored into the determination of each [NTSP] and corresponding Allowable Value. The trip setpoint entered into the bistable or setpoint comparator is more conservative than that specified by the Allowable Value to account for measurement errors detectable by the CHANNEL OPERATIONAL TEST (COT). The Allowable Value serves as the as-found Technical Specification OPERABILITY limit for the purpose of the COT.

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

[NTSPs], in conjunction with the use of as-found and as-left tolerances, together 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).

Note that the Allowable Values listed in Table 3.3.1-1 are the least conservative value of the as-found setpoint that a channel can have during a periodic CHANNEL CALIBRATION, COTs, or a TRIP ACTUATING DEVICE OPERATIONAL TEST that requires trip setpoint verification.

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 3. 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.

BASES

BACKGROUND (continued)

Solid State Protection System

, setpoint comparators, or contacts

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. 2

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.

, setpoint comparator, or contact

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. 2

Reactor Trip Switchgear

reactor trip breakers

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. 2 2

reactor trip breaker

reactor trip breakers

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 2 2

reactor trip breakers

BASES

BACKGROUND (continued)

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 ~~3~~ 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 channels 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. 2

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to preserve 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 4 takes credit for most RTS trip Functions. RTS trip Functions that are retained yet not specifically credited in the accident analysis are implicitly 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.

Permissive and interlock setpoints allow the blocking of trips during plant startups, and restoration of trips when the permissive conditions are not satisfied, but they are not explicitly modeled in the Safety Analyses. These permissives and interlocks ensure that the starting conditions are consistent with the safety analysis, before preventive or mitigating actions occur. Because these permissives or interlocks are only one of multiple conservative starting assumptions for the accident analysis, they are generally considered as nominal values without regard to measurement accuracy.

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 to be OPERABLE. The Allowable Value specified in Table 3.3.1-1 is the least conservative value of the as-found setpoint that the channel can have when tested, such that a channel is OPERABLE if the as-found setpoint is within the as-found tolerance and is conservative

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

with respect to the Allowable Value during a CHANNEL CALIBRATION or COT. As such, the Allowable Value differs from the ~~[~~NTSP~~]~~ by an amount ~~[~~greater than or~~]~~ equal to the expected instrument channel uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the channel ~~[~~NTSP~~]~~ will ensure that a SL is not exceeded at any given point of time as long as the channel has not drifted beyond expected tolerances during the surveillance interval. Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, 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 (as-found criteria). 4 4 4

If the actual setting of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE but degraded. The degraded condition of the channel will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the ~~[~~NTSP~~]~~ (within the allowed tolerance), and evaluating the channel's response. If the channel is functioning as required and is expected to pass the next surveillance, then the channel is OPERABLE and can be restored to service at the completion of the surveillance. After the surveillance is completed, the channel as-found condition will be entered into the Corrective Action Program for further evaluation. 4

A trip setpoint may be set more conservative than the ~~[~~NTSP~~]~~ as necessary in response to plant conditions. However, in this case, the OPERABILITY of this instrument must be verified based on the ~~[~~field setting~~]~~ and not the ~~[~~NTSP~~]~~. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. 4 4

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

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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 2

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. 6

In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the reactor is critical ~~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. 2

5 **INSERT 2**

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

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1

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. 2

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 3

The LCO requires all four of the Power Range Neutron Flux - High channels to be OPERABLE. 6

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.

5 **INSERT 3**

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

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

INSERT 4

The LCO requires all four of the Power Range Neutron Flux - Low channels to be OPERABLE. 6

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.

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 5

The LCO requires all four of the Power Range Neutron Flux - High Positive Rate channels to be OPERABLE. 6

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

in MODE

with Rod Control System capable of rod withdrawal or one or more rods not fully inserted, 2

5 **INSERT 4**

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

5 **INSERT 5**

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

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

with Rod Control System incapable of rod withdrawal and all rods fully inserted, there is

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. 2

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 a nonconservative local DNBR. DNBR is defined as the ratio of the heat flux required to cause a DNB at a particular location in 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.

INSERT 6

The LCO requires all four Power Range Neutron Flux - High Negative Rate channels to be OPERABLE. 6

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. 2

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

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INSERT 6

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

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. 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.

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

The LCO requires two 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. 6

Because this trip Function is important only during startup, there is generally no need to disable channels for testing while the Function 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 Rod Control System is not capable of rod withdrawal or the Source Range Neutron Flux function is required to be OPERABLE, providing protection. ~~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. 2

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

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

The Source Range Neutron Flux Function provides protection for control rod withdrawal from subcritical~~,~~ and boron dilution ~~and control rod ejection~~ events. 2

There are two Source Range Neutron Flux channels arranged in a one-out-of-two logic. 6

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~~ drawer input is shorted out, driving the output of the drawer to zero. 2

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)~~ Monitoring Instrumentation (BDMI)," for MODE 3, 4, or 5 and LCO 3.9.3, "Nuclear Instrumentation," for MODE 6. 7

6. <u>Overtemperature ΔT</u>

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~~ pressurizer 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: 2

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- 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

- 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.

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. Therefore, ~~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. 2

There are four Overtemperature ΔT channels arranged in a two-out-of-four logic. 6

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. 2

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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

7. Overpower ΔT

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 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:

SII

- 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~~.~~, and 2

- 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 2 of Table 3.3.1-1.

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,~~ 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 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. 2

There are four Overpower ΔT channels arranged in a two-out-of-four logic. 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. 6 2

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

 1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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. 2 2

a. Pressurizer Pressure - Low

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

There are four Pressurizer Pressure - Low channels arranged in a two-out-of-four logic. The LCO requires four channels ~~for two and four loop units (three channels for three loop units)~~ of Pressurizer Pressure - Low to be OPERABLE. 6 2

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.~~ 8

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.

There are four Pressurizer Pressure - High channels arranged in a two-out-of-four logic. 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. 6

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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

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

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.~~ 6 8 ~~9~~

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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 35 ~~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. INSERT 7 The flow signals are not used for any control system input. 2 6

INSERT 8 6

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~~. 8

~~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.~~

~~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.~~ 7

~~The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for this trip Function because the RCS Flow - Low trip alone provides sufficient protection of unit SLs for loss of flow events. The RCP~~

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INSERT 7

There are three per loop Reactor Coolant Flow - Low channels using these detectors and are arranged in a two-out-of-three logic for each loop.

5

INSERT 8

Design flow is 94,600 (91,400 X 1.035) gpm per loop (Reference 14). UFSAR Table 5.1-1 lists this value as the Full Power Operability Flow, gpm/loop.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~ 7

~~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.~~

~~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,~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~ 7

11 ~~12~~. Undervoltage Reactor Coolant Pumps (RCPs) 7

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. 2

There are four (one per bus) Undervoltage RCP channels arranged in a two-out-of-four logic. The LCO requires ~~three~~ four Undervoltage RCPs channels (one per ~~phase) per~~ bus) to be OPERABLE. 6 2

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.~~ 2

12 ~~13~~. Underfrequency Reactor Coolant Pumps 7

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. 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. 5

There are four (one per bus) Underfrequency RCP channels arranged in a two-out-of-four logic. The LCO requires ~~three~~ four Underfrequency RCPs channels (one per bus) to be OPERABLE. 6 2

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. INSERT 9 2

13 ~~14~~. Steam Generator Water Level - Low Low

INSERT 10
INSERT 11 2

~~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 Auxiliary Feedwater (AFW) ~~AFW~~ pumps on low low SG level.

INSERT 12

The LCO requires three ~~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~~. 6 2

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

2 **INSERT 9**

Note that this Function also provides a signal to trip all four reactor coolant pumps.

2 **INSERT 10**

The Steam Generator Water Level Low-Low trip protects the reactor from loss of heat sink in the event of a sustained steam/feedwater flow mismatch resulting from loss of normal feedwater or a feedwater system pipe break outside of containment. This function also provides input to the steam generator level control system. IEEE-279 requirements are satisfied by 2/3 logic for protection function actuation, thus allowing for a single failure of a channel and still performing the protection function.

Control/protection interaction is addressed by the use of the Median Signal Selector that prevents a single failure of a channel providing input to the control system requiring protection function action. That is, a single failure of a channel providing input to the control system does not result in the control system initiating a condition requiring protection function action. The Median Signal Selector performs this by not selecting the channels indicating the highest or lowest steam generator levels as input to the control system.

With the transmitters located inside containment and thus possibly experiencing adverse environmental conditions (due to a feedline break), the Environmental Allowance Modifier (EAM) was devised. The EAM function (Containment Pressure (EAM) with a setpoint of < 0.5 psig) senses the presence of adverse containment conditions (elevated pressure) and enables the Steam Generator Water Level - Low-Low trip setpoint (Adverse) which reflects the increased transmitter uncertainties due to this environment. The EAM allows the use of a lower Steam Generator Water Level - Low-Low (EAM) trip setpoint when these conditions are not present, thus allowing more margin to trip for normal operating conditions.

The Trip Time Delay (TTD) creates additional operational margin when the plant needs it most, during early escalation to power, by allowing the operator time to recover level when the primary side load is sufficiently small to allow such action. The TTD is based on continuous monitoring of primary side power through the use of RCS loop ΔT. Two time delays are calculated, based on the number of steam generators indicating less than the Low-Low Level trip setpoint and the primary side power level. The magnitude of the delays decreases with increasing primary side power level, up to 50% RTP. Above 50% RTP there are no time delays for the Low-Low level trips.

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2

INSERT 11

In the event of failure of a Steam Generator Water Level channel, it is placed in the trip condition as input to the Solid State Protection System and does not affect either the EAM or TTD setpoint calculations for the remaining operable channels. Failure of the Containment Pressure (EAM) channel to a protection set also does not affect the EAM setpoint calculations. It is then necessary for the operator to force the use of the shorter TTD by adjustment of the single steam generator time delay calculation (T_S) to match the multiple steam generator time delay calculation (T_M) for the affected protection set, through the Eagle-21 System Man-Machine-Interface (MMI) test cart. Failure of the RCS loop ΔT channel input (failure of more than one T_H RTD or failure of a T_C RTD) does not affect the TTD calculation for a protection set. Although not affecting the TTD calculation, this results in the requirement that the operator adjust the threshold power level for zero seconds time delay from 50% RTP to 0% RTP, through the MMI, or place the affected protection sets Steam Generator Water Level - Low-Low channel in trip.

5 2

INSERT 12

There are three Steam Generator Water Level Low-Low channels per steam generator arranged in a two-out-of-three logic. These channels are arranged in four protection sets with each channel of the Containment Pressure (EAM) and RCS Loop ΔT inputting into its associated protection set.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~

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

~~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 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.~~ 7

14

~~16~~. Turbine Trip 7

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,

1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

auto stop

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~~ above 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 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.

2

2

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

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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.

15

~~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 not 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.

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

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 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.

16

~~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 are:

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

a. Intermediate Range Neutron Flux, P-6

The Intermediate Range Neutron Flux, P-6 interlock is actuated when any NIS intermediate range channel goes approximately four decades ~~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: 2

- 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 input to the SR drawer is shorted out driving the output of drawer to zero ~~high voltage to the detectors is also removed~~, and 2 2 SII
- 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~~ 2
- ~~on increasing power, the P-6 interlock provides a backup block signal to the source range flux doubling circuit. Normally, this Function is manually blocked by the control room operator during the reactor startup.~~ 2

There are two Intermediate Range Neutron Flux, P-6 channels arranged in a one-out-of-two logic. 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. 5

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.

b. Low Power Reactor Trips Block, P-7

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 Pressure, P-13 interlock. The LCO requirement for the P-7 interlock ensures that the following Functions are performed:

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

(1) on increasing power, the P-7 interlock automatically enables 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),
- ~~RCPs Breaker Open (Two Loops),~~ 2
- Undervoltage RCPs, and
- Underfrequency RCPs.

These reactor trips are only required when operating above the P-7 setpoint (approximately 10% power). The reactor trips provide protection against violating the DNBR limit. Below the P-7 setpoint, the RCS is capable of 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),~~ 2
- 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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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 35 ~~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 trip~~s~~ 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 flow in any RCS loop that could result in DNB conditions in the core when greater than approximately 35 ~~48~~% power. On decreasing power, the reactor trip on low flow in any loop is automatically blocked.

The LCO requires four channels of Power Range Neutron Flux, P-8 interlock to be OPERABLE in MODE 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

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.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

e. Power Range Neutron Flux, P-10

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 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,
- on increasing power, the P-10 interlock allows the operator to manually block the Power Range Neutron Flux - Low reactor trip,
- 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~~ shorts out the input to the SR drawer, driving the output of drawer to zero, 2
- the P-10 interlock provides one of the two inputs to the P-7 interlock, and
- 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 channels of Power Range Neutron Flux, P-10 interlock to be OPERABLE in MODE 1 or 2.

1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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.

17 ~~19~~. Reactor Trip Breakers 7

This trip Function applies to the ~~RTBs~~ reactor trip breakers exclusive of individual trip mechanisms. There are two Reactor Trip Breakers arranged in a one-out-of-two logic. 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. 2 6

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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

18
~~20~~. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms 7

The LCO requires both the Undervoltage and Shunt Trip Mechanisms to be OPERABLE for each reactor trip breaker ~~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 17 ~~19~~ above. OPERABILITY of both trip mechanisms on each breaker ensures that no single trip mechanism failure will prevent opening any breaker on a valid signal. 2 2

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.

19
~~21~~. Automatic Trip Logic 7

The LCO requirement for the reactor trip breakers ~~RTBs~~ (Functions 17 and 18 ~~19 and 20~~) and Automatic Trip Logic (Function 19 ~~21~~) ensures that means are provided to interrupt the power to allow the rods to fall into the reactor core. Each reactor trip breaker ~~RTB~~ is equipped with an undervoltage coil and a shunt trip coil to trip the breaker open when needed. Each reactor trip breaker ~~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 reactor trip breakers ~~RTBs~~ and associated bypass breakers to open and shut down the reactor. 2 7 2 2

There are two RTS Automatic Trip Logic trains arranged in a one-out-of-two logic. 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. 6

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).

BASES

ACTIONS

~~-----REVIEWER'S NOTE-----~~
~~In Table 3.3.1-1, Functions 11.a and 11.b were not included in the generic evaluations approved in either WCAP-10271, as supplemented, WCAP-15376, or WCAP-14333. In order to apply the WCAP-10271, as supplemented, and WCAP-15376 or WCAP-14333 TS relaxations to plant specific Functions not evaluated generically, licensees must submit plant specific evaluations for NRC review and approval.~~
~~-----~~ 3

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.

In the event a channel's ~~[NTSP]~~ trip setting is found nonconservative with respect to the Allowable Value, or the channel is not functioning as required, or the transmitter, instrument loop, signal processing electronics, setpoint comparator trip output, contact output, 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 3.3.1-1 are specified on a "per" basis (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. 2 2 SII 5

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 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.~~
~~-----~~ 3

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.

BASES

ACTIONS (continued)

B.1 and B.2

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 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.

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.

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,
- reactor trip breakers ~~RTBs~~, 2
- reactor trip breaker ~~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

BASES

ACTIONS (continued)

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.

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

Condition 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in WCAP-14333-P-A (Ref. 8). 2

In addition to placing the inoperable channel in the tripped condition, THERMAL POWER must be reduced to ≤ 75% RTP within 78 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.

As an alternative to the above actions, the inoperable channel can be placed in the tripped condition within 72 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 12 hour Frequency is consistent with LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

BASES

ACTIONS (continued)

As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Seventy-eight hours are allowed to place the plant in MODE 3. The 78 hour Completion Time includes 72 hours for channel corrective maintenance, and an additional 6 hours for the MODE reduction as required by Required Action D.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.

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypass condition for up to 12 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 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~-----REVIEWER'S NOTE-----~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing routine surveillance testing, and setpoint adjustments when a setpoint reduction is required by other Technical Specifications. The 12 hour time limit is justified in Reference 8.~~
~~----------~~ 3

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~~ the movable incore detectors once per 12 hours may not be necessary. 5

E.1 and E.2

Condition E applies to the following reactor trip Functions:

- Power Range Neutron Flux - Low,
- Overtemperature ΔT,

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ACTIONS (continued)

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

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A known inoperable channel must be placed in the tripped condition within 72 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 8.

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.

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~REVIEWER'S NOTE~~
~~The below text should be used for plants with installed bypass test capability:~~ 3

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 9.~~ 2

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 to 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. 5

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 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 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 H.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.

I.1

Condition I 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~~ reactor trip breakers must be opened immediately. With the ~~RTBs~~ reactor trip breakers open, the core is in a more stable condition. 2

J.1, J.2.1, and J.2.2

Condition J 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

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BASES

ACTIONS (continued)

restore it to an OPERABLE status. If the channel cannot be returned to 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.

K.1 and K.2

Condition K applies to the following reactor trip Functions:

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

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 72 hours (Ref. 8). 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 trip Function, 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 trip Function, 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 72 hours allowed to place the channel in the tripped condition is justified in Reference 8. 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

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 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 8.~~
~~---~~ 3

~~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 11.~~ 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 11.~~

BASES

ACTIONS (continued)

~~M.1 and M.2~~

~~Condition M applies to the RCP Breaker Position (Two Loops) reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be placed in trip within [6] hours. If the channel cannot be placed in trip within the [6] hours, then THERMAL POWER must be reduced below the P-7 setpoint within the next 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The [6] hours allowed to place the channel in trip and the 6 additional hours allowed to reduce THERMAL POWER to below the P-7 setpoint are justified in Reference 11.~~

~~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 11.~~ 7

L L

~~N~~.1 and ~~N~~.2 7

L

Condition ~~N~~ 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 72 hours. If placed in the tripped condition, this results in a partial trip condition requiring only one additional Low Fluid Oil Pressure channel or three additional Turbine Stop Valve Closure channels 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 8. Four hours is allowed for reducing power. 7 2

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

BASES

ACTIONS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 8.~~
~~-----~~ 3

M M
~~O~~.1 and ~~O~~.2 7

M
Condition ~~O~~ 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, 24 hours are allowed to restore the train to OPERABLE status (Required M Action ~~O~~.1) or the unit must be placed in MODE 3 within the next 6 hours. M The Completion Time of 24 hours (Required Action ~~O~~.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 24 hours allowed to restore the inoperable RTS Automatic Trip Logic train to OPERABLE status is justified in Reference 8. An additional 6 hours is allowed to place the unit in MODE 3. ~~The Completion Time of 6~~ Six hours ~~(Required Action O.2)~~ is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. 7

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. ~~[~~The ~~[~~4~~]~~ hour time limit for testing the RTS Automatic Trip logic train may include testing the ~~RTB~~ reactor trip breaker also, if both the Logic test and ~~RTB~~ test are conducted within the ~~[~~4~~]~~ hour time limit. The ~~[~~4~~]~~ hour time limit is justified in Reference 8.~~]~~ 4 2

~~-----REVIEWER'S NOTE-----~~
~~The below text should replace the bracketed information in the previous paragraph if WCAP-14333 and WCAP-15376 are being incorporated:~~

~~The [4] hour time limit for the RTS Automatic Trip Logic train testing is greater than the 2 hour time limit for the RTBs, which the logic train supports. The longer time limit for the logic train ([4] hours) is acceptable based on Reference 12.~~
~~-----~~ 3

BASES

ACTIONS (continued)

N

~~P~~.1 and ~~P~~.2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~WCAP-14333-P-A, Rev. 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," and the associated TSTF (TSTF-418) and WCAP-15376-P, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," and the associated TSTF (TSTF-411) both modify Condition P.~~

~~WCAP-14333-P-A, Rev. 1 and the associated TSTF-418 provide a Completion Time for Required Action P.1 of 1 hour and Required Action P.2 of 7 hours. WCAP-14333-P-A, Rev. 1 contains three Notes to TS 3.3.1 Condition P. Note 1 states, "One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE." Note 2 states, "One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE." WCAP-14333-P-A, Rev. 1 also adds a third Note, which states: "One RTB train may be bypassed for up to [4] hours for concurrent surveillance testing of the RTB and automatic trip logic, provided the other train is OPERABLE."~~

~~WCAP-15376-P and the associated TSTF-411 provide a Completion Time for Required Action P.1 of 24 hours and Required Action P.2 of 30 hours. WCAP-15376-P relaxes the time that an RTB train may be bypassed for surveillance testing from 2 hours to 4 hours, and deletes Notes 2 and 3 that are added by WCAP-14333-P-A, Rev. 1.~~

~~Implementation of TS 3.3.1, Condition P:~~

~~1. If WCAP-14333-P-A, Rev. 1 is implemented without implementing WCAP-15376-P, the Completion Time for Required Action P.1 will be 1 hour and for Required Action P.2 will be 7 hours. Condition P will contain the three Notes as discussed above, with 2 hours to bypass an RTB train for surveillance testing in Note 1.~~

~~2. If WCAP-15376-P is implemented without implementing WCAP-14333-P-A, Rev. 1, the Completion Time for Required Action P.1 will be 24 hours and for Required Action P.2 will be 30 hours. Condition P will only contain one Note (Note 1 as discussed in the first paragraph above), with 4 hours to bypass an RTB train for surveillance testing in the Note.~~

~~3. If WCAP-14333-P-A, Rev. 1, and WCAP-15376-P are both implemented, follow the direction for Item 2, above.~~

BASES

ACTIONS (continued)

~~Use the following Bases if WCAP-14333-P-A, Rev. 1 is adopted without adopting WCAP-15376-P:~~

~~Condition P 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 Condition C entry while an RTB is inoperable.~~

~~The Required Actions have been modified by three Notes. Note 1 allows one channel to be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE. Note 1 applies to RTB testing that is performed independently from the corresponding automatic trip logic testing. Note 2 allows one RTB to be bypassed for up to 2 hours for maintenance if the other RTP train is OPERABLE. The 2 hour time limit is justified in Reference 9. Note 3 applies to RTB testing that is performed concurrently with the corresponding automatic trip logic test. For concurrent testing of the automatic trip logic and RTB, one RTB train may be bypassed for up to [4] hours provided the other train is OPERABLE. The [4] hour time limit is approved by Reference 8.~~ 3

~~Use the following Bases if WCAP-15376-P is adopted without adopting WCAP-14333-P-A, Rev. 1 or if both are adopted:~~

N reactor trip breakers

Condition ~~P~~ 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, 24 hours is allowed for train corrective maintenance to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the next 6 hours. The 24 hour Completion Time is justified in Reference ~~13~~. ~~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. 2 7

12 Six 7

An additional 6 hours is allowed to place the unit in MODE 3.

Placing the unit in MODE 3 results in Condition C entry while an ~~RTB~~ is inoperable. 2

reactor trip breaker

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BASES

ACTIONS (continued)

The Required Actions have been modified by a Note. The Note allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. The 4 hour time limit is justified in Reference ~~13~~ 12. 2 3

O.1 and O.2 ~~Q.1 and Q.2~~ 7

Condition ~~Q~~ O 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. An additional 6 hours is allowed to place the unit in MODE 3. ~~The Completion Time of 6~~ Six 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. 7

P.1 and P.2 ~~R.1 and R.2~~ 7

Condition ~~R~~ P 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. An additional 6 hours is allowed to place the unit in MODE 2. ~~The Completion Time of 6~~ Six hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems. 7

BASES

ACTIONS (continued)

~~S~~.1 and ~~S~~.2

Condition ~~S~~ 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 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 ~~P~~.

The Completion Time of 48 hours for Required Action ~~S~~.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.

Q
Q
reactor trip breaker
Six
The Required Actions have been modified by a Note. The Notes states that the
reactor trip breaker
up to 4 hours
4
N
Q
reactor trip breaker
INSERT 13
INSERT 14
INSERT 15
1 7 7 2 7 2 7 7 7 2 2

SURVEILLANCE REQUIREMENTS

~~------REVIEWER'S NOTE------~~
~~In Table 3.3.1-1, Functions 11.a and 11.b were not included in the generic evaluations approved in either WCAP-10271, as supplemented, or WCAP-14333. In order to apply the WCAP-10271, as supplemented, and WCAP-14333 TS relaxations to plant specific Functions not evaluated generically, licensees must submit plant specific evaluations for NRC review and approval.~~
~~------------~~

~~------REVIEWER'S NOTE------~~
~~Notes b and c are applied to the setpoint verification Surveillances for each RTS instrumentation Function in Table 3.3.1-1 unless one or more of the following exclusions apply:~~

~~1. Manual actuation circuits, automatic actuation logic circuits or instrument functions that derive input from contacts which have no associated sensor or adjustable device, e.g., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc. are excluded. In addition, those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function are excluded.~~

3 3

2

INSERT 13

R.1 and R.2

Condition R applies to the following reactor trip Functions:

- Steam Generator Water Level--Low-Low (Adverse), and
- Steam Generator Water Level--Low-Low (EAM)

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.

In addition to placing the channel in the tripped condition it is also necessary to force the use of the shorter TTD by adjustment of the single steam generator time delay calculation (T_S) to match the multiple steam generator time delay calculation (T_M) for the affected protection set within 4 hours.

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.

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2

INSERT 14

S.1, S.2, and S.3

Condition S applies to the Containment Pressure (EAM) coincident with Steam Generator Water Level--Low-Low (Adverse) reactor trip.

Failure of the Containment Pressure (EAM) channel to a protection set does not affect the EAM setpoint calculations. A known inoperable Containment Pressure channel results in the requirement to adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoints for the affected protection set to the same value as Steam Generator Water Level - Low-Low (Adverse) within 6 hours.

An alternative to adjusting the affected Steam Generator Water Level - Low-Low (EAM) trip setpoints to the same value as the Steam Generator Water Level - Low-Low (Adverse) trip setpoints is to place the associated protection set's SG Water Level Low-Low channels in the tripped condition within 6 hours

If neither of the above Required Actions are completed within their associated Completion Time, then the unit must be placed in a MODE where these Functions are not required OPERABLE This requires the unit be placed in MODE 3 within 12 hours. The allowed Completion Times are reasonable to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

2

INSERT 15

T.1, T.2, and T.3

Condition T applies to the RCS Loop ΔT coincident with SG Water Level -- Low Low reactor trips.

Failure of the RCS loop ΔT channel input (failure of more than one T_H RTD or failure of a T_C RTD) does not affect the TTD calculation for a protection set. This results in the requirement that the operator adjust the threshold power level for zero seconds time delay from 50% RTP to 0% RTP within 6 hours. With the trip time delay adjusted to zero seconds the additional operational margin that allows the operator time to recover SG level is removed.

An alternative to adjusting the threshold power level for zero seconds time delay is to place the affected protection set's SG Water Level Low-Low level channels in the tripped condition within 6 hours.

If neither of the above Required Actions can be completed within their associated Completion Times then the unit must be placed in a MODE where these Functions are not required OPERABLE. This requires the unit be placed in MODE 3 within 12 hours. The allowed Completion Times are reasonable to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

U.

If the Required Action is not met within the specified Completion Time of Condition R, the unit must be placed in a MODE where this Function is not required OPERABLE. Six 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~2. Settings associated with safety relief valves are excluded. The performance of these components is already controlled (i.e., trended with as-left and as-found limits) under the ASME Code for Operation and Maintenance of Nuclear Power Plants testing program.~~

~~3. Functions and Surveillance Requirements which test only digital components are normally excluded. There is no expected change in result between SR performances for these components. Where separate as-left and as-found tolerance is established for digital component SRs, the requirements would apply.~~

~~--~~

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.~~

~~--~~

SR 3.3.1.1

Performance of the CHANNEL CHECK 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 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 of 12 hours 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.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 3

SR 3.3.1.2

absolute difference is greater than 2 percent

SR 3.3.1.2 compares the calorimetric heat balance calculation to the power range channel output. If the ~~calorimetric heat balance calculation results exceed the power range channel output by more than 2% RTP~~, the power range channel is not declared inoperable, but must be adjusted. The power range channel output shall be adjusted consistent with the calorimetric heat balance calculation results if the ~~calorimetric calculation exceed the power range channel output by more than + 2% RTP~~. If the power range channel output cannot be properly adjusted, the channel is declared inoperable. 7

~~If the calorimetric is performed at part power (< [70]% RTP), adjusting the power range channel indication in the increasing power direction will assure a reactor trip below the safety analysis limit (< [118]% RTP). Making no adjustment to the power range channel in the decreasing power direction due to a part power calorimetric assures a reactor trip consistent with the safety analyses.~~ 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~This allowance does not preclude making indicated power adjustments, if desired, when the calorimetric heat balance calculation is less than the power range channel output. To provide close agreement between indicated power and to preserve operating margin, the power range channels are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric (< [70]% RTP). This action may introduce a nonconservative bias at higher power levels which may result in an NIS reactor trip above the safety analysis limit (> [118]% RTP). The cause of the potential nonconservative bias is the decreased accuracy of the calorimetric at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side power calorimetric measurement is the feedwater flow measurement, which is typically a ΔP measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the ΔP error has not changed. An evaluation of extended operation at part power conditions would conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ [85]% RTP when: 1) the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric below [70]% RTP; or 2) for a post refueling startup. The evaluation of extended operation at part power conditions would also conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power Range Neutron Flux - Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux - High bistables are reset to ≤ [109]% RTP, the power range channel adjustment must be confirmed based on a calorimetric performed at ≥ [70]% RTP.~~

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~A plant specific evaluation based on the guidance in Westinghouse Technical Bulletin ESBU-TB-92-14 is required to determine the power level below which power range channel adjustments in a decreasing power direction become a concern. This evaluation must reflect the plant specific RTS setpoint study. In addition, this evaluation should determine if additional administrative controls are required for Power Range Neutron Flux-High trip setpoint setting changes~~
~~--~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 12 hours are allowed for performing the first Surveillance after reaching 15% RTP. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid.

~~[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 that a difference between the calorimetric heat balance calculation and the power range channel output of more than ± 2% RTP is not expected in any 24 hour period.~~

~~an absolute difference greater than 2 percent~~ 7 9

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

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~]

3

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted. The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%.

SII

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. s

and overpower ΔT

2

A Note clarifies that the Surveillance is required only if reactor power is ≥ [15%] RTP and that ~~24~~ 96 hours is allowed for performing the first Surveillance after reaching ~~[~~15%] RTP. 4 7 4

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BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[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.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 3
~~-----]~~

SR 3.3.1.4

SR 3.3.1.4 is the performance of a TADOT. 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 reactor trip breaker ~~RTB~~ test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of reactor trip breaker ~~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 3.3.1.12 ~~14~~. 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. 2 7

~~[The Frequency of every 62 days on a STAGGERED TEST BASIS is justified in Reference 13.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

3

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested 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, including operation of the P-7 permissive which is a logic function only. ~~[The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 13.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

3

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. s

SII

and overpower ΔT

2

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.

4

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

3

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT.

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.

Setpoints must be conservative with respect to 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 9. 4

SR 3.3.1.7 is modified by a Note that provides a 4 hour~~s~~ 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 reactor trip breakers ~~RTBs~~ are open and SR 3.3.1.7 is no 5 2

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

longer required to be performed. If the unit is to be in MODE 3 with the reactor trip breakers ~~RTBs~~ closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3. 2

~~[The Frequency of 184 days is justified in Reference 9.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

3

SR 3.3.1.7 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable. 4 4 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~--~~

3

 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 4

SR 3.3.1.8

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 stating 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 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 Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within ~~[~~the Frequency specified in the Surveillance Frequency Control Program ~~OR 184 days]~~ or 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 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 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. ~~[The Frequency of 184 days is justified in Reference 13.~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 3

SR 3.3.1.8 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint 4 more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance 4 procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be 4 declared inoperable.

~~-----REVIEWER'S NOTE-----~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~-----~~ 3

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 9~~. 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ 3

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.

SR 3.3.1.10

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 ~~[~~NTSP ~~or the previous test "as-left" values]~~ must be consistent with the drift allowance used in the setpoint methodology. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[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.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 3
~~--]~~

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 3.3.1.10 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint 4
more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance 4
procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be 4
declared inoperable.

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1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~---~~
3

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. 4

UFSAR Section 7.1.2

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. 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.~~

~~OR~~
9

consists of checking the discriminator voltage and adjusting if necessary. The CHANNEL CALIBRATION for the

comparing the output of the intermediate range drawer to the secondary side calorimetric and adjusting if necessary.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~
3

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.11 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~--~~

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in UFSAR Section 7.1.2 ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~.

~~SR 3.3.1.12~~

~~SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10. 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.~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

~~SR 3.3.1.12 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the [NTSP]. Where a setpoint more conservative than the [NTSP] is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the [NTSP], then the channel shall be declared inoperable.~~

7

2 1

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1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~--~~

~~The second Note also requires that the [NTSP and the] methodologies for calculating the as-left and the as-found tolerances be in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].~~

~~SR 3.3.1.13~~

~~SR 3.3.1.13 is the performance of a COT of RTS interlocks. 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 Frequency of 18 months is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

7

12

SR 3.3.1.~~14~~

7

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~~

7

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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 shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the 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 and manual undervoltage trip. 7 2

~~[The Frequency of 18 months is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 3

The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them.

SR 3.3.1.~~15~~13 7

SR 3.3.1.~~15~~13 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. 7 4 4

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

14

SR 3.3.1.~~16~~ 7

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 UFSAR Table 7.2.1-5 ~~Technical Requirements Manual, Section 15 (Ref. 14)~~. Individual component response times are not modeled in the analyses. 7 2

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).

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 U 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. 2

~~-----REVIEWER'S NOTE-----~~
~~Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A and/or WCAP-14036-P.~~
~~-----~~ 3

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," (Ref. 10) 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.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," (Ref. ~~15~~ 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 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.

4 2 4

~~[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 18 months Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

3

SR 3.3.1.~~16~~ 14 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.

7

REFERENCES

1. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety Related Instrumentation."
2. U FSAR, Chapter ~~[~~7~~]~~. 2 4
3. U FSAR, Chapter ~~[~~6~~]~~. 2 4

1

BASES

REFERENCES (continued)

U
4. FSAR, Chapter ~~[~~15~~]~~. 2 4

5. IEEE-279-1971.

6. 10 CFR 50.49.

Calculation SQN-EEB-PL&S, Precautions, Limitations, and Setpoints for NSSS
7. ~~Plant specific setpoint methodology study~~. 2

8. WCAP-14333-P-A, Rev. 1, October 1998.

9. WCAP-10271-P-A, Supplement 1, May 1986.

10. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

~~11. [Plant specific evaluation reference.]~~ 2

11
~~12~~. WCAP-10271-P-A, Supplement 2, June 1990. 2

12
~~13~~. WCAP-15376, Rev. 0, October 2000. 2

~~14. Technical Requirements Manual, Section 15, "Response Times."~~ 2

13
~~15~~. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995. 2

14. Letter from Siva P. Lingam (NRC) to Joseph W. Shea (TVA), "Sequoyah Nuclear Plant, Units 1 and 2 - Issuance of Amendments to Revise the Technical Specification to allow use of Areva Advanced W17 High Performance Fuel (TS-SQN-2011-07) (TAC NOS. ME6538 and ME6539), dated September 26, 2012. 2

B 3.3 INSTRUMENTATION

B 3.3.1~~A~~ Reactor Trip System (RTS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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 include LSSS ~~for variables that have significant safety functions~~. LSSS are defined by the regulation as INSERT 1 "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a protective 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 Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur. 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The term "[Limiting Trip Setpoint (LTSP)]" is generic terminology for the calculated field setting (setpoint) value calculated by means of the plant specific setpoint methodology documented in a document controlled under 10 CFR 50.59. The term [LTSP] indicates that no additional margin has been added between the Analytical Limit and the calculated trip setting.~~

~~For most Westinghouse plants the term [Nominal Trip Setpoint (NTSP)] is used in place of the term [LTSP] and [NTSP] will replace [LTSP] in the Bases descriptions. "Field setting" is the suggested terminology for the actual setpoint implemented in the plant surveillance procedures where~~ 3

2 **INSERT 1**

settings for automatic protective devices related to those variables having significant safety functions. The regulation also states,

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BACKGROUND (continued)

~~margin has been added to the calculated field setting. The as-found and as-left tolerances will apply to the field setting implemented in the Surveillance procedures to confirm channel performance.~~

~~Licensees are to insert the name of the document(s) controlled under 10 CFR 50.59 that contain the methodology for calculating the as-left and as-found tolerances, in Note c of Table 3.3.1-1 for the phrase "[insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]" throughout these Bases.~~ 3

~~Where the [NTSP] is not included in Table 3.3.1-1, the plant specific location for the [NTSP] must be cited in Note c of Table 3.3.1-1. The brackets indicate plant specific terms may apply, as reviewed and approved by the NRC.~~

The ~~[~~Nominal Trip Setpoint (NTSP)~~]~~ specified in Table 3.3.1-1 is a predetermined setting for a protection channel chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded. As such, the ~~[~~NTSP~~]~~ accounts for uncertainties in setting the channel (e.g., calibration), uncertainties in how the channel might actually perform (e.g., repeatability), changes in the point of action of the channel 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 ~~[~~NTSP~~]~~ ensures that SLs are not exceeded. Therefore, the ~~[~~NTSP~~]~~ meets the definition of an LSSS (Ref. 1). 4 4 4 4

Technical Specifications contain values related to the OPERABILITY of equipment required for safe operation of the facility. OPERABLE is defined in Technical Specifications as "...being capable of performing its safety functions(s)." Relying solely on the ~~[~~NTSP~~]~~ to define OPERABILITY in Technical Specifications would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as-found" value of a protection channel 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 protection channel with a setting that has been found to be different from the ~~[~~NTSP~~]~~ 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 ~~[~~NTSP~~]~~ and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as-found" setting of the protection channel. 4 4 4

BASES

BACKGROUND (continued)

Therefore, the channel would still be OPERABLE since it would have performed its safety function and the only corrective action required would be to reset the channel within the established as-left tolerance around the ~~[~~NTSP~~]~~ to account for further drift during the next surveillance interval. 4

~~[Note: Alternatively, a Technical Specification format incorporating an Allowable Value only column may be proposed by a licensee. In this, case, the [NTSP] value and the methodologies used to calculate the as-found and as-left tolerances must be specified in [insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]. Changes to the actual plant trip setpoint or [NTSP] value would be controlled by 10 CFR 50.59 or administratively as appropriate, and adjusted per the setpoint methodology and applicable surveillance requirements.]~~ 4

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

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

2. Fuel centerline melt shall not occur, and

3. The RCS pressure SL of ~~[~~2735~~]~~ psig shall not be exceeded. 4

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.

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.

The RTS instrumentation is segmented into four distinct but interconnected modules as illustrated in Figure ~~[ ]~~ 7.2.2-2, U FSAR, Chapter ~~[~~7~~]~~ (Ref. 2), and as identified below: 4 2

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

BASES

BACKGROUND (continued)

2. Signal Process Control and Protection System, including ~~Analog~~ Process Protection System, Nuclear Instrumentation System (NIS), field contacts, and protection channel sets: provides analog to digital conversion (Digital Protection System), signal conditioning, ~~bistable~~ setpoint comparison, process algorithm actuation, compatible electrical signal output to protection system channels, 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, setpoint comparator, or contact 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~~ reactor trip breakers 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 ~~[~~NTSP~~]~~ and Allowable Value. 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 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 analog to digital conversion (Digital Protection System), signal conditioning, comparable output signals for instruments located on the main control board, and comparison of measured input signals with ~~[~~NTSPs~~]~~ derived from Analytical Limits established by the safety analyses. Analytical Limits are defined in UFSAR, Chapter ~~[~~7~~]~~ (Ref. 2), Chapter ~~[~~6~~]~~ (Ref. 3), and Chapter ~~[~~15~~]~~ (Ref. 4). If the measured value of a unit parameter exceeds the predetermined setpoint, an output from a bistable, setpoint comparator, or contact 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

BASES

BACKGROUND (continued)

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. 5). The actual number of channels required for each unit parameter is specified in Reference 2.

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.

Allowable Values and Nominal Trip Setpoints

, setpoint comparators, or contacts

4

The trip setpoints used in the bistables are based on the analytical limits stated in Reference ~~2~~. The calculation of the ~~[~~NTSP~~]~~ specified in Table 3.3.1-1 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. 6), 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 Values and ~~[~~NTSP~~]~~, including their explicit uncertainties, is provided in the ~~"RTS/ESFAS~~ 2 4 2 4 2

plant specific

BASES

BACKGROUND (continued)

Setpoint Methodology Study~~"~~ (Ref. 7) which incorporates all of the known uncertainties applicable to each channel. The as-left tolerance and as-found tolerance band methodology is provided in UFSAR Section 7.1.2 ~~"[insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]."~~ The magnitudes of these uncertainties are factored into the determination of each ~~[~~NTSP~~]~~ and corresponding Allowable Value. The trip setpoint entered into the bistable or setpoint comparator is more conservative than that specified by the Allowable Value to account for measurement errors detectable by the CHANNEL OPERATIONAL TEST (COT). The Allowable Value serves as the as-found Technical Specification OPERABILITY limit for the purpose of the COT. 2 4 4 2

The ~~[~~NTSP~~]~~ is the value at which the bistable or setpoint comparator is set and is the expected value to be achieved during calibration. The ~~[~~NTSP~~]~~ value is the LSSS and ensures the safety analysis limits are met for the surveillance interval selected when a channel is adjusted based on stated channel uncertainties. Any bistable or setpoint comparator is considered to be properly adjusted when the "as-left" ~~[~~NTSP~~]~~ value is within the as-left tolerance band for CHANNEL CALIBRATION uncertainty allowance (i.e., ± rack calibration and comparator setting uncertainties). The ~~[~~NTSP~~]~~ value is therefore considered a "nominal" value (i.e., expressed as a value without inequalities) for the purposes of COT and CHANNEL CALIBRATION. 4 2 4 2 4 4

~~[~~NTSPs~~]~~, in conjunction with the use of as-found and as-left tolerances, together 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). 4

Note that the Allowable Values listed in Table 3.3.1-1 are the least conservative value of the as-found setpoint that a channel can have during a periodic CHANNEL CALIBRATION, COTs, or a TRIP ACTUATING DEVICE OPERATIONAL TEST that requires trip setpoint verification.

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 3. 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.

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BACKGROUND (continued)

Solid State Protection System

The SSPS equipment is used for the decision logic processing of outputs from the signal processing equipment bistables, setpoint comparators, or contacts. 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. 2

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, setpoint comparator, or contact 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. 2

Reactor Trip Switchgear

The ~~RTBs~~ reactor trip breakers are in the electrical power supply line from the control rod drive motor generator set power supply to the CRDMs. Opening of the ~~RTBs~~ reactor trip breakers interrupts power to the CRDMs, which allows the shutdown rods and control rods to fall into the core by gravity. Each ~~RTB~~ reactor trip breaker is equipped with a bypass breaker to allow testing of the ~~RTB~~ reactor trip breaker while the unit is at power. 2

During normal operation the output from the SSPS is a voltage signal that energizes the undervoltage coils in the ~~RTBs~~ reactor trip breakers 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~~ reactor trip breakers 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 2

1

BASES

BACKGROUND (continued)

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 ~~3~~ 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 channels 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. 2

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to preserve 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 4 takes credit for most RTS trip Functions. RTS trip Functions that are retained yet not specifically credited in the accident analysis are implicitly 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.

Permissive and interlock setpoints allow the blocking of trips during plant startups, and restoration of trips when the permissive conditions are not satisfied, but they are not explicitly modeled in the Safety Analyses. These permissives and interlocks ensure that the starting conditions are consistent with the safety analysis, before preventive or mitigating actions occur. Because these permissives or interlocks are only one of multiple conservative starting assumptions for the accident analysis, they are generally considered as nominal values without regard to measurement accuracy.

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 to be OPERABLE. The Allowable Value specified in Table 3.3.1-1 is the least conservative value of the as-found setpoint that the channel can have when tested, such that a channel is OPERABLE if the as-found setpoint is within the as-found tolerance and is conservative

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

with respect to the Allowable Value during a CHANNEL CALIBRATION or COT. As such, the Allowable Value differs from the ~~[~~NTSP~~]~~ by an amount ~~[~~greater than or~~]~~ equal to the expected instrument channel uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the channel ~~[~~NTSP~~]~~ will ensure that a SL is not exceeded at any given point of time as long as the channel has not drifted beyond expected tolerances during the surveillance interval. Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, 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 (as-found criteria).

If the actual setting of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE but degraded. The degraded condition of the channel will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the ~~[~~NTSP~~]~~ (within the allowed tolerance), and evaluating the channel's response. If the channel is functioning as required and is expected to pass the next surveillance, then the channel is OPERABLE and can be restored to service at the completion of the surveillance. After the surveillance is completed, the channel as-found condition will be entered into the Corrective Action Program for further evaluation.

A trip setpoint may be set more conservative than the ~~[~~NTSP~~]~~ as necessary in response to plant conditions. However, in this case, the OPERABILITY of this instrument must be verified based on the ~~[~~field setting~~]~~ and not the ~~[~~NTSP~~]~~. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

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

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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 2

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. 6

In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the reactor is critical ~~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. 2

5 **INSERT 2**

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

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. 2

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 3

The LCO requires all four of the Power Range Neutron Flux - High channels to be OPERABLE. 6

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.

5 **INSERT 3**

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)

INSERT 4

The LCO requires all four of the Power Range Neutron Flux - Low channels to be OPERABLE. 6

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.

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 5

The LCO requires all four of the Power Range Neutron Flux - High Positive Rate channels to be OPERABLE. 6

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 2

in MODE

with Rod Control System capable of rod withdrawal or one or more rods not fully inserted,

5

INSERT 4

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

5

INSERT 5

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

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

with Rod Control System incapable of rod withdrawal and all rods fully inserted, there is

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. 2

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 a nonconservative local DNBR. DNBR is defined as the ratio of the heat flux required to cause a DNB at a particular location in 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.

INSERT 6

The LCO requires all four Power Range Neutron Flux - High Negative Rate channels to be OPERABLE. 6

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. 2

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

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INSERT 6

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

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. 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.

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

The LCO requires two 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. 6

Because this trip Function is important only during startup, there is generally no need to disable channels for testing while the Function 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 Rod Control System is not capable of rod withdrawal or the Source Range Neutron Flux function is required to be OPERABLE, providing protection. ~~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. 2

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

1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

The Source Range Neutron Flux Function provides protection for control rod withdrawal from subcritical~~,~~ and boron dilution ~~and control rod ejection~~ events. 2

There are two Source Range Neutron Flux channels arranged in a one-out-of-two logic. 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~~ drawer input is shorted out, driving the output of the drawer to zero. 6 2

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)~~ Monitoring Instrumentation (BDMI)," for MODE 3, 4, or 5 and LCO 3.9.3, "Nuclear Instrumentation," for MODE 6. 7

6. <u>Overtemperature ΔT</u>

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~~ pressurizer 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: 2

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

- 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

- 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.

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. Therefore, ~~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. 2

There are four Overtemperature ΔT channels arranged in a two-out-of-four logic. 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. 6 2

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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

7. Overpower ΔT

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 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:

SII

- 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 2 of Table 3.3.1-1.

- 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~~.~~ , and 2

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,~~ 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 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. 2

There are four Overpower ΔT channels arranged in a two-out-of-four logic. 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. 6 2

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

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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. 2 2

a. Pressurizer Pressure - Low

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

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

The LCO requires four channels ~~for two and four loop units (three channels for three loop units)~~ of Pressurizer Pressure - Low to be OPERABLE. 6 2

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.~~ 8

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.

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

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. 6

1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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

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

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.~~ 6

8 ~~9~~

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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 35 ~~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. INSERT 7 The flow signals are not used for any control system input. 2 6

INSERT 8 6

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~~. 8

~~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.~~

~~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.~~ 7

~~The LCO requires one RCP Breaker Position channel per RCP to be OPERABLE. One OPERABLE channel is sufficient for this trip Function because the RCS Flow - Low trip alone provides sufficient protection of unit SLs for loss of flow events. The RCP~~

5

INSERT 7

There are three per loop Reactor Coolant Flow - Low channels using these detectors and are arranged in a two-out-of-three logic for each loop.

5

INSERT 8

Design flow is 94,600 (91,400 X 1.035) gpm per loop (Reference 14). UFSAR Table 5.1-1 lists this value as the Full Power Operability Flow, gpm/loop.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~

7

~~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.~~

~~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,~~

1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~ 7

11 ~~12~~. Undervoltage Reactor Coolant Pumps (RCPs) 7

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. 2

There are four (one per bus) Undervoltage RCP channels arranged in a two-out-of-four logic. The LCO requires ~~three~~ four Undervoltage RCPs channels (one per ~~phase) per~~ bus) to be OPERABLE. 6 2

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.~~ 2

12 ~~13~~. Underfrequency Reactor Coolant Pumps 7

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. 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. 5

There are four (one per bus) Underfrequency RCP channels arranged in a two-out-of-four logic. The LCO requires ~~three~~ four Underfrequency RCPs channels (one per bus) to be OPERABLE. 6 2

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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. INSERT 9 2

13 ~~14~~. Steam Generator Water Level - Low Low

INSERT 10
INSERT 11 2

~~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 Auxiliary Feedwater (AFW) ~~AFW~~ pumps on low low SG level.

INSERT 12
The LCO requires three ~~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~~. 6 2

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

2

INSERT 9

Note that this Function also provides a signal to trip all four reactor coolant pumps.

2

INSERT 10

The Steam Generator Water Level Low-Low trip protects the reactor from loss of heat sink in the event of a sustained steam/feedwater flow mismatch resulting from loss of normal feedwater or a feedwater system pipe break outside of containment. This function also provides input to the steam generator level control system. IEEE-279 requirements are satisfied by 2/3 logic for protection function actuation, thus allowing for a single failure of a channel and still performing the protection function.

Control/protection interaction is addressed by the use of the Median Signal Selector that prevents a single failure of a channel providing input to the control system requiring protection function action. That is, a single failure of a channel providing input to the control system does not result in the control system initiating a condition requiring protection function action. The Median Signal Selector performs this by not selecting the channels indicating the highest or lowest steam generator levels as input to the control system.

With the transmitters located inside containment and thus possibly experiencing adverse environmental conditions (due to a feedline break), the Environmental Allowance Modifier (EAM) was devised. The EAM function (Containment Pressure (EAM) with a setpoint of < 0.5 psig) senses the presence of adverse containment conditions (elevated pressure) and enables the Steam Generator Water Level - Low-Low trip setpoint (Adverse) which reflects the increased transmitter uncertainties due to this environment. The EAM allows the use of a lower Steam Generator Water Level - Low-Low (EAM) trip setpoint when these conditions are not present, thus allowing more margin to trip for normal operating conditions.

The Trip Time Delay (TTD) creates additional operational margin when the plant needs it most, during early escalation to power, by allowing the operator time to recover level when the primary side load is sufficiently small to allow such action. The TTD is based on continuous monitoring of primary side power through the use of RCS loop ΔT. Two time delays are calculated, based on the number of steam generators indicating less than the Low-Low Level trip setpoint and the primary side power level. The magnitude of the delays decreases with increasing primary side power level, up to 50% RTP. Above 50% RTP there are no time delays for the Low-Low level trips.

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2

INSERT 11

In the event of failure of a Steam Generator Water Level channel, it is placed in the trip condition as input to the Solid State Protection System and does not affect either the EAM or TTD setpoint calculations for the remaining operable channels. Failure of the Containment Pressure (EAM) channel to a protection set also does not affect the EAM setpoint calculations. It is then necessary for the operator to force the use of the shorter TTD by adjustment of the single steam generator time delay calculation (T_S) to match the multiple steam generator time delay calculation (T_M) for the affected protection set, through the Eagle-21 System Man-Machine-Interface (MMI) test cart. Failure of the RCS loop ΔT channel input (failure of more than one T_H RTD or failure of a T_C RTD) does not affect the TTD calculation for a protection set. Although not affecting the TTD calculation, this results in the requirement that the operator adjust the threshold power level for zero seconds time delay from 50% RTP to 0% RTP, through the MMI, or place the affected protection sets Steam Generator Water Level - Low-Low channel in trip.

5 2

INSERT 12

There are three Steam Generator Water Level Low-Low channels per steam generator arranged in a two-out-of-three logic. These channels are arranged in four protection sets with each channel of the Containment Pressure (EAM) and RCS Loop ΔT inputting into its associated protection set.

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~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.~~

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

~~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 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.~~ 7

14

~~16~~. Turbine Trip 7

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,

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

approximately 50% power, will not actuate a reactor trip. Three pressure switches monitor the auto stop ~~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 above ~~below~~ the P-9 setpoint, approximately 50% power. 2 This action will ~~not~~ actuate a reactor trip. 2 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 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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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.

15
~~17~~. Safety Injection Input from Engineered Safety Feature Actuation System 7

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 not 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.

Trip Setpoint and Allowable Values are not applicable to this Function. The SI Input is provided by ~~relay~~ solid state logic in the ESFAS. Therefore, there is no measurement signal with which to associate an LSSS. 2

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 in MODE 1 or 2. 6

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.

16
~~18~~. Reactor Trip System Interlocks 7

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 are:

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

a. Intermediate Range Neutron Flux, P-6

The Intermediate Range Neutron Flux, P-6 interlock is actuated when any NIS intermediate range channel goes approximately four decades ~~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: 2

- 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 input to the SR drawer is shorted out driving the output of drawer to zero ~~high voltage to the detectors is also removed,~~ and 2 2 SII
- 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~~ . 2
- ~~on increasing power, the P-6 interlock provides a backup block signal to the source range flux doubling circuit. Normally, this Function is manually blocked by the control room operator during the reactor startup.~~ 2

There are two Intermediate Range Neutron Flux, P-6 channels arranged in a one-out-of-two logic. 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. 5

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.

b. Low Power Reactor Trips Block, P-7

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 Pressure, P-13 interlock. The LCO requirement for the P-7 interlock ensures that the following Functions are performed:

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

(1) on increasing power, the P-7 interlock automatically enables 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),
- ~~RCPs Breaker Open (Two Loops),~~ 2
- Undervoltage RCPs, and
- Underfrequency RCPs.

These reactor trips are only required when operating above the P-7 setpoint (approximately 10% power). The reactor trips provide protection against violating the DNBR limit. Below the P-7 setpoint, the RCS is capable of 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),~~ 2
- 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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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

35 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 trip~~s~~ 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 flow in any RCS loop that could result in DNB conditions in the core when greater than approximately 35 ~~48~~% power. On decreasing power, the reactor trip on low flow in any loop is automatically blocked. 2 2 2

The LCO requires four channels of Power Range Neutron Flux, P-8 interlock to be OPERABLE in MODE 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

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.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

e. Power Range Neutron Flux, P-10

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 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,

- on increasing power, the P-10 interlock allows the operator to manually block the Power Range Neutron Flux - Low reactor trip,

- 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~~ shorts out the input to the SR drawer, driving the output of drawer to zero, 2

- the P-10 interlock provides one of the two inputs to the P-7 interlock, and

- 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 channels of Power Range Neutron Flux, P-10 interlock to be OPERABLE in MODE 1 or 2.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

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.

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.

17 ~~19~~. Reactor Trip Breakers 7

This trip Function applies to the reactor trip breakers ~~RTBs~~ exclusive of individual trip mechanisms. There are two Reactor Trip Breakers arranged in a one-out-of-two logic. 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. 2 6

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.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

18 ~~20~~. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms 7

The LCO requires both the Undervoltage and Shunt Trip Mechanisms to be OPERABLE for each reactor trip breaker ~~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 17 ~~19~~ above. OPERABILITY of both trip mechanisms on each breaker ensures that no single trip mechanism failure will prevent opening any breaker on a valid signal. 2 2

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.

19 ~~21~~. Automatic Trip Logic 7

The LCO requirement for the reactor trip breakers ~~RTBs~~ (Functions 17 and 18 ~~19 and 20~~) and Automatic Trip Logic (Function 19 ~~21~~) ensures that means are provided to interrupt the power to allow the rods to fall into the reactor core. Each reactor trip breaker ~~RTB~~ is equipped with an undervoltage coil and a shunt trip coil to trip the breaker open when needed. Each reactor trip breaker ~~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 reactor trip breakers ~~RTBs~~ and associated bypass breakers to open and shut down the reactor. 2 7 2 2

There are two RTS Automatic Trip Logic trains arranged in a one-out-of-two logic. 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. 6

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).

BASES

ACTIONS

~~-------------------------------REVIEWER'S NOTE-----------------------------------
In Table 3.3.1-1, Functions 11.a and 11.b were not included in the generic evaluations approved in either WCAP-10271, as supplemented, WCAP-15376, or WCAP-14333. In order to apply the WCAP-10271, as supplemented, and WCAP-15376 or WCAP-14333 TS relaxations to plant specific Functions not evaluated generically, licensees must submit plant specific evaluations for NRC review and approval.
--~~ 3

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.

In the event a channel's ~~[NTSP]~~ trip setting is found nonconservative with respect to the Allowable Value, or the channel is not functioning as required, or the transmitter, instrument loop, signal processing electronics, setpoint comparator trip output, contact output, 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 3.3.1-1 are specified on a "per" basis (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. 2 2 5

SII

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 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.
--~~ 3

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.

BASES

ACTIONS (continued)

B.1 and B.2

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 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.

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.

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,
- reactor trip breakers ~~RTBs~~, 2
- reactor trip breaker ~~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

BASES

ACTIONS (continued)

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.

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

Condition 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in WCAP-14333-P-A (Ref. 8).

In addition to placing the inoperable channel in the tripped condition, THERMAL POWER must be reduced to ≤ 75% RTP within 78 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.

As an alternative to the above actions, the inoperable channel can be placed in the tripped condition within 72 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 12 hour Frequency is consistent with LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

 1

BASES

ACTIONS (continued)

As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Seventy-eight hours are allowed to place the plant in MODE 3. The 78 hour Completion Time includes 72 hours for channel corrective maintenance, and an additional 6 hours for the MODE reduction as required by Required Action D.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.

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypass condition for up to 12 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 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~-----REVIEWER'S NOTE-----~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing routine surveillance testing, and setpoint adjustments when a setpoint reduction is required by other Technical Specifications. The 12 hour time limit is justified in Reference 8.~~
~~-----~~ 3

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~~ the movable incore detectors once per 12 hours may not be necessary. 5

<u>E.1 and E.2</u>

Condition E applies to the following reactor trip Functions:

- Power Range Neutron Flux - Low,
- Overtemperature ΔT,

1

BASES

ACTIONS (continued)

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

7

A known inoperable channel must be placed in the tripped condition within 72 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 8.

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.

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~-----REVIEWER'S NOTE-----~~
~~The below text should be used for plants with installed bypass test capability:~~
~~----------~~

3

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 9.~~

2

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 to 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. 5

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 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 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 H.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.

I.1

Condition I 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 reactor trip breakers ~~RTBs~~ must be opened immediately. With the reactor trip breakers ~~RTBs~~ open, the core is in a more stable condition. 2

J.1, J.2.1, and J.2.2

Condition J 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

BASES

ACTIONS (continued)

restore it to an OPERABLE status. If the channel cannot be returned to 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.

K.1 and K.2

Condition K applies to the following reactor trip Functions:

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

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 72 hours (Ref. 8). 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 trip Function, 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 trip Function, 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 72 hours allowed to place the channel in the tripped condition is justified in Reference 8. 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.

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 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 8.~~
~~--~~ 3

~~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 11.~~ 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 11.~~

1

BASES

ACTIONS (continued)

~~M.1 and M.2~~

~~Condition M applies to the RCP Breaker Position (Two Loops) reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be placed in trip within [6] hours. If the channel cannot be placed in trip within the [6] hours, then THERMAL POWER must be reduced below the P-7 setpoint within the next 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The [6] hours allowed to place the channel in trip and the 6 additional hours allowed to reduce THERMAL POWER to below the P-7 setpoint are justified in Reference 11.~~

~~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 11.~~

7

L

~~N~~.1 and ~~N~~.2 7

L

Condition ~~N~~ 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 72 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 72 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 8. Four hours is allowed for reducing power. 7 2

Low Fluid Oil Pressure

or three additional Turbine Stop Valve Closure channels

~~[~~ The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 8. ~~]~~ 4 4

BASES

ACTIONS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The below text should be used for plants with installed bypass test capability:~~

~~The Required Actions are modified by a Note that allows placing one channel in bypass for up to 12 hours while performing routine surveillance testing. The 12 hour time limit is justified in Reference 8.~~
~~-----~~

M ~~O~~.1 and ~~O~~.2

Condition M ~~O~~ 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, 24 hours are allowed to restore the train to OPERABLE status (Required Action M ~~O~~.1) or the unit must be placed in MODE 3 within the next 6 hours. The Completion Time of 24 hours (Required Action M ~~O~~.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 24 hours allowed to restore the inoperable RTS Automatic Trip Logic train to OPERABLE status is justified in Reference 8. An additional 6 hours is allowed to place the unit in MODE 3. ~~The Completion Time of 6~~ Six hours ~~(Required Action O.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. ~~[~~The ~~[~~4~~]~~ hour time limit for testing the RTS Automatic Trip logic train may include testing the reactor trip breaker ~~RTB~~ also, if both the Logic test and reactor trip breaker ~~RTB~~ test are conducted within the ~~[~~4~~]~~ hour time limit. The ~~[~~4~~]~~ hour time limit is justified in Reference 8.~~]~~

~~-----REVIEWER'S NOTE-----~~
~~The below text should replace the bracketed information in the previous paragraph if WCAP-14333 and WCAP-15376 are being incorporated:~~

~~The [4] hour time limit for the RTS Automatic Trip Logic train testing is greater than the 2 hour time limit for the RTBs, which the logic train supports. The longer time limit for the logic train ([4] hours) is acceptable based on Reference 12.~~
~~-----~~

1

BASES

ACTIONS (continued)

N

~~P~~.1 and ~~P~~.2

7

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~WCAP-14333-P-A, Rev. 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," and the associated TSTF (TSTF-418) and WCAP-15376-P, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," and the associated TSTF (TSTF-411) both modify Condition P.~~

~~WCAP-14333-P-A, Rev. 1 and the associated TSTF-418 provide a Completion Time for Required Action P.1 of 1 hour and Required Action P.2 of 7 hours. WCAP-14333-P-A, Rev. 1 contains three Notes to TS 3.3.1 Condition P. Note 1 states, "One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE." Note 2 states, "One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE." WCAP-14333-P-A, Rev. 1 also adds a third Note, which states: "One RTB train may be bypassed for up to [4] hours for concurrent surveillance testing of the RTB and automatic trip logic, provided the other train is OPERABLE."~~

~~WCAP-15376-P and the associated TSTF-411 provide a Completion Time for Required Action P.1 of 24 hours and Required Action P.2 of 30 hours. WCAP-15376-P relaxes the time that an RTB train may be bypassed for surveillance testing from 2 hours to 4 hours, and deletes Notes 2 and 3 that are added by WCAP-14333-P-A, Rev. 1.~~

3

~~Implementation of TS 3.3.1, Condition P:~~

1. ~~If WCAP-14333-P-A, Rev. 1 is implemented without implementing WCAP-15376-P, the Completion Time for Required Action P.1 will be 1 hour and for Required Action P.2 will be 7 hours. Condition P will contain the three Notes as discussed above, with 2 hours to bypass an RTB train for surveillance testing in Note 1.~~

2. ~~If WCAP-15376-P is implemented without implementing WCAP-14333-P-A, Rev. 1, the Completion Time for Required Action P.1 will be 24 hours and for Required Action P.2 will be 30 hours. Condition P will only contain one Note (Note 1 as discussed in the first paragraph above), with 4 hours to bypass an RTB train for surveillance testing in the Note.~~

3. ~~If WCAP-14333-P-A, Rev. 1, and WCAP-15376-P are both implemented, follow the direction for Item 2, above.~~

BASES

ACTIONS (continued)

~~Use the following Bases if WCAP-14333-P-A, Rev. 1 is adopted without adopting WCAP-15376-P:~~

~~Condition P 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 Condition C entry while an RTB is inoperable.~~

~~The Required Actions have been modified by three Notes. Note 1 allows one channel to be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE. Note 1 applies to RTB testing that is performed independently from the corresponding automatic trip logic testing. Note 2 allows one RTB to be bypassed for up to 2 hours for maintenance if the other RTP train is OPERABLE. The 2 hour time limit is justified in Reference 9. Note 3 applies to RTB testing that is performed concurrently with the corresponding automatic trip logic test. For concurrent testing of the automatic trip logic and RTB, one RTB train may be bypassed for up to [4] hours provided the other train is OPERABLE. The [4] hour time limit is approved by Reference 8.~~ 3

~~Use the following Bases if WCAP-15376-P is adopted without adopting WCAP-14333-P-A, Rev. 1 or if both are adopted:~~

N reactor trip breakers

Condition ~~P~~ 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, 24 hours is allowed for train corrective maintenance to restore the train to OPERABLE status or the unit must be placed in MODE 3 within the next 6 hours. The 24 hour Completion Time is justified in Reference ~~13~~. ~~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. 2 7

12 Six 7

An additional 6 hours is allowed to place the unit in MODE 3.

Placing the unit in MODE 3 results in Condition C entry while an ~~RTB~~ is inoperable. 2

reactor trip breaker

BASES

ACTIONS (continued)

The Required Actions have been modified by a Note. The Note allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. The 4 hour time limit is justified in Reference ~~13~~ 12. 2 3

O ~~Q~~.1 and ~~Q~~.2 7

Condition ~~Q~~ O 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. An additional 6 hours is allowed to place the unit in MODE 3. ~~The Completion Time of 6~~ Six 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. 7

P ~~R~~.1 and ~~R~~.2 7

Condition ~~R~~ P 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. An additional 6 hours is allowed to place the unit in MODE 2. ~~The Completion Time of 6~~ Six hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems. 7

1

BASES

ACTIONS (continued)

Q

~~S~~.1 and ~~S~~.2

7

Q reactor trip breaker

Condition ~~S~~ 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 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 ~~P~~.

7 2

Six

7

The Required Actions have been modified by a Note. The Notes states that the

reactor trip breaker

2 7

up to 4 hours

4 N

7

Q

The Completion Time of 48 hours for Required Action ~~S~~.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.

reactor trip breaker

7

2

INSERT 13 INSERT 14 INSERT 15

2

SURVEILLANCE REQUIREMENTS

~~-------------------------------REVIEWER'S NOTE-----------------------------------~~
~~In Table 3.3.1-1, Functions 11.a and 11.b were not included in the generic evaluations approved in either WCAP-10271, as supplemented, or WCAP-14333. In order to apply the WCAP-10271, as supplemented, and WCAP-14333 TS relaxations to plant specific Functions not evaluated generically, licensees must submit plant specific evaluations for NRC review and approval.~~
~~--~~

3

~~-----------------------------REVIEWER'S NOTE--------------------------------~~
~~Notes b and c are applied to the setpoint verification Surveillances for each RTS instrumentation Function in Table 3.3.1-1 unless one or more of the following exclusions apply:~~

~~1. Manual actuation circuits, automatic actuation logic circuits or instrument functions that derive input from contacts which have no associated sensor or adjustable device, e.g., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc. are excluded. In addition, those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function are excluded.~~

3

SEQUOYAH UNIT 2 Revision XXX

2 1

2

INSERT 13

R.1 and R.2

Condition R applies to the following reactor trip Functions:

- Steam Generator Water Level--Low-Low (Adverse), and
- Steam Generator Water Level--Low-Low (EAM)

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.

In addition to placing the channel in the tripped condition it is also necessary to force the use of the shorter TTD by adjustment of the single steam generator time delay calculation (T_S) to match the multiple steam generator time delay calculation (T_M) for the affected protection set within 4 hours.

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.

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2

INSERT 14

S.1, S.2, and S.3

Condition S applies to the Containment Pressure (EAM) coincident with Steam Generator Water Level--Low-Low (Adverse) reactor trip.

Failure of the Containment Pressure (EAM) channel to a protection set does not affect the EAM setpoint calculations. A known inoperable Containment Pressure channel results in the requirement to adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoints for the affected protection set to the same value as Steam Generator Water Level - Low-Low (Adverse) within 6 hours.

An alternative to adjusting the affected Steam Generator Water Level - Low-Low (EAM) trip setpoints to the same value as the Steam Generator Water Level - Low-Low (Adverse) trip setpoints is to place the associated protection set's SG Water Level Low-Low channels in the tripped condition within 6 hours

If neither of the above Required Actions are completed within their associated Completion Time, then the unit must be placed in a MODE where these Functions are not required OPERABLE This requires the unit be placed in MODE 3 within 12 hours. The allowed Completion Times are reasonable to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

2

INSERT 15

T.1, T.2, and T.3

Condition T applies to the RCS Loop ΔT coincident with SG Water Level -- Low Low reactor trips.

Failure of the RCS loop ΔT channel input (failure of more than one T_H RTD or failure of a T_C RTD) does not affect the TTD calculation for a protection set. This results in the requirement that the operator adjust the threshold power level for zero seconds time delay from 50% RTP to 0% RTP within 6 hours. With the trip time delay adjusted to zero seconds the additional operational margin that allows the operator time to recover SG level is removed.

An alternative to adjusting the threshold power level for zero seconds time delay is to place the affected protection set's SG Water Level Low-Low level channels in the tripped condition within 6 hours.

If neither of the above Required Actions can be completed within their associated Completion Times then the unit must be placed in a MODE where these Functions are not required OPERABLE. This requires the unit be placed in MODE 3 within 12 hours. The allowed Completion Times are reasonable to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

U.

If the Required Action is not met within the specified Completion Time of Condition R, the unit must be placed in a MODE where this Function is not required OPERABLE. Six 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.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~2. Settings associated with safety relief valves are excluded. The performance of these components is already controlled (i.e., trended with as-left and as-found limits) under the ASME Code for Operation and Maintenance of Nuclear Power Plants testing program.~~

~~3. Functions and Surveillance Requirements which test only digital components are normally excluded. There is no expected change in result between SR performances for these components. Where separate as-left and as-found tolerance is established for digital component SRs, the requirements would apply.~~

~~--~~

3

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.~~
~~--~~

3

SR 3.3.1.1

Performance of the CHANNEL CHECK 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 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.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 of 12 hours 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.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

3

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the power range channel output. If the absolute difference is greater than 2 percent ~~calorimetric heat balance calculation results exceed the power range channel output by more than 2% RTP~~, the power range channel is not declared inoperable, but must be adjusted. The power range channel output shall be adjusted consistent with the calorimetric heat balance calculation results if the absolute difference is greater than 2 percent ~~calorimetric calculation exceed the power range channel output by more than + 2% RTP~~. If the power range channel output cannot be properly adjusted, the channel is declared inoperable.

7

~~If the calorimetric is performed at part power (< [70]% RTP), adjusting the power range channel indication in the increasing power direction will assure a reactor trip below the safety analysis limit (< [118]% RTP). Making no adjustment to the power range channel in the decreasing power direction due to a part power calorimetric assures a reactor trip consistent with the safety analyses.~~

2

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~This allowance does not preclude making indicated power adjustments, if desired, when the calorimetric heat balance calculation is less than the power range channel output. To provide close agreement between indicated power and to preserve operating margin, the power range channels are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric (< [70]% RTP). This action may introduce a nonconservative bias at higher power levels which may result in an NIS reactor trip above the safety analysis limit (> [118]% RTP). The cause of the potential nonconservative bias is the decreased accuracy of the calorimetric at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side power calorimetric measurement is the feedwater flow measurement, which is typically a ΔP measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the ΔP error has not changed. An evaluation of extended operation at part power conditions would conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ [85]% RTP when: 1) the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric below [70]% RTP; or 2) for a post refueling startup. The evaluation of extended operation at part power conditions would also conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power Range Neutron Flux - Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux - High bistables are reset to ≤ [109]% RTP, the power range channel adjustment must be confirmed based on a calorimetric performed at ≥ [70]% RTP.~~

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~A plant specific evaluation based on the guidance in Westinghouse Technical Bulletin ESBU-TB-92-14 is required to determine the power level below which power range channel adjustments in a decreasing power direction become a concern. This evaluation must reflect the plant specific RTS setpoint study. In addition, this evaluation should determine if additional administrative controls are required for Power Range Neutron Flux-High trip setpoint setting changes~~
~~---~~

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1

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 12 hours are allowed for performing the first Surveillance after reaching 15% RTP. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid.

~~[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 that a difference between the calorimetric heat balance calculation and the power range channel output of more than +2% RTP is not expected in any 24 hour period.~~

~~an absolute difference greater than 2 percent~~ 7

9

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

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~----------]~~

3

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted. The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%.

SII

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 and overpower ΔT Function s.

2

A Note clarifies that the Surveillance is required only if reactor power is ≥ ~~[~~15%~~]~~ RTP and that ~~24~~ 96 hours is allowed for performing the first Surveillance after reaching ~~[~~15%~~]~~ RTP.

4 7 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[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.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 3

SR 3.3.1.4

SR 3.3.1.4 is the performance of a TADOT. 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 reactor trip breaker ~~RTB~~ test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of reactor trip breaker ~~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 3.3.1.12 ~~14~~. 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. 2 7

~~[The Frequency of every 62 days on a STAGGERED TEST BASIS is justified in Reference 13.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 3

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested 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, including operation of the P-7 permissive which is a logic function only. ~~[The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 13.~~

~~OR~~ 9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 3

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 and overpower ΔT Functions. 2

SII

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. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~ 3
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT.

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.

Setpoints must be conservative with respect to 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 9. 4

SR 3.3.1.7 is modified by a Note that provides a 4 hour~~s~~ 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 reactor trip breakers ~~RTBs~~ are open and SR 3.3.1.7 is no 5 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

reactor trip breakers

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. 2

~~[The Frequency of 184 days is justified in Reference 9.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 3
~~---]~~

SR 3.3.1.7 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable. 4 4 4

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~ 3
~~---~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 4

SR 3.3.1.8

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 stating 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 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 Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within ~~[~~the Frequency specified in the Surveillance Frequency Control Program ~~OR 184 days]~~ or 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 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 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. ~~[The Frequency of 184 days is justified in Reference 13.~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 3

SR 3.3.1.8 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable. 4 4 4

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~---~~ 3

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 9~~. 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ 3

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.

SR 3.3.1.10

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 ~~[~~NTSP ~~or the previous test "as-left" values]~~ must be consistent with the drift allowance used in the setpoint methodology. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[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.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

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 3.3.1.10 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~---~~

3

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. UFSAR Section 7.1.2

4

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. 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 consists of checking the discriminator voltage and adjusting if necessary. The CHANNEL CALIBRATION for the ~~and~~ intermediate range neutron detectors consists of comparing the output of the intermediate range drawer to the secondary side calorimetric and adjusting if necessary. ~~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.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

3

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.11 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[~~NTSP~~]~~. Where a setpoint more conservative than the ~~[~~NTSP~~]~~ is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[~~NTSP~~]~~, then the channel shall be declared inoperable.

~~-----REVIEWER'S NOTE-----~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~-----~~

The second Note also requires that the ~~[NTSP and the]~~ methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2.

~~SR 3.3.1.12~~

~~SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10. 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.~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

~~SR 3.3.1.12 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the [NTSP]. Where a setpoint more conservative than the [NTSP] is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the [NTSP], then the channel shall be declared inoperable.~~

7

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The bracketed section '[NTSP and the]' of the sentence in Note (c) in Table 3.3.1-1 is not required in plant specific Technical Specifications which include a [Nominal Trip Setpoint] column in Table 3.3.1-1.~~
~~---~~

~~The second Note also requires that the [NTSP and the] methodologies for calculating the as-left and the as-found tolerances be in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].~~

~~SR 3.3.1.13~~

~~SR 3.3.1.13 is the performance of a COT of RTS interlocks. 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 Frequency of 18 months is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

7

12

SR 3.3.1.~~14~~ 7

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~~ 7

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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 shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the 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 and manual undervoltage trip. 7 2

~~[The Frequency of 18 months is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.~~

~~OR~~ 9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~REVIEWER'S NOTE~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~]~~ 3

The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them.

SR 3.3.1.~~15~~13 7

SR 3.3.1.~~15~~13 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. 7 4 4

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

14

SR 3.3.1.~~16~~ 7

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 UFSAR Table 7.2.1-5 ~~Technical Requirements Manual, Section 15 (Ref. 14)~~. Individual component response times are not modeled in the analyses. 7 2

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).

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 UFSAR 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. 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A and/or WCAP-14036-P.~~
~~---~~ 3

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," (Ref. 10) 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," (Ref. ~~15~~ 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. ~~]~~ 4 2 4 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 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.

~~[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 18 months Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ 9

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ 3

SR 3.3.1.~~16~~ 14 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. 7

REFERENCES

1. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety Related Instrumentation."

2. U FSAR, Chapter ~~[~~7~~]~~. 2 4

3. U FSAR, Chapter ~~[~~6~~]~~. 2 4

BASES

REFERENCES (continued)

4. U FSAR, Chapter ~~[~~15~~]~~.

5. IEEE-279-1971.

6. 10 CFR 50.49.

7. ~~Plant specific setpoint methodology study~~ Calculation SQN-EEB-PL&S, Precautions, Limitations, and Setpoints for NSSS.

8. WCAP-14333-P-A, Rev. 1, October 1998.

9. WCAP-10271-P-A, Supplement 1, May 1986.

10. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

~~11. [Plant specific evaluation reference.]~~

~~12~~ 11. WCAP-10271-P-A, Supplement 2, June 1990.

~~13~~ 12. WCAP-15376, Rev. 0, October 2000.

~~14. Technical Requirements Manual, Section 15, "Response Times."~~

~~15~~ 13. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995.

14. Letter from Siva P. Lingam (NRC) to Joseph W. Shea (TVA), "Sequoyah Nuclear Plant, Units 1 and 2 - Issuance of Amendments to Revise the Technical Specification to allow use of Areva Advanced W17 High Performance Fuel (TS-SQN-2011-07) (TAC NOS. ME6538 and ME6539), dated September 26, 2012.

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

1. NUREG 1431, Standard Technical Specifications - Westinghouse Plants, Revision 4.0 provides two sets of specification for Section 3.3.1; one for adoption "Without a Setpoint Control Program," (3.3.1.A) the other for adoption "With a Setpoint Control Program," (3.3.1.B). This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation and is removed.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description. Where a deletion has occurred, subsequent alpha-numeric designators have been changed for any applicable affected ACTIONS, SURVEILLANCE REQUIREMENTS, FUNCTIONS, and Footnotes.

3. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. Editorial changes made for enhanced clarity.

6. Proposed changes to the CTS removed details of system design and system description, including design limits stating that the removed detail will be located in the bases for the specification. These changes are made to be consistent with changes made to the Specification.

7. Changes are made to be consistent with changes made to the Specification.

8. SQN source could not be found to support this statement, therefore it is removed.

9. ~~ISTS SR 3.3.1.1 through ISTS 3.3.16 (ITS SR 3.3.1.1 through ITS 3.1.14) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.3.1.1 through ITS 3.3.1.14 is "In accordance with the Surveillance Frequency Control Program."~~

ISTS SR 3.3.1.1 through ISTS SR 3.3.1.14 and ISTS SR 3.3.1.16 (ITS SR 3.3.1.1 through ITS SR 3.3.1.12 and ITS SR 3.3.1.14) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.3.1.1 through ITS SR 3.3.1.12 and ITS SR 3.3.1.14 is "In accordance with the Surveillance Frequency Control Program."

KAB054

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L11 an L12

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Most changes to the SQN current Technical Specifications (CTS) incorporate industry changes made to NUREG-1431 and are covered by generic No Significant Hazards Considerations. Proposed changes that are not considered included in the conversion to NUREG-1431 are outside of the generic evaluation and require separate evaluation, as is the case with these less restrictive changes (L11 and L12). The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below are the descriptions of these less restrictive changes and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS Table 3.3-1 ACTION 10 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP. This action is applicable to CTS Table 3.3-1 Functional Unit 14.C (Main Steam Generator Water Level – Low-Low, RCS Loop ΔT). ITS 3.3.1 Required Action T.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low channel in trip instead of adjusting the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP with the same Completion Time. This changes the CTS by adding an alternative to adjusting the TTD threshold power level for zero seconds.

The purpose of CTS Table 3.3-1 ACTION 10 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the affected protection set's Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP. With the trip time delay adjusted to zero seconds the additional operational margin that allows the operator time to recover SG Water level is removed and the associated SG Water level channel is returned to OPERABLE. If the threshold power level for zero seconds time delay is not adjusted from 50% RTP to 0% RTP within the specified Completion Time this proposed change allows placing the affected protection sets SG Water Level Low-Low channels in the tripped condition. Once the channel is placed in the tripped condition the RCS ΔT TTD circuitry is removed from the active portion of the Steam Generator Low-Low Level channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20 and this action is no longer necessary. The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. The ITS Required Action T.2 Completion Time of 6 hours is consistent with CTS TABLE 3.3-1 ACTION 10 and the proposed ITS Required Action T.1. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

CTS Table 3.3-1 ACTION 11 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse). This action is applicable to CTS Table 3.3-1 Functional Unit 14.D (Main Steam Generator Water Level – Low-Low, Containment Pressure (EAM)). ITS 3.3.1 Required Action S.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low channel in trip instead of adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse) with the same Completion Time for placing the channel in trip. This changes the CTS by adding an alternative to adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse).

The purpose of CTS Table 3.3-1 ACTION 11 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse). If the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is not adjusted to the same value as Steam Generator Water Level -- Low-Low (Adverse) within the specified Completion Time, this proposed change allows placing the affected protection set's SG Water Level -- Low-Low channels in the tripped condition. Once the channel is placed in the tripped condition the Steam Generator Water Level -- Low-Low EAM/Adverse circuitry is removed from the active portion of the Steam Generator Water Level -- Low-Low channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20, and these actions are no longer necessary. The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. The ITS Required Action S.2 Completion Time of 6 hours is consistent with CTS TABLE 3.3-1 ACTION 11 and the proposed ITS Required Action S.1. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS

Tennessee Valley Authority (TVA) 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 any accident previously evaluated?

Response: No.

The proposed change relaxes the Required Actions for the Engineered Safety Feature Actuation System (ESFAS) Instrumentation, Auxiliary Feedwater Main Steam Generator Water Level—Low-Low, when an RCS Loop ΔT or a

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

Containment Pressure (EAM) channel is inoperable. Placing the affected Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels in trip uses installed equipment designed specifically for placing the channels in trip. This change will not affect the probability of an accident, because the OPERABLE Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels will continue to perform the safety function the instrumentation is required to perform. The Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels are not initiators of any accident sequence analyzed in the Updated Final Safety Analysis Report (UFSAR). Rather, Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels are used to mitigate accidents. The consequences of an analyzed accident will not be significantly increased since the minimum requirements for Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels will be maintained to ensure the availability of the required instrumentation to mitigate accidents assumed in the UFSAR. Operation in accordance with the proposed TS will ensure that sufficient Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels are OPERABLE as required to support the unit's required features. Therefore, the mitigating functions supported by the Auxiliary Feedwater Main Steam Generator Water Level—Low-Low instrumentation will continue to provide the protection assumed by the accident analysis. The integrity of fission product barriers, plant configuration, and operating procedures as described in the UFSAR will not be affected by the proposed changes. Thus, the consequences of previously analyzed accidents will not be significantly increased by implementing these changes.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The proposed change relaxes the Required Actions for the ESFAS Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels. The remaining Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels are required to be OPERABLE to support the associated unit's required features. This change will not physically alter the plant (no new or different type of equipment will be installed). The proposed changes will maintain the minimum requirements for Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels to ensure the availability of the equipment required to mitigate accidents assumed in the UFSAR.

Therefore, operation of the facility in accordance with this proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The proposed change relaxes the Required Actions for the ESFAS Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels. The remaining Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels are required to be OPERABLE to support the associated unit's required features. The margin of safety is not affected by this change because the minimum requirements for Auxiliary Feedwater Main Steam Generator Water Level—Low-Low channels will be maintained to ensure the availability of the required Auxiliary Feedwater Main Steam Generator Water Level—Low-Low instrumentation to shutdown the reactor and maintain it in a safe shutdown condition after an abnormal operational transient or postulated design basis accident.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR TRIP SYSTEM (RTS) INSTRUMENTATION

10 CFR 50.92 EVALUATION
FOR
MORE RESTRICTIVE CHANGE M24

SQN is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Most changes to the SQN current Technical Specifications (CTS) incorporate industry changes made to NUREG-1431 and are covered by generic No Significant Hazards Considerations. Proposed changes that are not considered included in the conversion to NUREG-1431 are outside of the generic evaluation and require separate evaluation, as is the case with this more restrictive change (M24). The proposed change involves making the Current Technical Specifications (CTS) more restrictive. Below are the descriptions of this more restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

The Reactor Nominal Trip Setpoint (NTSP) Limits specified in CTS Table 2.2-1 are the values at which the Reactor Trips are set for each functional unit. The NTSPs have been selected to ensure that the reactor core and reactor coolant system are prevented from exceeding their safety limits during normal operation and design basis anticipated operational occurrences. Operation with a trip set less conservative than its NTSP but within its specified Allowable Value (AV) is acceptable on the basis that the difference between each NTSP and the AV is equal to or less than the rack allowance assumed for each trip in the safety analyses.

Current Technical Specifications (CTS) Table 2.2-1 for Functional Unit 16 (Underfrequency-Reactor Coolant Pumps) lists the NTSP as 56.0 Hz – each bus, and the AV as ≥ 55.9 Hz – each bus. The proposed change to Improved Technical Specification (ITS) Table 3.3.1-1 for Function 12 (Underfrequency RCPs) lists the NTSP as 57.0 Hz and the AV as ≥ 56.3 Hz. This changes the CTS by increasing the NTSP and the AV for the Underfrequency Reactor Coolant Pump (RCP) reactor trip.

The purpose of the Underfrequency RCP reactor trip is to ensure 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. TVA has determined that to provide adequate protection changes to the Underfrequency RCP Nominal Trip Setpoint and the Allowable Value are needed. This change was previously proposed in SQN license amendment request TVA-SQN-TS-02-01, Revision 1 (ADAMS Accession No. 042430467) but later withdrawn in TVA-SQN-TS-02-01, Revision 2 (ADAMS Accession No. ML061990303) pending resolution of issues with TSTF-493. In Revision 2 TVA stated that a new TS amendment request would be submitted to the NRC once TSTF-493 receives NRC approval. As TSTF-493 has been approved by the NRC and is being adopted under this conversion, TVA is proposing to change the setpoints to those proposed in the previous submittal. This change is acceptable because the revised Allowable Value and Nominal Trip Setpoint continue to provide assurance that the safety limit for the underfrequency reactor trip function is not impacted. In addition, this change ensures instrument uncertainties have been included in the as-found tolerance

calculations in a manner that is acceptable and the surveillance Note requirements also ensure that there will be a reasonable expectation that these instruments will perform their safety function if required. This change is designated as more restrictive because more stringent acceptance requirements are being applied in the ITS than were applied in the CTS.

Tennessee Valley Authority (TVA) 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 any accident previously evaluated?

Response: No.

The proposed change affects the setpoint limits and the nominal setpoint for the RCP underfrequency reactor trip. Once the setpoint is exceeded, the RCP underfrequency reactor trip performs its design function in the same manner as before the proposed change. Maintenance and operation of the instrumentation is unchanged, except for a change in CTS setpoint, thus there is no increase in the likelihood of a malfunction of the instrument. The revision of the RCP underfrequency has been evaluated and the results are documented in approved calculations. These calculations verify that the revised values are acceptable in accordance with appropriate calculation methodologies and that they will continue to support the accident analysis. Although this proposed change revised the settings listed in CTS, these revisions will not require changes to the instrumentation settings currently being used or the methods for maintaining them.

Therefore, the proposed revision of these values will not significantly increase the probability or consequences of an accident.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

Response: No

The revised setpoints and the proposed operability limits will continue to provide acceptable initiation of safety functions for the mitigation of postulated accidents as required by the design basis. The primary function of the reactor protection system is to initiate accident mitigation functions. These functions are not considered initiators of postulated accidents. The proposed changes do not create the possibility of a new or different kind of accident because the design functions are not altered and the proposed values meet the accident analysis requirements for accident mitigation.

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 the margin of safety?

Response: No.

The NTSP and AV revisions proposed in this request were evaluated and found to be acceptable without impact to the safety limits required for the associated functions. Plant systems will continue to be actuated for those plant conditions that require the initiation of accident mitigation functions. The margin of safety is not reduced because the proposed conservative changes to the AV and NTSP will not change design functions and the initiation of accident mitigation functions for appropriate plant conditions is ensured. Operational margin is reduced by increasing the NTSP and AV, maintaining the margin of safety.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

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ATTACHMENT 2

ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

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

ITS — A01 — ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

ITS ACTION — LA01 — REQUIRED — A02

FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
19. Safety Injection Input from ESF	2	1	2	1, 2	12
20. Reactor Trip Breakers					
A. Startup and Power Operation	2	1	2	1, 2	12, 15
B. Shutdown	2	1	2	3*,4* and 5*	16
21. Automatic Trip Logic					
A. Startup and Power Operation	2	1	2	1, 2	12
B. Shutdown	2	1	2	3*,4* and 5*	16
22. Reactor Trip System Interlocks					
A. Intermediate Range Neutron Flux, P-6	2	1	2	2, and*	8a
B. Power Range Neutron Flux, P-7	4	2	3	1	8b
C. Power Range Neutron Flux, P-8	4	2	3	1	8c
D. Power Range Neutron Flux, P-10	4	2	3	1, 2	8d
E. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	8b
F. Power Range Neutron Flux, P-9	4	2	3	1	8e
8.a G. Reactor Trip P-4	~~2~~	~~1~~	~~2~~ 1 per train, 2 trains	1, 2, ~~and*~~ 3	14 G

See ITS 3.3.1

M01 — A03 — LA01

ITS

A01

ITS 3.3.2

TABLE 3.3-1 (Continued)

TABLE NOTATION

M01

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

** Above the P-9 (Power Range Neutron Flux) interlock.

Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.

ACTION STATEMENTS

ACTION 1 - 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.

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

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

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

c. The QUADRANT POWER TILT RATIO is monitored in accordance with Technical Specification 3.2.4.

See ITS 3.3.1

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ITS

A01

ITS 3.3.2

TABLE 3.3-1 (Continued)

ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least 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 provided the other channel is OPERABLE.

See ITS 3.3.1

L01

ACTION 13 - Deleted

Add proposed Required Action G.1

Add proposed Required Action G.2.2

M01

LCO 3.3.2 ACTION G

ACTION 14 - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within ~~6~~ 54 hours.

ACTION 15 - 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 12. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status.

ACTION 16 - 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.

See ITS 3.3.1

ACTION 17 - With the number of OPERABLE channels two less than the minimum channels OPERABLE requirement and with the THERMAL POWER level above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.

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ITS

A01

ITS 3.3.2

TABLE 4.3-1 (Continued)

M02

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE IS REQUIRED
15. Deleted				
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	(1) (12)	1**
B. Turbine Stop Valve Closure	N.A.	N.A.	(1) (12)	1**
19. Safety Injection Input from ESF	N.A.	N.A.	R	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A.	R	N.A.	2, and *
B. Power Range Neutron Flux, P-7	N.A.	N.A.	N.A.	1
C. Power Range Neutron Flux, P-8	N.A.	R	N.A.	1
D. Power Range Neutron Flux, P-10	N.A.	R	N.A.	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	N.A.	1
F. Power Range Neutron Flux, P-9	N.A.	R	N.A.	1
Table 3.3.2-1 8.a G. Reactor Trip, P-4	N.A.	N.A.	~~R~~ Once per reactor trip breaker cycle SR 3.3.2.10	1, 2, and *
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *

See ITS 3.3.1

M03

A04

See ITS 3.3.1

ITS A01 ITS 3.3.2

TABLE 4.3-1 (Continued)

NOTATION

*	-	With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
**	-	Above the P-9 (Power Range Neutron Flux) interlock.
(1)	-	If not performed in previous 31 days.
(2)	-	Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
(3)	-	Compare incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is $\geq$ 15% RTP.
(4)	-	Deleted.
(5)	-	Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS. The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.
(6)	-	Neutron detectors may be excluded from CHANNEL CALIBRATION.
(7)	-	Below P-6 (Block of Source Range Reactor Trip) setpoint.
(8)	-	Deleted.
(9)	-	The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.
(10)	-	Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
(11)	-	Automatic and manual undervoltage trip.
(12)	-	Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.

A04

See ITS 3.3.1

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ITS

A01

ITS 3.3.2

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.2

Table 3.3.2-1 Footnotes (b) and (c)

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 Nominal Trip Setpoint column of Table 3.3-4.

Applicability

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

Add proposed ACTIONS Note

A05

Table 3.3.2-1 Footnote (b)

ACTION A

Table 3.3.2-1 Footnote (c)

a. With an ESFAS instrumentation channel or interlock 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 Nominal Trip Setpoint value.

ACTION A

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

Surveillance Requirements Table Note

4.3.2.1.1 Each ESFAS 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 4.3-2.

M02

SR 3.3.2.2 for Functions 1.b and 4.b

SR 3.3.2.8

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 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.~~

~~L02~~

STET

A06

KAB013

SR 3.3.2.9

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit ~~at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified 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.~~

~~18 months on a STAGGERED TEST BASIS~~

A07

In accordance with the Surveillance Frequency Control Program

LA02

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1 | ITS ACTION

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01

A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
	1. SAFETY INJECTION, ~~TURBINE TRIP AND FEEDWATER ISOLATION~~ (A08)						
1.a	a. Manual Initiation	~~2~~	~~1~~	2	1, 2, 3, 4	20	B
1.b	b. Automatic Actuation Logic and Actuation Relays (M04)	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~ (L03: Add proposed ACTION C)	C
1.c	c. Containment Pressure-High	~~3~~	~~2~~	~~2~~ 3 (A02)	1, 2, 3	17	D
1.d	d. Pressurizer Pressure-Low	~~3~~	~~2~~	~~2~~ 3	1, 2, 3#	17	D
	e. Deleted						

LA01

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ITS A01 ITS 3.3.2

Table 3.3.2-1 ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION LA01

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1.e	f. Steam Line Pressure-Low	~~3/steam line~~	~~2/steam line in any steam line~~	~~2~~ 3/steam line	1, 2, 3#	17 D
	2. CONTAINMENT SPRAY					
2.a	a. Manual	~~2~~	~~1**~~	~~2~~ 2 per train, 2 trains	1, 2, 3, 4	20 B
2.b	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~ C
2.c	c. Containment Pressure--High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3	18 E
	3. CONTAINMENT ISOLATION					
3.a	a. Phase "A" Isolation					
3.a.(1)	1) Manual	~~2~~	~~1~~	2	1, 2, 3, 4	20 B
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	~~2~~	~~1~~	~~2~~	~~1, 2, 3, 4~~	~~15~~

LA01 A02 A02 LA03 A03 M04 L03 Add proposed ACTION C A02

Refer to Function 1 (Safety Injection) for all initiation functions and requirements A09

INSERT 1 M05

~~**Two switches must be operated simultaneously for actuation.~~ LA03

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M05

INSERT 1

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
3.a.(2)	(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

ITS | A01 | ITS 3.3.2

Table 3.3.2-1 | ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 | A02 | REQUIRED

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
3.b.	b. Phase "B" Isolation			2 per train, 2 trains			A03
3.b.(1)	1) Manual	~~2~~	~~1~~**	~~2~~	1, 2, 3, 4	20	B
3.b.(2)	2) Automatic Actuation Logic and Actuation Relays (M04)	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~	C (Add proposed ACTION C, L03)
3.b.(3)	3) Containment Pressure-High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3	18	E (A02)
	c. Containment Ventilation Isolation	2	1	2	1, 2, 3, 4	19	See ITS 3.3.6
	1) Manual						
	2) Automatic Isolation Logic	2	1	2	1, 2, 3, 4	15	See ITS 3.3.6
	3) Containment Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19	See ITS 3.3.6

LA03

~~**Two switches must be operated simultaneously for actuation.~~

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ITS

Table 3.3.2-1

A01

ITS 3.3.2

ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02 A10 L04 M04

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
	4. STEAM LINE ISOLATION						
4.a	a. Manual and Actuation Relays	~~1/steam line~~	~~1/steam line~~	1/~~operating~~ steam line	1, 2, 3 (j)	25	F
4.b	b. Automatic Actuation Logic	~~2~~	~~1~~	2	1, 2, 3 (j)	23	H
4.c	c. Containment Pressure--High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3 (j)	18	E
4.d.(1)	d. Steam Line Pressure- Low	~~3/steam line~~	~~2/steam line in any steam line~~	~~2~~ 3/steam line	1, 2, 3# (j)	17	D
4.d.(2)	e. Negative Steam Line Pressure Rate-High	~~3/steam line~~	~~2/steam line in any steam lines~~	~~2~~ 3/steam line	3## (j)	17	D

A02

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1 | ITS ACTION

TABLE 3.3-3 (Continued)

LA01

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	5. TURBINE TRIP & FEEDWATER ISOLATION					
5.b	a. Steam Generator Water Level—High-High (P-14)	~~3/loop~~	~~2/loop in any operating loop~~	3 per SG ~~2/loop in each operating loop~~	1, 2, 3 ~~(k)~~ i	17 D
5.a	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3	23 H
	INSERT 2					
	6. AUXILIARY FEEDWATER					
	~~a. Manual Initiation~~	~~2~~	~~1~~	~~2~~	~~1, 2, 3~~	~~24~~
6.a	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3	23 H
6.b	c. Main Stm. Gen. Water Level—Low-Low					
	i. ~~Start Motor-Driven Pumps~~					
6.b.(1)	a. Steam Generator Water Level--Low-Low (Adverse)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen.~~	3 ~~2~~/Stm. Gen. ~~in each operating Stm. Gen~~	1, 2, 3	36 I
6.b.(2)	b. Steam Gen Water Level--Low-Low (EAM)	~~3/Stm. Gen~~	~~2/Stm. Gen. in any operating Stm. Gen.~~	~~2~~/Stm. Gen. ~~in each operating Stm. Gen.~~	1, 2, 3	36 I
6.b.(1) 6.b.(2)	c. RCS LoopΔT	~~4(1/loop)~~	~~2~~	4 ~~3~~	1, 2, 3	37 K
6.b.(1)	d. Containment Pressure (EAM)	~~4~~	~~2~~	~~3~~	1, 2, 3	38 J

A11 A02 L05 M04 A08 A10 A12 LA04

KAB019

ITS

ITS 3.3.2

Table 3.3.2-1

A08

INSERT 2

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5.c	c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

ITS   A01   ITS 3.3.2

Table 3.3.2-1   ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
	ii. ~~Start Turbine Driven Pump~~ LA04			3 A02			
6.b.(1)	a. Steam Generator Water Level--Low-Low (Adverse)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any 2 Stm. Gen.~~	~~2~~/Stm. Gen. ~~in each operating Stm. Gen~~	1, 2, 3	36	I
6.b.(2)	b. Steam Generator Water Level--Low-Low (EAM)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any 2 Stm. Gen.~~	~~2~~/Stm. Gen. ~~in each operating Stm. Gen~~	1, 2, 3	36	I
6.b.(1) 6.b.(2)	c. RCS Loop ΔT	~~4(1/loop)~~	~~2~~	~~3~~ 4 A02	1, 2, 3	37	K
6.b.(1)	d. Containment Pressure (EAM)	~~4~~	~~2~~	~~3~~	1, 2, 3	38	J

A10

6.c   d. S.I. Start Motor-Driven Pumps and Turbine Driven Pump   See 1 above (all S.I. initiating functions and requirements)

ITS — A01 — ITS 3.3.2

Table 3.3.2-1 — ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
6.d.	e. Loss of Power Start						
6.d.(1)	1. Voltage Sensors	~~3/shutdown board**~~	~~2/shutdown board**~~	3/shutdown board**	1, 2, 3	35	L,M
6.d.(2)	2. Load Shed Timer	~~2/shutdown board**~~	~~1/shutdown board**~~	1/shutdown board**	1, 2, 3	35	M
6.e	f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	~~1/pump~~	~~1/pump~~	1/pump(a)	1, 2(b)	20	N
6.f	g. Auxiliary Feedwater Suction Pressure-Low	~~3/pump~~	~~2/pump~~	3/pump	1, 2, 3	21	O
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays						
6.g.(1)	1. Motor-Driven Pump	~~1/pump~~	~~1/pump~~	1/pump	1, 2, 3	21	O
6.g.(2)	2. Turbine-Driven Pump	~~2/pump~~	~~1/pump~~	2/pump	1, 2, 3	21	O

KAB023

stet

~~L06~~

Footnote (j) **Unit 1 shutdown boards only

Required Action N Note (a) One channel may be inoperable ~~during Mode 1~~ for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.

Footnote (k) (b) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ITS ACTION

LA01

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

REQUIRED

A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
	7. This Functional Unit has been deleted.						
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS						
8.b.(1) 8.b.(2)	a. Pressurizer Pressure-P-11/Not P-11	~~3~~	~~2~~	~~2~~ 3	1, 2, 3	22a Q	M06
	b. Deleted						
5.b	~~c. Steam Generator Level P-14~~	~~3/loop~~	~~2/loop any loop~~	~~3/loop~~	~~1, 2~~	~~22c~~	A11

ITS | A01 | ITS 3.3.2

Table 3.3.2-1 | ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 | A02

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
7.b.	a. RWST Level - Low COINCIDENT WITH	~~4~~	~~2~~	~~3~~ 4	1, 2, 3, 4	18 P
	Containment Sump Level - High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3, 4	18 P
	AND Safety Injection	(See 1 above for Safety Injection Requirements)				
7.a.	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3, 4	15 S

A02 | LA01 | M04

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ITS A01 ITS 3.3.2

TABLE 3.3-3 (Continued)

INSERT 3 A13

TABLE NOTATION

INSERT 4 A14

Table 3.3.2-1 Footnote (a) and Footnote (f) # ~~Trip function may be bypassed in this MODE below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint~~.

INSERT 5 A15

L04

Table 3.3.2-1 Footnote (g) ## ~~Trip function automatically blocked above P-11 and may be blocked below P11 when Safety Injection on Steam Line Pressure-Low is not blocked~~.

(e) Except when all MSIV's are closed.

(i) Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve. L05

ACTION STATEMENTS

ACTION S

ACTION 15 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION S Note

ACTION 16 - Deleted.

ACTION D

ACTION 17 - 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 ~~6~~ 72 hours. L07

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to ~~4~~ 12 hours for surveillance testing of other channels per Specification 4.3.2.1.1. L08

M07

Add proposed Required Action D.2.1 and D.2.2

ACTION E
ACTION P

ACTION 18 - 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 within ~~6~~ 72 for ACTION E, otherwise 6 hours and the Minimum Channels OPERABLE requirement is met; one additional channel may be bypassed for up to ~~4~~ 12 for ACTION E, otherwise 4 hours for surveillance testing per Specification 4.3.2.1.1. L09 L10

Add proposed Required Action E.2.1 and E.2.2 M08

ACTION 19 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge supply and exhaust valves are maintained closed. See ITS 3.3.6

ACTION B
ACTION N

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 be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. A16

Add proposed Required Action P.2.1 and P.2.2 M09

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ITS

ITS 3.3.2

Table 3.3.2-1

A13

INSERT 3

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

Safety Injection, Pressurizer Pressure - Low and Safety Injection, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock.

KAB024

A14

INSERT 4

Footnote (f) ~~When Steam Line Isolation, Steam Line Pressure, Negative Rate–High is blocked.~~

Steam Line Isolation, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock.

KAB024

A15

INSERT 5

Footnote (g) ~~When Steam Line Isolation on Steam Line Pressure, Low is blocked.~~

Steam Line Isolation, Steam Line Pressure Negative Rate-High is automatically blocked above P-11 and may be blocked below P-11 when Safety Injection, Steam Line Pressure - Low is not blocked.

KAB024

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ITS

A01

ITS 3.3.2

TABLE 3.3-3 (Continued)

ACTION O

ACTION 21 - With less than the Minimum Number of Channels OPERABLE, declare the associated auxiliary feedwater pump inoperable, and comply with the ACTION requirements of Specification 3.7.1.2.

Add proposed Required Action Q.1 M10

ACTION Q
ACTION D

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, ~~declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions~~. ~~Functions to be evaluated are:~~

Add proposed Required Actions Q.2.1, and Q.2.2 A17

ACTION Q

~~a. Safety Injection~~
~~- Pressurizer Pressure~~
~~- Steam Line Pressure~~
~~- Negative Steam Line Pressure Rate~~

~~b. Deleted~~

ACTION D

~~c. Turbine Trip~~
~~- Steam Generator Level High-High~~
~~Feedwater Isolation~~
~~- Steam Generator Level High-High~~

restore to OPERABLE status within 24 hours or, L11

ACTION H

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within ~~6~~ 30 hours and in at least HOT SHUTDOWN within ~~the following 6~~ 36 hours; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.1.

~~ACTION 24 - 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 6 hours and in at least HOT SHUTDOWN within the following 6 hours.~~ A12

ACTION F

ACTION 25 - 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.

ACTION 34 - Deleted

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ITS

A01

ITS 3.3.2

TABLE 3.3-3 (Continued)

ACTION L — ACTION 35 - a. With the number of OPERABLE channels one less than the Total Number of Channels for voltage sensors, restore the inoperable channel to OPERABLE status within 6 hours or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channel.

ACTION M — b. With the number of OPERABLE channels less than the Total Number of Channels by more than one for voltage sensors or timers, restore all but one channel to OPERABLE status within 1 hour or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channels.

ACTION I — ACTION 36 - 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 6 hours.

b. For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M) within 4 hours.

c. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

Add proposed ACTION R — M11

ACTION K — ACTION 37 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

Add proposed Required Action K.3.1 and K.3.2 — M12

ACTION J — ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

Add proposed Required Action J.3.1 and J.3.2 — M13

Add proposed Required Action K.2 — L12

Add proposed Required Action J.2 — L13

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	1. SAFETY INJECTION~~, TURBINE TRIP AND FEEDWATER ISOLATION~~ A08		
1.a	a. Manual Initiation	Not Applicable	Not Applicable
1.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
1.c	c. Containment Pressure—High	1.54 psig	≤ 1.6 psig
1.d	d. Pressurizer Pressure--Low	1870 psig	≥ 1864.8 psig
	e. Deleted		
1.e	f. Steam Line Pressure—Low	600 psig steam line pressure (Note 1)	≥ 592.2 psig steam line pressure (Note 1)

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	2. CONTAINMENT SPRAY		
2.a	a. Manual Initiation	Not Applicable	Not Applicable
2.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
2.c	c. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig
	3. CONTAINMENT ISOLATION		
3.a	a. Phase "A" Isolation		
3.a.(1)	1. Manual	Not Applicable	Not Applicable
3.a.(2)	2. From Safety Injection Automatic Actuation logic	Not Applicable	Not Applicable
3.b.	b. Phase "B" Isolation		
3.b.(1)	1. Manua1	Not Applicable	Not Applicable
3.b.(2)	2. Automatic Actuation Logic	Not Applicable	Not Applicable
3.b.(3)	3. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig
	c. Containment Ventilation Isolation		
	1. Manual	Not Applicable	Not Applicable
	2. Automatic Isolation Logic	Not Applicable	Not Applicable

See ITS 3.3.6

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ITS A01 ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES	
	3. Containment Purge Air Exhaust Monitor Radioactivity-High	≤ 8.5 x 10^{-3} μCi/cc	≤ 8.5 x 10^{-3} μCi/cc	See ITS 3.3.6
	4. STEAM LINE ISOLATION			
4.a	a. Manual	Not Applicable	Not Applicable	
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
4.c	c. Containment Pressure--High-High	2.81 psig	≤ 2.9 psig	
4.d.(1)	d. Steam Line Pressure--Low	600 psig steam line pressure (Note 1)	≥ 592.2 psig steam line pressure (Note 1)	
4.d.(2)	e. Negative Steam Line Pressure Rate—High	100.0 psi (Note 2)	≤ 107.8 psi (Note 2)	
	5. TURBINE TRIP AND FEEDWATER ISOLATION			LA05
5.b	a. Steam Generator Water level-- High-High (P-14)	81% ~~of narrow range instrument span each steam generator~~	≤ 81.7% ~~of narrow range instrument span each steam generator~~	A11
5.a	b. Automatic Actuation Logic	N.A.	N.A.	

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	6. AUXILIARY FEEDWATER		
	~~a. Manual~~	~~Not Applicable~~	~~Not Applicable~~ (A12)
6.a	b. Automatic Actuation Logic	Not Applicable	Not Applicable
	c. Main Steam Generator Water Level--Low-Low		
6.b.(1) 6.b.(2)	i. RCS Loop ΔT Equivalent to Power ≤ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input ≤ nominal trip setpoint +2.5% RTP
6.b.(1)	Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	≥14.4% of narrow range instrument span
	and		
6.b.(1)	Containment Pressure-EAM	0.5 psig	≤ 0.6 psig
	or		
6.b.(2)	Steam Generator Water Level--Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow instrument span
	with		
6.b.(1) 6.b.(2)	A time delay (T_S) if one Steam Generator is affected	T_S (Note 5, Table 2.2-1)	≤ (1.01) T_S (Note 5, Table 2.2-1)
	or		
6.b.(1) 6.b.(2)	A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5, Table 2.2-1)	≤ (1.01) T_M (Note 5, Table 2.2-1)

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ITS A01 ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
6.b.(1) 6.b.(2)	ii. RCS Loop ΔT Equivalent to Power > 50% RTP		
6.b.(1)	Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
	and		
6.b.(1)	Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
	or		
6.b.(2)	Steam Generator Water Level-- Low-Low (EAM)	10.7% of narrow range instrument span	≥ 10.1% of narrow range instrument span
6.c	d. S.I.	See 1 above (all SI Setpoints)	
6.d.	e. Loss of Power Start		
6.d.(1)	1. Voltage Sensors	Refer to Function 1 of Table 3.3-14 for setpoints and allowable values.	
6.d.(2)	2. Load Shed Timer		
6.e	f. Trip of Main Feedwater Pumps	N.A.	N.A.
6.f	g. Auxiliary Feedwater Suction Pressure-Low	3.21 psig (motor driven pump)	≥ 2.44 psig (motor driven pump)
		13.9 psig (turbine driven (pump)	≥ 12 psig (turbine driven pump)
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays	4 seconds (motor driven pump)	≤ 4.4 seconds and ≥ 3.6 seconds (motor driven pump)
		5.5 seconds (turbine driven pump)	≤ 6.05 seconds and ≥ 4.95 seconds (turbine driven pump)

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TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
7. This Functional Unit has been deleted.		
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS		
a. Pressurizer Pressure		
8.b.(1) 1. Not P-11, Automatic Unblock of Safety Injection on Increasing Pressure	1970 psig	≤ 1975.2 psig
8.b.(2) 2. P-11, Enable Manual Block of Safety Injection on Decreasing Pressure	1962 psig	≥ 1956.8 psig

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS (Continued)		
	b. Deleted		
	c. Deleted		
5.b	~~d. Steam Generator Level Turbine Trip, Feedwater Isolation P-14~~	~~(See 5. above)~~	A11
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP		
7.b.	a. RWST Level - Low	130" from tank base	≤ 132.71” and ≥ 127.29” from tank base
	COINCIDENT WITH		
	Containment Sump Level - High	30" above elev. 680'	≤ 31.68” and ≥ 28.32” above elev. 680’
	AND		
	Safety Injection	(See 1 above for all Safety Injection Setpoints/Allowable Values)	
7.a.	b. Automatic Actuation Logic	N.A.	N.A.

Footnote (d) Note 1: Time constants utilized in the lead-lag controller for Steam Pressure - Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds.

Footnote (h) Note 2: Time constant utilized in the rate-lag controller for Negative Steam Line Pressure Rate - High is $\tau \geq 50$ seconds.

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ITS   ITS 3.3.2

Table 3.3.2-1

A01

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES IN WHICH SURVEILLANCE REQUIRED~~
	1. SAFETY INJECTION ~~AND FEEDWATER ISOLATION~~				
1.a	a. Manual Initiation	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
1.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
1.c	c. Containment Pressure-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
1.d	d. Pressurizer Pressure--Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
	e. Deleted				
1.e	f. Steam Line Pressure—Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
	2. CONTAINMENT SPRAY				
2.a	a. Manual Initiation	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
2.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
2.c	c. Containment Pressure--High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~

A08

A04

L14 ~~184 days~~

~~184 days~~

~~92 days on a STAGGERED TEST BASES~~ L15

In accordance with the Surveillance Frequency Control Program LA02

For Functional Units 1.b, 2.b, 3.a.(2), 3.b.(2), 4.b, 5.b, 6.b, and 7.a add proposed SR 3.3.2.3 at a frequency of ~~92 days on a STAGGERED TEST BASES~~. M04

For Functional Units 1.b, 2.b, 3.a.(2), 3.b.(2), 4.b, 5.b, 6.b, and 7.a add proposed SR 3.3.2.5 at a frequency of ~~every 18 months~~. M04

a

KAB015

ITS

Table 3.3.2-1

A01

ITS 3.3.2

M02

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

L15

KAB043

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE IS REQUIRED~~
	3. CONTAINMENT ISOLATION			~~92 days on a STAGGERED TEST BASES~~	
3.a	a. Phase "A" Isolation				
3.a.(1)	1) Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(1)	~~1, 2, 3, 4~~
3.b.	b. Phase "B" Isolation				
3.b.(1)	1) Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
3.b.(2)	2) Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
3.b.(3)	3) Containment Pressure-- High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4 ~~184 days~~	~~1, 2, 3~~
	c. Containment Ventilation Isolation				
	1) Manual	N.A.	N.A.	R	1, 2, 3, 4
	2) Automatic Isolation Logic	N.A.	N.A.	M(1)	1, 2, 3, 4
	3) Containment Purge Air Exhaust Monitor Radio-activity-High	S	R	Q	1, 2, 3, 4

A09

A09

A04

L14

In accordance with the Surveillance Frequency Control Program

LA02

See ITS 3.3.6

ITS

Table 3.3.2-1

A01

ITS 3.3.2

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE IS REQUIRED~~
	4. STEAM LINE ISOLATION				
4.a	a. Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3~~
4.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~
4.c	c. Containment Pressure--High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
4.d.(1)	d. Steam Line Pressure--Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
4.d.(2)	e. Negative Steam Line Pressure Rate--High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~3~~
	5. TURBINE TRIP AND FEEDWATER ISOLATION (A11)				
5.b	a. Steam Generator Water Level--High-High (P-14)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4 (L14) ~~184 days~~	~~1, 2, 3~~
5.a	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~
	6. AUXILIARY FEEDWATER				
	~~a. Manual~~ (A12)	N.A.	N.A.	~~R~~ (A12)	~~1, 2, 3~~
6.a	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~

A04

~~92 days on a STAGGERED TEST BASES~~ L15

In accordance with the Surveillance Frequency Control Program LA02

June 25, 1993

ITS

Table 3.3.2-1

A01

ITS 3.3.2

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE REQUIRED~~
6.b	c. Main Steam Generator Water Level--Low-Low				
6.b.(1)	1. Steam Generator Water Level--Low-Low (Adverse)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(2)	2. Steam Generator Water Level--Low-Low (EAM)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(1) 6.b.(2)	3. RCS Loop ΔT	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(1)	4. Containment Pressure (EAM)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.c	d. S.I.	See 1 above (all SI surveillance requirements)			
6.d.	e. Loss of Power Start				
6.d.(1)	1. Voltage Sensors	N.A.	~~R~~ SR 3.3.2.8	~~M~~ SR 3.3.2.6	~~1, 2, 3~~
6.d.(2)	2. Load Shed Timer	N.A.	~~R~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~
6.e	f. Trip of Main Feedwater Pumps	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2~~
6.f	g. Auxiliary Feedwater Suction Pressure-Low	N.A.	~~R~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays	N.A.	~~R~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~
	7. This Functional Unit has been deleted. -				

A04

A04

In accordance with the Surveillance Frequency Control Program

LA02

September 14, 2006
Amendment No. 29, 129, 141, 182, 188, 207, 253, 311

ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M02

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE REQUIRED~~	
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					A04
8.b.(1) 8.b.(2)	a. Pressurizer Pressure, P-11/Not P-11	N.A.	~~R(2)~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~	
			In accordance with the Surveillance Frequency Control Program			LA02
	b. Deleted					
5.b	~~c. Steam Generator Level, P-14~~	~~N.A.~~	~~R(2)~~	~~N.A.~~	~~1, 2~~	A11
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
7.b.	a. RWST Level - Low COINCIDENT WITH	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3, 4~~	A04
	Containment Sump Level - High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3, 4~~	
	AND Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)				
7.a.	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~	A04

In accordance with the Surveillance Frequency Control Program | LA02

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ITS

A01

ITS 3.3.2

TABLE 4 .3-2 (Continued)

TABLE NOTATION

In accordance with the Surveillance Frequency Control Program

LA02

~~92 days on a STAGGERED TEST BASIS~~

L15

SR 3.3.2.2 (1) Each train or logic channel shall be tested at least every ~~62 days on a STAGGERED TEST BASIS~~.

SR 3.3.2.8 ~~(2) The total interlock function shall be demonstrated OPERABLE during CHANNEL CALIBRATION testing of each channel affected by interlock operation.~~

~~L01~~

STET

KAB013

Add proposed SR 3.3.2.6 Note

Add proposed SR 3.3.2.7 Note

Add proposed SR 3.3.2.10 Note

A18

Add proposed SR 3.3.2.8 Note

A19

Add proposed SR 3.3.2.9 Note

A20

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ITS

Table 3.3.2-1

A01

ITS 3.3.2

TABLE 3.3-1 (Continued)

ITS ACTION

LA01

REACTOR TRIP SYSTEM INSTRUMENTATION

A02

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	C. Power Range Neutron Flux, P-8	4	2	3	1	8c
	D. Power Range Neutron Flux, P-10	4	2	3	1, 2	8d
	E. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	8b
	F. Power Range Neutron Flux, P-9	4	2	3	1	8e
8.a	G. Reactor Trip P-4	~~2~~	~~1~~	~~2~~ 1 per train, 2 trains	1, 2, ~~and*~~ 3	14 G

See ITS 3.3.1

M01

A03

LA01

SEQUOYAH - UNIT 2

3/4 3-4

May 5, 1989
Amendment No. 46, 48, 104

ITS

A01

ITS 3.3.2

TABLE 3.3-1 (Continued)

TABLE NOTATION

M01

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

** Above the P-9 (Power Range Neutron Flux) interlock.

Source Range outputs may be disabled above the P-6 (Block of Source Range Reactor Trip) setpoint.

ACTION STATEMENTS

ACTION 1 - With the number of OPERABLE channels 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.

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:

See ITS 3.3.1

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

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

c. The QUADRANT POWER TILT RATIO is monitored in accordance with Technical Specification 3.2.4.

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ITS A01 ITS 3.3.2

TABLE 3.3-1 (Continued)

ACTION 10 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

ACTION 11 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

ACTION 12 - With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, be in at least 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 provided the other channel is OPERABLE.

See ITS 3.3.1

L01

ACTION 13 - Deleted

Add proposed Required Action G.1

Add proposed Required Action G.2.2

M01

LCO 3.3.2 ACTION G

ACTION 14 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within ~~6~~ 54 hours.

ACTION 15 - 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 12. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for up to 4 hours for performing maintenance to restore the breaker to OPERABLE status.

ACTION 16 - 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.

See ITS 3.3.1

ACTION 17 - With the number of OPERABLE channels two less than the minimum channels OPERABLE requirement and with the THERMAL POWER level above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.

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ITS

A01

ITS 3.3.2

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M02

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED	
15. Deleted					
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	Q	1	
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	Q	1	
18. Turbine Trip					
A. Low Fluid Oil Pressure	N.A.	N.A.	(1) (12)	1**	
B. Turbine Stop Valve Closure	N.A.	N.A.	(1) (12)	1**	
19. Safety Injection Input from ESF	N.A.	N.A.	R	1, 2	
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *	See ITS 3.3.1
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *	
22. Reactor Trip System Interlocks					
A. Intermediate Range Neutron Flux, P-6	N.A.	R	N.A.	2, and *	
B. Power Range Neutron Flux, P-7	N.A.	N.A.	N.A.	1	
C. Power Range Neutron Flux, P-8	N.A.	R	N.A.	1	
D. Power Range Neutron Flux, P-10	N.A.	R	N.A.	1, 2	
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	N.A.	1	KAB011
F. Power Range Neutron Flux, P-9	N.A.	R	N.A.	1	A04 M03
Table 3.3.2-1 8.a G. Reactor Trip, P-4	N.A.	N.A.	~~R~~ SR 3.3.2.10 Once per reactor trip breaker cycle	1, 2, and *	~~A07~~
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *	See ITS 3.3.1

ITS

A01

ITS 3.3.2

Table 4.3-1 (Continued)

NOTATION

*	-	With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
**	-	Above the P-9 (Power Range Neutron Flux) interlock.
(1)	-	If not performed in previous 31 days.
(2)	-	Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
(3)	-	Compare incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference greater than or equal to 3 percent. The frequency of this surveillance is every 31 EFPD. This surveillance is not required to be performed until 96 hours after thermal power is $\geq$ 15% RTP.
(4)	-	Deleted.
(5)	-	Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS. The test shall independently verify the OPERABILITY of the undervoltage and automatic shunt trip circuits.
(6)	-	Neutron detectors may be excluded from CHANNEL CALIBRATION.
(7)	-	Below P-6 (Block of Source Range Reactor Trip) setpoint.
(8)	-	Deleted.
(9)	-	The CHANNEL FUNCTIONAL TEST shall independently verify the operability of the undervoltage and shunt trip circuits for the manual reactor trip function.
(10)	-	Local manual shunt trip prior to placing breaker in service. Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
(11)	-	Automatic and manual undervoltage trip.
(12)	-	Prior to exceeding the P-9 interlock whenever the unit has been in HOT STANDBY.

A04

See ITS 3.3.1

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ITS A01 ITS 3.3.2

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.2 Table 3.3.2-1 Footnotes (b) and (c)

3.3.2 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 Nominal Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

Add proposed ACTIONS Note A05

Table 3.3.2-1 Footnote (b) ACTION A Table 3.3.2-1 Footnote (c)

a. With an ESFAS instrumentation channel or interlock 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 Nominal Trip Setpoint value.

ACTION A

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

Surveillance Requirements Table Note

4.3.2.1.1 Each ESFAS instrumentation channel and interlock 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 4.3-2. M02

SR 3.3.2.2 for Functions 1.b and 4.b

SR 3.3.2.8

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 months during CHANNEL CALIBRATION testing of each channel affected by interlock operation.~~ STET

~~L02~~ A06 KAB013

SR 3.3.2.9

4.3.2.1.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit ~~at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified 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.~~

~~18 months on a staggered test basis~~ A07

In accordance with the Surveillance Frequency Control Program LA02

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3

ITS ACTION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION LA01

REQUIRED A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	1. SAFETY INJECTION, ~~TURBINE TRIP AND FEEDWATER ISOLATION~~ A08					
1.a	a. Manual Initiation	~~2~~	~~1~~	2	1, 2, 3, 4	20 B
1.b	b. Automatic Actuation Logic and Actuation Relays M04	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~ C (Add proposed ACTION C) L03
1.c	c. Containment Pressure-High	~~3~~	~~2~~	~~2~~ 3	1, 2, 3	17 D
1.d	d. Pressurizer Pressure-Low	~~3~~	~~2~~	~~2~~ 3	1, 2, 3#	17 D
	e. Deleted					

A02

LA01

ITS (A01) ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ITS ACTION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
1.e	f. Steam Line Pressure- Low	~~3/steam line~~	~~2/steam line in any steam line~~	~~2~~ 3/steam line	1, 2, 3#	17	D
	2. CONTAINMENT SPRAY						
2.a	a. Manual	~~2~~	~~1**~~	~~2~~ 2 per train, 2 trains	1, 2, 3, 4	20	B
2.b	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~	C
2.c	c. Containment Pressure--High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3	18	E
	3. CONTAINMENT ISOLATION						
3.a	a. Phase "A" Isolation						
3.a.(1)	1) Manual	~~2~~	~~1~~	2	1, 2, 3, 4	20	B
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	~~2~~	~~1~~	~~2~~	~~1, 2, 3, 4~~	~~15~~	

LA03 A02 A03 M04 L03 Add proposed ACTION C

A09 Refer to Function 1 (Safety Injection) for all initiation functions and requirements

M05 INSERT 1

LA03

~~** Two switches must be operated simultaneously for actuation.~~

ITS
Table 3.3.2-1

M05

INSERT 1

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
3.a.(2)	(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

ITS — A01 — ITS 3.3.2

Table 3.3.2-1 — ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 — A02 — REQUIRED

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
	3. CONTAINMENT ISOLATION						
3.b.	b. Phase "B" Isolation						
3.b.(1)	1) Manual	~~2~~	~~1~~**	~~2~~ 2 per train, 2 trains	1, 2, 3, 4	20	B
3.b.(2)	2) Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3, 4	~~15~~ Add proposed ACTION C	C
3.b.(3)	3) Containment Pressure-High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3	18	E
	c. Containment Ventilation Isolation						
	1) Manual	2	1	2	1, 2, 3, 4	19	See ITS 3.3.6
	2) Automatic Isolation Logic	2	1	2	1, 2, 3, 4	15	See ITS 3.3.6
	3) Containment Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19	See ITS 3.3.6

A03 — M04 — LA03 — L03 — A02

~~** Two switches must be operated simultaneously for actuation.~~ — LA03

ITS | A01 | ITS 3.3.2

Table 3.3.2-1 | ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02 A10 L04 M04

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	4. STEAM LINE ISOLATION					
4.a	a. Manual and Actuation Relays	~~1/steam line~~	~~1/steam line~~	1/~~operating~~ steam line	1, 2, 3 (j)	25 F
4.b	b. Automatic Actuation Logic	~~2~~	~~1~~	2	1, 2, 3 (j)	23 H
4.c	c. Containment Pressure--High-High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3 (j)	18 E
4.d.(1)	d. Steam Line Pressure- Low	~~3/steam line~~	~~2/steam line in any steam line~~	~~2~~ 3/steam line	1,2,3# (j)	17 D
4.d.(2)	e. Negative Steam Line Pressure Rate-High	~~3/steam line~~	~~2/steam line in any steam lines~~	~~2~~ 3/steam line	3### (j)	17 D

A02

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ITS
Table 3.3.2-1

A01

ITS 3.3.2
ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02 A02 L05 A11

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	5. TURBINE TRIP & FEEDWATER ISOLATION					
5.b	a. Steam Generator Water Level—High-High (P-14)	~~3/loop~~	~~2/loop in any operating loop~~	3 per SG ~~2/loop in each operating loop~~	1, 2, 3 (k)	17 D
5.a	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3	23 H
	INSERT 2					
	6. AUXILIARY FEEDWATER					
	~~a. Manual Initiation~~	2	~~1~~	~~2~~	~~1, 2, 3~~	~~24~~
6.a	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3	23 H
6.b	c. Main Steam Generator Water Level--Low-Low					
	i. ~~Start Motor-Driven Pumps~~					
6.b.(1)	a. Steam Gen. Water Level--Low-Low (Adverse)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen.~~	~~2~~ 3/Stm. Gen. ~~in each operating Stm. Gen.~~	1, 2, 3	36 I
6.b.(2)	b. Steam Gen. Water Level--Low-Low (EAM)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any operating Stm. Gen.~~	~~2~~/Stm. Gen. ~~in each operating Stm. Gen.~~	1, 2, 3	36 I
6.b.(1) 6.b.(2)	c. RCS Loop ΔT	~~4(1/loop~~)	~~2~~	~~3~~ 4	1, 2, 3	37 K

M04 A08 A10 A12 M04 LA04 A02 A10 A02

i

KAB019

ITS
Table 3.3.2-1

ITS 3.3.2

A08

INSERT 2

		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5.c	c.	Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ITS ACTION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01 A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
6.b.(1)	d. Containment Pressure (EAM)	4	~~2~~	~~3~~ 4	1, 2, 3	38 J	A02
	ii. ~~Start Turbine Driven Pump~~ (LA04)						
6.b.(1)	a. Steam Gen. Water Level--Low-Low (Adverse)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any 2 operating Stm. Gen.~~	~~2~~ 3/Stm. Gen. ~~in each operating Stm. Gen.~~	1, 2, 3	36 I	A02
6.b.(2)	b. Steam Gen. Water Level--Low-Low (EAM)	~~3/Stm. Gen.~~	~~2/Stm. Gen. in any 2 operating Stm. Gen.~~	~~2~~ 3/Stm. Gen. ~~in each operating Stm. Gen.~~	1, 2, 3	36 I	
6.b.(1) 6.b.(2)	c. RCS Loop ΔT	~~4(1/loop)~~	~~2~~	~~3~~ 4	1, 2, 3	37 K	
6.b.(1)	d. Containment Pressure (EAM)	4	~~2~~	~~3~~ 4	1, 2, 3	38 J	A02

A10

6.c d. S. I. Start Motor-Driven Pumps and Turbine Driven Pump — See 1 above (all S.I. initiating functions and requirements)

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ITS — A01 — ITS 3.3.2

Table 3.3.2-1 — ITS ACTION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01

REQUIRED — A02

ITS	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ REQUIRED CHANNELS OPERABLE	APPLICABLE MODES	ACTION	ITS ACTION
6.d.	e. Loss of Power Start						
6.d.(1)	1. Voltage Sensors	~~3/shutdown board**~~	~~2/shutdown board**~~	3/shutdown board**	1, 2, 3	35	L.M
6.d.(2)	2. Load Shed Timer	~~2/shutdown board**~~	~~1/shutdown board**~~	1/shutdown board**	1, 2, 3	35	M
6.e	f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	~~1/pump~~	~~1/pump~~	1/pump(a)	1, 2(b)	20	N
6.f	g. Auxiliary Feedwater Suction Pressure-Low	~~3/pump~~	~~2/pump~~	3/pump	1, 2, 3	21	O
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays						
6.g.(1)	1. Motor-Driven Pump	~~1/pump~~	~~1/pump~~	1/pump	1, 2, 3	21	O
6.g.(2)	2. Turbine-Driven Pump	~~2/pump~~	~~1/pump~~	2/pump	1, 2, 3	21	O

KAB023

Footnote (j) — ** Unit 2 Shutdown Boards Only

stet — ~~L06~~

Required Action N Note — (a) One channel may be inoperable ~~during Mode 1~~ for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.

Footnote (k) — (b) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

ITS

A01

ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ITS ACTION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01

REQUIRED

A02

FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. This specification has been deleted.					

ITS

A01

ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-3 (Continued)

ITS ACTION

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LA01

REQUIRED

A02

	FUNCTIONAL UNIT	~~TOTAL NO. OF CHANNELS~~	~~CHANNELS TO TRIP~~	~~MINIMUM~~ CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS						
8.b.(1) 8.b.(2)	a. Pressurizer Pressure - P-11/Not P-11	~~3~~	~~2~~	~~2~~ 3	1, 2, 3	22a Q	M06
	b. Deleted						
5.b	~~c. Steam Generator Level P-14~~	~~3/loop~~	~~2/loop any loop~~	~~3/loop~~	~~1, 2~~	~~22c~~	A11
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP						LA01
7.b.	a. RWST Level - Low COINCIDENT WITH	~~4~~	~~2~~	~~3~~ 4	1, 2, 3, 4	18 P	
	Containment Sump Level - High	~~4~~	~~2~~	~~3~~ 4	1, 2, 3, 4	18 P	A02
	AND Safety Injection	(See 1 above for Safety Injection Requirements)					LA01
7.a.	b. Automatic Actuation Logic and Actuation Relays	~~2~~	~~1~~	2	1, 2, 3, 4	15 S	

M04

SEQUOYAH - UNIT 2

3/4 3-21a

October 31, 1990
Amendment No. 18, 55, 132

ITS   ITS 3.3.2

A01

TABLE 3.3-3 (Continued)

INSERT 3 — A13

TABLE NOTATION

INSERT 4 — A14

Table 3.3.2-1 Footnote (a) and Footnote (f)

~~# Trip function may be bypassed in this MODE below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint.~~

INSERT 5 — A15

Table 3.3.2-1 Footnote (g)

~~## Trip function automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.~~

(j) Except when all MSIV's are closed. — L04

(~~k~~) Except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve. — L05

i

ACTION STATEMENTS

KAB019

ACTION S

ACTION 15 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION S Note

ACTION 16 - Deleted.

ACTION D

ACTION 17 - 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:

72 — L07

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

12 — L08

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

M07 — Add proposed Required Action D.2.1 and D.2.2

ACTION E
ACTION P

72 for ACTION E, otherwise 6 — L09

ACTION 18 - 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 within ~~6~~ hours and the Minimum Channels OPERABLE requirement is met; one additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1.

L10 — 12 for ACTION E, otherwise 4

M08 — Add proposed Required Action E.2.1 and E.2.2

ACTION 19 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge supply and exhaust valves are maintained closed.

See ITS 3.3.6

ACTION B
ACTION N

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 be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

A16

M09 — Add proposed Required Action P.2.1 and P.2.2

ITS
Table 3.3.2-1

ITS 3.3.2

A13

INSERT 3

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

Safety Injection, Pressurizer Pressure - Low and Safety Injection, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock.

KAB024

A14

INSERT 4

Footnote (f) ~~When Steam Line Isolation, Steam Line Pressure, Negative Rate–High is blocked.~~

Steam Line Isolation, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock.

KAB024

A15

INSERT 5

Footnote (g) ~~When Steam Line Isolation on Steam Line Pressure, Low is blocked.~~

Steam Line Isolation, Steam Line Pressure Negative Rate-High is automatically blocked above P-11 and may be blocked below P-11 when Safety Injection, Steam Line Pressure - Low is not blocked.

KAB024

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ITS

A01

ITS 3.3.2

TABLE 3.3-3 (Continued)

ACTION O

ACTION 21 - With less than the Minimum Number of Channels OPERABLE, declare the associated auxiliary feedwater pump inoperable, and comply with the ACTION requirements of Specification 3.7.1.2.

Add proposed Required Action Q.1 — M10

ACTION Q
ACTION D

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, ~~declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions~~. ~~Functions to be evaluated are:~~

Add proposed Required Actions Q.2.1, and Q.2.2 — A17

ACTION Q

~~a. Safety Injection~~
~~Pressurizer Pressure~~
~~Steam Line Pressure~~
~~Negative Steam Line Pressure Rate~~

~~b. Deleted~~

~~c. Turbine Trip~~
~~Steam Generator Level High-High~~

ACTION D

~~Feedwater Isolation~~
~~Steam Generator Level High-High~~

restore to OPERABLE status within 24 hours or, — L11

ACTION H

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within ~~6~~ 30 hours and in at least HOT SHUTDOWN within ~~the following 6 hours~~ 36; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.1.

~~ACTION 24 - 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 6 hours and in at least HOT SHUTDOWN within the following 6 hours.~~ — A12

ACTION F

ACTION 25 - 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.

ACTION 34 - Deleted

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ITS

A01

ITS 3.3.2

TABLE 3.3-3 (Continued)

ACTION L ACTION 35 - a. With the number of OPERABLE channels one less than the Total Number of Channels for voltage sensors, restore the inoperable channel to OPERABLE status within 6 hours or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channel.

ACTION M b. With the number of OPERABLE channels less than the Total Number of Channels by more than one for voltage sensors or timers, restore all but one channel to OPERABLE status within 1 hour or enter applicable Limiting Condition(s) For Operation and Action(s) for the associated auxiliary feedwater pump made inoperable by the channels.

ACTION I ACTION 36 - 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 6 hours.

b. For the affected protection set, the Trip Time Delay for one affected steam generator (TS) is adjusted to match the Trip Time Delay for multiple affected steam generators (TM) within 4 hours.

c. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.

Add proposed ACTION R — M11

ACTION K ACTION 37 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP.

Add proposed Required Action K.3.1 and K.3.2 — M12

ACTION J ACTION 38 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse).

Add proposed Required Action J.3.1 and J.3.2 — M13

Add proposed Required Action K.2 — L12

Add proposed Required Action J.2 — L13

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ITS — A01 — ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	1. SAFETY INJECTION, ~~TURBINE TRIP AND FEEDWATER ISOLATION~~ A08		
1.a	a. Manual Initiation	Not Applicable	Not Applicable
1.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
1.c	c. Containment Pressure--High	1.54 psig	≤1.6 psig
1.d	d. Pressurizer Pressure--Low	1870 psig	≥1864.8 psig
	e. Deleted		
1.e	f. Steam Line Pressure--Low	600 psig steam line pressure (Note 1)	≥592.2 psig steam line pressure (Note 1)

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Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	2. CONTAINMENT SPRAY		
2.a	a. Manual Initiation	Not Applicable	Not Applicable
2.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable
2.c	c. Containment Pressure--High-High	2.81 psig	≤2.9 psig
	3. CONTAINMENT ISOLATION		
3.a	a. Phase "A" Isolation		
3.a.(1)	1. Manual	Not Applicable	Not Applicable
3.a.(2)	2. From Safety Injection Automatic Actuation logic	Not Applicable	Not Applicable
3.b.	b. Phase "B" Isolation		
3.b.(1)	1. Manual	Not Applicable	Not Applicable
3.b.(2)	2. Automatic Actuation Logic	Not Applicable	Not Applicable
3.b.(3)	3. Containment Pressure--High-High	2.81 psig	≤2.9 psig
	c. Containment Ventilation Isolation		
	1. Manual	Not Applicable	Not Applicable
	2. Automatic Isolation Logic	Not Applicable	Not Applicable

See ITS 3.3.6

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ITS A01 ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES	
	3. Containment Purge Air Exhaust Monitor Radioactivity - High	≤8.5 x 10^{-3} µCi/cc	≤8.5 x 10^{-3} µCi/cc	See ITS 3.3.6
	4. STEAM LINE ISOLATION			
4.a	a. Manual	Not Applicable	Not Applicable	
4.b	b. Automatic Actuation Logic	Not Applicable	Not Applicable	
4.c	c. Containment Pressure--High-High	2.81 psig	≤2.9 psig	
4.d.(1)	d. Steam Line Pressure--Low	600 psig steam line pressure (Note 1)	≥592.2 psig steam line pressure (Note 1)	
4.d.(2)	e. Negative Steam Line Pressure Rate--High	100.0 psi (Note 2)	≤107.8 psi (Note 2)	
	5. TURBINE TRIP AND FEEDWATER ISOLATION			LA05
5.b	a. Steam Generator Water level -- High-High (P-14)	81% ~~of narrow range instrument span each steam generator~~	≤81.7% ~~of narrow range instrument span each steam generator~~	A11
5.a	b. Automatic Actuation Logic	N.A.	N.A.	

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ITS — A01 — ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

ITS	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	6. AUXILIARY FEEDWATER		
	~~a. Manual~~	~~Not Applicable~~	~~Not Applicable~~ A12
6.a	b. Automatic Actuation Logic	Not Applicable	Not Applicable
	c. Main Steam Generator Water Level--Low-Low		
6.b.(1) 6.b.(2)	i. RCS Loop ΔT Equivalent to Power $\leq$ 50% RTP	RCS Loop ΔT variable input 50% RTP	RCS Loop ΔT variable input $\leq$ nominal trip setpoint +2.5% RTP
6.b.(1)	Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	$\geq$14.4% of narrow range instrument span
	and		
6.b.(1)	Containment Pressure-EAM	0.5 psig	$\leq$ 0.6 psig
	or		
6.b.(2)	Steam Generator Water Level--Low-Low (EAM)	10.7% of narrow range instrument span	$\geq$ 10.1% of narrow instrument span
	with		
6.b.(1) 6.b.(2)	A time delay (T_S) if one Steam Generator is affected	T_S (Note 5, Table 2.2-1)	$\leq$ (1.01) T_S (Note 5, Table 2.2-1)
	or		
6.b.(1) 6.b.(2)	A time delay (T_M) if two or more Steam Generators are affected	T_M (Note 5, Table 2.2-1)	$\leq$ (1.01) T_M (Note 5, Table 2.2-1)

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ITS

A01

ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
6.b.(1) 6.b.(2)	ii. RCS Loop ΔT Equivalent to Power > 50% RTP		
6.b.(1)	Coincident with Steam Generator Water Level-- Low-Low (Adverse)	15.0% of narrow range instrument span	≥ 14.4% of narrow range instrument span
	and		
6.b.(1)	Containment Pressure (EAM)	0.5 psig	≤ 0.6 psig
	or		
6.b.(2)	Steam Generator Water Level-- Low-Low (EAM)	10.7% of narrow range instrument span	≥10.1% of narrow range instrument span
6.c	d. S.I.	See 1 above (all SI Setpoints)	
6.d.	e. Loss of Power Start		
6.d.(1)	1. Voltage Sensors	Refer to Function 1 of Table 3.3-14 for setpoints and allowable values.	
6.d.(2)	2. Load Shed Timer		
6.e	f. Trip of Main Feedwater Pumps	N.A.	N.A.
6.f	g. Auxiliary Feedwater Suction Pressure-Low	3.21 psig (motor driven pump)	≥ 2.44 psig (motor driven pump)
		13.9 psig (turbine driven (pump)	≥ 12 psig (turbine driven pump)
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays	4 seconds (motor driven pump)	≤ 4.4 seconds and ≥ 3.6 seconds (motor driven pump)
		5.5 seconds (turbine driven pump)	≤ 6.05 seconds and ≥ 4.95 seconds (turbine driven pump)

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Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	7. This Specification has been deleted.		
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS		
	a. Pressurizer Pressure		
8.b.(1)	1. Not P-11, Automatic Unblock of Safety Injection on Increasing Pressure	1970 psig	≤1975.2 psig
8.b.(2)	2. P-11, Enable Manual Block of Safety Injection on Decreasing Pressure	1962 psig	≥1956.8 psig

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ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUES
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS (Continued)		
	b. Deleted		
	c. Deleted		
5.b	~~d. Steam Generator Level Turbine Trip, Feedwater Isolation P-14~~	~~(See 5. above)~~	A11
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP		
7.b.	a. RWST Level - Low	130" from tank base	≤ 132.71” and ≥ 127.29” from tank base
	COINCIDENT WITH		
	Containment Sump Level - High	30" above elev. 680'	≤ 31.68” and ≥ 28.32” above elev. 680’
	AND		
	Safety Injection	(See 1 above for all Safety Injection Setpoints/Allowable Valves)	
7.a.	b. Automatic Actuation Logic	N.A.	N.A.

Footnote (d) Note 1: Time constants utilized in the lead-lag controller for Steam Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds.

Footnote (h) Note 2: Time constant utilized in the rate-lag controller for Negative Steam Line Pressure Rate-High is $\tau_1 \geq 50$ seconds.

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ITS

Table 3.3.2-1

A01

ITS 3.3.2

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M02 A04

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE IS REQUIRED~~
	1. SAFETY INJECTION ~~AND FEEDWATER ISOLATION~~ (A08)				
1.a	a. Manual Initiation	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
1.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
1.c	c. Containment Pressure-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
1.d	d. Pressurizer Pressure--Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
	e. Deleted				
1.e	f. Steam Line Pressure--Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
	2. CONTAINMENT SPRAY				
2.a	a. Manual Initiation	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
2.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
2.c	c. Containment Pressure--High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~

L14 ~~184 days~~

~~184 days~~

~~92 days on a staggered test bases~~ L15

In accordance with the Surveillance Frequency Control Program LA02

For Functional Units 1.b, 2.b, 3.a.(2), 3.b.(2), 4.b, 5.b, 6.b, and 7.a add proposed SR 3.3.2.3 at a frequency of ~~92 days on a STAGGERED TEST BASES~~. M04

For Functional Units 1.b, 2.b, 3.a.(2), 3.b.(2), 4.b, 5.~~b~~, 6.~~b~~, and 7.a add proposed SR 3.3.2.5 at a frequency of ~~every 18 months~~. M04

a

KAB015

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ITS A01 ITS 3.3.2

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02 L15

~~92 days on a staggered test bases~~

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE IS REQUIRED~~
	3. CONTAINMENT ISOLATION				
	a. Phase "A" Isolation				
3.a.(1)	1) Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
3.a.(3)	2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(1)	~~1, 2, 3, 4~~
	b. Phase "B" Isolation				
3.b.(1)	1) Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3, 4~~
3.b.(2)	2) Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~
3.b.(3)	3) Containment Pressure--High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
	c. Containment Ventilation Isolation				
	1) Manual	N.A.	N.A.	R	1, 2, 3, 4
	2) Automatic Isolation Logic	N.A.	N.A.	M(1)	1, 2, 3, 4
	3) Containment Purge Air Exhaust Monitor Radioactivity-High	S	R	Q	1, 2, 3, 4

A04

A09 A09

~~184 days~~

In accordance with the Surveillance Frequency Control Program

L14

LA02

See ITS 3.3.6

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
	4. STEAM LINE ISOLATION				
4.a	a. Manual	N.A.	N.A.	~~R~~ SR 3.3.2.7	~~1, 2, 3~~
4.b	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~
4.c	c. Containment Pressure--High-High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
4.d.(1)	d. Steam Line Pressure--Low	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
4.d.(2)	e. Negative Steam Line Pressure Rate--High	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~3~~
	5. TURBINE TRIP AND FEEDWATER ISOLATION A11				
5.b	a. Steam Generator Water Level--High-High (P-14)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4 L14 ~~184 days~~	~~1, 2, 3~~
5.a	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~
	6. AUXILIARY FEEDWATER				
	~~a. Manual~~ A12	N.A.	N.A.	~~R~~ A12	~~1, 2, 3~~
6.a	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3~~

A04

~~92 days on a staggered test bases~~ L15

In accordance with the Surveillance Frequency Control Program LA02

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ITS

Table 3.3.2-1

A01

ITS 3.3.2

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

M02

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
	c. Main Steam Generator Water Level--Low-Low				
6.b.(1)	1. Steam Generator Water Level--Low-Low (Adverse)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(2)	2. Steam Generator Water Level--Low-Low (EAM)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(1) 6.b.(2)	3. RCS Loop ΔT	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.b.(1)	4. Containment Pressure (EAM)	~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4	~~1, 2, 3~~
6.c	d. S.I.	See 1 above (all SI surveillance requirements)			
	e. Loss of Power Start				
6.d.(1)	1. Voltage Sensors	N.A.	~~R~~ SR 3.3.2.8	~~M~~ SR 3.3.2.6	~~1, 2, 3~~
6.d.(2)	2. Load Shed Timer	N.A.	~~R~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~
6.e	f. Trip of Main Feedwater Pumps	N.A.	N.A.	~~R~~ SR 3.3.2.7 SR 3.3.2.7	~~1, 2~~
6.f	g. Auxiliary Feedwater Suction Pressure-Low	N.A.	~~R~~ SR 3.3.2.8	N.A	~~1, 2, 3~~
6.g	h. Auxiliary Feedwater Suction Transfer Time Delays	N.A.	~~R~~ SR 3.3.2.8	N.A.	~~1, 2, 3~~

A04

A04

7. This Specification has been deleted.

In accordance with the Surveillance Frequency Control Program

LA02

ITS | A01 | ITS 3.3.2

Table 3.3.2-1

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

M02

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	~~MODES FOR WHICH SURVEILLANCE IS REQUIRED~~	
	8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					A04
8.b.(1) 8.b.(2)	a. Pressurizer Pressure, P-11/Not P-11	N.A.	~~R(2)~~ SR 3.3.2.8 In accordance with the Surveillance Frequency Control Program	N.A.	~~1, 2, 3~~	LA02
	b. Deleted					
5.b	~~c. Steam Generator Level, P-14~~	~~N.A.~~	~~R(2)~~	~~N.A.~~	~~1, 2~~	A11
	9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
7.b.	a. RSWT Level - Low COINCIDENT WITH Containment Sump Level - High	~~S~~ SR 3.3.2.1 ~~S~~ SR 3.3.2.1	~~R~~ SR 3.3.2.8 ~~R~~ SR 3.3.2.8	~~Q~~ SR 3.3.2.4 ~~Q~~ SR 3.3.2.4	~~1, 2, 3, 4~~ ~~1, 2, 3, 4~~	A04
	AND Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)				
7.a.	b. Automatic Actuation Logic	N.A.	N.A.	~~M(1)~~ SR 3.3.2.2	~~1, 2, 3, 4~~	A04

In accordance with the Surveillance Frequency Control Program | LA02

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ITS

A01

ITS 3.3.2

TABLE 4.3-2 (Continued)
TABLE NOTATION

In accordance with the Surveillance Frequency Control Program

LA02

~~92 days on a STAGGERED TEST BASIS~~

L15

SR 3.3.2.2 (1) Each train or logic channel shall be tested at least every ~~62 days on a STAGGERED TEST BASIS~~.

SR 3.3.2.8 ~~(2) The total interlock function shall be demonstrated OPERABLE during CHANNEL CALIBRATION testing of each channel affected by interlock operation.~~

~~L01~~

STET

KAB013

Add proposed SR 3.3.2.6 Note

Add proposed SR 3.3.2.7 Note

Add proposed SR 3.3.2.10 Note

A18

Add proposed SR 3.3.2.8 Note

A19

Add proposed SR 3.3.2.9 Note

A20

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DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) 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. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS Table 3.3-1 and Table 3.3-3 specify 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.f, 2.c, 3.b.3), 4.c, 4.d, 4,e, 5.a, 6.c.i.a, 6.c.i.b, 6.c.i.c, 6.c.i.d, 6.c.ii.a, 6.c.ii.b, 6.c.ii.c, 6.c.ii.d, and 9.a, 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 3.3-3 ACTIONS 17, 18, 20, 36, 37, and 38, 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 ITS Table 3.3.2-1 to be OPERABLE, which includes only one column titled "REQUIRED CHANNELS," and ITS 3.3.2 ACTION A specifies the action to take under the condition where one or more Functions have one or more "Required Channels" or trains inoperable. This changes the CTS by changing the title of the "MINIMUM CHANNELS OPERABLE" column to "REQUIRED CHANNELS," and matching the number of channels listed in the "REQUIRED CHANNELS" column to the number listed in either the "TOTAL NO. OF CHANNELS" column or "MINIMUM CHANNELS OPERABLE" column where action is required if the number of OPERABLE channels falls below the number specified.

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. For CTS Table 3.3-3 Functional Units 6.e.1, 6.g, 6.h.1, and 6.h.2, action is required when the number of OPERABLE channels falls below the "MINIMUM CHANNELS OPERABLE" column, the number entered into the ITS "REQUIRED CHANNELS" column. For CTS Table 3.3-3 Functional Units 1.a, 1.b, 1.c, 1.d, 1.f, 2.b, 2.c, 3.a.1), 3.b.2), 3.b.3), 4.a, 4.b, 4.c, 4.d, 4.e, 5.a, 5.b, 6.b, 6.c.i.a, 6.c.i.b, 6.c.i.c, 6.c.i.d, 6.c.ii.a, 6.c.ii.b, 6.c.ii.c, 6.c.ii.d, 6.e.1, 6.f, and 9.a, action is required when the number of OPERABLE channels falls below the "TOTAL NO. OF CHANNELS" column, the number entered into the ITS "REQUIRED CHANNELS" column. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS Table 3.3-1 Functional Unit 22.G (Reactor Trip System Interlocks – Reactor Trip P-4), CTS Table 3.3-3 Functional Unit 2.a (Containment Spray – Manual), and CTS Table 3.3-3 Functional Unit 3.b.1) (Containment Isolation, Phase "B"

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

Isolation, Manual) the number of channels is specified as 2 channels. In ITS Table 3.3.2-1 Function 2.a (Containment Spray – Manual Initiation), Function 3.b.(1) (Containment Isolation, Phase "B" Isolation, Manual Initiation) and Function 8.a (ESFAS Interlocks – Reactor Trip, P-4) the corresponding ITS Function Required Channels are specified in terms of "trains". ITS Function 2.a (Containment Spray – Manual Initiation) and Function 3.b.(1) (Containment Isolation, Phase "B" Isolation, Manual Initiation) Required Channels are listed as "2 per train, 2 trains"; while Function 8.a (ESFAS Interlocks – Reactor Trip, P-4) Required Channels is listed as "1 per train, 2 trains". This changes the CTS by identifying the ESFAS Function Train A and B relationship required OPERABLE in the ITS.

CTS Functional Units Reactor Trip, P-4; Containment Spray – Manual; and Containment Isolation, Phase "B" Isolation, Manual are related to the ESFAS actuation trains and not individual instrument channels. The proposed change is acceptable because it is consistent with the ESFAS design and more accurately describes the affected Function. In addition, the proposed change revises the label used to describe the Function and does not change the CTS OPERABILITY requirements for the affected Function. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS Table 4.3-1 and Table 4.3-2 provide a column designating the MODES that each Surveillance is required to be met. ITS Table 3.3.2-1 does not provide this specific column but includes this information in the Applicable MODES or other Specified Conditions column. This changes the CTS by combining the information in the CTS Table 4.3-1 and Table 4.3-2 columns specifically stating when a Surveillance is required to be met with the CTS Table 3.3-1 and Table 3.3-3 column stating the Applicable MODES the instruments are required to be OPERABLE into one table in ITS.

CTS 4.0.1 states that Surveillance Requirements shall be met during the MODES or other specified conditions in the Applicability for individual Limiting Condition for Operation, unless otherwise stated in the individual Surveillance Requirement. ITS SR 3.0.1 states that surveillance requirements (SRs) shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. For these Functional Units the MODES for which the surveillance must be met from CTS Table 4.3-1 and CTS Table 4.3-2 are the same as that in the "Applicable MODES" column from CTS Table 3.3-1 and CTS Table 3.3-3. Any changes to the "Applicable MODES" from CTS to ITS are covered by DOCs identified in CTS Tables 3.3-1 and 3.3-3. This change is designated as administrative because it does not result in technical changes to the CTS.

A05 CTS 3.3.2.1 [Unit 1] ACTION, CTS 3.3.2 [Unit 2] ACTION and CTS Table 3.3-3 provide the compensatory actions to take when Engineered Safety Feature Actuation System (ESFAS) instrumentation is inoperable. ITS 3.3.2 ACTIONS similarly provide the compensatory actions for inoperable ESFAS Instrumentation. ITS 3.3.2 ACTIONS are modified by a Note that allows separate Condition entry for each Function. In addition, due to the manner in which the Required Channel's description modifies ITS Functions 1.e, 2.a,

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

3.b.(1), 4.a, 4.d.(1), 4.d.(2), 5.b, 6.b.(1), 6.b.(2), 6.d.(1), 6.d.(2), 6.e, 6.f, 6.g.(1), 6.g.(2), and 8.a, separate Condition entry is allowed within a Function as follows: Function 1.e (Safety Injection, Steam Line Pressure - Low) on a per steam line basis; Function 2.a (Containment Spray, Manual Initiation) on a per train basis; Function 3.b.(1) (Containment Isolation, Phase B Isolation, Manual Initiation) on a per train basis; Function 4.a (Steam Line Isolation, Manual Initiation) on a per steam line basis; Function 4.d.(1) (Steam Line Isolation, Steam Line Pressure, Low) on a per steam line basis; Function 4.d.(2) (Steam Line Isolation, Steam Line Pressure, Negative Rate - High) on a per steam line basis; Function 5.b (Turbine Trip and Feedwater Isolation, SG Water Level - High High (P-14)) on a per SG basis; Function 6.b.(1) (Auxiliary Feedwater, SG Water Level - Low Low (Adverse)) on a per SG basis; Function 6.b.(2) (Auxiliary Feedwater, SG Water Level - Low Low (EAM)) on a per SG basis; Function 6.d.(1) (Auxiliary Feedwater, Loss of Offsite Power, Voltage Sensors) on a per shutdown board basis; Function 6.d.(2) (Auxiliary Feedwater, Loss of Offsite Power, Load Shed Timer) on a per shutdown board basis; Function 6.e (Trip of all Main Feedwater Pumps) on a per pump basis; Function 6.f (Auxiliary Feedwater Pump Suction Transfer on Suction Pressure-Low) on a per pump basis; Function 6.g.(1) (Auxiliary Feedwater Suction Transfer Time Delays, Motor-Driven Pump) on a per pump basis; Function 6.g.(2) (Auxiliary Feedwater Suction Transfer Time Delays, Turbine-Driven Pump) on a per pump basis; and Function 8.a (ESFAS Interlock, P-4) on a per train basis. This changes 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, shutdown board, pump or train 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.a, 3.b.(1), 4.a, 4.d.(1), 4.d.(2), 5.b, 6.b.(1), 6.b.(2), 6.d.(1), 6.d.(2), 6.e, 6.f, 6.g.(1), 6.g.(2), and 8.a are allowed separate Condition entry on the specified basis (i.e., per steam line, train, loop, SG, shutdown board, pump, or train). This separate condition entry is allowed because the channels associated with each steam line, train, loop, SG, shutdown board, pump, or train, as applicable, 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.

A06 CTS 4.3.2.1.3 requires verification that the ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function is within limits. Sequoyah License Amendment 190 and 182, for Unit 1 and Unit 2 respectively, relocated the ESFAS response time limits to the UFSAR (ADAMS Accession No. ML013300393). UFSAR Table 7.3.1-4 contains these limits listing the information in two columns, "Initiating Signal and Function," and "Response Time in Seconds." In UFSAR Table 7.3.1-4, "Manual" initiating signal and associated functions are listed as not having an applicable response time limit and actuation logic is not listed in the "Initiation Signal and Function" column. The Initiating Signals listed in UFSAR Table 7.3.1-4 are; Containment Pressure – High, Pressurizer Pressure – Low, Negative Steam Line Pressure Rate – High, Steam Line Pressure – Low, Containment Pressure -- High – High, Steam Generator

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

Water Level -- High-High, Main Steam Generator Water Level -- Low-Low, Station Blackout, Trip of Main Feedwater Pumps, Loss of Power, and RWST Level-Low Coincident with Containment Sump Level - High and Safety Injection. ITS Table 3.3.2-1 requires the performance of SR 3.3.2.9, "Verify ESFAS RESPONSE TIMES are within limits," for Functions 1.c (Safety Injection - Containment Pressure - High), 1.d (Safety Injection - Pressurizer Pressure – Low), 1.e (Safety Injection - Steam Line Pressure Low), 2.c (Containment Spray – Containment Pressure High-High), 3.b.(3) (Containment Isolation - Containment Pressure High-High), 4.c (Steam Line Isolation - Containment Pressure High-High), 4.d.(1) (Steam Line Isolation – Steam Line Pressure Low), 4.d.(2) (Steam Line Isolation – Negative Rate - High), 5.b (Turbine Trip and Feedwater Isolation – SG Water Level High-High (P-14)), 6.b.(1) (Auxiliary Feedwater - SG Water Level Low Low – Adverse), 6.b.(2) (Auxiliary Feedwater - SG Water Level Low Low – EAM), 6.d.(1) (Auxiliary Feedwater, Loss of Power – Voltage Sensors), 6.d.(2) (Auxiliary Feedwater, Loss of Power – Load Shed Timer), 6.e (Auxiliary Feedwater, Trip of Main Feedwater Pumps), and 7.b (Automatic Switchover to Containment Sump, RWST Level - Low Coincident with Safety Injection and Coincident with Containment Sump Level – High). As with the CTS, "Manual" and "Automatic Actuation Logic and Actuation Relays" Functions are excluded from RESPONSE TIME TESTING. This changes the CTS by specifically stating which Functions the ESFAS RESPONSE TIME testing is required.

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 7.3.1-4 specifies response times for those ESFAS Functions assumed in the SQN safety analyses. This change is acceptable because ITS 3.3.2, Table 3.3.2-1 continues to require ESFAS RESPONSE TIME testing (ITS SR 3.3.2.9) for those Functions listed in UFSAR Table 7.3.1-4. This change is designated as administrative because it does not result in technical changes to the CTS.

A07 CTS 4.3.2.1.3 states, in part, that the ESFAS RESPONSE TIME of each ESFAS 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~~ ESFAS function as shown in the "Total No. of Channels" column of Table 3.3-3 ITS SR 3.3.2.9 requires the verification of ESFAS RESPONSE TIMES every 18 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.

KAB012

This change is acceptable because the requirements for 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.

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

A08 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, and Feedwater Isolation. ITS Table 3.3.2-1 Function 5 lists "Safety Injection" as one of the supporting Functions for Turbine Trip and Feedwater Isolation. This changes the CTS by moving the details of the support function from the Safety Injection Functional Unit (CTS Functional Unit 1) to the Turbine Trip and Feedwater Isolation Function (ITS Function 5).

CTS presents the relationship between actuation signals/circuitry and Functional Units by listing the Functional Units of Turbine Trip and Feedwater Isolation with the Safety Injection Functional Unit actuation signals and logic. ITS presents this relationship by listing "Safety Injection" under Function 5 (Turbine Trip and Feedwater Isolation) and referring to ITS Function 1 for all initiation functions and requirements. This change is acceptable because the support/supported relationship is maintained, only the manner in which the relationship is presented is changed. This change is designated as administrative because it does not result in technical changes to the CTS.

A09 CTS Tables 3.3-3, 3.3-4, and 4.3-2 provide specific requirements, including Applicability, number of channels, ACTIONS, and Surveillances, for Functional Unit 3.a.2) which is the Functional Unit for the Safety Injection (SI) signals generated from ESFAS to the Phase A Containment Isolation. ITS Table 3.3.2-1 Function 3.a.(3), which is the same Function, also provides the specific requirements for the SI Input from ESFAS. However, the ITS only refers to the requirements of ITS Table 3.3.2-1 Function 1 for the requirements. This changes the CTS by providing a cross-reference to the requirements of the various SI Functions in lieu of listing each for the Phase A Containment Isolation Functional Unit.

The purpose of CTS Functional Unit 3.a.2) is to provide proper requirements to ensure the SI signal from ESFAS will actuate the Containment Phase A Isolation. The ITS requirements state to refer to Function 1 for all initiation functions and requirements. Thus, in the ITS, all portions of the SI Input from ESFAS that actuate the Containment Phase A Isolation is governed by the requirements of ITS Table 3.3.2-1 Function 1. This is acceptable, since ITS Table 3.3.2-1 Function 1 provides requirements consistent with the CTS requirements. The CTS requires 2 trains to be OPERABLE. For CTS Functional Unit 3.a.2), this requirement is covered by CTS Functional Unit 1.b (ITS Table 3.3.2-1 Function 1.b), the Automatic Actuation Logic and Actuation Relays Function, since the SI Input from ESFAS for the Containment Phase A Isolation is through the Solid State Protection System logic. The ACTIONS provided for CTS Functional Unit 3.a.2) are the same as the CTS Functional Unit for Safety Injection and any changes to the ACTIONS are discussed and justified in other DOCs. CTS Functional Unit 3.a.2) requires a CHANNEL FUNCTIONAL TEST every 62 days on a STAGGERED TEST BASIS (as shown in Table 4.3-2 and Note 1) and any changes to the Frequencies are discussed and justified in other DOCs. This Surveillance and Frequency are consistent with the Surveillance and Frequency required by CTS Functional Unit 1.b. Therefore, this change is acceptable and designated as an administrative change because it does not result in a technical change to the CTS.

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

A10 CTS Table 3.3-3 Functional Units 4.a (Steam Line Isolation, Manual), 5.a (Turbine Trip & Feedwater Isolation, Steam Generator Water Level— High-High), 6.c.i.a (Auxiliary Feedwater, Main Stm. Gen. Water Level—Low-Low, Start Motor-Driven Pumps, Steam Generator Water Level--Low-Low (Adverse)), 6.c.i.b (Auxiliary Feedwater, Main Stm. Gen. Water Level—Low-Low, Start Motor Driven Pumps, Steam Generator Water Level--Low-Low (EAM)), 6.c.ii.a (Auxiliary Feedwater, Main Stm. Gen. Water Level—Low-Low, Start Turbine-Driven Pump, Steam Generator Water Level--Low-Low (Adverse)), and 6.c.ii.b (Auxiliary Feedwater, Main Stm. Gen. Water Level—Low-Low, Start Turbine Driven Pump, Steam Generator Water Level--Low-Low (EAM)), include the phrase "operating steam line," "in each operating loop," or "in each Operating Stm. Gen." in the "MINIMUM CHANNELS OPERABLE" column. ITS Table 3.3.2-1 Functions 4.a (Steam Line Isolation, Manual Initiation), 5.b (Turbine Trip and Feedwater Isolation, SG Water Level - High High (P-14)), 6.b.(1) (Auxiliary Feedwater, SG Water Level - Low Low, Adverse), or 6.b.(2) (Auxiliary Feedwater, SG Water Level - Low Low, EAM), "Required Channels" column does not contain this information. This changes the CTS by removing the phrases "operating steam line," "in each operating loop," or "in each Operating Stm. Gen."

The purpose of the phrases "in each operating loop," or "in each Operating Stm. Gen." is to allow for unit operation with less than all four steam lines, RCS loops, or steam generators in operation. Although CTS Table 3.3-3 Minimum Channels OPERABLE column includes the information, relating to "operating," the CTS Functional Units associated ACTIONS require action to be taken when the number of OPERABLE channels is one less than the Total Number of Channels, which does not include the phrases relating to "operating." ITS Table 3.3.2-1 "Required Channels" column for these Functions retains the OPERABLE channel requirements contained in CTS Table 3.3-3 "Total No. of Channels" column. This change is acceptable because the OPERABILITY requirements associated with the number of OPERABLE channels is the same in CTS as in ITS. This change is designated as administrative because it does not result in technical changes to the CTS.

A11 CTS Table 3.3-3 Functional Unit 8.c, Table 3.3-4 Functional Unit 8.d, and Table 4.3-2 Functional Unit 8.c provide requirements for the Engineered Safety Feature Actuation System Interlock – Steam Generator Level P-14. CTS Table 3.3-3, requires that Functional Unit 8.c have 3 channels per loop OPERABLE in MODES 1 and 2, CTS Table 3.3-4 requires the nominal trip set point and allowable value to be set in accordance with Functional Unit 5 (Turbine Trip and Feedwater Isolation) for Functional Unit 8.d, and CTS Table 4.3-2 provides Surveillance Requirements for Functional Unit 8.c. With less than 3 channels per loop OPERABLE in MODES 1 and 2, ACTION 22c requires the interlock be declared inoperable and verification that all affected channels for CTS Functional Unit 5.a (Turbine Trip & Feedwater Isolation - Steam Generator Water Level High-High) are OPERABLE or to apply the appropriate ACTION statement(s) for Functional Unit 5.a. ITS Table 3.3.2-1 links P-14 to Function 5.b (SG Water Level - High High (P-14)) requiring 3 channels per steam generator to be OPERABLE in MODES 1, 2, and 3, with MODES 2 and 3 modified by Note (~~k~~ i) KAB017
stating except when all MFIVs, MFRVs, and MFRV bypass valves are closed or

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DISCUSSION OF CHANGES
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isolated by a closed manual valve. In addition, CTS Table 4.3-2 requires a CHANNEL CALIBRATION every 18 months for Functional Unit 8.c as is required by ITS SR 3.3.2.8 for Function 5.b. This changes the CTS by linking P-14 directly to the Steam Generator Water level High-High Function (CTS Functional Unit 5.a, ITS Function 5.b) instead of indirectly with a separate interlock Functional Unit.

This change proposes to eliminate CTS Tables 3.3-3 and 4.3-2 Functional Unit 8.c (Table 3.3-4 Functional Unit 8.d) as a separate line item. The ITS SG Water Level - High High interlock Function is adequately addressed in the ESFAS Specification as ITS Table 3.3.2-1, Function 5.b, SG Water Level High-High (P-14). The requirement to address this function separately as an ESFAS Interlock is unnecessary. All necessary requirements (Applicable MODES, Required Channels, Condition, Surveillance Requirements, and setpoints) for the SG Water Level High-High function are adequately addressed by the existing Turbine Trip and Feedwater Isolation Function 5.b on ITS ESFAS Table 3.3.2-1. The Required Action associated with Function 5.b is to place the inoperable channel in trip. The requirement to place the inoperable channel in trip is appropriate and sufficient for the SG Water Level High-High Function as it is for the majority of other trip functions on Table 3.3.2-1. The requirement to verify interlock status does not impose any additional requirements beyond those required for the SG Water Level High-High function. This change is designated as administrative because it does not result in a technical change to the CTS.

KAB018
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KAB018

A12 CTS Table 3.3-3, Table 3.3-4, and Table 4.3-2, contain requirements for Functional Unit 6.a (Auxiliary Feedwater, Manual) and Functional Unit 6.d (Auxiliary Feedwater, Safety Injection) both of which are the method of manually starting the Auxiliary Feedwater Pumps. In addition, CTS Table 3.3-3 contains ACTION 24 which is only associated with Functional Unit 6.a. ITS Table 3.3.2-1 does not contain a Function similar to CTS Functional Unit 6.a, only Function 6.c (Safety Injection). This changes the CTS by eliminating a duplicate Functional Unit and its associated requirements.

The purpose of CTS Tables 3.3-3, 3.3-4, and 4.3-2 requirements for Functional Unit 6.a is to ensure two channels are OPERABLE to manually start Auxiliary Feedwater. The two channels required associated with Functional Unit 6.a are the two Safety Injection System Actuate hand switches, which are the same channels as Functional Unit 1.a (Safety Injection, Manual). CTS Tables 3.3-3, 3.3-4, and 4.3-2 contain similar requirements for Functional Unit 1.a (Safety Injection, Manual) as Functional Unit 6.a. Because CTS also requires Functional Unit 6.d (Auxiliary Feedwater, Safety Injection) that refers to CTS Functional Unit 1 for its requirements and ITS Table 3.3.2-1 Function 6.c refers to Function 1 (Safety Injection) for its requirements, listing a separate manual Function for Auxiliary Feedwater Pump actuation is unnecessary and is combined with ITS Function 6.c (Auxiliary Feedwater, Safety Injection). In addition, CTS Table 3.3-3 ACTION 24 is only associated with Functional Unit 6.a. Because CTS Functional Unit 6.a is being eliminated, ACTION 24 is no longer necessary and is also being eliminated. This change is designated as administrative because it does not result in a technical change to the CTS.

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KAB024

and 4.d, Steam Line Isolation, Steam Line Pressure - Low

A13 CTS Table 3.3-3 Note #, in part, is associated with Functional Units 1.d (Safety Injection, Pressurizer Pressure-Low) and 1.f (Safety Injection, Steam Line Pressure-Low)~~.~~ CTS Table 3.3-3 Note # modifies the Functional Unit's MODE of Applicability by stating that the trip function may be bypassed in MODE 3 below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint. ITS Table 3.3.2-1 footnote (a) is associated with Functions 1.d (Safety Injection, Pressurizer Pressure-Low), and 1.e (Safety Injection, Steam Line Pressure-Low). ITS Table 3.3.2-1 footnote (a) modifies the Function's Applicability by stating ~~"Above the P-11 (Pressurizer Pressure) interlock."~~ This changes the CTS by ~~replacing the description of how the P-11 interlock operates and when the Functions are allowed to be bypassed, with a statement of when the Functions are required to be OPERABLE.~~

making the footnote specific to the Safety Injection functional units. (See DOC A14 for the discussion on making Note # specific to Steam Line Isolation, Steam Line Pressure - Low.)

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"Safety Injection, Pressurizer Pressure - Low and Safety Injection, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock."

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The purpose of CTS Table 3.3-3 Note # is to modify the Applicability for the associated Functional Units stating when it is permissible for these Functional Units to be bypassed. Note # does this by providing information on the Functional Units interaction with interlock P-11. One purpose of P-11 is to prevent an inadvertent ECCS actuation during plant heatup and cooldown by blocking portions of the safety injection and steam line isolation signal actuation logic. The pressurizer low pressure and steamline low pressure safety injection actuation signals can be manually blocked when RCS pressure is below the P-11 permissive setpoint. ~~CTS Table 3.3-3 Note # states that these Functional Units may be bypassed when below P-11. ITS Table 3.3.2-1 footnote (a) modifies the applicability of the pressurizer low pressure and steamline low pressure safety injection Functions, stating that they are required to be OPERABLE above the P-11 (Pressurizer Pressure) interlock. Thus replacing the statements in CTS for when they may be bypassed with statements in ITS for when these Functions are required to be OPERABLE. Therefore,~~ ITS requires these Functions to provide a signal that will actuate safety injection under the same Conditions as CTS. This change is designated as administrative because it does not result in technical changes to the CTS.

A14 CTS Table 3.3-3 Note #, in part, is associated with Functional Unit 4.d (Steam Line Isolation, Steam Line Pressure-Low). CTS Table 3.3-3 Note # modifies the Functional Unit's MODE of Applicability by stating that the trip function may be bypassed in MODE 3 below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint. ITS Table 3.3.2-1 footnote (f) is associated with Function 4.d.(1) (Steam Line Isolation, Steam Line Pressure, Low). ITS Table 3.3.2-1 footnote (f) modifies the Function's applicability by stating ~~"when Steam Line Isolation on Steam Line Pressure Negative Rate - High is blocked."~~ This changes the CTS by ~~replacing the description of how the P-11 interlock operates and when the Function is allowed to be bypassed, with a statement of when the Function is required to be OPERABLE.~~

"Steam Line Isolation, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock."

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making the footnote specific to the Steam Line Isolation functional unit. (See DOC A13 for the discussion on making footnote # specific to the Safety Injection functional units.)

KAB024

The purpose of CTS Table 3.3-3 Note # is to modify the Applicability for the associated Functional Units stating when it is permissible for this Functional Unit to be bypassed. Note # does this by providing information on the Functional Units interaction with interlock P-11. One purpose of P-11 is to prevent an inadvertent ECCS actuation during plant heatup and cooldown by blocking

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portions of the steam line isolation signal actuation logic. The steam line isolation steam pressure low actuation signal can be manually blocked when RCS pressure is below the P-11 permissive setpoint. ~~CTS Table 3.3-3 Note # states that this Functional Unit may be bypassed when below P-11. ITS Table 3.3.2-1 footnote (a) modifies the Applicability of the Steamline Isolation, Steam Line Pressure, Low Function by stating that this Function is required to be OPERABLE when Steam Line Isolation on Steam Line Pressure Negative Rate-High is blocked.~~ ~~Therefore,~~ ITS requires this Function to provide a signal that will actuate steam line isolation under the same Conditions as CTS. This change is designated as administrative because it does not result in technical changes to the CTS. KAB024

A15 CTS Table 3.3-3 Note ## is associated with Functional Unit 4.e (Steam Line Isolation, Negative Steam Line Pressure Rate-High). CTS Table 3.3-3 Note ## modifies the Functional Unit's MODE of Applicability by stating that that the trip function is automatically blocked above P-11 and that it may be blocked below P11 when Safety Injection on Steam Line Pressure-Low is not blocked. ITS Table 3.3.2-1 footnote (g) is associated with Function 4.d.(2) (Steam Line Isolation, Steam Line Pressure, Negative Rate-High). ITS Table 3.3.2-1 footnote (g) modifies the applicability of the Steam Line Isolation, Steam Line Pressure, Negative Rate-High Function by stating "Steam Line Isolation, Steam Line Pressure Negative Rate-High is automatically blocked above P-11 and may be blocked below P-11 when Safety Injection, Steam Line Pressure - Low is not blocked." ~~that this Function is required to be OPERABLE when the Steam Line Isolation on Steam Line Pressure-Low Function is blocked."~~ This changes the CTS by making the footnote specific to the Steam Line Isolation, Steam Line Pressure, Negative Rate-High functional unit. ~~replacing the description of how the P-11 interlock operates and when the Function is allowed to be blocked, with a statement of when the Function is required to be OPERABLE.~~ KAB024 KAB024

The purpose of CTS Table 3.3-3 Note ## is to modify the Applicability for the associated Functional Unit stating when it is permissible for this Functional Unit to be blocked. Note ## does this by providing information on the Functional Unit's interaction with interlock P-11. One purpose of P-11 is to prevent an inadvertent ECCS or steam line isolation actuation during plant heatup and cooldown by blocking portions of the safety injection and steam line isolation signal actuation logic. The steam line isolation Negative Steam Line Pressure Rate-High actuation signal is automatically blocked when RCS pressure is above the P-11 permissive setpoint and can be manually enabled below P-11. ~~CTS Table 3.3-3 Note ## states that this Functional Unit's trip function is automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked. ITS Table 3.3.2-1 footnote (g) modifies the Applicability of the Steam Line Isolation, Steam Pressure, Negative Rate-High Function by stating that this Function is required to be OPERABLE when Steam Line Isolation on Steam Line Pressure -Low is blocked.~~ ~~Therefore,~~ ITS requires this Function to provide a signal that will actuate steam line isolation under the same Conditions as CTS. This change is designated as administrative because it does not result in technical changes to the CTS. KAB024

A16 CTS Table 3.3-3 ACTION 20 requires that 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. CTS Table 3.3-3 ACTION 20 is applicable to CTS Table 3.3-3 Functional Units

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1.a (Safety Injection – Manual Initiation), 2.a (Containment Spray – Manual), 3.a.1) (Containment Isolation Phase A – Manual), 3.b.1) (Containment Isolation Phase B – Manual), and 6.f (Auxiliary Feedwater - Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump). CTS Table 3.3-3 Functional Units 1.a, 2.a, 3.a.1, and 3.b.1 MODE of Applicability is MODES 1, 2, 3, and 4 while Functional Unit 6.f MODE of Applicability is MODES 1 and 2 when one or more Main Feedwater Pump(s) are supplying feedwater to steam generators. ITS LCO 3.3.2 ACTION N is applicable to ITS Table 3.3.2-1 Function 6.e (Trip of all Main Feedwater Pumps) and requires restoring the channel to OPERABLE status in 48 hours or be in MODE 3 in 54 hours. This changes the CTS by explicitly stating that for an inoperable Main Feedwater Pumps trip channel the unit is only required to be shut down to MODE 3 within 54 hours if the channel is not returned to OPERABLE status.

The purpose of CTS Table 3.3-3 ACTION 20 is to provide remedial actions 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. As in ACTION 20, these remedial ACTIONS can be used to place the unit in a MODE or other specified condition in which the LCO is not applicable. For CTS Table 3.3-3 Functional Unit 6.f the MODE of Applicability is MODES 1 and 2 when one or more Main Feedwater Pump(s) are supplying feedwater to steam generators. CTS Table 3.3-3 ACTION 20 requires that 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. For CTS Table 3.3-3 Functional Unit 6.f with one channel inoperable ACTION 20 would require a unit shut down after 48 hours being in HOT STANDBY within the next 6 hours (54 hours total). Once in HOT STANDBY the unit has exited the MODE of Applicability for this Functional Unit and no further ACTION is required. In ITS, LCO 3.3.2 ACTION N requires either the inoperable channel be returned to an OPERABLE status in 48 hours or the unit placed in MODE 3 in 54 hours. This change is acceptable because the specified ACTIONS in ITS are the same as those in CTS for an inoperable Auxiliary Feedwater - Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump channel. This change is designated as administrative because it does not result in technical changes to the CTS.

A17 CTS Table 3.3-3 ACTION 22 applies to Functional Units 8.a (Engineered Safety Feature Actuation System Interlocks, Pressurizer Pressure- P-11/Not P-11) and 8.c (Engineered Safety Feature Actuation System Interlock, Steam Generator Level P-14) requiring that with less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE "or apply the appropriate ACTION statement(s) for those functions." CTS Table 3.3-3 Functional Unit 8.c is being combined with CTS Table 3.3-3 Functional Unit 5.a (Turbine Trip & Feedwater Isolation, Steam Generator Water Level – High-High) and is discussed in DOC A11. ITS LCO 3.3.2 ACTION Q is associated with Functions 8.b(1) (ESFAS Interlocks, Pressurizer Pressure P-11, Unblock (Auto Reset of SI Block)) and 8.b(2) (ESFAS Interlocks, Pressurizer Pressure P-11, Enable Manual Block of SI), providing the Required Actions for an inoperable interlock that verifies the

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interlock is in the required state for existing unit condition within one hour "or to be in MODE 3, for Required Action Q.2.1, within 7 hours from discovery and to be in MODE 4, for Required Action Q.2.2, within 13 hours from discovery." This changes the CTS by providing specific ACTIONS when the associated interlock cannot be verified in the correct position for unit conditions.

The purpose of the CTS ACTION 22 is to ensure proper compensatory measures are taken in the event of an inoperable ESFAS interlock. Similarly, the purpose of ITS 3.3.2 ACTION Q is to ensure proper compensatory measures are taken in the event of an inoperable ESFAS interlock. In CTS, if the number of OPERABLE Pressurizer Pressure P-11 Interlock channels is less than that required by the Minimum Channels OPERABLE column, the interlock is declared inoperable and all affected channels of the Functions listed are verified OPERABLE or the appropriate ACTIONS for the affected channels are applied. Because the interlock is used to enable or block its associated Functions, if the interlock is in the wrong position for plant conditions the associated Function is inoperable (all channels) and CTS LCO 3.0.3 would be followed. CTS LCO 3.0.3 requires initiation of action in one hour to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in: 1) at least HOT STANDBY within the next 6 hours; 2) at least HOT SHUTDOWN within the following 6 hours; and 3) at least COLD SHUTDOWN within the subsequent 24 hours. For the Functional Units associated with P-11 the MODE of Applicability is MODES 1, 2, and 3. Therefore in CTS once a P-11 channel is discovered inoperable the affected channels associated Functional Units would be verified OPERABLE and if not action would be initiated within one hour to place the unit in HOT STANDBY within 6 hours and HOT SHUTDOWN within the following 6 hours, a total of 13 hours. ITS LCO 3.3.2 ACTION Q requires verifying the interlock is in the required state within one hour and if not be in MODE 3 within 7 hours and MODE 4 within 13 hours. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features are the same in CTS as in ITS. This change is designated as administrative because it does not result in technical changes to the CTS.

A18 CTS Table 4.3-2 requires CHANNEL FUNCTIONAL TEST for Functional Units 1.a (Safety Injection and Feedwater Isolation, Manual Initiation), 2.a (Containment Spray, Manual Initiation), 3.a.1 (Containment Isolation, Phase "A" Isolation, Manual), 3.b.1 (Containment Isolation, Phase "B" Isolation, Manual), 4.a (Steam Line Isolation, Manual), 6.e.1 (Auxiliary Feedwater, Loss of Power Start, Voltage Sensors), 6.f (Auxiliary Feedwater, Trip of Main Feedwater Pumps), and Table 4.3-1 Functional Unit 22.g (Reactor Trip P-4). ITS Table 3.3.2-1 requires similar tests, ITS SR 3.3.2.6 (TADOT), to be performed for Function 6.d.1 (Auxiliary Feedwater, Loss of Power Start, Voltage Sensors); ITS SR 3.3.2.7 (TADOT) to be performed for Functions 1.a (Safety Injection, Manual Initiation), 2.a (Containment Spray, Manual Initiation), 3.a.(1) (Containment Isolation, Phase "A" Isolation, Manual), 3.b.(1) (Containment Isolation, Phase "B" Isolation, Manual), 4.a (Steam Line Isolation, Manual Initiation), 6.e (Auxiliary Feedwater, Trip of Main Feedwater Pumps); and ITS SR 3.3.2.10 (TADOT) to be performed for Function 8.a (Reactor Trip, P-4) with the addition of a Note that

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states, "Verification of setpoint is not required," or "Verification of setpoint not required for manual initiation functions." This changes the CTS by requiring a TADOT without setpoint verification instead of a CHANNEL FUNCTIONAL TEST.

CTS 1.6 states that for an analog channel a CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions. ITS 1.1 defines a TADOT as consisting of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. ITS further states that the TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. Because the TADOT includes adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy, which is not included in the CTS CHANNEL FUNCTIONAL TEST, ITS SR 3.3.2.6, SR 3.3.2.7, and SR 3.3.2.10 includes the Note, "Verification of setpoint is not required," or "Verification of setpoint not required for manual initiation functions." A TADOT without setpoint verification provides a similar test for these channels as the CTS CHANNEL FUNCTIONAL TEST. This change is designated as administrative because it does not result in technical changes to the CTS.

A19 CTS Table 4.3-2 requires CHANNEL CALIBRATION for Functional Units as designated. ITS SR 3.3.2.8 requires similar calibration for these Functional Units. For those Functional Units associated with ITS SR 3.3.2.8, a Note is added to SR 3.3.2.8 stating, "This Surveillance shall include verification that the time constants are adjusted to the prescribed values." This changes the CTS by adding specific guidance that the time constant adjustment, as applicable, is part of the calibration for these Functional Units.

CTS 1.19, OPERABLE-OPERABILITY definition, in part states, "A system, subsystem, train, or component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation . . . . to perform its function(s) are also capable of performing their related support function(s)." ITS OPERABLE-OPERABILITY definition, in part states, "A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation . . . to perform its specified safety function(s) are also capable of performing their related support function(s). For CTS, as in ITS, the related time constants of an instrument channel are required to be set properly. To ensure they are set properly verification is required. By stating in the surveillance requirement that the CHANNEL CALIBRATION requires verification of the time constants restates what OPERABILITY requires. This change is designated as administrative because it does not result in technical changes to the CTS.

A20 CTS 4.3.2.1.3 states in part that the ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit. CTS 4.7.1.2.2 and CTS 4.7.1.2.4 are each modified by a Note that states, "Not required to be completed for the turbine driven Auxiliary Feedwater (AFW) pump until 24 hours after steam supply pressure is greater than or equal to 842 psig."

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ITS SR 3.3.2.9 requires verification that ESFAS RESPONSE TIMES are within limit. ITS 3.3.2.9 is modified by a Note that states, "Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is greater than or equal to 842 psig." This changes the CTS by explicitly stating and duplicating the allowance found in CTS 3.7.1.2 for the TD AFW pump to delay performance of surveillances until adequate steam pressure is available.

The purpose of CTS 4.3.2.1.3 is to verify that the response time assumptions from the accident analysis are within limits. ITS defines ESF RESPONSE TIME as the time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). CTS 4.7.1.2.2 requires verification that the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head. CTS 4.7.1.2.2 is modified by a Note for the TD AFW pump that states, "Not required to be completed for the turbine driven AFW pump until 24 hours after steam supply pressure is greater than or equal to 842 psig." Because the ESF RESPONSE TIME test end time is when the TD AFW pump reaches its required developed head a valid test cannot be performed until adequate steam generator pressure is reached. This relationship is implicit in CTS where in ITS the addition of the Note to ITS SR 3.3.2.9 makes this relationship explicit. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-1 Functional Unit 22.G (Reactor Trip System Interlocks – Reactor Trip (P-4)) Applicable MODES are 1, 2, and * where Note * states with the reactor trip system breakers in the closed position, the control rod drive system capable of rod withdrawal, and fuel in the reactor vessel. CTS Table 3.3-1 Functional Unit 22.G (Reactor Trip System Interlocks – Reactor Trip P-4) associated ACTION 14 requires that with the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE the plant be in at least HOT STANDBY within 6 hours. ITS Table 3.3.2-1 Function 8.a (ESFAS Interlocks - Reactor Trip, P-4) Applicable MODES or other Specified Conditions lists MODES 1, 2, 3 as the Applicable MODES. ITS Table 3.3.2-1 Function 8.a (ESFAS Interlocks - Reactor Trip, P-4) associated ACTION G allows 48 hours to restore the channel or train to OPERABLE status or be in MODE 3 (CTS HOT STANDBY) in 54 hours and MODE 4 (CTS HOT SHUTDOWN) in 60 hours. This changes the CTS by increasing the MODES the Reactor Trip (P-4) interlock must be OPERABLE and requiring the unit to be shutdown to MODE 4 instead of only MODE 3.

The purpose of CTS Table 3.3-1 Functional Unit 22.G (Reactor Trip System Interlocks – Reactor Trip P-4) Applicable MODES and associated ACTION 14 is to state the combination of conditions the specified Functional Unit is required to be capable of performing its specified function(s) and provide 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

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features. This change is acceptable because the MODES in which the P-4 interlock is required to be OPERABLE have been increased and the allowed Completion Times for plant shutdown are reasonable to reach the required unit conditions from full power in an orderly manner and without challenging unit systems. This change is designated as more restrictive because additional MODES of Applicability are applied and additional Required Actions have been imposed when a P-4 channel is inoperable.

M02 CTS 4.3.1.1.1 and CTS 4.3.2.1.1 require that each reactor trip system and ESFAS instrumentation channel and interlock be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST for the MODES and at the Frequencies shown in Table 4.3-1 and Table 4.3-2. Specifically, CTS Table 4.3-1 and 4.3-2 require performance of a CHANNEL FUNCTIONAL TEST at the Frequencies shown on the Tables. ITS 3.3.2 requires the performance of a CHANNEL OPERATIONAL TEST (COT), a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT), or an ACTUATION LOGIC TEST. This changes the CTS by replacing the CHANNEL FUNCTIONAL TEST requirements with a COT, a TADOT, or an ACTUATION LOGIC TEST.

This change is acceptable because a COT, a TADOT, or an ACTUATION LOGIC TEST continues to perform a test similar to the current CHANNEL FUNCTIONAL TEST. CTS defines a CHANNEL FUNCTIONAL TEST based on the type of channel. In CTS a CHANNEL FUNCTIONAL TEST shall be: for Analog channels, the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions; for Bistable channels, the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions; and for Digital channels, the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions. This does not include the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors as does the CHANNEL CALIBRATION. The ITS ACTUATION LOGIC TEST, CHANNEL OPERATIONAL TEST (COT), and TRIP ACTUATING DEVICE OPERATION TEST (TADOT) provide similar tests with the addition that the COT and TADOT include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. This change is designated as more restrictive because the ITS requires an additional acceptance criteria that is not currently required in the CTS.

M03 CTS Table 4.3-1 Functional Unit 22.G (Reactor Trip System Interlocks – Reactor Trip, P-4) requires a CHANNEL FUNCTIONAL TEST be performed at least once per 18 months (R). ITS Table 3.3.2-1 Function 8.a (ESFAS Interlocks – Reactor Trip, P-4) requires a TADOT be performed "Once per reactor trip breaker cycle" (SR 3.3.2.10). This changes the CTS by increasing the Frequency at which testing of the P-4 interlock is performed.

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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 purpose of the CTS CHANNEL FUNCTIONAL TEST and the ITS TADOT (SR 3.3.2.10) is to verify proper operation of the P-4 interlock. Normal plant operation is to produce power for 18 months then to refuel the reactor and perform maintenance. When the power operation period is over the plant is shut down and the reactor trip breakers and reactor trip bypass breakers are opened. In ITS the Frequency for the performance of the TADOT is once per reactor trip breaker cycle. Thus if a reactor trip breaker is cycled between normal refueling shutdowns, the P-4 circuit would be tested by performance of a TADOT. This results in a potential to perform SR 3.3.2.10 more frequently than once per 18 months. This change is acceptable because it will provide additional assurance that the P-4 interlock is capable of performing its function each time a reactor trip breaker is cycled. This change is designated as more restrictive because the testing Frequency has been increased from the CTS requirements.

M04 CTS Table 3.3-3, "Engineered Safety Feature Actuation System Instrumentation"; Table 3.3-4, "Engineered Safety Feature Actuation System Instrumentation Trip Setpoints"; and Table 4.3-2, "Engineered Safety Feature Actuation System Instrumentation Surveillance Requirements"; include Functional Unit requirements for Automatic Actuation Logics but do not contain requirements for Actuation Relays (i.e., Master Relays or Slave Relays). CTS requirements for Automatic Actuation Logic are included in CTS Tables 3.3-3, 3.3-4, and 4.3-2 for Functional Units 1.b (Safety Injection and Feedwater Isolation, Automatic Actuation Logic), 2.b (Containment Spray, Automatic Actuation Logic), 3.b.2) (Containment Isolation, Automatic Actuation Logic), 4.b (Steam Line Isolation, Automatic Actuation Logic), 5.b (Turbine Trip & Feedwater Isolation, Automatic Actuation Logic), 6.b (Auxiliary Feedwater, Automatic Actuation Logic), and 9.b (Automatic Switchover to Containment Sump, Automatic Actuation Logic). ITS contains requirements for Automatic Actuation Logics and adds OPERABILITY requirements for Actuation Relays and Surveillance Requirements for Master Relays and Slave Relays in ITS Table 3.3.2-1 to Functions 1.b (Safety Injection, Automatic Actuation Logic and Actuation Relays), 2.b (Containment Spray, Automatic Actuation Logic and Actuation Relays), 3.a(2) (Containment Isolation, Phase "A" Isolation, Automatic Actuation Logic and Actuation Relays), 3.b(2) (Containment Isolation, Phase "B" Isolation, Automatic Actuation Logic and Actuation Relays), 4.b (Steam Line Isolation, Automatic Actuation Logic and Actuation Relays), 5.a (Turbine Trip and Feedwater Isolation, Automatic Actuation Logic and Actuation Relays), 6.a (Auxiliary Feedwater, Automatic Actuation Logic and Actuation Relays), and 7.a (Automatic Switchover to Containment Sump, Automatic Actuation Logic and Actuation Relays). In ITS the Surveillance Frequency for the MASTER RELAY TEST is 92 days on a STAGGERED TEST BASIS (SR 3.3.2.3) while the SLAVE RELAY TEST Surveillance Frequency is every 18 months (SR 3.3.2.5). The addition of the Automatic Actuation Logic and Actuation Relay Function added to CTS Functional Unit 3 (Containment Isolation) is discussed under DOC M05. This changes the CTS by adding requirements for Actuation Relays to the appropriate ITS Functions including LCO, required number of channels, ACTIONS, and Surveillance Requirements for Master and Slave Relays.

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This change is acceptable because the Automatic Actuation Logic and Actuation Relays Function are required to support the OPERABILITY of the associated Functions. As such, explicitly including requirements for the Actuation Relays in the ITS provides additional assurance that the OPERABILITY of the associated Functions will be maintained. The change provides explicit requirements for testing the Actuation Relay Function. The addition of SR 3.3.2.3 (a MASTER RELAY TEST), and SR 3.3.2.5 (a SLAVE RELAY TEST) is acceptable because these tests provide additional assurance the Actuation Relays are capable of performing their required function. The proposed Frequency for testing of the master relays is consistent with the Frequency for testing of the Automatic Actuation Logic for these associated Functions. The Frequency proposed for testing of the slave relays is consistent with the current Frequency for testing of the slave relays. This change is designated as more restrictive because it adds new requirements for ESFAS Actuation Relays to the CTS.

M05 CTS Table 3.3-3, Table 3.3-4, and Table 4.3-2, 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 two Automatic Actuation Logic and Actuation Relay trains to be OPERABLE in MODES 1, 2, 3, and 4, provides Conditions to enter with less than the required channels OPERABLE, and Surveillance Requirements. ITS 3.3.2 ACTION C has been included for this Function, providing 24 hours to restore an inoperable train if one train is inoperable, and if not restored, provides a shutdown requirement. A Note that allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE, modifies the Required Actions associated with ACTION C. Additionally, ITS Table 3.3.2-1 Function 3.a.(2) requires the performance of SR 3.3.2.2, an ACTUATION LOGIC TEST every 92 days on a STAGGERED TEST BASIS; SR 3.3.2.3, a MASTER RELAY TEST, every 92 days on a STAGGERED TEST BASIS; and SR 3.3.2.5, a SLAVE RELAY TEST, every 18 months. 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 and Surveillance Requirements.

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 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 proposed ACTION for ITS Table 3.3.2-1 Function 3.a.(2) is ACTION C. ACTION C is consistent with the ACTIONS associated with an inoperable train of automatic actuation logic for other ESFAS functions. The change also 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 3.3.2.3 (a MASTER RELAY TEST), and SR 3.3.2.5 (a SLAVE RELAY TEST) is acceptable because currently the requirements of SR 3.3.2.2 and SR 3.3.2.3 are satisfied during the performance of the CHANNEL FUNCTIONAL TEST for CTS Table 4.3-2 Functional Unit 3.a.2)

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(From Safety Injection Automatic Actuation Logic) channels, and the requirements of SR 3.3.2.5 are satisfied during the performance of the TADOT associated with the Manual Initiation Function. This change is designated as more restrictive because it adds an LCO, ACTIONS, and SRs for the Containment Isolation Phase A Isolation Automatic Actuation Logic and Actuation Relays Function to the CTS.

M06 For CTS Table 3.3-3 Functional Unit 8.a, 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 3.3-3 ACTION 22 specifies the actions to take with less channels OPERABLE than specified in the "Minimum Channels OPERABLE" column. ITS LCO 3.3.2 requires the ESFAS instrumentation for each Function in ITS Table 3.3.2-1 to be OPERABLE, including only one column titled "REQUIRED CHANNELS," where for this Function the number of ITS "Required Channels" equals the CTS "TOTAL Number of Channels," and ITS 3.3.2 ACTION A specifies the action to take under the Condition where one or more Functions have one or more "Required Channels" or trains inoperable. This changes the CTS by matching the number of channels listed in the "REQUIRED CHANNELS" column to the number listed in the "TOTAL NO. OF CHANNELS" column, where action is required if the number of OPERABLE channels is not met.

This change is acceptable because the requirements for when actions must be taken are increased. The "REQUIRED CHANNELS" column reflects the CTS "Total NO. OF CHANNELS" column which is greater than the CTS MINIMUM CHANNELS OPERABLE" column, the current requirement for when actions are required to be taken. This change is designated as more restrictive because actions are required to be taken with fewer channels inoperable.

M07 CTS Table 3.3-3 ACTION 17 provides the actions to be taken when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. These ACTIONS state that STARTUP (similar to ITS MODE 2) and/or POWER OPERATION (similar to ITS MODE 1) may proceed, provided the listed conditions are satisfied. However, no action is specified if the listed conditions are not satisfied. ITS 3.3.2 Required Actions D.2.1 and D.2.2 require the unit to be in MODE 3 within 6 hours and MODE 4 within an additional 6 hours if conditions similar to those in CTS Table 3.3-3 ACTION 17 are not satisfied. This changes the CTS by providing a specific action for completion within a prescribed period when stipulated conditions are not met.

The purpose of CTS Table 3.3-3 ACTION 17 is to provide the actions when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. CTS 3.0.3 provides actions when a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements. Because CTS Table 3.3-3 ACTION 17 does not provide any further actions if those listed are not satisfied CTS 3.0.3 would be entered. CTS 3.0.3 states that within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply. CTS Table 3.3-3 ACTION 17 states that Startup and/or POWER OPERATION

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(MODES 2 and 1 respectively) may proceed if the listed conditions are satisfied. Therefore, in accordance with CTS 3.0.3, the MODE reached first that the Specification does not apply would be MODE 3. CTS 3.0.3 states, in part, that within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable in at least HOT STANDBY (MODE 3) within the next 6 hours (a total of 7 hours to reach MODE 3) and at least HOT SHUTDOWN (MODE 4) within the following 6 hours. ITS LCO 3.3.2 Required Action D.2.1 only allows 6 hours to reach MODE 3, while D.2.2 allows an additional 6 hours to reach MODE 4. This change is acceptable because less time is allowed to reach MODE 3 and MODE 4 while allowing adequate time to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems. This change is designated as more restrictive because ITS will allow less time to reach MODE 3 and MODE 4 than is allowed in the CTS.

M08 CTS Table 3.3-3 ACTION 18 provides the actions to be taken when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. These ACTIONS state that operation may proceed, provided the listed conditions are satisfied. However, no actions are specified if the listed conditions are not satisfied. Under similar conditions, ITS 3.3.2 Required Actions E.2.1 and E.2.2 require the unit to be in MODE 3 within 6 hours and MODE 4 within an additional 6 hours. This changes the CTS by providing a specific action for completion within a prescribed period when stipulated conditions are not met.

The purpose of CTS Table 3.3-3 ACTION 18 is to provide the actions when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. CTS 3.0.3 provides actions when a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements. Because CTS Table 3.3-3 ACTION 18 does not provide further actions if those listed are not satisfied, CTS 3.0.3 would be entered. CTS 3.0.3 states, in part, that within one hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable in at least HOT STANDBY (MODE 3) within the next 6 hours (a total of 7 hours to reach MODE 3) and at least HOT SHUTDOWN (MODE 4) within the following 6 hours. ITS LCO 3.3.2 Required Action E.2.1 allows 6 hours to reach MODE 3, while E.2.2 allows an additional 6 hours to reach MODE 4. This change is acceptable because adequate time is allowed to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems. This change is designated as more restrictive because ITS will allow less time to reach MODE 3 and MODE 4 than is allowed in the CTS.

M09 CTS Table 3.3-3 ACTION 18 provides the actions to be taken when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. These ACTIONS state that operation may proceed, provided the listed conditions are satisfied. However, no actions are specified if the listed conditions are not satisfied. Under similar conditions, ITS 3.3.2 Required Actions P.2.1 and P.2.2 require the unit to be in MODE 3 within 6 hours and MODE 5 within an additional 30 hours. This

changes the CTS by providing a specific action for completion within a prescribed period when stipulated conditions are not met.

The purpose of CTS Table 3.3-3 ACTION 18 is to provide the actions when the associated Functional Units OPERABLE channels are one less than the number of channels listed in the Total Number of Channels column. CTS 3.0.3 provides actions when a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements. Because CTS Table 3.3-3 ACTION 18 does not provide further actions if those listed are not satisfied, CTS 3.0.3 would be entered. CTS 3.0.3 states, in part, that within one hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable in at least HOT STANDBY (MODE 3) within the next 6 hours (a total of 7 hours to reach MODE 3), at least HOT SHUTDOWN (MODE 4) within the following 6 hours, and at least COLD SHUTDOWN (MODE 5) within the subsequent 24 hours. ITS LCO 3.3.2 Required Action P.2.1 allows 6 hours to reach MODE 3, while P.2.2 allows an additional 30 hours to reach MODE 5. This change is acceptable because adequate time is allowed to reach the required plant condition from full power conditions in an orderly manner and without challenging plant systems. This change is designated as more restrictive because ITS will allow less time to reach MODE 3 and MODE 4 than is allowed in the CTS.

M10 CTS Table 3.3-3 Functional Unit 8.a (Engineered Safety Feature Actuation System Interlocks, Pressurizer Pressure-P-11/Not P-11) associated ACTION 22 requires, in part, that with less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed are OPERABLE. ITS Table 3.3.2-1 Function 8.b.(1) (ESFAS Interlocks, Pressurizer Pressure, P-11, Unblock (Auto Reset of SI Block)) and Function 8.b.(2) (ESFAS Interlocks, Pressurizer Pressure, P-11, Enable Manual Block of SI) associated Condition Q Required Action Q.1 requires verifying the interlock is in the required state for existing unit conditions within one hour. This changes the CTS by providing an explicit Completion Time for verification of an inoperable interlock's state.

The purpose of CTS Table 3.3-3 ACTION 22 is to provide remedial ACTIONS that must be taken in response to a degraded ESFAS interlock condition in order to minimize risk associated with continued operation while providing time to repair the inoperable interlock. CTS and ITS provide similar Required Actions to verify that the failed interlock will not prevent the associated Functional Units from performing their required function. CTS does not provide a Completion Time for verification on the inoperable interlock's state whereas ITS provides a Completion Time of one hour. This change is designated as more restrictive because an explicit Completion Time is added to verify an inoperable ESFAS interlock is in its required state for unit conditions.

M11 CTS Table 3.3-3 Functional Units 6.c.i.a, Steam Generator Water Level--Low-Low (Adverse), 6.c.i.b, Steam Generator Water Level—Low-Low (EAM); 6.c.ii.a, Steam Generator Water Level--Low-Low (Adverse); and 6.c.ii.b, Steam Generator Water Level—Low-Low (EAM) require entry into ACTION 36 if one channel is inoperable. If the requirements of ACTION 36 are not met, entry into

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CTS 3.0.3 will be required because no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in at least HOT STANDBY (ITS MODE 3) within the next 6 hours, and at least HOT SHUTDOWN (ITS MODE 4) within the following 6 hours. ITS 3.3.2 Required ACTION R.1 and R.2 are applicable if ITS 3.3.2 Required ACTIONS I.1, I.2 and associated Completion Times are not met and require the unit to be in MODE 3 within 6 hours and MODE 4 within 12 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 after the Required Actions and associated Completion Times are not met from 7 hours in the CTS to 6 hours in the ITS while the time to be in MODE 4 from MODE 3 remains 6 hours.

The purpose of the CTS ACTIONS is to ensure proper compensatory measures are taken in the event of an inoperable feature and to place the unit in a safe condition. 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.

M12 CTS Table 3.3-3 Functional Units 6.c.i.c, Steam Generator Water Level--Low-Low, RCS Loop ΔT; and 6.c.ii.c, Steam Generator Water Level--Low-Low RCS Loop ΔT require entry into ACTION 37 if one channel is inoperable. If the requirements of ACTION 37 are not met, entry into CTS 3.0.3 will be required because no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in at least HOT STANDBY (ITS MODE 3) within the next 6 hours, and at least HOT SHUTDOWN (ITS MODE 4) within the following 6 hours. ITS 3.3.2 Required Actions K.3.1 and K.3.2, which are applicable if ITS 3.3.2 Required Action K.1 or K.2 and the associated Completion Time are not met, require the unit to be in MODE 3 within 12 hours and MODE 4 within 18 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 after the Required Actions and associated Completion Times are not met from 7 hours in the CTS to 6 hours in the ITS while the time to be in MODE 4 from MODE 3 remains 6 hours.

The purpose of the CTS ACTIONS is to ensure proper compensatory measures are taken in the event of an inoperable feature and to place the unit in a safe condition. 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.

M13 CTS Table 3.3-3 Functional Units 6.c.i.d, Steam Generator Water Level--Low-Low, Containment Pressure (EAM); and 6.c.ii.d, Steam Generator Water Level--

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Low-Low Containment Pressure (EAM) require entry into ACTION 38 if one channel is inoperable. If the requirements of ACTION 38 are not met, entry into CTS 3.0.3 will be required because no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in at least HOT STANDBY (ITS MODE 3) within the next 6 hours, and at least HOT SHUTDOWN (ITS MODE 4) within the following 6 hours. ITS 3.3.2 Required Action J.3.1 and J.3.2, which are applicable if ITS 3.3.2 Required Action J.1 or J.2 and associated Completion Time are not met, require the unit to be in MODE 3 within 12 hours and MODE 4 within 18 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 after the Required Actions and associated Completion Times are not met from 7 hours in the CTS to 6 hours in the ITS while the time to be in MODE 4 from MODE 3 remains 6 hours.

The purpose of the CTS ACTIONS is to ensure proper compensatory measures are taken in the event of an inoperable feature and to place the unit in a safe condition. 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.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 for Reactor Trip System instrumentation, specifically Reactor Trip System Interlock P-4, and CTS Table 3.3-3 for ESFAS 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 3.3.2-1 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

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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.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.3.2.1.1 requires that each ESFAS 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 4.3-2. CTS 4.3.2.1.3 requires that the ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months where each verification includes at least one train such that both trains are verified at least once per 36 months and one channel per function such that all channels are verified 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, 18 months on a STAGGERED TEST BASIS in ITS. The proposed change relocates all periodic Surveillance Frequencies from the CTS Section 3/4.3.2, Engineered Safety Features Actuation System Instrumentation, and places the Frequencies under licensee control in accordance with a new program, the Surveillance Frequency Control Program. The only surveillance not being relocated is the Functional Test for CTS Table 4.3-1 Functional Unit 22.G (Reactor Trip System Interlocks, Reactor Trip P-4) which is retained in ITS SR 3.3.2.10. ITS LCO 3.3.2 Surveillance Requirements require similar Surveillances and, except for special or conditional Frequencies stated in the individual surveillance, specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving designated specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies 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 existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 Functional Unit 2.a, (Containment Spray – Manual), and Functional Unit 3.b.1) (Containment Isolation – Phase "B" Isolation

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– Manual) "Channels to Trip" column contains a footnote (**) that states, "Two switches must be operated simultaneously for actuation." ITS Table 3.3.2-1 Function 2.a (Containment Spray – Manual) and Function 3.b.1) (Containment Isolation – Phase "B" Isolation – Manual) do not provide this information. This changes the CTS by moving the details of required switch operation for actuation to the ITS 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. In addition, 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.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 Functional Unit 6.c provides separate Functional Units concerning motor driven and turbine driven AFW pumps. ITS Table 3.3.2-1 does not retain separate Functions for the motor driven AFW pumps and turbine driven AFW pump. This changes the CTS by moving the information of the Functional differences for the motor driven AFW pumps 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 difference between the information listed for the motor driven AFW pumps and the turbine drive AFW pumps is associated with the "Number of Channels to Trip" column which is being removed making separate Functions unnecessary. 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.

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-4 Functional Unit 5.a (Turbine Trip and Feedwater Isolation - Steam Generator Water level--High-High) Nominal Trip Setpoint and Allowable Value contains a description specifying the steam generator water level instrument range the limit is associated with. ITS Table 3.3.2-1 Function 5.b (Turbine Trip and Feedwater Isolation - SG Water Level High High (P-14))

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does not contain this information. This changes the CTS by moving the details of which steam generator water level instrument range the limit is associated with to the TS 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 Nominal Trip Setpoint and Allowable Value for the Steam Generator Water Level—High-High Functional Unit. In addition, 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 3 – Relaxation of Completion Time)* CTS Table 3.3-1 Functional Unit 22.G (Reactor Trip Interlock, Reactor Trip P-4) and associated ACTION 14 requires the plant to be placed in at least HOT STANDBY within 6 hours when the number of P-4 channels OPERABLE is one less than required by the Minimum Channels OPERABLE column (one of two channels inoperable). ITS Table 3.3.2-1 Function 8.a (ESFAS Interlock Reactor Trip P-4) and associated ACTION G allow 48 hours to restore the inoperable channel or train to OPERABLE status before requiring the plant be in MODE 3 (Similar conditions to CTS HOT STANDBY) within 6 hours (54 hour Completion Time). This changes the CTS by increasing the Completion Time for placing the plant in MODE 3 from 6 hours to 54 hours when one channel of P-4 is inoperable.

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 function actuates turbine trip, provides Feedwater Isolation Signal on Tavg below setpoint, prevents opening of main feedwater valves which were closed by safety injection or high steam generator water level, and allows manual block of the automatic re-actuation of safety injection. This change is acceptable because the Completion Time is 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 allowed Completion Time. This change is designated as less restrictive because additional time is allowed to restore instrument channels to OPERABLE status before placing the plant in MODE 3 than was allowed in the CTS.

L02 ~~*(Category 5 - Deletion of Surveillance Requirement)* CTS Surveillance 4.3.2.1.2 specifies, in part, and CTS Table 4.3-2 Note (2) specifies that the total interlock function shall be demonstrated OPERABLE at least once per 18 months during~~ KAB013

Not Used

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~~CHANNEL CALIBRATION testing of each channel affected by interlock operation. The corresponding ITS Surveillances require an Actuation Logic Test (SR 3.3.2.2) of each Function in Table 3.3.2-1. The ACTUATION LOGIC TEST includes verification that the interlocks do not prevent the Functions from operating properly as required. This changes the CTS by eliminating the Surveillance Requirement to verify the total interlock function during the CHANNEL CALIBRATION.~~

~~The interlock functions are part of the solid state protection system (SSPS) logic circuits. Unlike the affected CTS Surveillance, the ITS addresses the testing of logic circuits separately from the CHANNEL CALIBRATION requirements. The ITS CHANNEL CALIBRATION verifies the performance of each channel up to the logic circuits (where channels are combined and lose separate identities). The testing of each channel is governed by the CHANNEL CALIBRATION test definition that ensures the complete channel is verified. The ITS ACTUATION LOGIC TEST verifies all combinations of logic inputs (channels) required for logic circuit OPERABILITY including all required interlocks. As the interlock functions are combinations of channel inputs (e.g., 2/3, 2/4 etc.) in the logic circuitry, the interlock operation is verified during the ACTUATION LOGIC TEST. The interlock logic testing is governed by the ITS ACTUATION LOGIC TEST definition that assures the "input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit" are tested. The logic and interlock testing is accomplished by the built in solid state protection system logic tester which also assures all required input combinations and interlocks are fully tested. The proposed change is acceptable because, the required ITS CHANNEL CALIBRATION and more frequent ACTUATION LOGIC TEST (every 92 days on a STAGGERED TEST BASIS) ensure the total interlock function continues to be verified at least once per 18 months (i.e., the same as the CTS surveillance requirement). The ITS defined test terms provide additional assurance that individual channels and all required interlock functions are fully tested. In addition, by separating the logic testing from the CHANNEL CALIBRATION requirements, the ITS presentation of the Surveillance Requirements associated with this instrumentation improve clarity and provide more technically accurate test requirements consistent with industry standards, and the SSPS design including the built in logic test capability. Therefore, the proposed change continues to provide adequate assurance of interlock channel and logic OPERABILITY and does not adversely affect the safe operation of the plant. The proposed change is designated as less restrictive because less stringent requirements will be applied in the ITS than in the CTS.~~ KAB013

L03 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3, ACTION 15 for Functional Units 1.b (Safety Injection, Automatic Actuation Logic), 2.b (Containment Spray, Automatic Actuation Logic), 3.b.2) (Containment Isolation Phase B, Automatic Actuation Logic), and 9.b (Automatic Switchover to Containment Sump, Automatic Actuation Logic) states, "With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is

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OPERABLE." ITS Table 3.3.2-1 designates Condition C as the referenced Condition for Functions 1.b (Safety Injection, Automatic Actuation Logic and Actuation Relays), 2.b (Containment Spray, Automatic Actuation Logic and Actuation Relays), and 3.b.(2) (Containment Isolation Phase B, Automatic Actuation Logic and Actuation Relays while designating Condition S as the referenced Condition for Function 7.a (Automatic Switchover to Containment Sump, Automatic Actuation Logic and Actuation Relays). ITS LCO 3.3.~~1~~ 2, KAB014 ACTION C for Functions 1.b (Safety Injection, Automatic Actuation Logic and Actuation Relays), 2.b (Containment Spray, Automatic Actuation Logic and Actuation Relays), and 3.b.(2) (Containment Isolation Phase B, Automatic Actuation Logic and Actuation Relays) requires restoration of the inoperable train to OPERABLE status within 24 hours or be in MODE 3 within 30 hours and MODE 5 within 60 hours, and is modified by a Note stating, "One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE." ITS 3.3.2 Required ACTION S retains the CTS requirements of CTS Table 3.3-3 ACTION 15. This changes the CTS by allowing 24 hours for train maintenance to restore the train to an OPERABLE status before requiring a power reduction to MODE 3 within an additional 6 hours, increasing the allowed time to enter MODE 3 from 12 hours to 30 hours, and increases the allowance for entering MODE 5 from 42 hours (12 + 30) to 60 hours for inoperable Safety Injection, Containment Spray, or Containment Isolation Phase B Automatic Actuation Logic and Actuation Relays.

The purpose of CTS Table 3.3-3, ACTION 15 is to allow some time to restore the inoperable train before requiring a unit shutdown. These changes are acceptable and are the result of WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the two WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because more time is allowed in the ITS for the maintenance and testing of trains than was allowed in the CTS.

L04 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3, Functional Units 4 (Steam Line Isolation), 4.a. (Manual), 4.b. (Automatic Actuation Logic), 4.c. (Containment Pressure – High-High), and 4.d. (Steam Line Pressure – Low), are required to be OPERABLE in MODES 1, 2, and 3, while CTS Functional Unit 4.e. (Negative Steam Line Pressure Rate – High) is required to be OPERABLE in MODE 3. Note that CTS Table 3.3-3, Functional Units 4.d and 4.e have further limitations on OPERABILITY as delimitated in Note # and ##, respectively, that are not changing. ITS Table 3.3.2-1, Function 4. (Steam Line Isolation), 4.a (Manual Initiation), 4.b (Automatic Actuation Logic and Actuation Relays), 4.c (Containment Pressure High-High), 4.d.(1) (Steam Line Pressure Low), and 4.d.(2) (Steam Line Pressure Negative Rate – High) include a Footnote for MODES 2 and 3, Footnote (i). Footnote (i) states, "Except when all MSIVs are closed." This changes the CTS by making the Specification for these Functions not applicable in MODES 2 and 3 when all MSIVs are closed. KAB016

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The purpose of the ITS Table 3.3.2-1 Function 4 Applicability is to provide an exception to clarify that the Steam Line Isolation instrumentation Functions are not required when the MSIVs 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 MSIVs are in the closed position, they are in their assumed accident position, thus the isolation instrumentation is not needed. In addition, the MSIVs are not required to be OPERABLE in MODES 2 and 3 when the valves are closed, thus there is no purpose in requiring the instrumentation that closes the valves to be OPERABLE. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L05 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 requires Functional Unit 5.a (Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High) and 5.b (Turbine Trip and Feedwater Isolation - Automatic Actuation Logic) to be OPERABLE in MODES 1, 2, and 3. ITS Table 3.3.2-1 requires the same Functions (ITS Table 3.3.2-1 Functions 5.a and 5.b) to be OPERABLE in MODE 1, and in MODES 2 and 3 except when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve, Footnote (~~k~~ i). This changes the CTS by not requiring the instrumentation to be OPERABLE when all MFIVs, MFRVs, and MFRV bypass valves are closed or isolated by a closed manual valve. KAB019

The purpose of the ITS Table 3.3.2-1 Functions 5.a and 5.b Applicability is to provide an exception to clarify that the Turbine Trip and Feedwater Isolation Steam Generator Water Level - High High (P-14) instrumentation and the Turbine Trip and Feedwater Isolation Automatic Actuation Logic and Actuation Relays are not required when all MFIVs, MFRVs, and MFRV bypass valves are closed 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 MFIVs, MFRVs, and MFRV bypass 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.

L06 ~~*(Category 2 – Relaxation of Applicability)* CTS Table 3.3.3 footnote (a) is applicable to Functional Unit 6.f (Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump) "Minimum Channels OPERABLE" requirement. CTS Table 3.3.3 footnote (a) states that one channel may be inoperable during Mode 1 for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service. ITS 3.3.2 ACTION N is applicable Function 6.e (Auxiliary Feedwater, Trip of Main Feedwater Pumps) and is modified by a similar Required Action Note. ITS 3.3.2 ACTION N Required Action Note states that one channel may~~ Not Used KAB023

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~~be inoperable for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service. This changes the CTS by increasing the MODES in which this footnote relaxation is Applicable.~~

~~The purpose of CTS Table 3.3.3 footnote (a) is to prevent unnecessary entries into the ACTION statement during the normal evolution of starting or stopping a main feedwater pump. Making this relaxation Applicable in MODE 2 addresses the possibility that a situation may exist requiring starting or stopping of a main feedwater pump, preventing an unnecessary entry into the associated ACTION. 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 as the AFW auto-start function provides an anticipatory trip to reduce the effect of a feedwater transient. In addition, as in MODE 1, the evolution should be completed in less than 4 hours providing a reasonable allowance for operating contingencies. This change is designated as less restrictive because the Required Channel relaxation is applicable in more operating conditions than in the CTS.~~ KAB023

L07 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3 ACTION 17, requires in part that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the inoperable channel is placed in the tripped condition within 6 hours. This action is applicable to CTS Table 3.3-3 Functional Units: 1.c (Containment Pressure – High); 1.d (Pressurizer Pressure – Low); 1.f (Steam Line Pressure – Low); 4.d (Steam Line Pressure – Low); 4.e (Negative Steam Line Pressure Rate – High); and 5.a (Steam Generator Water Level — High-High). ITS 3.3.2, Required Action D.1 require placing the associated channel in trip with a Completion Time of 72 hours for ITS Table 3.3.2-1 Functions 1.c (Containment Pressure – High); 1.d (Pressurizer Pressure – Low); 1.e (Steam Line Pressure – Low); 4.d.(1) (Steam Line Pressure – Low); 4.d.(2) (Negative Steam Line Pressure Rate – High); and 5.b (SG Water Level — High-High (P-14)). This changes the CTS by increasing the Completion Time for placing an inoperable channel for these Functional Units from six (6) hours to 72 hours.

The purpose of CTS Table 3.3-3 ACTION 17 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable or prior to being placed in a tripped state. This change is acceptable because the Completion Time is 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 allowed Completion Time. Additionally, this change is acceptable based on TVA's confirmation of applicability and incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is

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designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L08 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3 ACTION 17 allows in part that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following listed conditions are satisfied but further states that the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1. This allowance is applicable to CTS Table 3.3-3 Functional Units 1.c (Containment Pressure – High); 1.d (Pressurizer Pressure – Low); 1.~~e~~f (Steam Line Pressure – Low); 4.d~~.(1)~~ (Steam Line Pressure – Low); 4.~~d.(2)~~e (Negative Steam Line Pressure Rate – High); and 5.a (Steam Generator Water Level — High-High). ITS 3.3.2 ACTION D Required Actions are modified by a Note that states; "The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels." This allowance is applicable to ITS Table 3.3.2-1 Functional Units 1.c (Containment Pressure – High); 1.d (Pressurizer Pressure – Low); 1.~~f~~e (Steam Line Pressure – Low); 4.d.(1) (Steam Line Pressure – Low); 4.~~e~~d.(2) (Negative Steam Line Pressure Rate – High); and 5.~~a~~b (Steam Generator Water Level — High-High). This changes the CTS by increasing the time allowed for these functions to be bypassed from 4 hours to 12 hours. KAB025

The purpose of CTS Table 3.3-3 ACTION 17 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable or prior to being placed in a tripped state. The proposed bypass time of 12 hours in ITS 3.3.2 ACTION D is a sufficient time to perform train or channel surveillance. The 12 hour period is acceptable based on TVA's confirmation of applicability and incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is designated as less restrictive because additional time is allowed for an inoperable channel to be bypassed for maintenance than was allowed in the CTS.

L09 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3 ACTION 18, requires, in part, that 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 within 6 hours. This action is applicable to CTS Table 3.3-3 Functional Units 2.c (Containment Pressure –- High-High); 3.b.3) (Containment Pressure –- High-High); 4.c (Containment Pressure –- High-High); 9.a (RWST Level – Low); and 9.a (Containment Sump Level – High). ITS Table 3.3.2-1 designates Condition E as the referenced Condition for Functions 2.c (Containment Pressure –- High-High), 3.b.(3) (Containment Pressure –- High-High), and 4.c (Containment Pressure –- High-High) while designating Condition P as the referenced Condition for Functions 7.b (RWST Level – Low) and 7.b (Containment Sump Level – High). ITS 3.3.2,

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Required Actions E.1 requires placing the associated channel in bypass with a Completion Time of 72 hours for ITS Table 3.3.2-1 Functions 2.c (Containment Pressure –- High-High), 3.b.(3) (Containment Pressure –- High-High), and 4.c (Containment Pressure –- High-High). ITS 3.3.2 Required Action P.1 retains the CTS Completion Time of 6 hours for placing the associated inoperable channel in bypass. This changes the CTS by increasing the Completion Time for placing an inoperable channel in bypass for these Functional Units from six (6) hours to 72 hours.

The purpose of CTS Table 3.3-3 ACTION 18 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable or prior to being placed in a bypassed state. This change is acceptable because the Completion Time is 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 allowed Completion Time. Additionally, this change is acceptable based on TVA's confirmation of applicability and incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L10 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3 ACTION 18 requires, in part, that with the number of OPERABLE channels one less than the Total Number of Channels operation may proceed provide the specified conditions are met but further states that one additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.1. This allowance is applicable to CTS Table 3.3-3 Functional Units 2.c (Containment Pressure – High-High); 3.b.3) (Containment Pressure – High-High); 4.c (Containment Pressure – High-High); 9.a (RWST Level – Low); and 9.a (Containment Sump Level – High). ITS Table 3.3.2-1 designates Condition E as the referenced Condition for Functions 2.c (Containment Pressure –- High-High), 3.b.(3) (Containment Pressure –- High-High), and 4.c (Containment Pressure –- High-High) while designating Condition P as the referenced Condition for Functions 7.b (RWST Level – Low) and 7.b (Containment Sump Level – High). ITS 3.3.2 ACTIONS E Required Actions are modified by a Note that states; "~~The inoperable~~ One additional channel may be bypassed for up to 12 hours for surveillance testing of other channels." This allowance is applicable to ITS Table 3.3.2-1 Functional Units 2.c (Containment Pressure – High-High); 3.b.3) and (Containment Pressure – High-High); 4.c (Containment Pressure – High-High)~~; and 7.b (RWST Level – Low)~~. ITS 3.3.2 ACTIONS P Required Action Note retains the CTS ~~inoperable~~ one additional channel bypass allowance of 4 hours for surveillance testing of other channels. This changes the CTS by increasing the time allowed for an additional channel to be bypassed for ~~these~~ Functional Units 2.c, 3.b.(3), and 4.c, from 4 hours to 12 hours. KAB026

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The purpose of CTS Table 3.3-3 ACTION 18 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable or prior to being placed in a bypassed state. The proposed bypass time of 12 hours in ITS 3.3.2 ACTION E is a sufficient time to perform train or channel surveillance. The 12 hour period is acceptable based on TVA's confirmation of applicability and incorporation of insights as described in Enclosure 4 of this submittal, required by the NRC in their letter and enclosed Safety Evaluation Report (SER) dated July 15, 1998, "Review of Westinghouse Owners Group Topical Reports WCAP-14333-P and WCAP-14334-NP, dated May 1995, 'Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times' (TAC NO. M92782)." This change is designated as less restrictive because additional time is allowed for an inoperable channel to be bypassed for maintenance than was allowed in the CTS.

L11 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 3.3-3, ACTION 23 for Functional Units 4.b (Steam Line Isolation, Automatic Actuation Logic), 5.b (Turbine Trip & Feedwater Isolation, Automatic Actuation Logic), and 6.b (Auxiliary Feedwater, Automatic Actuation Logic) states, "With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1." ITS 3.3.2, ACTION H for Functions 4.b (Steam Line Isolation, Automatic Actuation Logic and Actuation Relays), 5.a (Turbine Trip & Feedwater Isolation, Automatic Actuation Logic and Actuation Relays), and 6.a (Auxiliary Feedwater, Automatic Actuation Logic and Actuation Relays) requires restoration of the inoperable train to OPERABLE status within 24 hours or be in MODE 3 within 30 hours and MODE 4 within 36 hours; and is modified by a Note stating, "One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE." This changes the CTS by allowing 24 hours for train maintenance to restore the train to an OPERABLE status before requiring a power reduction to MODE 3 within an additional 6 hours and MODE 4 in additional 6 hours for an inoperable Steam Line Isolation, Automatic Actuation Logic, Turbine Trip & Feedwater Isolation, Automatic Actuation Logic, or Auxiliary Feedwater, Automatic Actuation Logic, plus increasing the allowed time a train can be bypassed for surveillance testing from 2 hours to 4 hours.

The purpose of CTS Table 3.3-3, ACTION 23 is to allow some time to restore the inoperable train before requiring a unit shut down. ITS LCO 3.3.2 ACTION ~~G~~ H KAB027 allows 24 hours to restore the train to an OPERABLE status and the Required Actions Note allows placing one train in the bypassed condition for up to 4 hours while performing routine surveillance testing provided the other train is OPERABLE. These changes are acceptable and are the result of WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the two

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WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because more time is allowed in the ITS for the maintenance and testing of trains than was allowed in the CTS.

L12 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 ACTION 37 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay is adjusted to 0% RTP. This action is applicable to CTS Functional Unit 6.c.i.c (Auxiliary Feedwater, Main Stm. Gen Water Level – Low-Low, Start Motor-Driven Pumps, RCS Loop ΔT) and Functional Unit 6.c.ii.c (Auxiliary Feedwater, Main Stm. Gen Water Level – Low-Low, Start Turbine-Driven Pump, RCS Loop ΔT). ITS 3.3.2 Required Action K.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low channel in trip instead of adjusting the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP with the same Completion Time. This changes the CTS by adding an alternative to adjusting the TTD threshold power level for zero seconds.

Once the channel is placed in the tripped condition, the RCS ΔT TTD input has no effect on the circuit, and this action is no longer necessary.

The purpose of CTS Table 3.3-3 ACTION 37 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the affected protection sets Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP. With the trip time delay adjusted to zero seconds the additional operational margin that allows the operator time to recover SG Water level is removed and the associated SG Water level channel is returned to OPERABLE. If the threshold power level for zero seconds time delay is not adjusted from 50% RTP to 0% RTP within the specified Completion Time this proposed change allows placing the affected protection set's SG Water Level Low-Low channels in the tripped condition. ~~Once the channel is placed in the tripped condition the RCS ΔT TTD circuitry is removed from the active portion of the Steam Generator Low-Low Level channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20 and this action is no longer necessary.~~ The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. The ITS Required Action K.2 Completion Time of 6 hours is consistent with CTS TABLE 3.3-3 ACTION 37 and the proposed ITS Required Action K.1. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS. KAB028

L13 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 ACTION 38 requires that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and POWER OPERATION may proceed provided that within 6 hours, for the affected protection set, the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is adjusted to the same value as Steam Generator Water Level - Low-Low (Adverse). This action is applicable to CTS Functional Unit 6.c.i.d (Auxiliary Feedwater, Main Stm. Gen Water Level – Low-Low, Start Motor-Driven Pumps, Containment Pressure (EAM)) and Functional Unit 6.c.ii.d (Auxiliary Feedwater, Main Stm. Gen Water Level – Low-Low, Start Turbine-Driven Pump, Containment Pressure (EAM)).

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ITS 3.3.2 Required Action J.2 allows an alternative of placing the Steam Generator Water Level -- Low-Low channel in trip instead of adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse) with the same Completion Time for placing the channel in trip. This changes the CTS by adding an alternative to adjusting the Steam Generator Water Level -- Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse).

Once the channel is placed in the tripped condition, the EAM/ Adverse input has no effect on the circuit, and these actions are no longer necessary.

The purpose of CTS Table 3.3-3 ACTION 38 is to limit the maximum time allowed for maintenance activities, in which the channel is unavailable prior to adjusting the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse). If the Steam Generator Water Level -Low-Low (EAM) channels trip setpoint is not adjusted to the same value as Steam Generator Water Level -- Low-Low (Adverse) within the specified Completion Time this proposed change allows placing the affected protection sets SG Water Level -- Low-Low level channels in the tripped condition. ~~Once the channel is placed in the tripped condition the Steam Generator Water Level -- Low-Low EAM/Adverse circuitry is removed from the active portion of the Steam Generator Water Level -- Low-Low channel, reference UFSAR Figure 7.2.1-1, Sheets 17 through 20, and these actions are no longer necessary~~. The action of tripping the channel provides the protection sets input to the 2/3 logic gates located on UFSAR Figure 7.2.1-1 Sheet 19. The ITS Required Action J.2 Completion Time of 6 hours is consistent with CTS TABLE 3.3-3 ACTION 38 and the proposed ITS Required Action J.1. This change is designated as less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS. KAB029

L14 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 4.3-2 requires a CHANNEL FUNCTIONAL TEST on a quarterly basis (Q) for Functional Units: 1.c (Containment Pressure-High), 1.d (Pressurizer Pressure--Low); 1.f (Steam Line Pressure—Low); 2.c (Containment Pressure--High-High); 3.b.3) (Containment Pressure--High-High); 4.c (Containment Pressure--High-High); 4.d (Steam Line Pressure--Low); 4.e (Negative Steam Line Pressure Rate--High); and 5.a (Steam Generator Water Level--High-High). ITS Table 3.3.2-1 requires performance of a COT (ITS SR 3.3.2.4 ~~SR 3.3.1.7 or SR 3.3.1.8~~) every 184 days for Functions: 1.c (Containment Pressure-High); 1.d (Pressurizer Pressure--Low); 1.e (Steam Line Pressure—Low); 2.c (Containment Pressure--High-High); 3.b.(3) (Containment Pressure--High-High); 4.c (Containment Pressure--High-High); 4.d.(1) (Steam Line Pressure--Low); 4.d.(2) (Steam Line Pressure Negative Rate--High); and 5.b (SG Water Level--High-High (P-14)). This changes the CTS by changing the Frequency of the Surveillances from quarterly to 184 days.

KAB031

The purpose of the CHANNEL FUNCTIONAL TEST/COT is to ensure that the instrumentation is functioning properly. These changes are acceptable and are the result of WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

October 1998, WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs), or a unit specific evaluation showing the applicability of these WCAPs to the change. TVA has performed evaluations of the applicable changes associated with the three WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because less stringent Frequencies are being applied in the ITS than were applied in the CTS.

L15 *(Category 9 – Allowed Outage Time, Surveillance Frequency, and Bypass Time Extensions Based on Generic Topical Reports)* CTS Table 4.3-2 requires a CHANNEL FUNCTIONAL TEST on a monthly basis (M) for Functional Units: 1.b (Safety Injection, Automatic Actuation Logic); 2.b (Containment Spray, Automatic Actuation Logic); 3.b.2) (Containment Isolation, Automatic Actuation Logic); 4.b (Steam Line Isolation, Automatic Actuation Logic); 5.b (Turbine Trip and Feedwater Isolation, Automatic Actuation Logic); 6.b (Auxiliary Feedwater, Automatic Actuation Logic). A Note (Note (1)) modifies this Frequency and states, "Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS." The monthly CHANNEL FUNCTIONAL TEST in combination with the modifying Note requires testing each Automatic Actuation KAB032 Logic train every two months. ITS Table 3.3.2-1 requires performance of an ACTUATION LOGIC TEST (ITS SR 3.3.2.2) every 92 days on a STAGGERED TEST BASIS for Functions: 1.b (Safety Injection, Automatic Actuation Logic and Actuation Relays); 2.b (Containment Spray, Automatic Actuation Logic and Actuation Relays); 3.b.(2) (Containment Isolation, Automatic Actuation Logic and Actuation Relays); 4.b (Steam Line Isolation, Automatic Actuation Logic and Actuation Relays); 5.a (Turbine Trip and Feedwater Isolation, Automatic Actuation Logic and Actuation Relays); ~~and~~ 6.a (Auxiliary Feedwater, Automatic Actuation Logic and Actuation Relays). This changes the CTS by changing the Frequency of the Surveillances from monthly (every 62 days on a STAGGERED TEST BASIS) for these Automatic Actuation Logics to every 92 days on a KAB032 STAGGERED TEST BASIS.

; and 9.b (Automatic Switchover to Containment Sump, Automatic Actuation Logic)

; and 7.a (Automatic Switchover to Containment Sump, Automatic Actuation Logic and Actuation Relays)

The purpose of the Automatic Actuation Logic Test is to ensure that when various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit are applied the required logic output is obtained. An important concept in this change is that the definition of STAGGERED TEST BASIS (STB) in CTS is not the same as in ITS. In CTS STAGGERED TEST BASIS is defined as, "A STAGGERED TEST BASIS shall consist of: a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals, b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval. Using the CTS STB definition there are two (2) Automatic Actuation Logic trains with the Note (1) frequency of 62 days on a STB, 62 days/2 trains = 31 days/train (or monthly), Table 4.3-2 Frequency. Therefore, in CTS, each month (31 days) an Automatic Actuation Logic train is tested and each Automatic Actuation Logic train is tested every two (2) months (62 days). In ITS, STB is defined as, "A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems,

DISCUSSION OF CHANGES
ITS 3.3.2, ENGINEERED SAFETY FEATURE ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function." Using the ITS definition for the ITS SR 3.3.2.2 Frequency of "92 days on a STAGGERED TEST BASIS," changes the testing of each Automatic Actuation Logic and Actuation Relays train to every 6 months (184 days). The ITS STB definition requires an Automatic Actuation Logic and Actuation Relays Function to be tested every ~~6~~92 days. Because there are two (2) Automatic Actuation Logic and Actuation Relays trains and the STB definition states that all designated trains are tested during *n* Surveillance Frequency Intervals where *n* is the number of trains, 92 days x 2 components = 184 days (or every 6 months). Therefore, this change decreases the Frequency for testing of each Automatic Actuation Logic and Actuation Relays train from every two months to every 6 months with the interaction between trains controlled by the STB definition. These changes are acceptable and are the result of WCAP-10271, Revision 0 ("Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System"), dated May 1996, and supplements, WCAP-14333-P-A, Revision 1 ("Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times"), dated October 1998, or WCAP-15376-P-A, Revision 1 ("Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times"), dated March 2003 (or a combination of the WCAPs). TVA has performed evaluations of the applicable changes associated with the three WCAPs to justify the above changes. The evaluations supporting these changes are provided in Enclosure 4 of this submittal. This change is designated as less restrictive because less stringent Frequencies are being applied in the ITS than were applied in the CTS.

KAB032

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

3.3 INSTRUMENTATION

3.3.2~~A~~ Engineered Safety Feature Actuation System (ESFAS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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

Applicability APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

--NOTE--

DOC A05 Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION	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
Table 3.3-3 ACTION 20	B. One channel or train inoperable.	B.1	Restore channel or train to OPERABLE status.	48 hours
		OR		
		B.2.1	Be in MODE 3.	54 hours
		AND		
		B.2.2	Be in MODE 5.	84 hours

Table 3.3-3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 15	C. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. ---		3
		C.1 Restore train to OPERABLE status.	24 hours	
		OR		
		C.2.1 Be in MODE 3.	30 hours	
		AND		
		C.2.2 Be in MODE 5.	60 hours	
ACTION 17	D. One channel inoperable.	~~[~~ ------------------NOTE------------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---		3
		~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~--]~~		4 3
		D.1 Place channel in trip.	72 hours	
		OR		

CTS
Table 3.3-3

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M07		D.2.1 Be in MODE 3.	78 hours	
		AND		
DOC M07		D.2.2 Be in MODE 4.	84 hours	
ACTION 18	E. One Containment Pressure channel inoperable.	~~[~~ ------------------NOTE------------------- One additional channel may be bypassed for up to 12 hours for surveillance testing of other channels. --		3
		~~----------REVIEWER'S NOTE---------- The below Note should be used for plants with installed bypass test capability.~~		4
		~~One channel may be bypassed for up to 12 hours for surveillance testing. ---]~~		3
		E.1 Place channel in bypass.	72 hours	
		OR		
DOC M08		E.2.1 Be in MODE 3.	78 hours	
		AND		
DOC M08		E.2.2 Be in MODE 4.	84 hours	
	INSERT 1			2
Table 3.3-1 ACTION 14 DOC L01	~~F~~ G. One channel or train inoperable.	~~F~~ G.1 Restore channel or train to OPERABLE status.	48 hours	2
		OR		
		~~F~~ G.2.1 Be in MODE 3.	54 hours	2
		AND		

CTS
Table 3.3-3

2

INSERT 1

ACTION 25	F. One channel inoperable.	F.1 Restore channel to OPERABLE status.	48 hours
		OR	
		F.2 Declare the associated Main Steam Isolation Valve inoperable.	48 hours

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01		~~F~~ G.2.2 Be in MODE 4.	60 hours	2
ACTION 23	~~G~~ H. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. --		2 3
DOC L11		~~G~~ H.1 Restore train to OPERABLE status.	24 hours	2
		<u>OR</u>		
		~~G~~ H.2.1 Be in MODE 3.	30 hours	2
		<u>AND</u>		
		~~G~~ H.2.2 Be in MODE 4.	36 hours	2
	~~H. One train inoperable.~~	~~--------------------NOTE-------------------~~ ~~One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.~~ ~~--~~		2
		~~H.1 Restore train to OPERABLE status.~~	~~24 hours~~	
		~~OR~~		
		~~H.2 Be in MODE 3.~~	~~30 hours~~	

INSERT 2
INSERT 3
INSERT 4
INSERT 5
2

CTS
Table 3.3-3

2 **INSERT 2**

ACTION 36

I. One channel inoperable.	-------------------NOTE------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. --	
	I.1 For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M).	4 hours
	AND	
	I.2 Place channel in trip.	6 hours

CTS
Table 3.3-3

3.3.2

2

INSERT 3

ACTION 38	J. One channel inoperable.	J.1 For the affected protection set, adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse).	6 hours
		OR	
DOC L13		J.2 For the affected protection set, place the Steam Generator Water Level-- Low-Low channel(s) in trip.	6 hours
		OR	
DOC M13		J.3.1 Be in MODE 3.	12 hours
		AND	
DOC M13		J.3.2 Be in MODE 4.	18 hours

CTS
Table 3.3-3

2

INSERT 4

ACTION 37	K. One channel inoperable.	K.1 For the affected protection set, adjust the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP.	6 hours
		OR	
DOC L12		K.2 For the affected protection set, place the Steam Generator Water level--Low-Low channel(s) in trip.	6 hours
		OR	
DOC M12		K.3.1 Be in MODE 3.	12 hours
		AND	
DOC M12		K.3.2 Be in MODE 4.	18 hours
ACTION 35.a	L. One voltage sensor channel inoperable.	L.1 Restore the inoperable channel to OPERABLE status.	6 hours
		OR	
		L.2 Declare the associated auxiliary feedwater pump inoperable.	6 hours

CTS
Table 3.3-3

2

INSERT 5

ACTION 35.b	M. Two or more voltage sensor channels inoperable. OR One required load shed timer channel inoperable.	M.1.1 Restore all but one voltage sensor channel to an OPERABLE status. AND M.1.2 Restore required load shed timer channel to an OPERABLE status. OR M.2 Declare the associated auxiliary feedwater pump inoperable.	1 hour 1 hour 1 hour

CTS
Table 3.3-3

1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~I. One channel inoperable.~~	~~[---------------NOTE--------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.~~ ~~--~~ ~~---------REVIEWER'S NOTE--------- The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~--]~~	
	~~I.1 Place channel in trip.~~	~~72 hours~~
	~~OR~~	
	~~I.2 Be in MODE 3.~~	~~78 hours~~
N ~~J~~. One Main Feedwater Pumps trip channel inoperable.	INSERT 6 N ~~J~~.1 Restore channel to OPERABLE status.	48 hours
	OR	
	N ~~J~~.2 Be in MODE 3.	54 hours

ACTION 20

2

2

2

INSERT 7

2

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2

INSERT 6

----------------NOTE--------------

Table 3.3-3, Footnote (a)

during MODE 1

One channel may be inoperable for up to 4 hours when placing the second main feedwater (MFW) pump in service or removing one of two MFW pumps from service.

KAB023

CTS
Table 3.3-3

2

INSERT 7

ACTION 21	O. One channel inoperable.	O.1 Declare the associated auxiliary feedwater pump inoperable.	Immediately

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CTS
Table 3.3-3

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 18	~~K~~ P. One channel inoperable.	~~[~~ ------------------NOTE------------------ One additional channel may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing. --- ~~----------REVIEWER'S NOTE---------- The below Note should be used for plants with installed bypass test capability: One channel may be bypassed for up to 12 hours for surveillance testing. --]~~		2 3 3 4 3
		~~K~~ P.1 Place channel in bypass.	~~[~~6~~]~~ hours	2 3
		OR		
DOC M09		~~K~~ P.2.1 Be in MODE 3.	~~[~~12~~]~~ hours	2 3
		AND		
DOC M09		~~K~~ P.2.2 Be in MODE 5.	~~[~~42~~]~~ hours	2 3
ACTION 22	~~L.~~ Q. One or more channels inoperable.	~~L~~ Q.1 Verify interlock is in required state for existing unit condition.	1 hour	2
		OR		
DOC A17		~~L~~ Q.2.1 Be in MODE 3.	7 hours	2
		AND		
DOC A17		~~L~~ Q.2.2 Be in MODE 4.	13 hours	2

INSERT 8 2

CTS

3.3.2

2

INSERT 8

KAB034

M11	R. Required Action and associated Completion Time of Condition I not met.	R.1 Be in MODE 3. AND R.2 Be in MODE 4.	6 hours 12 hours
ACTION 15	S. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- S.1 Be in MODE 3. AND S.2 Be in MODE 5.	 12 hours 42 hours

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SURVEILLANCE REQUIREMENTS

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

	SURVEILLANCE		FREQUENCY	
Table 4.3-2 Functional Units 1.c, 1.d, 1.f, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.a, 6.c.1, 6.c.2, 6.c.3, 6.c.4, and 9.a	SR 3.3.2.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	5
Table 4.3-2 Functional Units 1.b, 2.b, 3.b.2, 4.b, 5.b, 6.b, and 9.b	SR 3.3.2.2	Perform ACTUATION LOGIC TEST.	~~[92 days on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	5
	~~SR 3.3.2.3~~	~~-----NOTE-----~~ ~~The continuity check may be excluded.~~ ~~-----~~ ~~Perform ACTUATION LOGIC TEST.~~	~~[31 days on a STAGGERED TEST BASIS~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	2

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
	~~-----REVIEWER'S NOTE----- The Frequency remains at 31 days on a STAGGERED TEST BASIS for plants with a Relay Protection System.~~ 4	
DOC M04	SR 3.3.2.~~4~~ 3 Perform MASTER RELAY TEST.	~~[92 days on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2 5
Table 4.3-2 Functional Units 1.c, 1.d, 1.f, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.a, 6.c.1, 6.c.2, 6.c.3, 6.c.4, and 9.a	SR 3.3.2.~~5~~ 4 Perform COT.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2 5
DOC M04	SR 3.3.2.~~6~~ 5 Perform SLAVE RELAY TEST.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 2 5

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.~~7~~ 6	-----NOTE----- Verification of relay setpoints not required. ---------- Perform TADOT.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~
SR 3.3.2.~~8~~ 7	-----NOTE----- Verification of setpoint not required for manual initiation functions. ---------- Perform TADOT.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

Table 4.3-2 Functional Unit 6.e.1 DOC A18

Table 4.3-2 Functional Units 1.a, 2.a, 3.a.1, 3.b.1, 4.a, and 6.f DOC A18

2 5 2 5

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.3.2.1.2 Table 4.3-2 Functional Units 1.c, 1.d, 1.f, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.a,6.c.1, 6.c.2, 6.c.3, 6.c.4, 6.e.1, 6.e.2, 6.g, 6.h, 8.a, and 9.a. DOC A19	SR 3.3.2.~~9~~ 8 ----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 5
4.3.2.1.3 DOC A20	SR 3.3.2.~~10~~ 9 ----------NOTE---------- Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after SG pressure is ≥ ~~[1000]~~ 842 psig. ---------- Verify ESFAS RESPONSE TIMES are within limit.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	2 3 5
Table 4.3-1 Functional Unit 22 DOC A18	SR 3.3.2.~~11~~ 10 ----------NOTE---------- Verification of setpoint not required. ---------- Perform TADOT.	Once per reactor trip breaker cycle	2

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-3

Table 3.3.2-1 (page 1 of 11)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(1)~~ TRIP SETPOINT~~]~~	
	1. Safety Injection							3
1.a	a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.~~8~~ 7	NA	NA	2
1.b	b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA	
1.c	c. Containment Pressure - High ~~1~~	1,2,3	3	D	SR 3.3.2.1 4 SR 3.3.2.~~5~~(b)(c) 8 SR 3.3.2.~~9~~(b)(c) SR 3.3.2.~~10~~ 9	≤ ~~[3.86]~~ 1.6 psig	~~[3.6]~~ 1.54 psig	3, 2
1.d	d. Pressurizer Pressure - Low	1,2,3 (a)	~~[~~3~~]~~	D	SR 3.3.2.1 4 SR 3.3.2.~~5~~(b)(c) 8 SR 3.3.2.~~9~~(b)(c) SR 3.3.2.~~10~~ 9	≥ ~~[1839]~~ 1864.8 psig	~~[1850]~~ 1870 psig	3, 2
1.f	e. Steam Line Pressure							
	~~(1)~~ - Low	1,2,3 ~~[~~(a)~~]~~	3 per steam line	D	SR 3.3.2.1 4 SR 3.3.2.~~5~~(b)(c) 8 SR 3.3.2.~~9~~(b)(c) SR 3.3.2.~~10~~ 9	≥ ~~[635]~~ 592.2 (d) psig	~~[675]~~ 600 (d) psig	3
	~~(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(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≤ [106] psig~~	~~[97] psig~~	2

Note # (a) ~~Above the P-11 (Pressurizer Pressure) interlock.~~ Safety Injection, Pressurizer Pressure - Low and Safety Injection, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock. 2

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. KAB024

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that ~~the~~ as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 2 3

Table 3.3-4 Note 1 (d) Time constants used in the lead/lag controller are ~~t~~ $\tau_1 \geq$ ~~[~~50~~]~~ seconds and ~~t~~ $\tau_2 \leq$ ~~[~~5~~]~~ seconds. 2 3

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-3

Table 3.3.2-1 (page 2 of 11)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL ~~(i)~~ TRIP SETPOINT~~]~~ 3
~~1. Safety Injection~~						2
~~f. High Steam Flow in Two Steam Lines~~	~~1,2,3 (e)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5 (b)(c)~~ ~~SR 3.3.2.9 (b)(c)~~ ~~SR 3.3.2.10~~	~~(f)~~	~~(g)~~
~~Coincident with T_{avg} - Low Low~~	~~1,2,3 (e)~~	~~1 per loop~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5 (b)(c)~~ ~~SR 3.3.2.9 (b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [550.6]°F~~	~~[553]°F~~
~~g. High Steam Flow in Two Steam Lines~~	~~1,2,3 (e)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5 (b)(c)~~ ~~SR 3.3.2.9 (b)(c)~~ ~~SR 3.3.2.10~~	~~(f)~~	~~(g)~~
~~Coincident with Steam Line Pressure - Low~~	~~1,2,3 (e)~~	~~1 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5 (b)(c)~~ ~~SR 3.3.2.9 (b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [635] (d) psig~~	~~[675] psig~~
2. Containment Spray						
2.a a. Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.~~8~~ 7	NA	NA 2

~~(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.~~

~~(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].~~

~~(d) Time constants used in the lead/lag controller are t_1 ≥ [50] seconds and t_2 ≤ [5] seconds.~~

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

~~(f) 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.~~

~~(g) 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.~~ 2

~~REVIEWER'S NOTE~~

~~(i) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-3

Table 3.3.2-1 (page 3 of 11)
Engineered Safety Feature Actuation System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~ 3
	2. Containment Spray						
2.b	b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA 2
2.c	c. Containment Pressure ~~High~~ - ~~3 (~~High High~~)~~ -	1,2,3	4	E	4 SR 3.3.2.1(b)(c) 8 SR 3.3.2.~~5~~(b)(c) SR 3.3.2.~~9~~ 9 SR 3.3.2.~~10~~	≤ ~~[12.31]~~ 2.9 psig	~~[12.05]~~ 2.81 psig 3 2
	~~d. Containment Pressure High - 3 (Two Loop Plants)~~	~~1,2,3~~	~~[3] sets of [2]~~	~~E~~	~~SR 3.3.2.1(b)(c)~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9~~ ~~SR 3.3.2.10~~	~~≤ [12.31] psig~~	~~[12.05] psig~~
	3. Containment Isolation						
3.a	a. Phase A Isolation						
3.a.1)	(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.~~8~~ 7	NA	NA
DOC M05	(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA 2
3.a.2)	(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 2 3

~~REVIEWER'S NOTE~~
~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-3

Table 3.3.2-1 (page 4 of 11)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~ 3
	3. Containment Isolation						
3.b.	b. Phase B Isolation						
3.b.1)	(1) Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.~~8~~ 7	NA	NA
3.b.2)	(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.~~4~~ 3 SR 3.3.2.~~6~~ 5	NA	NA
3.b.3)	(3) Containment Pressure ~~High - 3 (~~High High~~)~~	1,2,3	~~[~~4~~]~~	E	SR 3.3.2.1 SR 3.3.2.~~5~~ 4 (b)(c) SR 3.3.2.~~9~~ 8 (b)(c) SR 3.3.2.~~10~~ 9	≤ ~~[12.31]~~ 2.9 psig	~~[12.05]~~ 2.81 psig
	4. Steam Line Isolation						
4.a	a. Manual Initiation	1,2 ~~(j)~~ (e),3 ~~(j)~~ (e)	~~2~~ 1 per steam line	F	SR 3.3.2.~~8~~ 7	NA	NA
4.b	b. Automatic Actuation Logic and Actuation Relays	1,2 ~~(j)~~ (e),3 ~~(j)~~ (e)	2 trains	~~G~~ H	SR 3.3.2.2 SR 3.3.2.~~4~~ 3 SR 3.3.2.~~6~~ 5	NA	NA
4.c	c. Containment Pressure - High ~~2~~ -High	1,2 ~~(j)~~ (e),3 ~~(j)~~ (e)	~~[~~4~~]~~	~~D~~ E	SR 3.3.2.1 SR 3.3.2.~~5~~ 4 (b)(c) SR 3.3.2.~~9~~ 8 (b)(c) SR 3.3.2.~~10~~ 9	≤ ~~[6.61]~~ 2.9 psig	~~[6.35]~~ 2.81 psig

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 2 3

DOC L04 (~~j~~ e) Except when all MSIVs are closed ~~and [de-activated]~~. 3

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~
3.3.2~~A~~

Table 3.3-3

Table 3.3.2-1 (page 5 of 11)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~
4. Steam Line Isolation						
d. Steam Line Pressure						
4.d (1) Low	1,2~~(i)~~,3~~(i)~~ ~~(a)~~ (e) (f)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.~~5~~ 4 (b)(c) SR 3.3.2.~~9~~ 8 (b)(c) SR 3.3.2.~~10~~ 9	≥ ~~[635]~~ 592.2(d) psig	~~[675]~~ 600(d) psig
4.e (2) Negative Rate - High	3 ~~(h)~~ (g) ~~(j)~~ (e)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.~~5~~ 4 (b)(c) SR 3.3.2.~~9~~ 8 (b)(c) SR 3.3.2.~~10~~ 9	≤ ~~[121.6]~~ 107.8(~~i~~ h) psi	~~[110]~~ 100.0(~~i~~ h) psi

Note # (~~a~~ f) ~~Above the P-11 (Pressurizer Pressure) interlock.~~ ~~When Steam Line Isolation on Steam Line Pressure, Negative Rate–High is blocked~~

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2.

Table 3.3-4 Note 1 (d) Time constants used in the lead/lag controller are ~~t~~ τ$_1$ ≥ ~~[~~50~~]~~ seconds and ~~t~~ τ$_2$ ≤ ~~[~~5~~]~~ seconds.

Table 3.3-3 Note ## (~~h~~ g) ~~Below the P-11 (Pressurizer Pressure) interlock.~~ When Steam Line Isolation on Steam Line Pressure, Low is blocked

Table 3.3-4 Note 2 (~~i~~ h) Time constant utilized in the rate/lag controller is ≥ ~~[~~50~~]~~ τ seconds.

KAB030

DOC L04 (~~j~~ e) Except when all MSIVs are closed ~~and [de-activated]~~.

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~

2 KAB024

Steam Line Isolation, Steam Line Pressure - Low may be bypassed below the P-11 (Pressurizer Pressure) interlock. KAB024

Steam Line Isolation, Steam Line Pressure Negative Rate-High is automatically blocked above P-11 and may be blocked below P-11 when Safety Injection, Steam Line Pressure - Low is not blocked. KAB024

1

Table 3.3-3

Table 3.3.2-1 (page 6 of 11)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~
4. Steam Line Isolation						
~~e. High Steam Flow in Two Steam Lines~~	~~1,2 (j),3 (j)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~(f)~~	~~(g)~~
~~Coincident with T_{avg} – Low Low~~	~~1,2 (j),3 (e) (j)~~	~~1 per loop~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [550.6]°F~~	~~[553]°F~~
~~f. High Steam Flow in Two Steam Lines~~	~~1,2 (j),3 (j)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~(f)~~	~~(g)~~
~~Coincident with Steam Line Pressure – Low~~	~~1,2 (j),3 (j)~~	~~1 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [635](d) psig~~	~~[675](d) psig~~

3

~~(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.~~

~~(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].~~

~~(d) Time constants used in the lead/lag controller are t_1 ≥ [50] seconds and t_2 ≤ [5] seconds.~~

~~(e) Above the P-12 (T_{avg} – Low Low) interlock.~~

~~(f) 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.~~

~~(g) 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.~~

~~(j) Except when all MSIVs are closed and [de-activated].~~

2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~

4

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CTS

Table 3.3-3

Table 3.3.2-1 (page 7 of 11)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~ 3
4. Steam Line Isolation						
~~g. High Steam Flow~~	~~1,2 (j),3 (j)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~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 (j),3 (e) (j)~~	~~[2] per loop~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [550.6]°F~~	~~[553]°F~~
~~h. High High Steam Flow~~	~~1,2 (j),3 (j)~~	~~2 per steam line~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~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.~~					

2

~~(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.~~

~~(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].~~

~~(e) Above the P-12 (T_{avg} – Low Low) interlock.~~

~~(j) Except when all MSIVs are closed and [de-activated].~~

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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Table 3.3-3

Table 3.3.2-1 (page 8 of 11)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(i)~~ TRIP SETPOINT~~]~~ 3
	5. Turbine Trip and Feedwater Isolation						
5.b	a. Automatic Actuation Logic and Actuation Relays	1, 2 ~~(k)~~ i, ~~[~~3~~]~~ ~~(k)~~ i	2 trains	H~~[G]~~	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA 3
5.a	b. SG Water Level - High High (P-14)	1,2 ~~(k)~~ i, ~~[~~3~~]~~ ~~(k)~~ i	~~[~~3~~]~~ per SG	~~[[~~D~~]~~	SR 3.3.2.1 4 SR 3.3.2.~~5~~ (b)(c) 8 SR 3.3.2.~~9~~ (b)(c) 9 SR 3.3.2.~~10~~	≤ ~~[84.2]~~ 81.7%	~~[82.4]~~ 81% 3
DOC A08	c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
	6. Auxiliary Feedwater						
6.b	a. Automatic Actuation Logic and Actuation Relays ~~(Solid State Protection System)~~	1,2,3	2 trains	~~G~~ H	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA
	~~b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)~~	~~1,2,3~~	~~2 trains~~	~~G~~	~~SR 3.3.2.3~~	~~NA~~	~~NA~~

KAB017 2

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 2 3

DOC L05 (~~k~~ i) Except when all MFIVs, MFRVs, ~~[~~and ~~associated~~ MFRV bypass valves~~]~~ are closed ~~and [de-activated]~~ ~~[~~or isolated by a closed manual valve~~]~~. 3

~~REVIEWER'S NOTE~~
~~(j) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-3
Table 3.3-4
Table 4.3-2

Table 3.3.2-1 (page 9 of 11)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(I)~~ TRIP SETPOINT~~]~~	
	6. Auxiliary Feedwater							
6.c	b ~~c~~. SG Water Level - Low Low INSERT 9 INSERT 10	~~1,2,3~~	~~[3] per SG~~	~~D~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [30.4]%~~	~~[32.2]%~~	6 6
6.d	c ~~d~~. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.						2
6.e	d ~~e~~. Loss of Offsite Power INSERT 11	~~1,2,3~~	~~[3] per bus~~	~~F~~	~~SR 3.3.2.7~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [2912] V with ≤ 0.8 sec time delay~~	~~[2975] V with ≤ 0.8 sec time delay~~	7
	~~f. Undervoltage Reactor Coolant Pump~~	~~1,2~~	~~[3] per bus~~	~~I~~	~~SR 3.3.2.7~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [69]% bus voltage~~	~~[70]% bus voltage~~	
6.f	e ~~g~~. Trip of all Main Feedwater Pumps	1,2 (k)	1 ~~[2]~~ per pump	N ~~J~~	7 SR 3.3.2.8(b)(c) ~~SR 3.3.2.9(b)(c)~~ SR 3.3.2.~~10~~ 9	NA ~~≥ [ ] psig~~	NA ~~[ ] psig~~	3 2
6.g	f ~~h~~. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low	1,2,3	3 per pump ~~[2]~~	O ~~F~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.7~~ 8 SR 3.3.2.~~9~~(b)(c)	INSERT 12 ~~≥ [20.53] [psia]~~	~~[ ] [psia]~~	3
	INSERT 13							2
9.	7. Automatic Switchover to Containment Sump							
9.b	a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	S ~~C~~	SR 3.3.2.2 3 SR 3.3.2.~~4~~ 5 SR 3.3.2.~~6~~	NA	NA	2

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~ UFSAR Section 7.1.2. 2 3 8

INSERT 14

~~REVIEWER'S NOTE~~

~~(I) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

6

INSERT 9

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-3 Table 3.3-4 Table 4.3-2							
6.c.i.a 6.c.ii.a	(1) Adverse	1,2,3	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c) SR 3.3.2.9	≥ 14.4% NR Span	15.0% NR Span
6.c.i.d 6.c.ii.d	Coincident with Containment Pressure (EAM)	1,2,3	4	J	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c)	≤ 0.6 psig	0.5 psig
6.c.i.c 6.c.ii.c	and RCS Loop ΔT	1,2,3	4	K	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c)	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 3.3-4 6.c.i	with Time Delay T_S if one SG is affected					≤ $(1.01)T_s$ (Note 3 Table 3.3.1-1)	T_S (Note 3 Table 3.3.1-1)
Table 3.3-4 6.c.i	or Time Delay T_m if two or more SGs are affected					≤ $(1.01)T_m$ (Note 3 Table 3.3.1-1)	T_m (Note 3 Table 3.3.1-1)

CTS 3.3.2

6

INSERT 10

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-3 Table 3.3-4 Table 4.3-2							
6.c.i.b 6.c.ii.b	(2) EAM	1,2,3	3 per SG	I	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c) SR 3.3.2.9	≥ 10.1% NR Span	10.7% NR Span
6.c.i.c 6.c.ii.c	Coincident with RCS Loop ΔT	1,2,3	4	K	SR 3.3.2.1 SR 3.3.2.4(b)(c) SR 3.3.2.8(b)(c)	RCS Loop ΔT variable input ≤ nominal trip setpoint + 2.5% RTP	RCS Loop ΔT variable input 50% RTP
Table 3.3-4 6.c.i	with Time Delay T_S if one SG is affected					≤ (1.01)T_s (Note 3 Table 3.3.1-1)	T_S (Note 3 Table 3.3.1-1)
Table 3.3-4 6.c.i	or Time Delay T_m if two or more SGs are affected					≤ (1.01)T_m (Note 3 Table 3.3.1-1)	T_m (Note 3 Table 3.3.1-1)

7

INSERT 11

Table 3.3-3
Table 3.3-4
Table 4.3-2

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
(1) Voltage Sensors	1,2,3	3 per shutdown board(j)	L,M	SR 3.3.2.6 SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	
(2) Load Shed Timer	1,2,3	1 per shutdown board(j)	M	SR 3.3.2.8(b)(c) SR 3.3.2.9	Refer to Function 1 of Table 3.3.5-1 for setpoints and allowable values.	

Table 3.3-3 6.e.1 (Voltage Sensors); Table 3.3-3 6.e.2 (Load Shed Timer)

3

INSERT 12

Allowable Value	Nominal Trip Setpoint
≥ 2.44 psig (motor driven pump)	3.21 psig (motor driven pump)
≥ 12 psig (turbine driven pump)	13.9 psig (turbine driven pump)

Table 3.3-4
6.g

Insert Page 3.3.2-19c

CTS

3.3.2

2

INSERT 13

Table 3.3-3 Table 3.3-4 Table 4.3-2	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-3 6.h	g. Auxiliary Feedwater Suction Transfer Time Delays						
Table 3.3-3 6.h.1	(1) Motor-Driven Pump	1,2,3	1 per pump	O	SR 3.3.2.8(b)(c)	≤ 4.4 seconds and ≥ 3.6 seconds	4 seconds
Table 3.3-3 6.h.2	(2) Turbine-Driven Pump	1,2,3	2 per pump	O	SR 3.3.2.8(b)(c)	≤ 6.05 seconds and ≥ 4.95 seconds	5.5 seconds

8

INSERT 14

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Table 3.3-3 Note ** (j) Unit 1[~~2~~] shutdown boards only.

Table 3.3-3 Note (b) (k) When one or more Main Feedwater Pump(s) are supplying feedwater to steam generators.

Insert Page 3.3.2-19d

Table 3.3-3
Table 3.3-4
Table 4.3-2

Table 3.3.2-1 (page 10 of 11)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL ~~(l)~~ TRIP SETPOINT~~]~~ 3
9. 7. Automatic Switchover to Containment Sump						
~~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(b)(c)~~ ~~SR 3.3.2.9(b)(c)~~ ~~SR 3.3.2.10~~	~~≥ [15]% and ≤ [ ]%~~	~~[ ]% and [ ]%~~ 2
~~Coincident with Safety Injection~~	~~Refer to Function 1 (Safety Injection) for all initiation functions and requirements.~~					
9.a. b. ~~c.~~ RWST Level - Low ~~Low~~	1,2,3,4	4	P ~~K~~	SR 3.3.2.1 SR 3.3.2.4 ~~5~~(b)(c) SR 3.3.2.8 ~~9~~(b)(c) SR 3.3.2.9 ~~10~~	≤ 132.71" and ≥ 127.29" from tank base ~~≥ [15]%~~	130" from tank base ~~[18]%~~ 3
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	P ~~K~~	SR 3.3.2.1 SR 3.3.2.4 ~~5~~(b)(c) SR 3.3.2.8 ~~9~~(b)(c) SR 3.3.2.9 ~~10~~	≤ 31.68 in and ≥ 28.32 ~~≥ [30]~~ in. above el. 680 ~~[703]~~ ft	30 ~~[ ]~~ in. above el. 680 ~~[ ]~~ft 2 3

3.3.2.1, and ACTION (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

3.3.2.1, and ACTION c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The ~~NTSP and the~~ methodologies used to determine the as-found and as-left tolerances are specified in UFSAR Section 7.1.2 ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. 2 3

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

CTS

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

Table 3.3-1
Table 4.3-1

Table 3.3.2-1 (page 11 of 11)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	~~[~~NOMINAL~~(l)~~ TRIP SETPOINT~~]~~ 3
	8. ESFAS Interlocks						
22.G.	a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	~~F~~ G	SR 3.3.2.~~11~~ 10	NA	NA
	~~b. Pressurizer Pressure, P-11~~	~~1,2,3~~	~~3~~	~~L~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5~~ ~~SR 3.3.2.9~~	~~≤ [1996] psig~~	~~[ ] psig~~
	~~c. T_{avg} - Low Low, P-12~~ INSERT 15	~~1,2,3~~	~~[1] per loop~~	~~L~~	~~SR 3.3.2.1~~ ~~SR 3.3.2.5~~ ~~SR 3.3.2.9~~	~~≥ [550.6]°F~~	~~[553]° F~~

2

~~REVIEWER'S NOTE~~

~~(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.~~ 4

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CTS 3.3.2

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INSERT 15

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
Table 3.3-3 Table 3.3-4 Table 4.3-2							
Table 3.3-2, 8.a Table 4.3-2, 8.a	b. Pressurizer Pressure, P-11/Not P-11						
Table 3.3-4, 8.a.1	(1) Not P-11, Automatic Unblock of Safety Injection on Increasing Pressure	1,2,3	3	Q	SR 3.3.2.8	≤ 1975.2 psig	1970 psig
Table 3.3-4, 8.a.2	(2) P-11, Enable Manual Block of Safety Injection on Decreasing Pressure	1,2,3	3	Q	SR 3.3.2.8	≥ 1956.8 psig	1962 psig

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3.3 INSTRUMENTATION

3.3.2~~A~~ Engineered Safety Feature Actuation System (ESFAS) Instrumentation ~~(Without Setpoint Control Program)~~ 1

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

Applicability APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

--NOTE--

DOC A05 Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	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
Table 3.3-3 ACTION 20	B. One channel or train inoperable.	B.1 Restore channel or train to OPERABLE status.	48 hours
		<u>OR</u>	
		B.2.1 Be in MODE 3.	54 hours
		<u>AND</u>	
		B.2.2 Be in MODE 5.	84 hours

Table 3.3-3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION 15	C. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. ---		3
		C.1 Restore train to OPERABLE status.	24 hours	
		OR		
		C.2.1 Be in MODE 3.	30 hours	
		AND		
		C.2.2 Be in MODE 5.	60 hours	
ACTION 17	D. One channel inoperable.	~~[~~ -----------------NOTE------------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---		3
		~~----------REVIEWER'S NOTE----------~~ ~~The below Note should be used for plants with installed bypass test capability:~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~---]~~		4 3
		D.1 Place channel in trip.	72 hours	
		OR		

CTS
Table 3.3-3

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2A

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M07		D.2.1 Be in MODE 3.	78 hours	
		AND		
DOC M07		D.2.2 Be in MODE 4.	84 hours	
ACTION 18	E. One Containment Pressure channel inoperable.	[-----------------NOTE------------------ One additional channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---		3
		~~----------REVIEWER'S NOTE---------- The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing.~~ ~~---~~]		4 3
		E.1 Place channel in bypass.	72 hours	
		OR		
DOC M08		E.2.1 Be in MODE 3.	78 hours	
		AND		
DOC M08		E.2.2 Be in MODE 4.	84 hours	
	INSERT 1			2
Table 3.3-1 ACTION 14 DOC L01	G ~~F~~. One channel or train inoperable.	G ~~F~~.1 Restore channel or train to OPERABLE status.	48 hours	2
		OR		
		G ~~F~~.2.1 Be in MODE 3.	54 hours	2
		AND		

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CTS
Table 3.3-3

2

INSERT 1

ACTION 25	F. One channel inoperable.	F.1 Restore channel to OPERABLE status. OR F.2 Declare the associated Main Steam Isolation Valve inoperable.	48 hours 48 hours

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CTS
Table 3.3-3

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~ 1
3.3.2~~A~~

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01		~~F~~ G.2.2 Be in MODE 4.	60 hours	2
ACTION 23	~~G~~ H. One train inoperable.	--------------------NOTE------------------- One train may be bypassed for up to ~~[~~4~~]~~ hours for surveillance testing provided the other train is OPERABLE. --		2 3
DOC L11		~~G~~ H.1 Restore train to OPERABLE status.	24 hours	2
		OR		
		~~G~~ H.2.1 Be in MODE 3.	30 hours	2
		AND		
		~~G~~ H.2.2 Be in MODE 4.	36 hours	2
	~~H. One train inoperable.~~	~~--------------------NOTE-------------------~~ ~~One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.~~ ~~--~~		2
		~~H.1 Restore train to OPERABLE status.~~	~~24 hours~~	
		~~OR~~		
		~~H.2 Be in MODE 3.~~	~~30 hours~~	

INSERT 2
INSERT 3
INSERT 4
INSERT 5
2

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CTS
Table 3.3-3

2 **INSERT 2**

ACTION 36	I. One channel inoperable.	-------------------NOTE------------------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ---	
		I.1 For the affected protection set, the Trip Time Delay for one affected steam generator (T_S) is adjusted to match the Trip Time Delay for multiple affected steam generators (T_M).	4 hours
		AND	
		I.2 Place channel in trip.	6 hours

CTS
Table 3.3-3

3.3.2

2

INSERT 3

ACTION 38	J. One channel inoperable.	J.1 For the affected protection set, adjust the Steam Generator Water Level - Low-Low (EAM) channels trip setpoint to the same value as Steam Generator Water Level -- Low-Low (Adverse).	6 hours
		OR	
DOC L13		J.2 For the affected protection set, place the Steam Generator Water Level-- Low-Low channel(s) in trip.	6 hours
		OR	
DOC M13		J.3.1 Be in MODE 3.	12 hours
		AND	
DOC M13		J.3.2 Be in MODE 4.	18 hours

2

INSERT 4

ACTION 37	K. One channel inoperable.	K.1 For the affected protection set, adjust the Trip Time Delays (T_S and T_M) threshold power level for zero seconds time delay to 0% RTP.	6 hours
		OR	
DOC L12		K.2 For the affected protection set, place the Steam Generator Water level--Low-Low channel(s) in trip.	6 hours
		OR	
DOC M12		K.3.1 Be in MODE 3.	12 hours
		AND	
DOC M12		K.3.2 Be in MODE 4.	18 hours
ACTION 35.a	L. One voltage sensor channel inoperable.	L.1 Restore the inoperable channel to OPERABLE status.	6 hours
		OR	
		L.2 Declare the associated auxiliary feedwater pump inoperable.	6 hours

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CTS
Table 3.3-3

3.3.2

2

INSERT 5

ACTION 35.b	M. Two or more voltage sensor channels inoperable. OR One required load shed timer channel inoperable.	M.1.1 Restore all but one voltage sensor channel to an OPERABLE status. AND M.1.2 Restore required load shed timer channel to an OPERABLE status. OR M.2 Declare the associated auxiliary feedwater pump inoperable.	1 hour 1 hour 1 hour	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~I. One channel inoperable.~~	~~[--------NOTE-------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --------~~ ~~-----REVIEWER'S NOTE----- The below Note should be used for plants with installed bypass test capability.~~ ~~One channel may be bypassed for up to 12 hours for surveillance testing. --------]~~ ~~I.1 Place channel in trip.~~ ~~OR~~ ~~I.2 Be in MODE 3.~~	~~72 hours~~ ~~78 hours~~
ACTION 20 N ~~J~~. One Main Feedwater Pumps trip channel inoperable.	INSERT 6 N ~~J~~.1 Restore channel to OPERABLE status. OR N ~~J~~.2 Be in MODE 3.	48 hours 54 hours

2

INSERT 7 2

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2

INSERT 6

Table 3.3-3, Footnote (a)

----------------NOTE--------------
One channel may be
inoperable during MODE 1 for up to 4 hours
when placing the second main
feedwater (MFW) pump in
service or removing one of two
MFW pumps from service.

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CTS
Table 3.3-3

2

INSERT 7

ACTION 21	O. One channel inoperable.	O.1	Declare the associated auxiliary feedwater pump inoperable.	Immediately

CTS
Table 3.3-3

ESFAS Instrumentation ~~(Without Setpoint Control Program)~~
3.3.2~~A~~

1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION 18 — P ~~K~~. One channel inoperable.	[-----NOTE----- One additional channel may be bypassed for up to [4] hours for surveillance testing. ----- ~~-----REVIEWER'S NOTE----- The below Note should be used for plants with installed bypass test capability: One channel may be bypassed for up to 12 hours for surveillance testing. -----~~]	2 3 3 4 3
	P ~~K~~.1 Place channel in bypass.	[6] hours 2 3
	OR	
DOC M09	P ~~K~~.2.1 Be in MODE 3.	[12] hours 2 3
	AND	
DOC M09	P ~~K~~.2.2 Be in MODE 5.	[42] hours 2 3
ACTION 22 — Q ~~L~~. One or more channels inoperable.	Q ~~L~~.1 Verify interlock is in required state for existing unit condition.	1 hour 2
	OR	
DOC A17	Q ~~L~~.2.1 Be in MODE 3.	7 hours 2
	AND	
DOC A17	Q ~~L~~.2.2 Be in MODE 4.	13 hours 2

INSERT 8 2

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