ATTACHMENT 1

VOLUME 8

DAVIS-BESSE IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.3 INSTRUMENTATION

Revision 0

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ATTACHMENT 1

ITS 3.3.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.1 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

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

L01

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation.

A02

SR 3.3.1.8 4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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.

LA01

on a STAGGERED TEST BASIS

A03

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

A04

LA05

ITS

A01

A06 M07

Add proposed Function 1.b Nuclear Overpower Low Setpoint

LA02 A05 A06 M01 A08

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

LCO 3.3.1

See ITS 3.3.2

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
	1. Manual Reactor Trip	2	1	2	1, 2 and *	1
1.a	2. High Flux	4	2	3	1, 2	2*, 10 A, B
2	3. RC High Temperature	4	2	3	1, 2	3*, 10 A, B
8	4. Flux - ΔFlux - Flow	4	2[a][b]	3	1, 2	2*, 10 A, B
4	5. RC Low Pressure	4	2[a]	3	1, 2	3*, 10 A, B
3	6. RC High Pressure	4	2	3	1, 2	3*, 10 A, B
5	7. RC Pressure-Temperature	4	2[a]	3	1, 2	3*, 10 A, B
7	8. High Flux/Number of Reactor Coolant Pumps On	4	2[a][b]	3	1, 2	3*, 10 A, B
6	9. Containment High Pressure	4	2	3	1, 2	3*, 10 A, B
	10. Intermediate Range, Neutron Flux and Rate	2	N/A	2(c)	1, 2 and *	4
	11. Source Range, Neutron Flux and Rate					
	A. Startup	2	N/A	2	2## and *	5
	B. Shutdown	2	N/A	1	3, 4 and 5	6
	12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#, 8#
	13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#
9	14. Shutdown Bypass High Pressure	1	2	1	2**, 3**, 4**, 5**	6 B
	15. CR Relays	2	2	2	1, 2 and *	9#

A07 A05 A06 L05 M01 M02 M03 LA02 A08

See ITS 3.3.10

See ITS 3.3.9

See ITS 3.3.4

See ITS 3.3.3

Add proposed ACTION A

See ITS 3.3.4

DAVIS-BESSE, UNIT 1

3/4 3-2

Amendment No. 188, 138, 185

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A01

See ITS 3.3.2, ITS 3.3.3, ITS 3.3.4, ITS 3.3.9, ITS 3.3.10

TABLE 3.3-1 (Continued)

TABLE NOTATION

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

A09

During

Table 3.3-1 Footnote (f)

**When Shutdown Bypass is actuated:

operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal

~~The provisions of Specification 3.0.4 are not applicable.~~

A08

Table 3.3.1-1 Footnote (a)

##High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels.

See ITS 3.3.9

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

When not in shutdown bypass operation

A06

Table 3.3.1-1 Function 1.b

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

Table 3.3.1-1 Function 9

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

A10

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

A07

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.

See ITS 3.3.10

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers.

See ITS 3.3.2

ACTION A

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.

L02

Add proposed ACTIONS C and D

M04

A01

ITS

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

Add proposed ACTIONS C and D — M04

ACTION A ACTION 3 - 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 bypassed or tripped condition within one hour.

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

a. ≤ 5% of RATED THERMAL POWER restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

b. > 5% of RATED THERMAL POWER, POWER OPERATION may continue.

See ITS 3.3.10

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A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10^{-10} amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue.

See ITS 3.3.9

ACTION B

ACTION 6 - 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 within one hour and at least once per 12 hours thereafter.

Add proposed Required Actions B.1 and B.2

L03

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition, or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.

See ITS 3.3.3 and ITS 3.3.4

Add proposed ACTIONS C and E

M04

ITS

A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With one of the Reactor Trip Breaker diverse trip features (undervoltage or shunt trip devices) inoperable, restore it to OPERABLE status in 48 hours or place the breaker in trip in the next hour.

See ITS 3.3.4

ACTION 9 - With one or both channels of SCR Relays inoperable, restore the channels to OPERABLE status during the next COLD SHUTDOWN exceeding 24 hours.

See ITS 3.3.4

ACTION B

ACTIONS C and D

ACTION 10 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, within one hour, place one inoperable channel in trip and the second inoperable channel in bypass, and restore one of the inoperable channels to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and open the reactor trip breakers.

L04

Add proposed Note to Required Action D.2

A01

DELETED

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ITS

A01

SR 3.3.1.2, SR 3.3.1.3, SR 3.3.1.4, SR 3.3.1.6, SR 3.3.1.7

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

SR 3.3.1.5

	FUNCTIONAL UNIT	CHANNEL CHECK (SR 3.3.1.1)	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
	1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.	See ITS 3.3.2
1	2. High Flux	S -1	2- D(2), and Q(6,9) -3	N.A.	1, 2 [a] 3[h]	A06, M01
2	3. RC High Temperature	S-1	R-7 , 10	SA(9)-5	1, 2	A13
8	4. Flux - ΔFlux - Flow	S(4) -1	4- M(3) and Q(6,7,9) -7 -3	N.A.	1, 2 [a]	A06
4	5. RC Low Pressure	S -1	R-7	SA(9)-5	1, 2 [a]	L05
3	6. RC High Pressure	S -1	R-7	SA(9) -5	1, 2 [a] 3[h]	M01
5	7. RC Pressure-Temperature	S -1	R(10)-7	SA(9,10) -5	1, 2	
7	8. High Flux/Number of Reactor Coolant Pumps On	S -1	Q(6,9)-3	N.A.	1, 2 [a]	A06
6	9. Containment High Pressure	S -1	E-6	SA(9)-5	1, 2 3[f]	M02
	10. Intermediate Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	1, 2 and *	See ITS 3.3.10
	11. Source Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	2, 3, 4 and 5	See ITS 3.3.9
	12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *	See ITS 3.3.4
	13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *	See ITS 3.3.3
9	14. Shutdown Bypass High Pressure	S-1	R-7	SA(9)-5	2**, 3**, 4**, 5**	
	15. SCR Relays	N.A.	N.A.	R	1, 2 and *	See ITS 3.3.4

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ITS

A01

TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days. — See ITS 3.3.2 and ITS 3.3.4

Note 2 to SR 3.3.1.2 — (2) - Heat balance only, above 15% of RATED THERMAL POWER. — M05, M06

SR 3.3.1.4 — (3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows: — M05, LA03

$$\frac{RTP}{TP}[API_O - API_I] = \text{Offset Error}$$

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5%

(4) - ~~AXIAL POWER IMBALANCE and loop flow indications only.~~ — A12

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days. — See ITS 3.3.9 and ITS 3.3.10

Note 1 to SR 3.3.1.3 — (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

Note 2 to SR 3.3.1.3 — (7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION.

Note to SR 3.3.1.7 — However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL.

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers. — See ITS 3.3.4

SR 3.3.1.3 and SR 3.3.1.7 Frequency — (9) - Performed on a STAGGERED TEST BASIS.

Table 3.3.1-1 Footnote (c) — (10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. ~~If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.~~ — LA06

Table 3.3.1-1 Footnote (d) — The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in ~~a document incorporated by reference into the Updated Safety Analysis Report~~ the TRM. — A14, See ITS 3.3.3, ITS 3.3.4, and ITS 3.3.10

* - With any control rod drive trip breaker closed.

Table 3.3-1 Footnote (e) — ** - ~~When~~ During Shutdown Bypass ~~is actuated~~ operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal — A09

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ITS

A01

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR PROTECTION SYSTEM SETPOINTS

LCO 3.3.1

2.2.1 The Reactor Protection System instrumentation setpoints shall be set consistent with the Allowable Values shown in Table 2.2-1.

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

ACTION:

ACTIONS A, B, and C

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

ITS

A01

Table 2.2-1 Reactor Protection System Instrumentation Trip Setpoints

	Functional unit	Allowable values
	1. Manual reactor trip	Not applicable.
1	2. High flux	≤105.1% of RATED THERMAL POWER with four pumps operating
		≤80.6% of RATED THERMAL POWER with three pumps operating
2	3. RC high temperature	≤618°F
8	4. Flux -- Δflux/flow(1)	Pump allowable values not to exceed the limit lines shown in in the CORE OPERATING LIMITS REPORT for four and three pump operation
4	5. RC low pressure(1)	≥1900.0 psig
3	6. RC high pressure	≤2355.0 psig
5	7. RC pressure-temperature(1)	≥(16.25 T_{out} °F – 7899.0) psig
7	8. High flux/number of RC pumps on(1)	≤55.1% of RATED THERMAL POWER with one pump operating in each loop
		≤0.0% of RATED THERMAL POWER with two pumps operating in one loop and no pumps operating in the other loop
		≤0.0% of RATED THERMAL POWER with no pumps operating or only one pump operating
6	9. Containment pressure high	≤4 psig

See ITS 3.3.2

104.9

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A13

A11

LA04

ITS

A01

Table 3.3.1-1 Footnote (a)

When not in shutdown bypass operation

A06

Table 2.2-1. (Cont'd)

(1) Trip may be manually bypassed when RCS pressure ≤1820 psig by actuating shutdown bypass provided that:

Table 3.3.1-1 Function 1.b — a. The high flux trip setpoint is ≤5% of RATED THERMAL POWER.

Table 3.3.1-1 Function 9 — b. The shutdown bypass high pressure trip setpoint of ≤1820 psig is imposed.

c. The shutdown bypass is removed when RCS pressure >1820 psig.

A10

*Allowable value for CHANNEL FUNCTIONAL TEST.

LA04

Table 3.3.1-1 Footnote (e)

≤ 103.3% of RATED THERMAL POWER, to be implemented in accordance with license controlled requirements for Ultrasonic Flow Meter instrumentation that is inoperable or not used in the performance of the daily heat balance.

A13

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A01

Figure 2.2-1 Trip Setpoint for Flux -- ΔFlux/Flow

DELETED

A01

Figure 2.2-2 Allowable Value for Flux-Δ Flux/Flow

DELETED

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 4.3.1.1.3 requires REACTOR PROTECTION SYSTEM RESPONSE TIME testing of "each" reactor trip function. ITS SR 3.3.1.8 is the REACTOR PROTECTION SYSTEM RESPONSE TIME testing Surveillance, but in ITS Table 3.3.1-1, it is only required for Functions 1.a (High Flux–High Setpoint), 3 (RC High Pressure), 4 (RC Low Pressure), 7 (High Flux/Number of Coolant Pumps On), and 8 (Flux – ΔFlux – Flow). This changes the CTS by specifically stating that the Surveillance is only applicable to certain Functions, not "each" function.

The purpose of CTS 4.3.1.1.3 is to ensure that the actuation response times are less than or equal to the maximum values assumed in the accident analysis. TRM Table 3.3-2, which was previously in CTS 3.3.1.1 as Table 3.3-2, only specifies response times for those RPS Functions assumed in the Davis-Besse safety analyses. These response times were removed from CTS 3.3.1.1 and placed under Davis-Besse control as documented in the NRC Safety Evaluation Report for License Amendment 225. This change is acceptable since ITS 3.3.1 requires RPS RESPONSE TIME testing (ITS SR 3.3.1.8) for only those Functions listed in TRM Table 3.3-2. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.3.1.1.3 states, in part, that the RPS RESPONSE TIME of each trip function shall be demonstrated to be within its limit at least once every N times the REFUELING INTERVAL 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 3.3.1.8 requires the verification of RPS RESPONSE TIME every 24 months "on a STAGGERED TEST BASIS." The ITS definition of STAGGERED TEST BASIS is consistent with the CTS testing Frequency. This changes the CTS by utilizing the ITS definition of STAGGERED TEST BASIS.

This change is acceptable because the requirements for RESPONSE TIME testing for the RPS 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.

A04 CTS 4.3.1.1.3 footnote (*) states that the response times includes the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. ITS SR 3.3.1.8 requires verification that RPS RESPONSE TIME is within limits and includes a Note that states neutron detectors are excluded from the RPS RESPONSE TIME testing. This changes

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the CTS by deleting some of the details of what is included in the scope of the test.

This change is acceptable because the requirements have not changed. The definition of RPS RESPONSE TIME in ITS Section 1.1 states that RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until electrical power is interrupted at the control rod drive trip breakers. The ITS definition of RPS RESPONSE TIME and its application in this requirement do not change the current testing requirements. The definition includes the time period from the when the sensor exceeds its RPS trip setpoint at the channel sensor until electrical power is interrupted at the control rod drive trip breakers. This encompasses the components included in the CTS 4.3.1.1.3 footnote (*) (that the response time includes the sensor, Reactor Protection System instrument delay, and the control rod drive breaker delay). The Note in ITS SR 3.3.1.8 includes the allowance to exclude neutron detectors. 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 RPS Functional Unit. For CTS Table 3.3-1 Functional Units 2, 3, 4, 5, 6, 7, 8, and 9 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 and 3 specify the actions to take with the number of channels OPERABLE one less than required by the "Total Number of Channels" requirement. CTS Table 3.3-1 Action 10 specify the actions to take with the number of channels OPERABLE, one less than required by the "Minimum Channels OPERABLE" requirement . ITS LCO 3.3.1 requires four channels of RPS instrumentation for each Function in ITS Table 3.3.1-1 to be OPERABLE. The LCO requires four channels to be OPERABLE and this is consistent with the number of channels listed in the CTS "TOTAL NO. OF CHANNELS" column. The ITS 3.3.1 ACTIONS require entry when the OPERABLE channels are one, two, or three or more less than required by the LCO. This changes the CTS by increasing the number of channels listed in the LCO to match the number listed in the "TOTAL NO. OF CHANNELS" column.

This change is acceptable because the requirements for when actions must be taken remain unchanged. The LCO reflects the current requirements in the CTS Actions for when actions are required to be taken. The "MINIMUM CHANNELS OPERABLE" column for CTS Table 3.3-1 Functional Units 2, 3, 4, 5, 6, 7, 8, and 9 have changed to correspond to the number of channels in the "TOTAL NO. OF CHANNELS" column as reflected in ITS LCO 3.3.1 for ITS Table 3.3.1-1 Functions 1 through 8. 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 High Flux channels to be OPERABLE in MODES 1 and 2. CTS Table 3.3-1 Functional Unit 4 (Flux – ΔFlux – Flow), Functional Unit 5 (RC Low Pressure), Functional Unit 7 (RC Pressure-Temperature), and Functional Unit 8 (High Flux/Number of Reactor Coolant Pumps On) are also only required to be OPERABLE in MODES 1 and 2 however Note (a) states that these trips may be manually bypassed when RCS

pressure ≤ 1820 psig by actuating Shutdown Bypass provided that the High Flux Trip Setpoint is ≤ 5% RTP, the Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and the Shutdown Bypass is removed when RCS pressure > 1820 psig. ITS 3.3.1 Table 3.3.1-1 Function 1.a requires the High Flux-High Setpoint channels to be OPERABLE in MODE 1, MODE 2 when not in shutdown bypass operation (Footnote a), and MODE 3 with any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation (Footnote b). ITS Table 3.3.1-1 Function 1.b requires the High Flux-Low Setpoint Function (Allowable Value of ≤ 5% RTP) to be OPERABLE in MODES 2, 3, 4, and 5 during shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal. ITS Table 3.3.1-1 Function 4 (RC Low Pressure), Function 5 (RC Pressure-Temperature), Function 7 (High Flux/Number of Coolant Pumps On), and Function 8 (Flux – ΔFlux – Flow) are required to be OPERABLE in MODES 1 and in MODE 2 when not in shutdown bypass operation (Footnote a). This changes the CTS by splitting CTS Table 3.3-1 Functional Unit 2 (High Flux) into two distinct functions, High Flux-High Setpoint (ITS Table 3.3.1-1 Function 1.a) and High Flux-Low Setpoint (ITS Table 3.3.1-1 Function 1.b) and describes in a positive sense when the Functions are required to be OPERABLE. A change to the Applicability of the High Flux-Low Setpoint during MODES 3, 4, and 5 is also discussed in DOC M07.

This change is considered acceptable because it is consistent with the allowances in CTS Table 3.3-1 Note (a). Whenever RCS pressure is ≤ 1820 psig Shutdown Bypass operation may be entered however the High Flux Trip Setpoint must be reduced to ≤ 5% RTP and the other Functions are allowed to be bypassed. This change is designated as administrative because it does not result in a technical change to the CTS.

A07 The "CHANNEL TO TRIP" column for CTS Table 3.3-1 Functional Unit 4 (Flux – ΔFlux – Flow) and Functional Unit 8 (High Flux/Number of Reactor Coolant Pumps on) include a Note (b) that states the trips may be manual bypassed when Specification 3.10.3 is in effect. The Applicability for these Functions in ITS Table 3.3.1-1 do not contain the footnote or a reference to the Special Test Exception.

The purpose of the CTS Table 3.3-1 Note is to alert the user that a Special Test Exception exists which may modify the Applicability of the Specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as an administrative change since it does not result in technical changes to the CTS.

A08 CTS Table 3.3-1 Functional Units 2 through 9 and Functional Unit 14 include a Note # that applies to Actions 2, 3, and 6 and states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.1 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the

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Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.1 ACTION A and B require the plant to place the inoperable channels in bypass or trip and allow operation to continue for an unlimited period of time. Therefore, because the ITS still allows the plant to change a MODE or other specified condition in the Applicability, this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

A09 CTS Table 3.3-1 Functional Unit 14 requires the Shutdown Bypass High Pressure channels to be OPERABLE in MODES 2, 3, 4, and 5. CTS Table 4.3-1 Functional Unit 14 specifies Surveillance requirements in the same MODES. This Applicability is modified by Table 3.3-1 Note (**) and Table 4.3-1 Note (**) that states "When Shutdown Bypass is actuated." ITS Table 3.3.1-1 Function 9 requires the Shutdown Bypass High Pressure channels to be OPERABLE in MODES 2, 3, 4, and 5. This Applicability is modified by Table 3.3-1 Footnote (e) that states "During shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal." This changes the CTS by clarifying when the equipment is needed.

This change is acceptable because it results in no technical change to the Technical Specifications. The CTS Bases states that shutdown bypass high pressure trips provides the means for removing four automatic RPS trip parameters from the RPS circuitry during a plant shutdown and heatup, or control rod drive and zero power physics testing, and inserts a lower RC high pressure trip in the circuit. If the CRD breakers are open and the CRD System is not capable of rod withdrawal, the trip function of the shutdown bypass is not considered actuated with the key switch initiated since it will not cause tripping of the CRD breakers. Therefore, when Shutdown Bypass is actuated the control rods are capable of withdrawal and therefore the CRD trip breakers must be closed. This change is consistent with current practice. This change is designated as administrative because it does not result in a technical change to the CTS.

A10 CTS Table 3.3-1 Note (a) part 3 states that the Shutdown Bypass is removed when RCS pressure > 1820 psig. ITS 3.3.1 does not include this requirement. This changes the CTS by deleting the requirement.

The Shutdown Bypass is provided to allow rod withdrawal testing with the plant shutdown. To initiate the bypass the operator must turn a key switch in each RPS channel. Turning the key switch bypasses certain RPS trips. The key switch also inserts the shutdown bypass high pressure trip. CTS Table 3.3-1 Note (a) part 3 states that Shutdown Bypass must be removed when RCS pressure > 1820 psig. If the RCS pressure is > 1820 psig and the unit is in Shutdown Bypass operation the RPS trips. Therefore, the explicit requirement to remove the Shutdown Bypass from service is not necessary. This change is designated as administrative because it does not result in a technical change to the CTS.

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A11 CTS Table 2.2-1 provides two Allowable Values for the Reactor Protection System (RPS) High Flux trip (Functional Unit 2); one for four reactor coolant pump operation and the other for three reactor coolant pump operation. ITS Table 3.3.1-1 includes two Allowable Values for the High Flux trip (Function 1.a), but also includes the clarifying information that the three reactor coolant pump Allowable Value is applicable when reset per LCO 3.4.4, "RCS Loops - MODES 1 and 2." This changes the CTS by adding clarifying information as to specifically when the three reactor coolant pump Allowable Value becomes applicable.

The RPS High Flux trip must be manually reset if one of the four reactor coolant pumps is not operating. The RPS does not automatically set down the trip setpoint. CTS 3.4.1.1 Action a.1 currently provides the requirement to reduce the High Flux setpoint when a reactor coolant pump is not in operation. Thus, the current Allowable Value only becomes effective after being adjusted per CTS 3.4.1.1 Action a.1. This change is acceptable since it is only providing clarification that the Allowable Value for three reactor coolant pump operation only becomes applicable after being adjusted in accordance with the ACTIONS of ITS 3.4.4, consistent with the current CTS allowance. This change is designated as administrative because it does not result in any technical change to the CTS.

A12 CTS Table 4.3-1 Functional Unit 4 requires the performance of a CHANNEL CHECK of the Flux – ΔFlux – Flow instrumentation however Table 4.3-1 Note 4 states that the CHANNEL CHECK includes AXIAL POWER IMBALANCE and loop flow indications only. ITS SR 3.3.1.1, the CHANNEL CHECK requirement, does not include this Note. This changes the CTS by deleting the Note.

This change is acceptable because all components of the Flux – ΔFlux – Flow instrumentation are currently being monitored during the performance of the CHANNEL CHECK. The Flux – ΔFlux – Flow instrumentation includes Flux, AXIAL POWER IMBALANCE, and loop flow indications. Currently, the Flux component is monitored during the CHANNEL CHECK as part of the High Flux instrumentation and will also satisfy the requirement for the Flux-Δ Flux-Flow channels. Since the removal of the Note does not impose any additional testing this change is considered administrative. This change is designated as administrative because it does not result in technical changes to the CTS.

A13 These changes to CTS Table 2.2-1 Functional Unit 2, including Footnote #, and CTS Table 4.3-1 Functional Unit 2 are provided in the Davis-Besse ITS consistent with License Amendment Request No. 05-0007, submitted to the USNRC for approval in FENOC letter Serial Number 3198, from Mark B. Bezilla (FENOC) to USNRC, dated April 12, 2007. As such, this change is administrative.

A14 CTS Table 4.3-1 Note (10), in part, states that for certain RPS Functions, the limiting trip setpoint, the pre-determined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the UFSAR. ITS Table 3.3.1-1 Footnote (d) states that the same information is specified in the Technical Requirements Manual (TRM). This

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changes the CTS by specifically delineating the document (i.e., TRM) where the information is located.

This change is acceptable because the requirements have not changed. This information is currently located in the TRM, and the TRM is currently incorporated by reference into the UFSAR. 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 2 only requires the High Flux channels to be OPERABLE in MODES 1 and 2. CTS Table 3.3-1 Functional Unit 6 only requires the RC High Pressure channels to be OPERABLE in MODES 1 and 2. ITS 3.3.1 Table 3.3.1-1 Function 1.a, in part, requires the High Flux-High Setpoint channels to be OPERABLE in MODE 3 with any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation (Footnote b). ITS Table 3.3.1-1 Function 3, in part, requires the RC High Pressure channel to be OPERABLE in MODE 3 with any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation (Footnote b). This changes the CTS by expanding the Applicability of the LCOs.

The purpose of the RPS 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 with any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation (Footnote b). This change is designated as more restrictive because it requires the High Flux and RC High Pressure channels to be OPERABLE with any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation.

M02 CTS Table 3.3-1 Functional Unit 9 only requires the Containment High Pressure channels to be OPERABLE in MODES 1 and 2. ITS Table 3.3.1-1 Function 6 requires the channels to be OPERABLE in MODES 1, 2, and MODE 3 with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal (Table 3.3.1-1 Footnote g). This changes the CTS by expanding the Applicability of the RPS Containment High Pressure channels.

The purpose of the Containment High Pressure channels is to shutdown the plant in the unlikely event of a steam line failure or loss of coolant accident (LOCA) in the containment vessel. This change is acceptable because it provides appropriate requirements in MODE 3 with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal (Footnote c). This change is designated as more restrictive because it requires the Containment High Pressure channels to be OPERABLE with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal.

M03 CTS Table 3.3-1 Functional Unit 14 (Shutdown Bypass High Pressure) requires entry into ACTION 6. ACTION 6 states, "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 within one hour and at least once per 12 hours thereafter. CTS Table 3.3-1 specifies the Minimum Channel requirement to be 3. ITS LCO 3.3.1 and ITS Table 3.3.1-1 Function 11 requires 4 channels of the Shutdown Bypass High Pressure Function to be OPERABLE. ITS 3.3.1 ACTION A requires entry when one channel is inoperable and requires the channel to be placed in bypass or trip within one hour. This changes the CTS by increasing the required channels to be OPERABLE from "3" to "4" and adds an Action to the Technical Specifications.

This change is acceptable because the new LCO requirement to require "4" channels to be OPERABLE and the new ACTION to place the inoperable channel in bypass or trip is consistent with the requirements for other RPS Instrumentation Functions. This change is designated as more restrictive because the Shutdown Bypass High Pressure channels required to be OPERABLE has increased from "3" to "4" and a new Action has been provided when a channel is inoperable.

M04 CTS Table 3.3-1 does not provide any actions for three or more inoperable channels and does not provide Required Actions to place the unit outside of the Applicability if the specified Actions are not met (CTS Table 3.3-1 ACTIONS 2, 3, and 6). Entry into CTS 3.0.3 is required since no actions are specified. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.1 ACTION C requires entry when three or more channels are inoperable and requires entry into the Condition referenced in Table 3.3.1-1 for the Function. ITS Table 3.3.1-1 references ITS 3.3.1 ACTION D and E. ITS 3.3.1 ACTION D requires the plant to be in MODE 3 with all control rod drive trip breakers open within 6 hours. ITS 3.3.1 ACTION E requires the plant to open all CRD trip breakers within 6 hours. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3, reduces the time to reach the applicable condition from 7 hours to 6 hours, and requires the plant to open all the CRD trip breakers.

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

M05 CTS Table 4.3-1 Functional Unit 2 requires a daily CHANNEL CALIBRATION of the High Flux instrumentation. CTS Table 4.3-1 Note 2 specifies that the Surveillance consists of a "Heat Balance only, above 15% of RATED THERMAL POWER." CTS Table 4.3-1 Functional Unit 4 requires a monthly CHANNEL CALIBRATION of the Flux – ΔFlux – Flow instrumentation, however CTS Table 4.3-1 Note 3 requires the test to be performed above 50% RTP and requires a comparison of out-of-core measured AXIAL POWER IMBALANCE to incore measured AXIAL POWER IMBALANCE. ITS SR 3.3.1.2 requires a comparison of the results of calorimetric heat balance calculation to the power range channel output every 24 hours. This Surveillance contains a Note (Note 2) that states that it is not required to be performed until 24 hours after THERMAL

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POWER is ≥ 15% RTP. ITS SR 3.3.1.4 requires a comparison of the results of the out of core measured AXIAL POWER IMBALANCE to incore measured AXIAL POWER IMBALANCE every 31 days. This Surveillance contains a Note (Note 2) that states that it is not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. This changes the CTS by explicitly specifying the time required to perform the Surveillance after entering the specified Applicability.

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

M06 CTS Table 4.3-1 Functional Unit 2 requires a CHANNEL CALIBRATION of the High Flux channels. CTS Table 4.3-1 Note 2 specifies that the Surveillance consists of a "Heat Balance only." ITS SR 3.3.1.2 requires a comparison of the results of calorimetric heat balance calculation to the power range channel output. This Surveillance contains a Note (Note 1) that states that the power range channel output must be adjusted if the absolute difference exceeds the established limits. This changes the CTS by specifying an acceptance criterion for when the power range channels are required to be adjusted.

The purpose of the CTS Table 4.3-1 including Note 2 is to ensure the High Flux channels are calibrated, ensuring they will function properly to mitigate the consequences of a design basis accident or transient. This change adds a requirement to adjust the power range channel output if the absolute difference between the power range channels and the calculated power exceeds established limits. The Bases states that the established limits are discussed in UFSAR, Section 7.8.1.1. UFSAR, Section 7.8.1.1 states that the sum of the outputs from the two sections of each power range detector is calibrated to within +/- 2% of heat balance at 100% RTP. The power range detectors are allowed to indicate more than 2% above the heat balance power at power levels less than 100% RTP. The power range detectors must not indicate more than 2% below the heat balance power at any power level. The proposed acceptance criterion is acceptable because the established limits are conservative with respect to the safety analyses. This change is more restrictive because it adds an acceptance criterion for when the power range channels are required to be adjusted.

M07 CTS Table 3.3-1 Functional Unit 2 only requires the High Flux channels to be OPERABLE in MODES 1 and 2. CTS Table 3.3-1 Note a requires the High Flux Trip Setpoint to be reduced to ≤ 5% RTP and the Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig to be imposed when in shutdown bypass operation. ITS Table 3.3.1-1 Function 1.b requires the High Flux-Low Setpoint to be OPERABLE in MODES 2, 3, 4, and 5 during shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal (ITS Table 3.3.1-1 Footnote (b)). This changes the CTS by

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expanding the Applicability requirements for the High Flux Trip Setpoint-Low Function when operating during shutdown operation in MODES 3, 4, and 5.

The purpose of the RPS 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 during shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal. This change is necessary because under these conditions, the Shutdown Bypass High Pressure trip prevents normal operation without shutdown bypass activated and the High Flux-Low trip prevents any significant power from being produced. This change is designated as more restrictive because it expands the Applicability requirements of High Flux-Low Setpoint Function.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.3.1.1.3 requires each RPS trip function to be response time tested. However, CTS 4.3.1.1.3 exempts the neutron detectors from response time testing and specifies that the "response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of first electronic component in the channel." ITS SR 3.3.1.8 Note 1 exempts the neutron detectors from response time testing, but does not include the detail of how to test the neutron flux signal portion of the channel. This changes the CTS by moving the descriptive wording from the Specification to the Bases.

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

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 for RPS 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 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.3-1 Functional Unit 4 requires a monthly CHANNEL CALIBRATION of the Flux – ΔFlux – Flow channel. However, CTS Table 4.3-1 Note 3 requires the test to be performed above 50% RTP at a "steady state" condition and requires a comparison of out-of-core measured AXIAL POWER IMBALANCE to incore measured AXIAL POWER IMBALANCE. ITS SR 3.3.1.4 requires a comparison of the results of the out of core measured AXIAL POWER IMBALANCE to incore measured AXIAL POWER IMBALANCE. This Surveillance contains a Note (Note 2) that states that it is not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. This changes the CTS by moving the details that the Surveillance must be done at "steady state" conditions 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 require the performance of the Surveillance. 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.

LA04 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 2.2-1 specifies the Allowable Values for the RPS Instrumentation Functional Units and the table includes a Note * that states the Allowable Value is specified for the CHANNEL FUNCTIONAL TEST. ITS Table 3.3.1-1 only provides the Allowable Value. This changes the CTS by moving the details that the specified Allowable Value is for the CHANNEL FUNCTIONAL TEST from the Technical Specifications to the Bases.

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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 the Allowable Value for each RPS Instrument Function. 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.

LA05 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.3.1.1.3 requires each RPS trip function to be response time tested. However, CTS 4.3.1.1.3 includes a Note (*) that states, in part, "a delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit." ITS SR 3.3.1.8 does not contain this Note. This changes the CTS by moving the CTS 4.3.1.1.3 Note (*) to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Response Time Test associated with the RPS Instrumentation. Also, this change is acceptable because these types of procedural details will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specifications requirements are being removed from the Technical Specification.

LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 4.3-1 Note (10) states that if the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable. ITS 3.3.1 requires four channels of RPS instrumentation for each Function in Table 3.3.1-1 to be OPERABLE, and Table 3.3.1-1 includes an Allowable Value column. However, ITS 3.3.1 does not include this statement in either Table 3.3.1-1 footnote (c) or (d). This changes the CTS by moving the details of what constitutes an OPERABLE channel (with respect to the Allowable Value) to the Bases.

The removal of this detail, which relate 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 clearly states that the channels are required to be OPERABLE and the ITS Table includes a required Allowable Value for the various RPS Functions. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the

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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 CTS.

LESS RESTRICTIVE CHANGES

L01 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.3.1.1.2 requires the shutdown bypass function to be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation. ITS 3.3.1 does not include this specific Surveillance Requirement. This changes the CTS by deleting the Surveillance.

The purpose of CTS 4.3.1.1.2 is to ensure the shutdown bypass function is OPERABLE. This change is acceptable because the deleted Surveillance Requirement is not necessary to ensure the affected RPS functions remain OPERABLE. Thus, appropriate Technical Specification Surveillances continue to be performed in a manner and at a Frequency necessary to ensure the RPS Functions remain OPERABLE. This change is acceptable because other Surveillance Requirements in the CTS ensure the shutdown bypass function is OPERABLE. When the plant is in shutdown bypass operation, CTS Table 4.3-1 Functional Unit 14 (Shutdown Bypass High Pressure) requires the performance of a CHANNEL CHECK every 12 hours, a CHANNEL CALIBRATION every 24 months, and a CHANNEL FUNCTIONAL TEST every 46 days on a STAGGERED TEST BASIS. These Surveillances ensure the Shutdown Bypass High Pressure Function is OPERABLE. The High Flux trip setpoint is also administratively reduced to 5% RTP during shutdown bypass operation. The ITS requires this Function to be calibrated and tested consistent with the Frequencies of the High Flux-High Setpoint. CTS 4.3.1.1.2 requires the shutdown bypass function to be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation. When the shutdown bypass is placed into operation the RC Low Pressure, Flux – ΔFlux – Flow, High Flux/Number of Coolant Pumps On, and the RC Pressure-Temperature trips are bypassed and the Shutdown Bypass High Pressure trip is placed in service. The Shutdown Bypass High Pressure trip forces a reactor trip to occur whenever the unit shifts from Power Operation to Shutdown Bypass or vice versa. The act of placing RPS into Shutdown Bypass and then resetting RPS is an operational demonstration of the functionality. This Surveillance has been deleted because it is not necessary to verify the Functions are bypassed. Furthermore, maintaining the Shutdown Bypass High Pressure Function and the High Flux-Low Setpoint Function OPERABLE helps ensure the core is protected during shutdown bypass operation. Since these Functions are required to be OPERABLE during shutdown bypass operation and since each of these Functions include specific Surveillances, CTS 4.3.1.1.2 is not necessary. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

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L02 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 Functional Unit 2 (High Flux) or Functional Unit 4 (Flux – ΔFlux – Flow) requires entry into CTS Table 3.3-1 Action 2. Action 2 part b requires either THERMAL POWER to be restricted to ≤ 75% RTP and the High Flux trip setpoint be reduced to ≤ 85% RTP within 4 hours or the QUADRANT POWER TILT must be monitored at least once per 12 hours. ITS 3.3.1 does not include this Required Action. This changes the CTS by deleting this Required Action.

The purpose of the CTS Actions is to ensure proper compensatory measures are taken in the event of an inoperable High Flux or Flux – ΔFlux – Flow channel. 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. In the CTS, when a channel of High Flux or a channel of Flux – ΔFlux – Flow is inoperable the inoperable channel must be placed in trip or bypass within one hour and either THERMAL POWER is to be restricted to ≤ 75% RTP and the High Flux trip setpoint be reduced to ≤ 85% RTP within 4 hours or the QUADRANT POWER TILT must be monitored at least once per 12 hours. Under the same conditions in the ITS, the inoperable channel must be placed in the trip condition or bypass within one hour. ITS 3.3.1 does not include the requirement to restrict THERMAL POWER to ≤ 75% RTP and to reduce the High Flux trip setpoint to ≤ 85% RTP or to monitor the QUADRANT POWER TILT at the accelerated Frequencies. The change is considered less restrictive because the CTS Actions do not have to be applied. The ITS retains the requirement to place the inoperable channel in trip or bypass. Placing the channel in trip performs the intended function of the channel. Placing the channel in bypass allows the channel to be repaired. In either configuration the RPS is still capable of performing the intended function even with a single instrument failure. These power range nuclear instruments, which provide input to the two RPS Functions, are excore instruments and are not used to determine QUADRANT POWER TILT (QPT). Thus, inoperability of one of the channels does not affect computation of the QPT. ITS 3.2.4 provides the requirements for QPT, and if QPT is not within the appropriate limits, proper action will be taken in accordance with ITS 3.2.4. Provided QPT is within limits, the core power is essentially symmetrical and therefore, the reduction in THERMAL POWER and the reduction of the High Flux trip setpoint or the accelerated monitoring requirement for QUADRANT POWER TILT are not required to mitigate the consequences of any transient or accident and do not provide significant additional assurance of safety. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 Functional Unit 14 (Shutdown Bypass High Pressure) requires entry into ACTION 6. ACTION 6 states, "With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance

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with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 within one hour and at least once per 12 hours thereafter. Under the same conditions in the ITS (i.e., with two channels inoperable), ITS 3.3.1 ACTION B requires one channel to be placed in the trip condition and the second channel to be placed in bypass within one hour. ITS 3.3.1 does not include the CTS Table 3.3-1 ACTION 6. This changes the CTS by replacing the CTS action with ITS 3.3.1 ACTION B.

The purpose of the CTS Actions is to ensure proper compensatory measures are taken in the event of two inoperable Shutdown Bypass High Pressure channels. 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. When two Shutdown Bypass High Pressure channels are inoperable the CTS requires verification of SHUTDOWN MARGIN within one hour and at least once per 12 hours thereafter. Under the same conditions in the ITS one channel must be placed in the trip condition and the second channel to be placed in bypass within one hour. ITS 3.3.1 does not include the SHUTDOWN MARGIN requirement. The change is considered less restrictive because the CTS Actions do not have to be applied. The Shutdown Bypass High Pressure channels provide for protection during an overpressurization of the reactor coolant system. Placing one channel in trip ensures the Function maintains capability to provide the trip even if another channel fails. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 4 – Relaxation of Required Action)* When two channels are inoperable CTS Table 3.3-1 Functional Units 2 through 9 require entry into CTS Table 3.3-1 Action 10. Action 10 requires one inoperable channel to be placed in trip and the second inoperable channel to be placed in bypass within one hour. In addition, it requires the restoration of one of the inoperable channels to OPERABLE status within 48 hours. ITS 3.3.1 ACTION B only requires the one channel to be placed in trip and the other channel to be placed in bypass within one hour. ITS 3.3.1 does not include the Required Action to restore the channels to OPERABLE status within any specific time frame. This changes the CTS by deleting the Required Action to restore the channels to OPERABLE status within any specific time frame.

The purpose of the CTS Actions is to ensure proper compensatory measures are taken in the event of two inoperable channels. 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 ITS retains the requirement to place one inoperable channel in trip and the other one in bypass. Placing the channel in trip performs the intended function of the channel. Placing the second channel in bypass allows the channel to be repaired. There are still two OPERABLE channels available for mitigation and is considered acceptable for continuous operation. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L05 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-1 requires Functional Unit 6 (RC High Pressure) to be OPERABLE in MODES 1 and 2. ITS Table 3.3.1-1 Function 3, in part, requires the RC High Pressure Function to be OPERABLE in MODE 1 and MODE 2 when not in shutdown bypass (ITS Table 3.3.1-1 Footnote a). This changes the CTS by deleting the requirements for OPERABILITY of the RC High Pressure functional unit in MODE 2 when in shutdown bypass operation.

The purpose of CTS Table 3.3-1 Functional Unit 6 is to ensure the RC High Pressure functional unit is OPERABLE. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses. This change deletes the shutdown requirements for the RC High Pressure functional unit in MODE 2 when in shutdown bypass operation. During shutdown bypass operation the Shutdown Bypass High Pressure Function is required to be OPERABLE with an Allowable Value established at ≤ 1820 psig. Therefore, the RC High Pressure Function which has an Allowable Value of ≤ 2355 psig is not necessary because the Shutdown Bypass High Pressure Function will trip prior to reaching the RC High Pressure Allowable Value. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.1 Reactor Protection System (RPS) Instrumentation

3.3.1.1, Table 3.3-1

LCO 3.3.1 Four channels of RPS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-1 ACTIONS 2 and 3	A. One channel inoperable.	A.1 Place channel in bypass or trip.	1 hour
Table 3.3-1 ACTION 10	B. Two channels inoperable.	B.1 Place one channel in trip. AND B.2 Place second channel in bypass.	1 hour 1 hour
DOC M09	C. Three or more channels inoperable. OR Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter the Condition referenced in Table 3.3.1-1 for the Function.	Immediately
Table 3.3-1 ACTION 10	D. As required by Required Action C.1 and referenced in Table 3.3.1-1.	D.1 Be in MODE 3. AND D.2 Open all CONTROL ROD drive (CRD) trip breakers.	6 hours 6 hours

1

2 13

----------NOTE----------
Only applicable to Functions 1.a, 3, and 6.

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M04 E. As required by Required Action C.1 and referenced in Table 3.3.1-1.	E.1 Open all CRD trip breakers.	6 hours
~~F. As required by Required Action C.1 and referenced in Table 3.3.1-1.~~	~~F.1 Reduce THERMAL POWER < [45]% RTP.~~	~~6 hours~~
~~G. As required by Required Action C.1 and referenced in Table 3.3.1-1.~~	~~G.1 Reduce THERMAL POWER < [15]% RTP.~~	~~6 hours~~

3

SURVEILLANCE REQUIREMENTS

----------NOTE----------

4.3.1.1.1 Refer to Table 3.3.1-1 to determine which SRs apply to each RPS Function.

	SURVEILLANCE		FREQUENCY
Table 4.3-1 Functional Units 2, 3, 4, 5, 6, 7, 8, 9, and 14	SR 3.3.1.1	Perform CHANNEL CHECK.	12 hours
Table 4.3-1 Functional Unit 2, Table 4.3-1 Note 2	SR 3.3.1.2	----------NOTES---------- 1. Adjust power range channel output if the absolute difference ~~is > [2]% RTP~~ exceeds established limits 2. Not required to be performed until [24] hours after THERMAL POWER is ≥ 15% RTP. ----------	6 4
		Compare result of calorimetric heat balance calculation to power range channel output.	24 hour s 5

INSERT 1

7

CTS

7

INSERT 1

SR 3.3.1.3 Table 4.3-1 Functional Units 2, 4, and 8	----------NOTES---------- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. For Function 8, flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	23 days on a STAGGERED TEST BASIS

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
Table 4.3-1 Functional Unit 4 and Note (3)	SR 3.3.1.3 (4) ----------NOTES---------- 1. Adjust the power range channel imbalance output if the absolute value of the imbalance (offset) error is ≥ [2]% RTP (2.5%). 2. Not required to be performed until [24] hours after THERMAL POWER is ≥ 15% RTP. (50) ----------		(7) (10) (4) (4) (8)
	Compare results of out of core measured AXIAL POWER IMBALANCE (API_0) to incore measured AXIAL POWER IMBALANCE (API_1) as follows: (RTP/TP)(API_0 - API_1) = imbalance (offset) error.	31 days	(10)
Table 4.3-1 Functional Units 3, 5, 6, 7, 9, and 14 and Note (9)	SR 3.3.1.4 (5) Perform CHANNEL FUNCTIONAL TEST.	[45] (46) days on a STAGGERED TEST BASIS	(7) (4)
Table 4.3-1 Functional Unit 9	SR 3.3.1.5 (6) ----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------		(7) (9)
	Perform CHANNEL CALIBRATION.	[18] months	(4)
4.3.1.1.3	SR 3.3.1.6 (8) ----------NOTE---------- Neutron detectors are excluded from RPS RESPONSE TIME testing. ----------		(7)
	Verify that RPS RESPONSE TIME is within limits.	[18] (24) months on a STAGGERED TEST BASIS	(4)

INSERT 2 (7)

CTS

7

INSERT 2

Table 4.3-1 Functional Units 4 (and Note 7), 5, 6, 7, and 14	SR 3.3.1.7	----------NOTE---------- For Function 8, flow rate measurement sensors are only required to be calibrated. ---------- Perform CHANNEL CALIBRATION.	24 months

CTS

Table and Functional Unit

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

Table and Functional Unit	FUNCTION (10)	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS (7)	ALLOWABLE VALUE (4)
Table 3.3-1 (2), Table 4.3-1 (2), Table 2.2-1 (2)	1. ~~Nuclear Overpower~~ - High Flux a. High Setpoint	1,2[a],3[b]	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3[c,h,d] → ~~SR 3.3.1.4~~ ~~SR 3.3.1.5~~ SR 3.3.1.6 (8)	≤ 104.9% RTP[e] with four pumps operating, and ≤ 80.6% RTP when reset for three pumps operating per LCO 3.4.4. "RCS Loops MODES 1 and 2" ~~≤ [104.9]% RTP~~ (12)
Table 3.3-1 (2), Table 4.3-1 (2), Table 2.2-1 (2) including Footnote (1)a	b. Low Setpoint	2[b],3[b] 4[b],5[b]	E	SR 3.3.1.1 SR 3.3.1.3 → ~~SR 3.3.1.4~~ ~~SR 3.3.1.5~~ ~~SR 3.3.1.6~~ (11)	≤ 5% RTP
Table 3.3-1 (3), Table 4.3-1 (3), Table 2.2-1 (3)	2. RCS ~~High Outlet~~ Temperature	1,2	D	SR 3.3.1.1 SR 3.3.1.4 (5) SR 3.3.1.5 (7)	≤ [618]°F
Table 3.3-1 (6), Table 4.3-1 (6), Table 2.2-1 (6)	3. RCS High Pressure	1,2[a],3[b]	D	SR 3.3.1.1 SR 3.3.1.4 (5) SR 3.3.1.5 (7) SR 3.3.1.6 (8)	≤ [2355] psig
Table 3.3-1 (5), Table 4.3-1 (5), Table 2.2-1 (5)	4. RCS Low Pressure	1,2[a]	D	SR 3.3.1.1 SR 3.3.1.4 (5) SR 3.3.1.5 (7) SR 3.3.1.6 (8)	≥ [1800] (1900) psig
Table 3.3-1 (7), Table 4.3-1 (7), Table 2.2-1 (7)	5. RCS ~~Variable Low Pressure~~ - Pressure - Temperature	1,2[a]	D	SR 3.3.1.1 SR 3.3.1.4 (5[c,h,d]) SR 3.3.1.5 (7[c,h,d])	≥ ([11.59] (16.25) · T_{out} - [5037.8] (7899.00)) psig
Table 3.3-1 (9), Table 4.3-1 (9), Table 2.2-1 (9)	6. ~~Reactor Building~~ - Containment High Pressure	1,2,3[g]	D	SR 3.3.1.1 SR 3.3.1.4 (5) SR 3.3.1.5 (6)	≤ [4] psig

Table 3.3-1 Note (a) (a) When not in shutdown bypass operation. INSERT 3

Table 3.3-1 Note ** (f) During shutdown bypass operation with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal.

DOC M02 (g) With any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal.

DOC M01 (b) With any CRD trip breaker in the closed position, the CRD System capable of rod withdrawal, and not in shutdown bypass operation.

(12)

CTS

(12) **INSERT 3**

Table 4.3-1 Note (10) (c) If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

Table 4.3-1 Note (10) (d) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band and the as-left setpoint tolerance band are specified in the Technical Requirements Manual.

Table 2.2-1 Footnote # (e) ≤ 103.3% RTP when reset per license controlled requirements due to an inoperable ultrasonic flow meter (UFM) instrumentation or due to not using the UFM to perform SR 3.3.1.2.

CTS

Table and Functional Unit

≤ 55.1% RTP with one pump operating in each loop,
≤ 0.0% RTP with two pumps operating in one loop and no pumps operating in the other loop,
≤ 0.0% RTP with one pump or no pumps operating

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
Table 3.3-1 (8) Table 4.3-1 (8) Table 2.2-1 (8)	7. ~~Reactor Coolant Pump to Power~~ High Flux/Number of Reactor Coolant Pumps On	1,2[(a)]	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.6	~~[5]% RTP with ≤ 2 pumps operating~~
Table 3.3-1 (4) Table 4.3-1 (4) Table 2.2-1 (4)	8. ~~Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE~~ Flux - ΔFlux - Flow	1,2[(a)]	D	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.6	~~Nuclear Overpower RCS Flow and AXIAL POWER IMBALANCE setpoint envelope in COLR~~ Flux – ΔFlux – Flow Allowable Value
	9. ~~Main Turbine Trip (Control Oil Pressure)~~	≥ [45]% RTP	F	~~SR 3.3.1.1~~ ~~SR 3.3.1.4~~ ~~SR 3.3.1.5~~	~~≥ [45] psig~~
	10. ~~Loss of Main Feedwater Pumps (Control Oil Pressure)~~	≥ [15]% RTP	G	~~SR 3.3.1.1~~ ~~SR 3.3.1.4~~ ~~SR 3.3.1.5~~	~~≥ [55] psig~~
Table 3.3-1 (14) Table 4.3-1 (14) Table 2.2.1 footnote (1)b	11. Shutdown Bypass ~~RCS~~ High Pressure	2,3,4,5	E	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.5	≤ ~~[1720]~~ 1820 psig

Table 3.3-1 Note (a) (a) When not in shutdown bypass operation.

Table 3.3-1 Note ** During shutdown bypass operation with any CRD trip breakers in the closed position and the CRD System capable of rod withdrawal.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

1. This change is made consistent with the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Section 4.1.6 and 4.1.6.i.5.v.

2. A Note has been added to Required Action D.2 that states the Required Action is only applicable to Functions 1.a, 3, and 6. This change is necessary to be consistent with the Applicabilities of the Functions in Table 3.3.1-1. Condition D also applies to Functions 2, 4, 7, and 8; however the Functions are only required to be applicable in MODES 1 and 2. Therefore, it is not necessary to open all CRD trip breakers.

3. ISTS Table 3.3.1-1 Functions 9 and 10 have been deleted. These Functions are not included in the Reactor Protection System. As a result ACTIONS F and G have been deleted since these requirements only apply to ISTS Table 3.3.1-1 Functions 9 and 10, respectively. The subsequent Function has been renumbered.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Typographical error corrected.

6. Note 1 to ISTS SR 3.3.1.2 requires the adjustment of the power range channel output if the absolute difference of the calorimetric heat balance calculation to the power range channel output is > 2% RTP. The ITS requires the adjustment if the absolute difference exceeds the established limits. UFSAR, Section 7.8.1.1 provides the established limits.

7. ITS SR 3.3.1.3 has been added to require the performance of a CHANNEL CALIBRATION every 23 days on a STAGGERED TEST BASIS. This change is consistent with the current licensing basis. Subsequent SRs has been revised as necessary and changes have been made to the SR numbering in Table 3.3.1-1.

8. The THERMAL POWER level of 15% RTP in ISTS SR 3.3.1.3 (ITS SR 3.3.1.4) has been changed to 50% RTP consistent with the current licensing basis.

9. The ISTS SR 3.3.1.5 (ITS SR 3.3.1.6) Note that states "Neutron detectors are excluded from the CHANNEL CALIBRATION" has been deleted because the Functions that include neutron detectors are calibrated in accordance with ITS SR 3.3.1.3.

10. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature.

11. ISTS SR 3.3.1.6 has been deleted from Function 1.b in Table 3.3.1.1-1 because the Function is not credited in the safety analyses.

12. ITS Table 3.3.1-1 Notes (c) and (d) have been added to SR 3.3.1.3 for Function 1.b and SR 3.3.1.5 and SR 3.3.1.7 for Function 5, consistent with the current licensing basis. ITS Table 3.3.1-1 Note (e) has been added consistent with an outstanding License Amendment Request (See DOC A13). Due to this change, subsequent footnotes have been renumbered.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

13. The term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of a system.

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

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Protection System (RPS) Instrumentation

BASES

BACKGROUND

The RPS initiates a reactor trip to protect against violating the core fuel design limits and the Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Feature (ESF) Systems in mitigating accidents. s Actuation System (SFAS) 2

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 RPS, as well as the LCOs on other reactor system parameters and equipment performance.

Technical Specifications are required by 10 CFR 50.36 to contain LSSS defined by the regulation as "...settings for automatic protective devices...so chosen that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytic Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytic Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protective devices must be chosen to be more conservative than the Analytic Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur. Analytical Analytical Analytical 2

The trip setpoint is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the Analytic Limit and thus ensuring that the SL would not be exceeded. As such, the trip setpoint accounts for uncertainties in setting the device (e.g., calibration), uncertainties in how the device might actually perform (e.g., repeatability), changes in the point of action of the device over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the trip setpoint plays an important role in ensuring that SLs are not exceeded. As such, the trip setpoint meets the definition of an LSSS (Ref. 1) and could be used to meet the requirement that they be contained in the Technical Specifications. Analytical 2

BASES

BACKGROUND (continued)

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

10 CFR 50.36 (12)

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

10 CFR 50.36 (12)

The Allowable Value specified in Table 3.3.1-1 serves as the LSSS such that a channel is OPERABLE if the trip setpoint is found not to exceed the Allowable Value during the CHANNEL FUNCTIONAL TEST (CFT). As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties,

channel (12)

BASES

BACKGROUND (continued)

such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a SL is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the surveillance interval. If the actual setting of the device is found to have exceeded the Allowable Value the device would be considered inoperable from a Technical Specification perspective. This requires corrective action including those actions required by 10 CFR 50.36 when automatic protective devices do not function as required. Note that, although the channel is "OPERABLE" under these circumstances, the trip setpoint should be left adjusted to a value within the established trip setpoint calibration tolerance band, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned. 8

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

a. The departure from nucleate boiling ratio (DNBR) shall be maintained above the SL value, 4

b. Fuel centerline melt shall not occur, and

c. The RCS pressure SL of 2750 psia shall not be exceeded. 2

Maintaining the parameters within the above values ensures that the offsite dose will be within the 10 CFR 20 and 10 CFR 100 criteria during AOOs.

Accidents are events that are analyzed even though they are not expected to occur during the unit's life. The acceptable limit during accidents is that the offsite dose shall be maintained within 10 CFR 100 limits. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event. 2

RPS Overview 2

The RPS consists of four separate redundant protection channels that receive inputs of neutron flux, RCS pressure, RCS flow, RCS temperature, RCS pump status, reactor building (RB) pressure, main feedwater (MFW) pump status, and turbine status. 2

BASES

BACKGROUND (continued)

Figure 7.2-1, UFSAR, Section 7.2

3

Figure [ ], FSAR, Chapter [7] (Ref. 2), shows the arrangement of a typical RPS protection channel. A protection channel is composed of measurement channels, a manual trip channel, a reactor trip module (RTM), and CONTROL ROD drive (CRD) trip devices. LCO 3.3.1 provides requirements for the individual measurement channels. These channels encompass all equipment and electronics from the point at which the measured parameter is sensed through the bistable relay contacts in the trip string. LCO 3.3.2, "Reactor Protection System (RPS) Manual Reactor Trip," LCO 3.3.3, "Reactor Protection System (RPS) - Reactor Trip Module (RTM)," and LCO 3.3.4, "CONTROL ROD Drive (CRD) Trip Devices," discuss the remaining RPS elements. 3 and 2 5 2

The RPS instrumentation measures critical unit parameters and compares these to predetermined setpoints. If the setpoint is exceeded, a channel trip signal is generated. The generation of any two trip signals in any of the four RPS channels will result in the trip of the reactor.

INSERT 1

The Reactor Trip System (RTS) contains multiple CRD trip devices, two AC trip breakers, and two DC trip breaker pairs that provide a path for power to the CRD System. Additionally, the power for most of the CRDs passes through electronic trip assembly (ETA) relays. The system has two separate paths (or channels), with each path having either two breakers or a breaker and an ETA relay in series. Each path provides independent power to the CRDs. Either path can provide sufficient power to operate all CRDs. Two separate power paths to the CRDs ensure that a single failure that opens one path will not cause an unwanted reactor trip. 2

The RPS consists of four independent protection channels, each containing an RTM. The RTM receives signals from its own measurement channels that indicate a protection channel trip is required. The RTM transmits this signal to its own two-out-of-four trip logic and to the two-out-of-four logic of the RTMs in the other three RPS channels. Whenever any two RPS channels transmit channel trip signals, the RTM logic in each channel actuates to remove 120 VAC power from its associated CRD trip breaker.

Four

The reactor is tripped by opening circuit breakers that interrupt the power supply to the CRDs. Six breakers are installed to increase reliability and allow testing of the trip system. A one-out-of-two taken twice logic is used to interrupt power to the rods. 2

(2) **INSERT 1**

The Control Rod Drive (CRD) System contains two types of CRD trip devices: four CRD trip breakers and two silicon controlled rectifier (SCR) relay trip channels. The system has two separate paths (or trip systems), with each path having two AC breakers in series. Each path provides independent power to the CRDs. Either path can provide sufficient power to operate the control rods of the entire CRD System. SCRs are utilized in the CRD power supply to energize the CRD mechanism (CRDM) windings.

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BASES

BACKGROUND (continued)

~~The RPS has two bypasses: a shutdown bypass and a channel bypass. Shutdown bypass allows the withdrawal of safety rods for SDM availability and rapid negative reactivity insertion during unit cooldowns or heatups. Channel bypass is used for maintenance and testing. Test circuits in the trip strings allow complete testing of all RPS trip Functions.~~

~~The RPS operates from the instrumentation channels discussed next. The specific relationship between measurement channels and protection channels differs from parameter to parameter. Three basic configurations are used:~~ 11

~~a. Four completely redundant measurements (e.g., reactor coolant flow) with one channel input to each protection channel,~~

~~b. Four channels that provide similar, but not identical, measurements (e.g., power range nuclear instrumentation where each RPS channel monitors a different quadrant), with one channel input to each protection channel, and~~

~~c. Redundant measurements with combinational trip logic outside of the protection channels and the combined output provided to each protection channel (e.g., main turbine trip instrumentation).~~

These arrangements and the relationship of instrumentation channels to trip Functions are discussed next to assist in understanding the overall effect of instrumentation channel failure. 2

Power Range Nuclear Instrumentation

Power Range Nuclear Instrumentation channels provide inputs to the following trip Functions: 8

1. ~~Nuclear Overpower~~ High Flux 1

   a. ~~Nuclear Overpower~~ High Flux - High Setpoint ; 1 4

   b. ~~Nuclear Overpower~~ High Flux - Low Setpoint ; 1 4

7. ~~Reactor Coolant Pump to Power~~ ; and 1 4

   High Flux/Number of Coolant Pumps On

BASES

BACKGROUND (continued)

Flux - ΔFlux - Flow

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE (Power Imbalance Flow). 1 4

9. Main Turbine Trip (Control Oil Pressure), and 1

10. Loss of Main Feedwater (LOMFW) Pumps (Control Oil Pressure).

The power range instrumentation has four linear level channels, one for each core quadrant. Each channel feeds one RPS protection channel. Each channel originates in a detector assembly containing two uncompensated ion chambers. The ion chambers are positioned to represent the top half and bottom half of the core. The individual currents from the chambers are fed to individual linear amplifiers. The summation of the top and bottom is the total reactor power. The difference of the top minus the bottom neutron signal is the measured AXIAL POWER IMBALANCE of the reactor core.

RC High

Reactor Coolant System Outlet Temperature

RC High

The Reactor Coolant System Outlet Temperature provides input to the following Functions: 2

2. RCS High Outlet Temperature and 1 4

Pressure - Temperature

5. RCS Variable Low Pressure 1 4

High

The RCS Outlet Temperature is measured by two resistance elements in each hot leg, for a total of four. One temperature detector is associated with each protection channel.

Reactor Coolant System Pressure

The Reactor Coolant System Pressure provides input to the following Functions:

3. RCS High Pressure 1 4

4. RCS Low Pressure 1 4

BASES

BACKGROUND (continued)

Pressure - Temperature

5. RCS Variable Low Pressure, and 1 4

11. Shutdown Bypass RCS High Pressure. 1

The RPS inputs of reactor coolant pressure are provided by two pressure transmitters in each hot leg, for a total of four. One sensor is associated with each protection channel.

Containment

Reactor Building Pressure 1

Containment Containment

The Reactor Building Pressure measurements provide input only to the Reactor Building High Pressure trip, Function 6. There are four RB High Pressure sensors, one associated with each protection channel. 1 2

switches

Reactor Coolant Pump Power Monitoring 1

High Flux/Number of Coolant Pumps On

Reactor coolant pump power monitors are inputs to the Reactor Coolant Pump to Power trip, Function 7. Each RCP, operating current, and voltage is measured by four current transformers and four potential transformers driving four overpower and four underpower relays. Each power monitoring channel consists of an overpower relay and an underpower relay. One channel for each pump is associated with each protection channel. 1 2

INSERT 2

Reactor Coolant System Flow

(flow rate measurement sensors) 2

Flux - ΔFlux - Flow

The Reactor Coolant System Flow measurements are an input to the Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE trip, Function 8. The reactor coolant flow inputs to the RPS are provided by eight high accuracy differential pressure transmitters, four on each loop, which measure flow through calibrated flow tubes. One flow input in each loop is associated with each protection channel. 1 2

gentile

The correlation of sensed flow with RCS total flow is ensured during the precision flow rate measurement test required by SR 3.4.1.4.

2

Main Turbine Automatic Stop Oil Pressure

Main Turbine Automatic Stop Oil Pressure is an input to the Main Turbine Trip (Control Oil Pressure) reactor trip, Function 9. Each of the four protection channels receives turbine status information from the same four pressure switches monitoring main turbine automatic stop oil pressure. An open indication will be provided to the RPS on a turbine trip. Contact buffers in each protection channel continuously monitor the status of the contact inputs and initiate an RPS trip when a turbine trip is indicated.

2

INSERT 2

Each RCP motor has four RCP monitoring circuits. A current transformer on one phase of each RCP motor provides current signals to four current transducer circuits. Each circuit is able to detect an RCP motor overcurrent condition, as would be found with an overloaded or binding shaft, and an RCP motor undercurrent condition, as would be found with a sheared shaft. Each power monitoring channel circuit provides RCP run status to each of the four RPS channels. A closed contact indicates normal operation and an open contact indicates an abnormal condition.

BASES

BACKGROUND (continued)

Feedwater Pump Control Oil Pressure

Feedwater Pump Control Oil Pressure is an input to the Loss of Main Feedwater Pumps (Control Oil Pressure) trip, Function 10. Control oil pressure is measured by four switches on each feedwater pump. One switch on each pump is associated with each protection channel. 1

RPS Bypasses

The RPS is designed with two types of bypasses: channel bypass and shutdown bypass.

Channel bypass provides a method of placing all Functions in one RPS protection channel in a bypassed condition, and shutdown bypass provides a method of leaving the safety rods withdrawn during cooldown and depressurization of the RCS. Each bypass is discussed next. 2

INSERT 3

Channel Bypass

A channel bypass provision is provided to allow for maintenance and testing of the RPS. The use of channel bypass keeps the protection channel trip relay energized regardless of the status of the instrumentation channel of the bistable relay contacts. To place a protection channel in channel bypass, the other three channels must not be in channel bypass. This is ensured by contacts from the other channels being in series with the channel bypass relay. If any contact is open, the second channel cannot be bypassed. The second condition is the closing of the key switch. When the bypass relay is energized, the bypass contact closes, maintaining the channel trip relay in an energized condition. All RPS trips are reduced to a two-out-of-three logic in channel bypass. 2 2 2

INSERT 4

in

with a

Shutdown Bypass

may be

withdraw

During unit cooldown, it is desirable to leave the safety rods withdrawn to provide shutdown capabilities in the event of unusual positive reactivity additions (moderator dilution, etc.). 2

2 **INSERT 3**

and provides a method to allow control rod drive testing and startup/shutdown testing after the reactor has been shutdown and depressurized below the low pressure trip setpoint

2 **INSERT 4**

The bypass is initiated using a key switch. Placing a channel in channel bypass interlocks the other three channels, preventing a second channel from being bypassed. The other three channels are prevented from being bypassed by the removal of the ground return path to the bypass circuits.

BASES

BACKGROUND (continued)

However, the unit is also depressurized as coolant temperature is decreased. If the safety rods are withdrawn and coolant pressure is decreased, an RCS Low Pressure trip will occur at 1800 psig and the rods will fall into the core. To avoid this, the protection system allows the operator to bypass the low pressure trip and maintain shutdown capabilities. During the cooldown and depressurization, the safety rods are inserted prior to the low pressure trip of 1800 psig. The RCS pressure is decreased to less than 1720 psig, then each RPS channel is placed in shutdown bypass.

1900 1 1900 1 1820

INSERT 5 In shutdown bypass, a normally closed contact opens and the operator closes the shutdown bypass key switch. This action bypasses the RCS Low Pressure trip, Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE trip, Reactor Coolant Pump to Power trip, and the RCS Variable Low Pressure trip, and inserts a new RCS High Pressure, 1720 psig trip. The operator can now withdraw the safety rods for additional SDM.

INSERT 6 1820 then trippable reactivity shutdown bypass 1 1 1

The insertion of the new high pressure trip performs two functions. First, with a trip setpoint of 1720 psig, the bistable prevents operation at normal system pressure, 2155 psig, with a portion of the RPS bypassed. The second function is to ensure that the bypass is removed prior to normal operation. When the RCS pressure is increased during a unit heatup, the safety rods are inserted prior to reaching 1720 psig. The shutdown bypass is removed, which returns the RPS to normal, and system pressure is increased to greater than 1800 psig. The safety rods are then withdrawn and remain at the full out condition for the rest of the heatup.

1820 1 2 1820 1 1900 1 1

High Flux

In addition to the Shutdown Bypass RCS High Pressure trip, the high flux trip setpoint is administratively reduced to ≤ 5% RTP while the RPS is in shutdown bypass. This provides a backup to the Shutdown Bypass RCS High Pressure trip and allows low temperature physics testing while preventing the generation of any significant amount of power.

1 1

INSERT 7

s

Module Interlock and Test Trip Relay 2

Each channel and each trip module is capable of being individually tested. When a module is placed into the test mode, it causes the test trip relay to open and to indicate an RPS channel trip. Under normal conditions, the channel to be tested is placed in bypass before a module is tested. 2

INSERT 8

1 **INSERT 5**

Actuating the Shutdown Bypass switch opens the bistable trip string thereby ensuring the channel is tripped before shutdown bypass mode can be entered.

1 **INSERT 6**

Flux – ΔFlux – Flow trip, High Flux/Number of Reactor Coolant Pumps On trip, and the RC Pressure -Temperature

2 **INSERT 7**

Sufficient natural circulation would be available to remove 5% of RTP if none of the RCPs were operating.

2 **INSERT 8**

Electro-mechanical interlocks initiate an RPS channel trip whenever: (1) a test module that is used to test one of the seven trip bistables or the containment pressure switch contact buffer is placed in the test mode; or (2) any module vital to a trip signal is withdrawn, unless the RPS channel is bypassed. Removal of the RTM in any condition will trip its associated CRD breaker. Another interlock is used to prevent the bypassing of more than one channel. Once a bypass is initiated, the other three channels are prevented from being bypassed by the removal of the ground return path to the bypass circuits.

BASES

BACKGROUND (continued)

Trip Setpoints/Allowable Value

The trip setpoints are the normal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION accuracy (i.e., ± [rack calibration + comparator setting accuracy]). 2

U 4 2

The trip setpoints used in the bistables are based on the analytical limits stated in FSAR, Chapter [14] (Ref. 3). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RPS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 4), the Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the trip setpoints, including their explicit uncertainties, is provided in "[Unit Specific Setpoint Methodology]" (Ref. 5). The actual nominal trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a CHANNEL FUNCTIONAL TEST. One example of such a change in measurement error is drift during the Surveillance Frequency. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

Table 15.1-2, UFSAR Section 15.1.2 2

uncertainties 2

5 2

12

The trip setpoint is established using Method 1 or Method 2 of Reference 6 or 7. 2

and CHANNEL CALIBRATION 2

Setpoints in accordance with the Allowable Value ensure that the limits of Chapter 2.0, "Safety Limits," in the Technical Specifications 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 in LCO 3.3.1 the Allowable Values listed in Table 3.3.1-1 are the LSSS.

Each channel can be tested online to verify that the signal and setpoint accuracy are within the specified allowance requirements of Reference 5. 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. Surveillances for the channels are specified in the SR section. 8 2

BASES

BACKGROUND (continued)

established using Method 1 or Method 2 of Reference 6 or 7

The Allowable Values listed in Table 3.3.1-1 are based on the methodology described in "[Unit Specific Setpoint Methodology]" (Ref. 5), which incorporates all of the known uncertainties applicable for each channel. The magnitudes of those uncertainties are factored into the determination of each trip setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes. 2

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

Containment

High Flux - Low Setpoint, and Shutdown Bypass High Pressure

Each of the analyzed accidents and transients can be detected by one or more RPS Functions. The accident analysis contained in Reference ~~6~~ 9 takes credit for most RPS trip Functions. Functions not specifically credited in the accident analysis were qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions are high R/B pressure, high temperature, turbine trip, and loss of main feedwater. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions also serve as backups to Functions that were credited in the safety analysis. 2 RC 2

The LCO requires all instrumentation performing an RPS Function to be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. The four channels of each Function in Table 3.3.1-1 of the RPS instrumentation shall be OPERABLE during its specified Applicability to ensure that a reactor trip will be actuated if needed. Additionally, during shutdown bypass with any CRD trip breaker closed, the applicable RPS Functions must also be available. This ensures the capability to trip the withdrawn CONTROL RODS exists at all times that rod motion is possible. The trip Function channels specified in Table 3.3.1-1 are considered OPERABLE when all channel components necessary to provide a reactor trip are functional and in service for the required MODE or Other Specified Condition listed in Table 3.3.1-1. 7 14

and the CRD System capable of rod withdrawal

Required Actions allow maintenance (protection channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel bypass. Bypass effectively places the unit in a two-out-of-three logic configuration that can still initiate a reactor trip, even with a single failure within the system. 6

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Only the Allowable Values are specified for each RPS trip Function in the LCO. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal setpoints are selected to ensure that the setpoint measured by CHANNEL FUNCTIONAL TESTS and CHANNEL CALIBRATION does not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the unit specific setpoint calculations. Each Allowable Value specified is more conservative than instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "[Unit Specific Setpoint Methodology]" (Ref. 5). Reference 6 or 7

INSERT 9 2 3

For most RPS Functions, the trip setpoint Allowable Value is to ensure that the departure from nucleate boiling (DNB) or RCS pressure SLs are not challenged. Cycle specific figures for use during operation are contained in the COLR. 8

Certain RPS trips function to indirectly protect the SLs by detecting specific conditions that do not immediately challenge SLs but will eventually lead to challenge if no action is taken. These trips function to minimize the unit transients caused by the specific conditions. The Allowable Value for these Functions is selected at the minimum deviation from normal values that will indicate the condition, without risking spurious trips due to normal fluctuations in the measured parameter.

The Allowable Values for bypass removal Functions are stated in the Applicable MODE or Other Specified Condition column of Table 3.3.1-1. 7

The safety analyses applicable to each RPS Function are discussed next.

1. Nuclear Overpower High Flux 3

   a. Nuclear Overpower - High Setpoint 3

      The Nuclear Overpower - High Setpoint trip provides protection for the design thermal overpower condition based on the measured out of core fast neutron leakage flux. High Flux 3

INSERT 9

except for Functions 1.a and 5. For these two Functions, the Limiting Trip Setpoint and methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria, and the as-left tolerance are specified in the TRM (Ref. 2). 2

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The ~~Nuclear Overpower~~ High Flux - High Setpoint trip initiates a reactor trip when the neutron power reaches a predefined setpoint at the design overpower limit. Because THERMAL POWER lags the neutron power, tripping when the neutron power reaches the design overpower will limit THERMAL POWER to a maximum value of the design overpower. Thus, the ~~Nuclear Overpower~~ High Flux - High Setpoint trip protects against violation of the DNBR and fuel centerline melt SLs. ~~However, the RCS Variable Low Pressure, and Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE, provide more direct protection. The role of the Nuclear Overpower - High Setpoint trip is to limit reactor THERMAL POWER below the highest power at which the other two trips are known to provide protection.~~ 2

The ~~Nuclear Overpower~~ High Flux - High Setpoint trip ~~also~~ provides transient protection for rapid positive reactivity excursions during ~~power~~ operations. These events include the ~~rod withdrawal~~ INSERT 10 ~~accident~~, the rod ejection accident, and the steam line break accident. By providing a trip during these events, the ~~Nuclear~~ High Flux ~~Overpower~~ - High Setpoint trip protects the unit from excessive power levels and also serves to reduce reactor power to prevent violation of the RCS pressure SL. 2 2

Rod withdrawal accident analyses cover a large spectrum of reactivity insertion rates (rod worths), which exhibit slow and rapid rates of power increases. At high reactivity insertion rates, the High Flux ~~Nuclear Overpower~~ - High Setpoint trip provides the primary protection. At low reactivity insertion rates, the high pressure trip provides primary protection.

The specified Allowable Value~~s~~ ~~is~~ are selected ~~to ensure that a trip occurs before reactor power exceeds the highest point at which the RCS Variable Low Pressure and the Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE trips are analyzed~~ to provide protection against DNB and fuel centerline melt. The Allowable Value~~s~~ ~~does~~ not account for harsh INSERT 10A environment induced errors, because the trip will actuate prior to degraded environmental conditions being reached. 2

(2) **INSERT 10**

uncontrolled control rod assembly group withdrawal from a subcritical condition event, uncontrolled rod assembly group withdrawal at power event

(2) **INSERT 10A**

Allowable Values are provided for four reactor coolant pump operation and three reactor coolant pump operation. The three reactor coolant pump operation Allowable Value is only applicable when reset in accordance with LCO 3.4.4, "RCS Loops - MODES 1 and 2." In addition, ITS Table 3.3-1 Footnote (e) provides a lower four reactor coolant pump operation Allowable Value that is applicable only when reset in accordance with the licensee controlled requirements (i.e., the Technical Requirements Manual). This is required when the ultrasonic flow meter (UFM) is inoperable or is not used during performance of SR 3.3.1.2, since the UFM is required to allow the unit to maintain 100% RTP. No reduction in the three reactor coolant pump operation Allowable Value is needed since the normal Allowable Value is conservative and bounds operation irrespective of the use of the UFM for heat balance calculation.

All changes are (1) unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

b. ~~Nuclear Overpower~~ - Low Setpoint (High Flux)

While in shutdown bypass, with the Shutdown Bypass ~~RCS~~ High Pressure trip OPERABLE, the ~~Nuclear Overpower~~ - Low Setpoint trip must be reduced to ≤ 5% RTP. The low power setpoint, in conjunction with the lower Shutdown Bypass ~~RCS~~ High Pressure setpoint, ensure that the unit is protected from excessive power conditions when other RPS trips are bypassed. (High Flux)

The ~~setpoint~~ Allowable Value was chosen to be as low as practical and still lie within the range of the out of core instrumentation. (Instrument uncertainties and other uncertainties are not a factor in determining the Allowable Value.) (2)

2. RC~~S~~ High ~~Outlet~~ Temperature (Pressure - Temperature)

The RC~~S~~ High ~~Outlet~~ Temperature trip, in conjunction with the RC~~S~~ Low Pressure and RC~~S Variable Low Pressure~~ trips, provides protection for the DNBR SL. A trip is initiated whenever the reactor vessel outlet temperature approaches the conditions necessary for DNB. Portions of each RC~~S~~ High ~~Outlet~~ Temperature trip channel are common with the RC~~S Variable Low Pressure~~ trip. The RC~~S~~ High ~~Outlet~~ Temperature trip provides steady state protection for the DNBR SL. (Pressure - Temperature)

The RC~~S~~ High ~~Outlet~~ Temperature trip limits the maximum RCS temperature to below the highest value for which DNB protection by the ~~Variable Low Pressure~~ trip is ensured. The ~~trip setpoint~~ Allowable Value is selected to ensure that a trip occurs before hot leg temperatures reach the point beyond which the RC~~S~~ Low Pressure and ~~Variable Low Pressure~~ trips are analyzed. Above the high temperature trip, the ~~variable low pressure~~ trip need not provide protection, because the unit would have tripped already. The ~~setpoint~~ Allowable Value does not reflect errors induced by harsh environmental conditions that the equipment is expected to experience because the trip is not required to mitigate accidents that create harsh conditions in the ~~RB~~ containment. (RC Pressure - Temperature) (7) (7)

The RC High Temperature trip provides backup protection for RCS overheating events such as loss of normal feedwater and is credited in the makeup and purification system malfunction event. (2)

All changes are (1) unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3. RCS High Pressure

code

The RCS High Pressure trip works in conjunction with the pressurizer and main steam safety valves to prevent RCS overpressurization, thereby protecting the RCS High Pressure SL. (2) (2)

uncontrolled control rod assembly group withdrawal from a subcritical condition, uncontrolled rod assembly group withdrawal at power, makeup and purification system malfunction

The RCS High Pressure trip has been credited in the accident analysis calculations for slow positive reactivity insertion transients rod withdrawal accidents and moderator dilution and loss of feedwater accidents. The rod withdrawal accidents cover a large spectrum of reactivity insertion rates and rod worths that exhibit slow and rapid rates of power increases. At high reactivity insertion rates, the Nuclear Overpower - High Setpoint trip provides the primary protection. At low reactivity insertion rates, the RCS High Pressure trip provides the primary protection. (2)

normal

uncontrolled control rod assembly group withdrawal events

transients and control rod assembly ejection accident

High Flux

The setpoint Allowable Value is selected to ensure that the RCS High Pressure SL is not challenged during steady state operation or slow power increasing transients. The setpoint Allowable Value does not reflect errors induced by harsh environmental conditions because the equipment is not required to mitigate accidents that create harsh conditions in the RB. (7) (2) (7)

containment

4. RCS Low Pressure

RC Pressure-Temperature

The RCS Low Pressure trip, in conjunction with the RCS High Outlet Temperature and Variable Low Pressure trips, provides protection for the DNBR SL. A trip is initiated whenever the system pressure approaches the conditions necessary for DNB. The RCS Low Pressure trip provides DNB low pressure limit for the RCS Variable Low Pressure trip.

Pressure - Temperature

The RCS Low Pressure setpoint Allowable Value is selected to ensure that a reactor trip occurs before RCS pressure is reduced below the lowest point at which the RCS Variable Low Pressure trip is analyzed. The RCS Low Pressure trip provides protection for primary system depressurization events and has been credited in the accident analysis calculations for small break loss of coolant accidents (LOCAs). Consequently, harsh RB conditions created by small break LOCAs can affect performance of the RCS pressure sensors and transmitters. Therefore, degraded environmental conditions are considered in the Allowable Value determination. (2) (2)

steam generator tube rupture, steam line break, and

The Allowable Value does not reflect errors induced by harsh environmental conditions because the containment environment is not extensively degraded before the trip occurs.

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5. RCS Variable Low Pressure — Pressure - Temperature

The RCS Variable Low Pressure trip, in conjunction with the RCS High Outlet Temperature and RCS Low Pressure trips, provides protection for the DNBR SL during steady state condition. A trip is initiated whenever the system parameters of pressure and temperature approach the conditions necessary for DNB. The RCS Variable Low Pressure trip provides a floating low pressure trip based on the RCS High Outlet Temperature within the range specified by the RCS High Outlet Temperature and RCS Low Pressure trips. (Pressure - Temperature)

The RCS Variable Low Pressure setpoint Allowable Value is selected to ensure that a trip occurs when temperature and pressure approach the conditions necessary for DNB while operating in a temperature pressure region constrained by the low pressure and high temperature trips. The RCS Variable Low Pressure trip is not assumed for transient protection in the unit safety analysis; therefore, determination of the setpoint Allowable Value does not account for errors induced by a harsh RB environment. (Pressure - Temperature) (Containment) 7 2 7

6. Reactor Building High Pressure

The Reactor Building High Pressure trip provides an early indication of a high energy line break (HELB) inside the RB. By detecting changes in the RB pressure, the RPS can provide a reactor trip before the other system parameters have varied significantly. Thus, this trip acts to minimize accident consequences. It also provides a backup for RPS trip instruments exposed to an RB HELB environment. (Containment) (containment) (containment) (containment) 2

The Allowable Value for RB High Pressure trip is set at the lowest value consistent with avoiding spurious trips during normal operation. The electronic components of the RB High Pressure trip are located in an area that is not exposed to high temperature steam environments during HELB transients. The components are exposed to high radiation conditions. Therefore, the determination of the setpoint Allowable Value accounts for errors induced by the high radiation. (Containment) (Containment) 2 2

This Containment High Pressure trip is not credited in the safety analyses, however it can trip the plant during small, high energy line breaks inside containment, such as LOCAs, steam line breaks, and feedwater line breaks.

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

7. ~~Reactor Coolant Pump to Power~~ High Flux/Number of Coolant Pumps On

The ~~Reactor Coolant Pump to Power~~ trip provides protection for reactor coolant pumps (changes in the reactor coolant flow due to the loss of multiple RCPs.) 8
Because the flow reduction lags loss of power indications due to the inertia of the RCPs, the trip initiates protective action earlier than a trip based on a measured flow signal.

The trip also prevents operation with both pumps in either coolant loop tripped. Under these conditions, core flow and core fluid mixing are insufficient for adequate heat transfer. Thus, the ~~Reactor Coolant Pump to Power~~ High Flux/Number of Coolant Pumps On trip functions to protect the DNBR and fuel centerline melt SLs.

The ~~Reactor Coolant Pump to Power~~ trip has been credited in the accident analysis calculations for the loss of four RCPs. The trip also provides the primary protection for the loss of a pump or pumps, which would result ~~in~~ from both pumps in a single steam generator loop being tripped. 8

The Allowable Value(s) for the ~~Reactor Coolant Pump to Power~~ High Flux/Number of Coolant Pumps On trip ~~setpoint~~ are ~~is~~ selected to prevent normal (100%) power operation unless at least three RCPs are operating. RCP status is monitored by ~~power~~ current transducers on each pump. These relays indicate a loss of an RCP on overpower with an Allowable Value of ≥ 14,400 kW and on underpower with an Allowable Value of ≤ 1752 kW. The overpower Allowable Value is selected low enough to detect locked rotor conditions (although credit is not allowed for this capability) but high enough to avoid a spurious trip on the in rush current when the pumps start. The underpower Allowable Value is selected to reliably trip on loss of voltage to the RCPs. Neither the reactor power ~~nor the pump power~~ s nor the current transducer setpoint Allowable Value account for instrumentation errors caused by harsh environments because the trip Function is not required to respond to events that could create harsh environments around the equipment. 2 2

The transducer channel indicates a loss of an RCP on overcurrent and on undercurrent. During a RCP motor overcurrent condition, as would be found with an overloaded or binding shaft, one set of output contacts will open. During a RCP motor undercurrent condition, as would be found with a sheared shaft, a second set of output contacts will open.

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE

Flux - ΔFlux - Flow

The Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE trip provides steady state protection for the power imbalance SLs. A reactor trip is initiated when the core power, AXIAL POWER IMBALANCE, and reactor coolant flow conditions indicate an approach to DNB or fuel centerline melt limits. 2

DNB and fuel centerline melt temperature

High Flux/Number of Coolant Pumps On

This trip supplements the protection provided by the Reactor Coolant Pump to Power trip, through the power to flow ratio, for loss of reactor coolant flow events. The power to flow ratio provides direct protection for the DNBR SL for the loss of a single RCP and for locked RCP rotor accidents. The imbalance portion of the trip is credited for steady state protection only. 2

DNB and fuel centerline melt temperature SLs

Flux - ΔFlux - Flow

The power to flow ratio of the Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE trip also provides steady state protection to prevent reactor power from exceeding the allowable power when the primary system flow rate is less than full four pump flow. Thus, the power to flow ratio prevents overpower conditions similar to the Nuclear Overpower trip. This protection ensures that during reduced flow conditions the core power is maintained below that required to begin DNB.

High Flux-High Setpoint

The Allowable Value is selected to ensure that a trip occurs when the core power, axial power peaking, and reactor coolant flow conditions indicate an approach to DNB or fuel centerline melt limits. By measuring reactor coolant flow and by tripping only when conditions approach an SL, the unit can operate with the loss of one pump from a four pump initial condition. The Allowable Value for this Function is given in the unit COLR because the cycle specific core peaking changes affect the Allowable Value.

9. Main Turbine Trip (Control Oil Pressure)

The Main Turbine Trip Function trips the reactor when the main turbine is lost at high power levels. The Main Turbine Trip Function provides an early reactor trip in anticipation of the loss of heat sink associated with a turbine trip. The Main Turbine Trip Function was added to the B&W designed units in accordance with NUREG-0737 (Ref. 7) following the Three Mile Island Unit 2 accident. The trip 1

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

lowers the probability of an RCS power operated relief valve (PORV) actuation for turbine trip cases. This trip is activated at higher power levels, thereby limiting the range through which the Integrated Control System must provide an automatic runback on a turbine trip.

Each of the four turbine oil pressure switches feeds all four protection channels through buffers that continuously monitor the status of the contacts. Therefore, failure of any pressure switch affects all protection channels.

For the Main Turbine Trip (Control Oil Pressure) bistable, the Allowable Value of 45 psig is selected to provide a trip whenever feedwater pump control oil pressure drops below the normal operating range. To ensure that the trip is enabled as required by the LCO, the reactor power bypass is set with an Allowable Value of 45% RTP. The turbine trip is not required to protect against events that can create a harsh environment in the turbine building. Therefore, errors induced by harsh environments are not included in the determination of the setpoint Allowable Value. (1)

10. Loss of Main Feedwater Pumps (Control Oil Pressure)

The Loss of Main Feedwater Pumps (Control Oil Pressure) trip provides a reactor trip at high power levels when both MFW pumps are lost. The trip provides an early reactor trip in anticipation of the loss of heat sink associated with the LOMFW. This trip was added in accordance with NUREG-0737 (Ref. 7) following the Three Mile Island Unit 2 accident. This trip provides a reactor trip at high power levels for a LOMFW to minimize challenges to the PORV.

For the feedwater pump control oil pressure bistable, the Allowable Value of 55 psig is selected to provide a trip whenever feedwater pump control oil pressure drops below the normal operating range. To ensure that the trip is enabled as required by the LCO, the reactor power bypass is set with an Allowable Value of 15% RTP. The Loss of Main Feedwater Pumps (Control Oil Pressure) trip is not required to protect against events that can create a harsh environment in the turbine building. Therefore, errors caused by harsh environments are not included in the determination of the setpoint Allowable Value.

All changes are (1) unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

11. Shutdown Bypass RCS High Pressure

The RPS Shutdown Bypass RCS High Pressure is provided to allow for withdrawing the CONTROL RODS prior to reaching the normal RCS Low Pressure trip setpoint. The shutdown bypass provides trip protection during deboration and RCS heatup by allowing the operator to withdraw the safety groups of CONTROL RODS. This makes their negative reactivity available to terminate inadvertent reactivity excursions. Use of the shutdown bypass trip requires that the neutron power trip setpoint be reduced to 5% of full power or less. The Shutdown Bypass RCS High Pressure trip forces a reactor trip to occur whenever the unit switches from power operation to shutdown bypass or vice versa. This ensures that the CONTROL RODS are all inserted and the flux distribution is known before power operation can begin. The operator is required to remove the shutdown bypass, reset the Nuclear Overpower - High Power trip setpoint, and again withdraw the safety rod groups before proceeding with startup.

Accidents analyzed in the FSAR, Chapter [14] (Ref. 3), do not describe events that occur during shutdown bypass operation, because the consequences of these events are enveloped by the events presented in the FSAR.

During shutdown bypass operation with the Shutdown Bypass RCS High Pressure trip active with a setpoint of ≤ [1720] psig and the Nuclear Overpower - Low Setpoint set at or below 5% RTP, the (numbered) trip Functions listed below can be bypassed. Under these conditions, the Shutdown Bypass RCS High Pressure trip and the Nuclear Overpower - Low Setpoint trip act to prevent unit conditions from reaching a point where actuation of these trip Functions is necessary.

1.a Nuclear Overpower - High Setpoint,

4. RCS Low Pressure,

5. RCS Variable Low Pressure,

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

High Flux/Number of Coolant Pumps On

7. Reactor Coolant Pump to Power, and ; 4

Flux - ΔFlux - Flow

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE.

The Shutdown Bypass RCS High Pressure Function's Allowable Value is selected to ensure a trip occurs before producing THERMAL POWER.

Instrumentation

The RPS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 7

In MODES 1 and 2, the following (numbered) trip Functions shall be OPERABLE because the reactor is critical in these MODES. These trips are designed to take the reactor subcritical to maintain the SLs during AOOs and to assist the ESFAS in providing acceptable consequences during accidents. 2

SFAS

High Flux

1.a Nuclear Overpower - High Setpoint, ;

2. RCS High Outlet Temperature, ;

3. RCS High Pressure, ;

4. RCS Low Pressure, ; 4

Pressure - Temperature

5. RCS Variable Low Pressure, ;

Containment

6. Reactor Building High Pressure, ;

High Flux/Number of Coolant Pumps On

7. Reactor Coolant Pump to Power, and ;

Flux - ΔFlux - Flow

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE.

are

Functions 1/3, 4, 5, 7, and 8 just listed may be bypassed in MODE 2 2

1820

when RCS pressure is below [1720] psig, provided the Shutdown Bypass 3

RCS High Pressure and the Nuclear Overpower - Low setpoint trip are placed in operation. Under these conditions, the Shutdown Bypass RCS 7

High Flux

High Flux

High Pressure trip and the Nuclear Overpower - Low setpoint trip act to prevent unit conditions from reaching a point where actuation of these Functions is necessary. 7

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

High Flux

In MODE 3 when not operating in shutdown bypass but with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal, the Nuclear Overpower High Setpoint trip and the RCS High Pressure trip are required to be OPERABLE.

Two other Functions are required to be OPERABLE during portions of MODE 1. These are the Main Turbine Trip (Control Oil Pressure) and the Loss of Main Feedwater Pumps (Control Oil Pressure) trip. These Functions are required to be OPERABLE above [45]% RTP and [15]% RTP, respectively. Analyses presented in BAW-1893 (Ref. 8) have shown that for operation below these power levels, these trips are not necessary to minimize challenges to the PORVs as required by NUREG-0737 (Ref. 7).

Because the only safety function of the RPS is to trip the CONTROL RODS, the RPS is not required to be OPERABLE in MODE 3, 4, or 5 if the reactor trip breakers are open, or the CRD System is incapable of rod withdrawal. Similarly, the RPS is not required to be OPERABLE in MODE 6 when the CONTROL RODS are decoupled from the CRDs. 14 14

High Flux

However, in MODE 2, 3, 4, or 5, the Shutdown Bypass RCS High Pressure and Nuclear Overpower - Low setpoint trips are required to be OPERABLE if the CRD trip breakers are closed and the CRD System is capable of rod withdrawal. Under these conditions, the Shutdown Bypass RCS High Pressure and Nuclear Overpower - Low setpoint trips are sufficient to prevent an approach to conditions that could challenge SLs. 7 7

High Flux

ACTIONS

Conditions A, B, and C are applicable to all RPS protection Functions. If a channel's trip setpoint is found nonconservative with respect to the required Allowable Value in Table 3.3.1-1, or the transmitter, instrument loop, signal processing electronics or bistable is found inoperable, the channel must be declared inoperable and Condition A or Conditions A and B entered immediately. 8 7

the applicable Condition must be

When the number of inoperable channels in a trip Function exceed those specified in the 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. 7

BASES

ACTIONS (continued)

~~----------REVIEWER'S NOTE----------~~
~~If a unit is to take credit for topical reports as the basis for justifying Completion Times, the reports must be supported by an NRC Staff Safety Evaluation Report (SER) that establishes the acceptability of each topical report for that unit.~~
~~----------~~

9

A.1

If one or more Functions in one protection channel become inoperable, the affected protection channel must be placed in bypass or trip. If the channel is bypassed, all RPS Functions are placed in a two-out-of-three logic configuration and the bypass of any other channel is prevented. In this configuration, the RPS can still perform its safety function in the presence of a random failure of any single channel. Alternatively, the inoperable channel can be placed in trip. Tripping the affected protection channel places all RPS Functions in a one-out-of-three configuration.

Operation in the two-out-of-three configuration or in the one-out-of-three configuration may continue indefinitely based on the NRC SER for BAW-10167, Supplement 2 (Ref. 9). In this configuration, the RPS is capable of performing its trip Function in the presence of any single random failure. The 1 hour Completion Time is sufficient to perform Required Action A.1.

10 2

B.1 and B.2

For Required Action B.1 and Required Action B.2, if one or more Functions in two protection channels become inoperable, one of two inoperable protection channels must be placed in trip and the other in bypass. These Required Actions place all RPS Functions in a one-out-of-two logic configuration and prevent bypass of a second channel. In this configuration, the RPS can still perform its safety functions in the presence of a random failure of any single channel. The 1 hour Completion Time is sufficient time to perform Required Action B.1 and Required Action B.2.

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BASES

ACTIONS (continued)

C.1

Required Action C.1 directs entry into the appropriate Condition referenced in Table 3.3.1-1. The applicable Condition referenced in the table is Function dependent. If the Required Action and the associated Completion Time of Condition A or B are not met or if more than two channels are inoperable, Condition C is entered to provide for transfer to the appropriate subsequent Condition.

D.1 and D.2

or if more than two channels are inoperable.

If the Required Action and associated Completion Time of Condition A or B are not met and Table 3.3.1-1 directs entry into Condition D, the unit must be brought to a MODE in which the specified RPS trip Functions are not required to be OPERABLE. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and to open all CRD trip breakers without challenging plant systems. (7) (1)

As Noted, the CRD trip breakers are only required to be opened for Functions 1.a, 3, and 6.

E.1

or if more than two channels are inoperable.

If the Required Action and associated Completion Time of Condition A or B are not met and Table 3.3.1-1 directs entry into Condition E, the unit must be brought to a MODE in which the specified RPS trip Functions are not required to be OPERABLE. To achieve this status, all CRD trip breakers must be opened. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to open CRD trip breakers without challenging plant systems. (7) (7)

condition

F.1

If the Required Action and associated Completion Time of Condition A or B are not met and Table 3.3.1-1 directs entry into Condition F, the unit must be brought to a MODE in which the specified RPS trip Function is not required to be OPERABLE. To achieve this status, THERMAL POWER must be reduced < [45]% RTP. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach [45]% RTP from full power conditions in an orderly manner without challenging plant systems. (1)

BASES

ACTIONS (continued)

G.1

If the Required Action and associated Completion Time of Condition A or B are not met and Table 3.3.1-1 directs entry into Condition G, the unit must be brought to a MODE in which the specified RPS trip Function is not required to be OPERABLE. To achieve this status, THERMAL POWER must be reduced < [15]% RTP. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach [15]% RTP from full power conditions in an orderly manner without challenging plant systems. 1

SURVEILLANCE REQUIREMENTS

The SRs for each RPS Function are identified by the SRs column of Table 3.3.1-1 for that Function. Most Functions are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, CHANNEL CALIBRATION, and RPS RESPONSE TIME testing.

The SRs are modified by a Note. The [first] Note directs the reader to Table 3.3.1-1 to determine the correct SRs to perform for each RPS Function. 7

----------REVIEWER'S NOTE----------
The CHANNEL FUNCTIONAL TEST Frequencies are based on approved topical reports. For a licensee to use these times, the licensee must justify the Frequencies as required by the NRC Staff SER for the topical report. 9

SR 3.3.1.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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 two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; therefore, it is key in 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 isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

~~The agreement criteria includes an expectation of one decade of overlap when transitioning between neutron flux instrumentation. For example, during a power increase near the top of the scale of the intermediate range monitors, a power range monitor reading is expected with at least one decade overlap. Without such an overlap, the power range monitors are considered inoperable unless it is clear that an intermediate range monitor inoperability is responsible for the lack of the expected overlap.~~ (10)

12 hours

The Frequency, ~~about once every shift~~, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal but more frequent checks of channel OPERABILITY during normal operational use of the displays associated with the LCO's required channels. (7)

Flux - ΔFlux - Flow

For Functions that trip on a combination of several measurements, such as the ~~Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE Function~~, the CHANNEL CHECK must be performed on each input. (1)

SR 3.3.1.2

This SR is the performance of a heat balance calibration for the power range channels every 24 hours when reactor power is ~~>~~ ≥ 15% RTP. The heat balance calibration consists of a comparison of the results of the calorimetric with the power range channel output. The outputs of the power range channels are normalized to the calorimetric. Note 1 to the SR ~~states~~ clarifies that if the absolute difference between the calorimetric and the (7) (12)

BASES

SURVEILLANCE REQUIREMENTS (continued)

exceeds established limits

Nuclear Instrumentation System (NIS) channel output is > [2]% RTP, the NIS is not declared inoperable but must be adjusted. If the NIS channel cannot be properly adjusted, the channel is declared inoperable. Note 2 clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate.

established limits are described in UFSAR, Section 7.8.1.1 (Ref. 11) and are conservative with respect to

exceeds established limits

The power range channel's output shall be adjusted consistent with the calorimetric results if the absolute difference between the calorimetric and the power range channel's output is > [2]% RTP. The value of [2]% is adequate because this value is assumed in the safety analyses of FSAR, Chapter [14] (Ref. 3). These checks and, if necessary, the adjustment of the power range channels ensure that channel accuracy is maintained within the analyzed error margins. The 24 hour Frequency is adequate, based on unit operating experience, which demonstrates the change in the difference between the power range indication and the calorimetric results rarely exceeds a small fraction of [2]% in any 24 hour period. Furthermore, the control room operators monitor redundant indications and alarms to detect deviations in channel outputs.

Section 15 (Ref. 9)

U

the established limits

INSERT 11

SR 3.3.1.3

and THERMAL POWER is steady

A comparison of power range nuclear instrumentation channels against incore detectors shall be performed at a 31 day Frequency when reactor power is > 15% RTP. The SR is modified by two Notes. Note 2 clarifies that 24 hours is allowed for performing the first Surveillance after reaching 15% RTP. Note 1 states if the absolute difference between the power range and incore measurements is ≥ [2]% RTP, the power range channel is not inoperable, but an adjustment of the measured imbalance to agree with the incore measurements is necessary. If the power range channel cannot be properly recalibrated, the channel is declared inoperable. The calculation of the Allowable Value envelope assumes a difference in out of core to incore measurements of 2.5%. Additional inaccuracies beyond those that are measured are also included in the setpoint envelope calculation. The 31 day Frequency is adequate, considering that long term drift of the excore linear amplifiers is small and burnup of the detectors is slow. Also, the excore readings are a strong function of the power produced in the peripheral fuel bundles, and do not represent an integrated reading across the core. The slow changes in neutron flux during the fuel cycle can also be detected at this interval.

≥ 50

50

clarifies that

2.5%

1 **INSERT 11**

SR 3.3.1.3

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the unit specific setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis. The Surveillance includes two Notes. The first Note to the Surveillance indicates that neutron detectors are excluded from CHANNEL CALIBRATION. 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. The second Note states that for Function 8, Flux - ΔFlux - Flow, flow rate measurement sensors may be excluded from CHANNEL CALIBRATION for this SR. This is acceptable because these sensors are calibrated in accordance with SR 3.3.1.7 every 24 months.

The Frequency is justified by the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. However, the test is performed every 23 days on a STAGGERED TEST BASIS.

SR 3.3.1.3 for Function 1.a is modified by two Notes as identified in Table 3.3.1-1. Function 1.a is an LSSS for protection system instrument channels that protect reactor core or RCS pressure boundary Safety Limits. Some components (e.g., mechanical devices which have an on or off output or an open/close position such as limit switches, float switches, and proximity detectors) are not calibrated in the traditional sense and do not have as-left or as-found conditions that would indicate drift of the component setpoint. These devices are considered not trendable and the requirements of the Notes are not required to be applied to the mechanical portion of the functions. Where a non-trendable component provides signal input to other channel components that can be trended, the remaining components must be evaluated in accordance with the Notes. 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. For digital channel components, the as-found tolerance may be identical to the as-left tolerance since drift may not be an expected error. In these cases a channel as-found value outside the as-left condition may be

1 **INSERT 11 (continued)**

cause for component assessment. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. These channels will also be identified in the Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY. The second Note requires that the as-left setting for the instrument be returned to within the as-left tolerance around the Limiting Trip Setpoint (LTSP), or a value that is more conservative than the LTSP. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left instrument setting cannot be returned to a setting within the as-left tolerance, then the instrument channel shall be declared inoperable. The second Note also requires that the LTSP and the methodology used to determine the LTSP, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in the Technical Requirements Manual (TRM) (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.~~4~~ 5 1

A CHANNEL FUNCTIONAL TEST is performed on each required RPS channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable ~~because~~ if 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 found within the Allowable Values specified in Table 3.3.1-1. Any setpoint adjustment shall be consistent with the assumptions of the current unit specific setpoint analysis. 13

The as-found and as-left values ~~must also be~~ were recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis (Ref. 10). ~~The requirements for this review are outlined in BAW-10167 (Ref. 10).~~ 2

The Frequency of ~~[45]~~ 46 days on a STAGGERED TEST BASIS is consistent with the calculations of Reference ~~9~~ 12 that indicate the RPS retains a high level of reliability for this test interval. 3 2

INSERT 12 1

SR 3.3.1.~~5~~ 6

~~A Note to the Surveillance indicates that neutron detectors are excluded from CHANNEL CALIBRATION. 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.~~ 1

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the unit specific setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis.

1 **INSERT 12**

SR 3.3.1.5 for Function 5 is modified by two Notes as identified in Table 3.3.1-1. Function 5 is an LSSS for protection system instrument channels that protect reactor core or RCS pressure boundary Safety Limits. Some components (e.g., mechanical devices which have an on or off output or an open/close position such as limit switches, float switches, and proximity detectors) are not calibrated in the traditional sense and do not have as-left or as-found conditions that would indicate drift of the component setpoint. These devices are considered not trendable and the requirements of the Notes are not required to be applied to the mechanical portion of the functions. Where a non-trendable component provides signal input to other channel components that can be trended, the remaining components must be evaluated in accordance with the Notes. 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. For digital channel components, the as-found tolerance may be identical to the as-left tolerance since drift may not be an expected error. In these cases a channel as-found value outside the as-left condition may be cause for component assessment. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument to service. These channels will also be identified in the Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY. The second Note requires that the as-left setting for the instrument be returned to within the as-left tolerance around the Limiting Trip Setpoint, or a value that is more conservative than the limiting trip setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left instrument setting cannot be returned to a setting within the as-left tolerance, then the instrument channel shall be declared inoperable. The second Note also requires that the LTSP and the methodology used to determine the LTSP, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in the TRM (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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

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. 2

INSERT 13

8

SR 3.3.1.6 1

This SR verifies individual channel actuation response times are less than or equal to the maximum values assumed in the accident analysis. Individual component response times are not modeled in the analyses. The analyses model the overall, or total, elapsed time from the point at which the parameter exceeds the analytical limit at the sensor to the point of rod insertion. Response time testing acceptance criteria for this unit are included in Reference 2. 12

7

(CRD trip breakers open)

Thus, this SR encompasses the reactor trip module components covered by LCO 3.3.3 and the operation of the mechanical components covered by LCO 3.3.4 (i.e., the CRD trip breakers).

2

1

A Note to the Surveillance indicates that neutron detectors are excluded from RPS 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. 1

INSERT 14

24

Response time tests are conducted on an [18] month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. Therefore, staggered testing results in response time verification of these devices every [18] months. The [18] month Frequency is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. 3 3 3

96

24

(the CRD breakers)

1 **INSERT 13**

SR 3.3.1.7

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the unit specific LTSP analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis. Whenever a resistance temperature detector (RTD) sensing element is replaced, the next required CHANNEL CALIBRATION of the RTD sensor is accomplished by an inplace qualitative calibration that compares the other sensing elements with the recently installed sensing element. A Note to the SR states that for Function 8, Flux – ΔFlux – Flow, only the flow rate measurement sensors are required to be calibrated.

The Frequency is justified by the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.7 for Function 5 is modified by two Notes as identified in Table 3.3.1-1. Function 5 is an LSSS for protection system instrument channels that protect reactor core or RCS pressure boundary Safety Limits. Some components (e.g., mechanical devices which have an on or off output or an open/close position such as limit switches, float switches, and proximity detectors) are not calibrated in the traditional sense and do not have as-left or as-found conditions that would indicate drift of the component setpoint. These devices are considered not trendable and the requirements of the Notes are not required to be applied to the mechanical portion of the functions. Where a non-trendable component provides signal input to other channel components that can be trended, the remaining components must be evaluated in accordance with the Notes. 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. For digital channel components, the as-found tolerance may be identical to the as-left tolerance since drift may not be an expected error. In these cases a channel as-found value outside the as-left condition may be cause for component assessment. Evaluation of instrument performance will verify that the instrument will continue to behave in accordance with design basis assumptions. The purpose of the assessment is to ensure confidence in the instrument performance prior to returning the instrument

1 **INSERT 13 (continued)**

to service. These channels will also be identified in the Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY. The second Note requires that the as-left setting for the instrument be returned to within the as-left tolerance around the LTSP, or a value that is more conservative than the LTSP. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left instrument setting cannot be returned to a setting within the as-left tolerance, then the instrument channel shall be declared inoperable. The second Note also requires that the LTSP and the methodology used to determine the LTSP, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in the TRM (Ref. 2).

1 **INSERT 14**

The response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic components in the channel.

BASES

REFERENCES

1. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety Related Instrumentation."
2. FSAR, Chapter [7]
3. FSAR, Chapter [14].
4. 10 CFR 50.49.
5. [Unit Specific Setpoint Methodology].
6. [Unit Specific Accident Analysis].
7. NUREG-0737, November 1979.
8. BAW-1893.
9. NRC SER for BAW-10167, Supplement 2, July 8, 1992.
10. BAW-10167, May 1986.

2. Technical Requirements Manual. (2)

Figure 7.2-1, UFSAR 7.2. (2) (3)

Table 15.1-2, UFSAR Section 15.1.2 (2) (3)

ISA 67.04-Part II-1994, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." (3)

8. UFSAR, Section 7.2.1. (2)

UFSAR, Section 15.0 (3)

NRC SER for Amendment No. 185 to Facility Operating License No. NPF-3. Davis-Besse. dated March 28, 1994. (1)

11. UFSAR, Section 7.8.1.1. (2)

7. ISA 67.04.02-2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation."

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1 BASES, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

5. Changes are made to reflect changes made to another Specification.

6. The discussion of the Required Actions in the Applicable Safety Analyses Section has been deleted since a similar discussion is found in the Background and Required Actions discussions.

7. Changes made to be consistent with the Specification.

8. Grammatical/editorial error corrected.

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

10. The Bases discussion associated with the intermediate range and the power range overlap has been deleted. This Bases requires an overlap check to be performed between the intermediate range and the power range monitors during the top of the scale of the intermediate range monitors and states there is an expected overlap of at least a decade. The current licensing basis does not include any overlap requirements for the power range monitors, which are the only neutron flux monitor requirements in ITS 3.3.1. In addition, these requirements are not consistent with the CHANNEL CHECK requirements in the actual Surveillance Requirement. The definition of CHANNEL CHECK states "A CHANNEL CHECK shall be qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter." The definition does not require an overlap check of any type of channel. This overlap check described in the Bases is an additional requirement, over and above the requirements in the actual Surveillance Requirement.

11. The Bases Background discussions have been deleted because the information is duplicative of other discussions within the Bases Background section.

12. Editorial change with no change in intent.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1 BASES, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

13. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

14. The RPS affects all control rods, not just those defined as "CONTROL RODS."

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.3.2, REACTOR PROTECTION SYSTEM (RPS) MANUAL REACTOR TRIP

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.2 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE. — See ITS 3.3.1

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1 4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation. — See ITS 3.3.1

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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. — See ITS 3.3.1, ITS 3.3.9, and ITS 3.3.10

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

ITS

A01

LA01

Function

L01

LCO 3.3.2

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1. Manual Reactor Trip	2	1	2 (1)	1, 2 and *	1	
2. High Flux	4	2	3	1, 2	2#, 10	See ITS 3.3.1
3. RC High Temperature	4	2	3	1, 2	3#, 10	See ITS 3.3.1
4. Flux - ΔFlux - Flow	4	2(a)(b)	3	1, 2	2#, 10	See ITS 3.3.1
5. RC Low Pressure	4	2(a)	3	1, 2	3#, 10	See ITS 3.3.1
6. RC High Pressure	4	2	3	1, 2	3#, 10	See ITS 3.3.1
7. RC Pressure-Temperature	4	2(a)	3	1, 2	3#, 10	See ITS 3.3.1
8. High Flux/Number of Reactor Coolant Pumps On	4	2(a)(b)	3	1, 2	3#, 10	See ITS 3.3.1
9. Containment High Pressure	4	2	3	1, 2	3#, 10	See ITS 3.3.1
10. Intermediate Range, Neutron Flux and Rate	2	N/A	2(c)	1, 2 and *	4	See ITS 3.3.10
11. Source Range, Neutron Flux and Rate						See ITS 3.3.9
A. Startup	2	N/A	2	2## and *	5	See ITS 3.3.9
B. Shutdown	2	N/A	1	3, 4 and 5	6	See ITS 3.3.9
12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#, 8#	See ITS 3.3.4
13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#	See ITS 3.3.3
14. Shutdown Bypass High Pressure	4	2	3	2**, 3** 4**, 5**	6#	See ITS 3.3.1
15. CR Relays	2	2	2	1, 2 and *	9#	See ITS 3.3.4

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ITS

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TABLE 3.3-1 (Continued)

TABLE NOTATION

APPLICABILITY

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

**When Shutdown Bypass is actuated.

See ITS 3.3.1

#The provisions of Specification 3.0.4 are not applicable.

See ITS 3.3.1, ITS 3.3.3, and ITS 3.3.4

##High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels.

See ITS 3.3.9

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

See ITS 3.3.1

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.

See ITS 3.3.10

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers.

L01 M01

Add proposed ACTIONS A, B, and C

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.

See ITS 3.3.1

ITS

A01

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
SR 3.3.2.1	1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.	
	2. High Flux	S	D(2), and Q(6,9)	N.A.	1, 2	
	3. RC High Temperature	S	R	SA(9)	1, 2	
	4. Flux - ΔFlux - Flow	S(4)	M(3) and Q(6,7,9)	N.A.	1, 2	
	5. RC Low Pressure	S	R	SA(9)	1, 2	See ITS 3.3.1
	6. RC High Pressure	S	R	SA(9)	1, 2	
	7. RC Pressure-Temperature	S	R(10)	SA(9,10)	1, 2	
	8. High Flux/Number of Reactor Coolant Pumps On	S	Q(6,9)	N.A.	1, 2	
	9. Containment High Pressure	S	E	SA(9)	1, 2	See ITS 3.3.10
	10. Intermediate Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	1, 2 and *	See ITS 3.3.9
	11. Source Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	2, 3, 4 and 5	See ITS 3.3.4
	12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *	See ITS 3.3.3
	13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *	See ITS 3.3.1
	14. Shutdown Bypass High Pressure	S	R	SA(9)	2**, 3**, 4**, 5**	See ITS 3.3.4
	15. SCR Relays	N.A.	N.A.	R	1, 2 and *	

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ITS

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TABLE 4.3-1 (Continued)

Notation

SR 3.3.2.1 (1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows:

$\frac{RTP}{TP}$ [API_O - API_I] = Offset Error

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5%

(4) - AXIAL POWER IMBALANCE and loop flow indications only.

See ITS 3.3.1

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days.

See ITS 3.3.9 and ITS 3.3.10

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

See ITS 3.3.1, ITS 3.3.9 and ITS 3.3.10

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL.

See ITS 3.3.1

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers.

See ITS 3.3.4

(9) - Performed on a STAGGERED TEST BASIS.

See ITS 3.3.1, ITS 3.3.3, and ITS 3.3.4

(10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the Updated Safety Analysis Report.

See ITS 3.3.1

See ITS 3.3.3, ITS 3.3.4, and ITS 3.3.10

* - With any control rod drive trip breaker closed.

** - When Shutdown Bypass is actuated.

See ITS 3.3.1

ITS

A01

Table 2.2-1 Reactor Protection System Instrumentation Trip Setpoints

Functional unit	Allowable values
1. Manual reactor trip	Not applicable.
2. High flux	≤105.1% of RATED THERMAL POWER with four pumps operating*
	≤80.6% of RATED THERMAL POWER with three pumps operating*
3. RC high temperature	≤618°F*
4. Flux -- Δflux/flow[1]	Pump allowable values not to exceed the limit lines shown in in the CORE OPERATING LIMITS REPORT for four and three pump operation.*
5. RC low pressure[1]	≥1900.0 psig*
6. RC high pressure	≤2355.0 psig*
7. RC pressure-temperature[1]	≥(16.25 T_{out} °F – 7899.0) psig*
8. High flux/number of RC pumps on[1]	≤55.1% of RATED THERMAL POWER with one pump operating in each loop*
	≤0.0% of RATED THERMAL POWER with two pumps operating in one loop and no pumps operating in the other loop*
	≤0.0% of RATED THERMAL POWER with no pumps operating or only one pump operating*
9. Containment pressure high	≤4 psig*

A01

See ITS 3.3.1

DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTION SYSTEM (RPS) MANUAL REACTOR TRIP

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-1 does not provide any actions for two inoperable Manual Reactor Trip channels, thus entry into CTS 3.0.3 is required. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.2 ACTION A requires entry when the Manual Reactor Trip Function is inoperable and requires the restoration of the Function to OPERABLE status within 1 hour. ITS 3.3.2 ACTION B requires entry when ACTION A is not met during MODES 1, 2, and 3 and requires the plant to be in MODE 3 with the Control Rod Drive trip breakers open within 6 hours. ITS 3.3.2 ACTION C requires entry when ACTION A is not met during MODES 4 and 5 and requires the Control Rod Drive trip breakers to be opened within 6 hours. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3 when two RPS Manual Reactor Trip channels are inoperable and requires all CRD trip breakers to be opened within 7 hours.

This change is acceptable because the proposed default condition will require the plant to be in a condition where the RPS instrumentation is no longer required to be OPERABLE. The proposed Completion Times are consistent with the time currently required for the unit to reach MODE 3 in a safe manner. The Required Action to also open the CRD trip breakers is consistent with the requirement in CTS Table 3.3-1 to open the CRD trip breakers when one channel is inoperable and is consistent with the Applicability. This change is designated as more restrictive since the CRD trip breakers must now be opened.

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 RPS instrumentation has three columns stating various requirements for each Functional Unit. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS 3.3.2 does not retain the "TOTAL NO. OF CHANNELS" or "CHANNELS TO TRIP" columns. This changes the CTS by

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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.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS Table 3.3-1 requires as a minimum two Manual Reactor Trip channels to be OPERABLE. CTS Table 3.3-1 ACTION 1 requires entry with the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and requires restoration of the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers. ITS LCO 3.3.2 requires the RPS Manual Trip Function to be OPERABLE. This changes the CTS by reducing the required Manual Reactor Trip channels from "2" to "1" and deleting the Action associated with one of the two channels inoperable.

The purpose of the RPS Manual Reactor Trip channels are to provide a backup to the automatic trip functions and allows operators to shut down the reactor whenever any parameter is rapidly trending toward its trip setpoint. ITS LCO 3.3.2 only requires the RPS Manual Reactor Trip Function to be OPERABLE. This change reduces the required Manual Reactor Trip channels from "2" to "1." This change is acceptable because the design includes two redundant Manual Reactor Trip channels (push buttons). Depressing either push button will remove power from all four control rod drive trip breakers, initiating a reactor trip. Furthermore, the RPS Manual Reactor Trip channels are not credited in the safety analyses. They are used as a backup to the automatic trip functions, and either of the two RPS Manual Reactor Trip Function channels is sufficient to perform this backup function. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.2 Reactor Protection System (RPS) Manual Reactor Trip

3.3.1.1, Table 3.3-1 Functional Unit 1

LCO 3.3.2 The RPS Manual Reactor Trip Function shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5 with any CONTROL ROD drive (CRD) trip breaker in the closed position and the CRD System capable of rod withdrawal. (1)

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01	A. Manual Reactor Trip Function inoperable.	A.1 Restore Function to OPERABLE status.	1 hour
DOC M01	B. Required Action and associated Completion Time not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Open all CRD trip breakers.	6 hours 6 hours
DOC M01	C. Required Action and associated Completion Time not met in MODE 4 or 5.	C.1 Open all CRD trip breakers.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.3.1.1.1, Table 4.3-1 Functional Unit 1	SR 3.3.2.1	Perform CHANNEL FUNCTIONAL TEST.	Once prior to each reactor startup if not performed within the previous 7 days

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, REACTOR PROTECTION SYSTEM (RPS) MANUAL REACTOR TRIP

1. The defined term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of a system.

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

B 3.3 INSTRUMENTATION

B 3.3.2 Reactor Protection System (RPS) Manual Reactor Trip

BASES

BACKGROUND

The RPS Manual Reactor Trip provides the operator with the capability to trip the reactor from the control room in the absence of any other trip condition. Manual trip is provided by a trip push button on the main control board. This push button operates four electrically independent switches, one for each train. This trip is independent of the automatic trip system. As shown in Figure 1, FSAR, Chapter 7 (Ref. 1), power for the CONTROL ROD drive (CRD) breaker undervoltage coils and contactor coils comes from the reactor trip modules (RTMs). The manual trip switches are located between the RTM output and the breaker undervoltage coils. Opening of the switches opens the lines to the breakers, tripping them. The switches also energize the breaker shunt trip mechanisms. There is a separate switch in series, with the output of each of the four RTMs. All switches are actuated through a mechanical linkage from a single push button. INSERT 1

located in the control room and mounted on either side of the rod control panel

two

s

Each

eight

contacts

side of the undervoltage coil for each breaker

1

are two

es

Eight switch contacts

push button

APPLICABLE SAFETY ANALYSES

The Manual Reactor Trip ensures that the control room operator can initiate a reactor trip at any time. The Manual Reactor Trip Function is required as a backup to the automatic trip functions and allows operators to shut down the reactor whenever any parameter is rapidly trending toward its trip setpoint.

does not satisfy any criteria

however, it is retained for the overall redundancy and diversity of the RPS as required by the NRC

The Manual Reactor Trip Function satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

1

LCO

The LCO on the RPS Manual Reactor Trip requires that the trip shall be OPERABLE whenever the reactor is critical or any time any control rod breaker is closed and rods are capable of being withdrawn, including shutdown bypass. This enables the operator to terminate any reactivity excursion that in the operator's judgment requires protective action, even if no automatic trip condition exists.

eight

The Manual Reactor Trip Function is composed of four electrically independent trip switches sharing a common mechanical push button.

1

switch contacts

1

There are two separate push button switches, and only one of the two are required for the Manual Reactor Trip Function to be OPERABLE.

1

INSERT 1

Pressing either push button will remove power from all four CRD trip breakers, initiating a reactor trip (Ref. 1).

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BASES

APPLICABILITY

The Manual Reactor Trip Function is required to be OPERABLE in MODES 1 and 2. It is also required to be OPERABLE in MODES 3, 4, and 5 if any CRD trip breaker is in the closed position and if the CRD System is capable of rod withdrawal. The only safety function of the RPS is to trip the CONTROL RODS; therefore, the Manual Reactor Trip Function is not needed in MODE 3, 4, or 5 if the reactor trip breakers are open or if the CRD System is incapable of rod withdrawal. Similarly, the RPS Manual Reactor Trip is not needed in MODE 6 when the CONTROL RODS are decoupled from the CRDs. (2) (2)

ACTIONS

A.1

Condition A applies when the Manual Reactor Trip Function is found inoperable. One hour is allowed to restore Function to OPERABLE status. The automatic functions and various alternative manual trip methods, such as removing power to the RTMs, are still available. The 1 hour Completion Time is sufficient time to correct minor problems.

B.1 and B.2

With the Manual Reactor Trip Function inoperable and unable to be returned to OPERABLE status within 1 hour in MODE 1, 2, or 3, the unit must be placed in a MODE in which manual trip is not required. Required Action B.1 and Required Action B.2 place the unit in at least MODE 3 with all CRD trip breakers open within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. (condition) (4)

C.1

With the Manual Reactor Trip Function inoperable and unable to be returned to OPERABLE status within 1 hour in MODE 4 or 5, the unit must be placed in a MODE in which manual trip is not required. To achieve this status, all CRD trip breakers must be opened. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to open all CRD trip breakers without challenging unit systems. (condition) (4)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the Manual Reactor Trip Function. This test verifies the OPERABILITY of the Manual Reactor Trip by actuation of the CRD trip breakers. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency shall be once prior to each reactor startup (i.e., prior to each entry into MODE 2) if not performed within the preceding 7 days to ensure the OPERABILITY of the Manual Reactor Trip Function prior to achieving criticality. The Frequency was developed in consideration that these Surveillances are only performed during a unit outage. (U)

REFERENCES

1. FSAR, Chapter [7]. Section 7.2.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2 BASES, REACTOR PROTECTION SYSTEM (RPS) MANUAL REACTOR TRIP

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to reflect changes made to the Specification.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made to reflect the Specification.

5. The discussion of a successful test of the required contact(s) of a channel relay in ISTS SR 3.3.2.1 has been deleted since the end device (CRD trip breaker) is opened during the performance of this test.

6. Editorial change for clarity.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.2, REACTOR PROTECTION SYSTEM (RPS) MANUAL REACTOR TRIP

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 3

ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE.

See ITS 3.3.1

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1 4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation.

See ITS 3.3.1

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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.

See ITS 3.3.1, ITS 3.3.9, and ITS 3.3.10

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

ITS

A01

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1. Manual Reactor Trip	2	1	2	1, 2 and *	1	See ITS 3.3.2
2. High Flux	4	2	3	1, 2	2#, 10	See ITS 3.3.1
3. RC High Temperature	4	2	3	1, 2	3#, 10	
4. Flux - ΔFlux - Flow	4	2(a)(b)	3	1, 2	2#, 10	
5. RC Low Pressure	4	2(a)	3	1, 2	3#, 10	
6. RC High Pressure	4	2	3	1, 2	3#, 10	
7. RC Pressure-Temperature	4	2(a)	3	1, 2	3#, 10	
8. High Flux/Number of Reactor Coolant Pumps On	4	2(a)(b)	3	1, 2	3#, 10	
9. Containment High Pressure	4	2	3	1, 2	3#, 10	
10. Intermediate Range, Neutron Flux and Rate	2	N/A	2(c)	1, 2 and *	4	See ITS 3.3.10
11. Source Range, Neutron Flux and Rate						See ITS 3.3.9
A. Startup	2	N/A	2	2## and *	5	
B. Shutdown	2	N/A	1	3, 4 and 5	6	
12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#, 8#	See ITS 3.3.4
13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7# A	
14. Shutdown Bypass High Pressure	4	2	3	2**, 3** 4**, 5**	6#	See ITS 3.3.1
15. CR Relays	2	2	2	1, 2 and *	9#	See ITS 3.3.4

LA01

A02

A03

A02

LA01

4

LCO 3.3.3

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ITS

A01

TABLE 3.3-1 (Continued)

TABLE NOTATION

APPLICABILITY

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

**When Shutdown Bypass is actuated. — See ITS 3.3.1

~~#The provisions of Specification 3.0.4 are not applicable.~~ — A03

~~##~~High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels. — See ITS 3.3.9

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect. — See ITS 3.3.1

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect. — See ITS 3.3.10

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers. — See ITS 3.3.2

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours. — See ITS 3.3.1

ITS

A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10^{-10} amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue.

See ITS 3.3.9

ACTION 6 - 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 within one hour and at least once per 12 hours thereafter.

See ITS 3.3.1 and ITS 3.3.9

ACTION A

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition, or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

M01

Add proposed Required Action A.2

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.

L01

Add proposed ACTIONS B and C

M02

A01

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
	1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.	See ITS 3.3.2
	2. High Flux	S	D(2), and Q(6,9)	N.A.	1, 2	
	3. RC High Temperature	S	R	SA(9)	1, 2	
	4. Flux - ΔFlux - Flow	S(4)	M(3) and Q(6,7,9)	N.A.	1, 2	
	5. RC Low Pressure	S	R	SA(9)	1, 2	See ITS 3.3.1
	6. RC High Pressure	S	R	SA(9)	1, 2	
	7. RC Pressure-Temperature	S	R(10)	SA(9,10)	1, 2	
	8. High Flux/Number of Reactor Coolant Pumps On	S	Q(6,9)	N.A.	1, 2	
	9. Containment High Pressure	S	E	SA(9)	1, 2	See ITS 3.3.10
	10. Intermediate Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	1, 2 and *	See ITS 3.3.9
	11. Source Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	2, 3, 4 and 5	See ITS 3.3.4
	12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *	
SR 3.3.3.1	13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *	See ITS 3.3.1
	14. Shutdown Bypass High Pressure	S	R	SA(9)	2**, 3**, 4**, 5**	
	15. SCR Relays	N.A.	N.A.	R	1, 2 and *	See ITS 3.3.4

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ITS

A01

TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days. — See ITS 3.3.2 and ITS 3.3.4

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows:

$\frac{RTP}{TP}[API_O - API_I]$ = Offset Error

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5%

(4) - AXIAL POWER IMBALANCE and loop flow indications only. — See ITS 3.3.1

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days. — See ITS 3.3.9 and ITS 3.3.10

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION. — See ITS 3.3.1, ITS 3.3.9 and ITS 3.3.10

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL. — See ITS 3.3.1

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers. — See ITS 3.3.4

SR 3.3.3.1 Frequency

(9) - Performed on a STAGGERED TEST BASIS.

(10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the Updated Safety Analysis Report. — See ITS 3.3.1

Applicability

* - With any control rod drive trip breaker closed.

** - When Shutdown Bypass is actuated. — See ITS 3.3.1

DISCUSSION OF CHANGES
ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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 Functional Unit 13 requires 2 RTMs per trip system. ITS LCO 3.3.3 requires four channels of RPS RTMs to be OPERABLE. This changes the CTS by defining the total number of channels required to be OPERABLE instead of the minimum number of channels required per trip system.

This change is acceptable because the number of required channels has not changed. CTS Table 3.3-1 Functional Unit 13 requires 2 RTM per trip system. Since there are two trip systems, the total number of required channels is four. ITS LCO 3.3.3 requires four RTM to be OPERABLE. 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 13 (RTM) includes a Note (#) that applies to ACTION 7 and states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.3 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.3 ACTION A requires either a trip of the associated trip breaker or to remove power from the associated CRD trip breaker and to physically remove the inoperable RTM. If these actions are accomplished the plant can continue to operate. Therefore, because the allowances in the ITS allow the plant to change a MODE or other specified condition in the Applicability this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-1 ACTION 7 covers the condition when one RTM is inoperable and requires the placement of the inoperable channel in the trip condition or the removal of power supplied to the control rod drive trip device associated with the inoperable channel within one hour. ITS 3.3.3 ACTION A requires the

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associated CRD trip breaker to be tripped or to remove power from the associated CRD trip breaker and to physically remove the inoperable RTM. This changes the CTS by providing an additional Required Action to remove the inoperable RTM and provides an action to trip the CRD breaker instead of just tripping the channel (i.e., module).

The purpose of CTS Table 3.3-1 ACTION 7 is to perform the required function of the inoperable RTM. The CTS Actions do not specifically perform all safety functions of the RTMs. Each RTM performs a two-out-of-four logic evaluation of the four RPS instrumentation channels and also provides an output signal of the protective channel status to the other RTMs. Therefore, when an RTM is inoperable, the associated CRD trip breaker must then be placed in a condition that is equivalent to a tripped condition for the RTM. ITS 3.3.3 Required Action A.1.1 or ITS 3.3.3 Required Action A.1.2 accomplishes this either by tripping the CRD trip breaker or by removing power to the CRD trip breaker. Tripping the inoperable CRD trip breaker or removing power from the path containing the inoperable CRD trip breaker removes one source of power to the CRDs. Power to hold up control rods is still provided via the parallel CRD trip device(s). Therefore, a reactor trip will not occur until a trip occurs on the other trip pathway. To ensure the trip signal is registered in the other channels, ITS 3.3.3 Required Action A.2 requires that the inoperable RTM be removed from the cabinet. This action causes the electrical interlocks to indicate a tripped channel in the remaining three RTMs. Operation in this condition is allowed indefinitely because the actions put the RPS into a one-out-of-three configuration. This change is acceptable since the proposed Required Actions perform the function of the RTM. This change is designated as more restrictive because a new Required Action has been added.

M02 CTS Table 3.3-1 requires entry into ACTION 7 if one channel is inoperable and does not provide any actions for two or more inoperable channels. If the requirements of the CTS Table 3.3-1 ACTION 7 are not met or if two or more channels are inoperable, entry into CTS 3.0.3 is required since no actions are specified. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in MODE 3. ITS 3.3.3 ACTION B, which is applicable if any Required Action and associated Completion Time of Condition A is not met in MODE 1, 2, or 3 or when two or more RTMs are inoperable in MODE 1, 2, and 3, requires the unit to be placed in MODE 3 within 6 hours and to either open all CRD trip breakers or remove power from all CRD trip breakers within 6 hours. ITS 3.3.3 ACTION C, which is applicable if any Required Action and associated Completion Time of Condition A is not met in MODE 4 or 5 or when two or more RTMs are inoperable in MODE 4 or 5, requires either all CRD trip breakers to be opened or power to be removed from all CRD trip breakers within 6 hours. This changes the CTS by providing a specific default Condition and Required Actions instead of requiring entry into CTS 3.0.3 when the actions for one inoperable channel are not met or when two or more channels are inoperable and reduces the time to reach MODE 3 from 7 hours to 6 hours. It also adds Required Actions to open all CRD trip breakers or to remove power to all CRD trip breakers.

DISCUSSION OF CHANGES
ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

This change is acceptable because the proposed default condition will require the plant to be in a condition where the RTM is no longer required to be OPERABLE. The Completion Times are consistent with the time currently required for the unit to reach these conditions in a safe manner (CTS Table 3.3-1 ACTION 1 for the Manual Reactor Trip Function). This change is designated as more restrictive since the 1 hour specified in CTS 3.0.3 to initiate action no longer applies and new Required Actions have been added to the ITS which are not applicable in the CTS.

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 RPS instrumentation has three columns stating various requirements for each Functional Unit. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS Table 3.3.3-1 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-1 Action 7b states that "one additional channel may be bypassed for up to 2 hours for surveillance testing per specification 4.3.1.1.1, and the inoperable channel may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel." The ITS does not retain this specific allowance, but allows the guidance provided in LCO 3.0.5 to

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DISCUSSION OF CHANGES
ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

control the amount of time an inoperable RTM can be bypassed in lieu of complying with the Required Actions. This changes the CTS by removing the specific time limits an inoperable RTM can be bypassed for testing.

The purpose of CTS Table 3.3-1 Action 7b is to allow a specific time for testing of other OPERABLE channels after the first channel was declared inoperable in CTS Table 3.3-1 Action 7a. This requirement is based upon the assumption that when it is time to test the other OPERABLE channels, the OPERABLE channels cannot be tested with the inoperable channel in trip. ITS LCO 3.0.5 is a generic allowance requirement that will allow the inoperable channel to be restored to service in order to perform Surveillances on the other OPERABLE channels in the associated Function. Thus, using this generic allowance, it is possible to test the remaining OPERABLE channels and there is no need for the allowances provided in CTS Table 3.3-1 Action 7b. The administrative controls required by ITS LCO 3.0.5 will ensure the time the RTM is returned to service or returned to meeting the requirements of ITS 3.3.3 ACTION A is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY of the other channels. In addition, this specific example (taking an inoperable channel out of the tripped condition) is discussed in the Bases of ISTS LCO 3.0.5. This change is designated as less restrictive because less stringent time limits to not meet the Required Actions are being applied in the ITS than were applied in the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.3 Reactor Protection System (RPS) - Reactor Trip Module (RTM)

3.3.1.1, Table 3.3-1 Functional Unit 13

LCO 3.3.3 Four RTMs shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5 with any CONTROL ROD drive (CRD) trip breaker in the closed position and the CRD System capable of rod withdrawal. (4)

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-1 ACTION 7	A. One RTM inoperable.	A.1.1 Trip the associated CRD trip breaker. OR A.1.2 Remove power from the associated CRD trip breaker. AND A.2 Physically remove the inoperable RTM.	1 hour 1 hour 1 hour
DOC M02	B. Two or more RTMs inoperable in MODE 1, 2, or 3. OR (2) Required Action and associated Completion Time not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2.1 Open all CRD trip breakers. OR B.2.2 Remove power from all CRD trip breakers.	6 hours 6 hours 6 hours

of Condition A (1)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two or more RTMs inoperable in MODE 4 or 5.	C.1 Open all CRD trip breakers.	6 hours
OR	OR	
	C.2 Remove power from all CRD trip breakers.	6 hours

DOC M02

Required Action and associated Completion Time not met in MODE 4 or 5.

of Condition A

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform CHANNEL FUNCTIONAL TEST.	[23] days on a STAGGERED TEST BASIS

Table 4.3-1 Functional Unit 13 including Note (9)

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

1. These changes have been made consistent with the Writer's Guide for the Standard Improved Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.ii.

2. These corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Sections 4.1.6.b and 4.1.6.i.5.v.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. The defined term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of the system.

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

B 3.3 INSTRUMENTATION

B 3.3.3 Reactor Protection System (RPS) - Reactor Trip Module (RTM) 1

BASES

BACKGROUND 7.2-1 The RPS consists of four independent protection channels, each containing an RTM. Figure [\], FSAR, Chapter [7] (Ref. 1), shows a typical RPS protection channel and the relationship of the RTM to the RPS instrumentation, manual trip, and CONTROL ROD drive (CRD) trip devices. The RTM receives bistable trip signals from the functions in its own channel and channel trip signals from the other three RPS - RTMs. The RTM provides these signals to its own two-out-of-four trip logic and transmits its own channel trip signal to the two-out-of-four logic of the RTMs in the other three RPS channels. Whenever any two RPS channels transmit channel trip signals, the RTM logic in each channel actuates to remove 120 VAC power from its associated CRD trip device. U Section 7.2 2 3 1

The RPS trip scheme consists of series contacts that are operated by bistables. During normal unit operations, all contacts are closed and the RTM channel trip relay remains energized. However, if any trip parameter exceeds its setpoint, its associated contact opens, which de-energizes the channel trip relay.

When an RTM channel trip relay de-energizes, several things occur:

a. Each of the four (4) output logic relays "informs" its associated RPS channel that a reactor trip signal has occurred in the tripped RPS channel. 4

b. The contacts in the trip device circuitry, powered by the tripped channel, open, but the trip device remains energized through the closed contacts from the other RTMs. (This condition exists in each RPS - RTM. Each RPS - RTM controls power to a trip device.) and 4

c. The contact in parallel with the channel reset switch opens and the trip is sealed in. To re-energize the channel trip relay, the channel reset switch must be depressed after the trip condition has cleared.

When the second RPS channel senses a reactor trip condition, the output logic relays for the second channel de-energize and open contacts that supply power to the trip devices. With contacts opened by two separate RPS channels, power to the trip devices is interrupted and the CONTROL RODS fall into the core. 1

BASES

BACKGROUND (continued)

A minimum of two out of four RTMs must sense a trip condition to cause a reactor trip. Also, because the bistable relay contacts for each function are in series with the channel trip relays, two channel trips caused by different trip functions can result in a reactor trip.

APPLICABLE SAFETY ANALYSES

Accident analyses rely on a reactor trip for protection of reactor core integrity and reactor coolant pressure boundary integrity and reactor building OPERABILITY. A reactor trip must occur when needed to prevent accident conditions from exceeding those calculated in the accident analyses. More detailed descriptions of the applicable accident analyses are found in the bases for each of the RPS trip Functions in LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation."

RTM response time is included in the overall required response time for each RPS trip and is not specified separately.

The RTMs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The RTM LCO requires all four RTMs to be OPERABLE. Failure of any RTM renders a portion of the RPS inoperable and reduces the reliability of the affected Functions.

Four RTMs must be OPERABLE to ensure that a reactor trip would occur if needed any time the reactor is critical. OPERABILITY is defined as the RTM being able to receive and interpret trip signals from its own and other RPS channels and to open its associated trip device.

The requirement of four channels to be OPERABLE ensures that a minimum of two RPS channels will remain OPERABLE if a single failure has occurred in one channel and if a second channel has been bypassed for surveillance or maintenance. This two-out-of-four trip logic also ensures that a single RPS channel failure will not cause an unwanted reactor trip. Violation of this LCO could result in a trip signal not causing a reactor trip when needed.

BASES

APPLICABILITY

The RTMs are required to be OPERABLE in MODES 1 and 2. They are also required to be OPERABLE in MODES 3, 4, and 5 if any CRD trip breakers are in the closed position and the CRD System is capable of rod withdrawal. The RTMs are designed to ensure a reactor trip would occur, if needed, ~~any time the reactor is critical~~ during these conditions. This condition can exist in all of these MODES; therefore, the RTMs must be OPERABLE.

ACTIONS

A.1.1, A.1.2, and A.2

When an RTM is inoperable, the associated CRD trip breaker must then be placed in a condition that is equivalent to a tripped condition for the RTM. Required Action A.1.1 or Required Action A.1.2 requires this either by tripping the CRD trip breaker or by removing power to the CRD trip ~~device~~ breaker. ~~Tripping one RTM or removing power opens one set of CRD trip devices.~~ INSERT 1 (5) (3) (1) Power to hold up CONTROL RODS is still provided via the parallel CRD trip device(s). Therefore, a reactor trip will not occur until a ~~second protection channel trips~~ trip occurs on the other trip pathway (3)

To ensure the trip signal is registered in the other channels, Required Action A.2 requires that the inoperable RTM be removed from the cabinet. This action causes the electrical interlocks to indicate a tripped channel in the remaining three RTMs. Operation in this condition is allowed indefinitely because the actions put the RPS into a one-out-of-three configuration. The 1 hour Completion Time is sufficient time to perform the Required Actions.

B.1, B.2.1, and B.2.2

INSERT 2

~~Condition B applies if two or more RTMs are inoperable or if the Required Actions of Condition A are not met within the required Completion Time in MODE 1, 2, or 3.~~ (1) In this case, the unit must be placed in a ~~MODE~~ condition (5) in which the LCO does not apply. This is done by placing the unit in at least MODE 3 with all CRD trip breakers open or with power from all CRD trip breakers removed within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems.

3 **INSERT 1**

Tripping (opening) the inoperable CRD trip breaker or removing power from the path containing the inoperable CRD trip breaker removes one source of power to the CRDs.

1 **INSERT 2**

Condition B applies if any Required Action and associated Completion Time of Condition A is not met in MODE 1, 2, or 3 or if two or more RTMs are inoperable in MODE 1, 2, or 3.

BASES

ACTIONS (continued)

C.1 and C.2

INSERT 3

Condition C applies if two or more RTMs are inoperable or if the Required Actions of Condition A are not met within the required Completion Time in MODE 4 or 5. In this case, the unit must be placed in a MODE in which the LCO does not apply. This is done by opening all CRD trip breakers or removing power from all CRD trip breakers. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to open all CRD trip breakers or remove power from all CRD trip breakers without challenging unit systems. (1) condition (5)

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1

----------REVIEWER'S NOTE----------
The CHANNEL FUNCTIONAL TEST Frequency is approved for all B&W power plants except for TMI based on an approved topical report. No further evaluations or justifications are required for the evaluated plants to incorporate the 23 day STAGGERED TEST BASIS Frequency. (6)

The SRs include performance of a CHANNEL FUNCTIONAL TEST every [23] days on a STAGGERED TEST BASIS. This test shall verify the OPERABILITY of the RTM and its ability to receive and properly respond to channel trip and reactor trip signals. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Calculations have shown that the Frequency (23 days) maintains a high level of reliability of the Reactor Trip System in BAW-10167A, Supplement 3 (Ref. 2). (2) if (7)

U

REFERENCES

1. FSAR, Chapter [7] — Section 7.2, Figure 7.2-1 (3)
2. BAW-10167A, Supplement 3, February 1998. (2)

1 **INSERT 3**

Condition C applies if any Required Action and associated Completion Time of Condition A is not met in MODE 4 or 5 or if two or more RTMs are inoperable in MODE 4 or 5.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.3 BASES, REACTOR PROTECTION SYSTEM (RPS)-REACTOR TRIP MODULE (RTM)

1. Changes are made to reflect changes made to the Specification.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

5. Changes are made to be consistent with the Specification.

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

7. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.3, REACTOR PROTECTION SYSTEM (RPS) - REACTOR TRIP MODULE (RTM)

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 4

ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE. — See ITS 3.3.1

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1, SR 3.3.4.2 4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation. — See ITS 3.3.1

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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. — See ITS 3.3.1, ITS 3.3.9, and ITS 3.3.10

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

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ITS

A01

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2	1	2	1, 2 and *	1
2. High Flux	4	2	3	1, 2	2#, 10
3. RC High Temperature	4	2	3	1, 2	3#, 10
4. Flux - ΔFlux - Flow	4	2(a)(b)	3	1, 2	2#, 10
5. RC Low Pressure	4	2(a)	3	1, 2	3#, 10
6. RC High Pressure	4	2	3	1, 2	3#, 10
7. RC Pressure-Temperature	4	2(a)	3	1, 2	3#, 10
8. High Flux/Number of Reactor Coolant Pumps On	4	2(a)(b)	3	1, 2	3#, 10
9. Containment High Pressure	4	2	3	1, 2	3#, 10
10. Intermediate Range, Neutron Flux and Rate	2	N/A	2(c)	1, 2 and *	4
11. Source Range, Neutron Flux and Rate					
A. Startup	2	N/A	2	2## and *	5
B. Shutdown	2	N/A	1	3, 4 and 5	6
12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	4 7#, 8# B, A
13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#
14. Shutdown Bypass High Pressure	4	2	3	2**, 3** 4**, 5**	6#
15. CR Relays	2	1	2	1, 2 and *	9# E

See ITS 3.3.2

See ITS 3.3.1

See ITS 3.3.10

See ITS 3.3.9

See ITS 3.3.3

See ITS 3.3.1

LA01

A02

A02

A03

LA01

A03

LA01

LCO 3.3.4.a

LCO 3.3.4.b

DAVIS-BESSE, UNIT 1

3/4 3-2

Amendment No. 128, 138, 185

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A01

TABLE 3.3-1 (Continued)

TABLE NOTATION

See ITS 3.3.1

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

**When Shutdown Bypass is actuated.

A03

†The provisions of Specification 3.0.4 are not applicable.

See ITS 3.3.9

††High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels.

See ITS 3.3.1

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

See ITS 3.3.10

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.

ACTION STATEMENTS

See ITS 3.3.2

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers.

See ITS 3.3.1

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.

ITS

A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10^{-10} amps on the IR instrumentation.

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue.

See ITS 3.3.9

See ITS 3.3.1 and ITS 3.3.9

ACTION 6 - 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 within one hour and at least once per 12 hours thereafter.

Add proposed ACTIONS Note

L01

ACTION B

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition. or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.

L02

Add proposed ACTIONS C and D

M01

ITS

A01

M01

Add proposed ACTIONS Note

L01

Add proposed ACTIONS C and D

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION A

ACTION 8 - With one of the Reactor Trip Breaker diverse trip features (undervoltage or shunt trip devices) inoperable, restore it to OPERABLE status in 48 hours or place the breaker in trip in the next hour.

M02

Add proposed Required Action A.2

L03

ACTION E

ACTION 9 - With one or both channels of SCR Relays inoperable, restore the channels to OPERABLE status during the next COLD SHUTDOWN exceeding 24 hours.

ACTION 10 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, within one hour, place one inoperable channel in trip and the second inoperable channel in bypass, and restore one of the inoperable channels to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and open the reactor trip breakers.

See ITS 3.3.1

ITS

A01

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
	1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.	See ITS 3.3.2
	2. High Flux	S	D(2), and Q(6,9)	N.A.	1, 2	See ITS 3.3.1
	3. RC High Temperature	S	R	SA(9)	1, 2	See ITS 3.3.1
	4. Flux - ΔFlux - Flow	S(4)	M(3) and Q(6,7,9)	N.A.	1, 2	See ITS 3.3.1
	5. RC Low Pressure	S	R	SA(9)	1, 2	See ITS 3.3.1
	6. RC High Pressure	S	R	SA(9)	1, 2	See ITS 3.3.1
	7. RC Pressure-Temperature	S	R(10)	SA(9,10)	1, 2	See ITS 3.3.1
	8. High Flux/Number of Reactor Coolant Pumps On	S	Q(6,9)	N.A.	1, 2	See ITS 3.3.1
	9. Containment High Pressure	S	E	SA(9)	1, 2	See ITS 3.3.1
	10. Intermediate Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	1, 2 and *	See ITS 3.3.10
	11. Source Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	2, 3, 4 and 5	See ITS 3.3.9
SR 3.3.4.1	12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *	LA02 L04
	13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *	See ITS 3.3.3
	14. Shutdown Bypass High Pressure	S	R	SA(9)	2**, 3**, 4**, 5**	See ITS 3.3.3
SR 3.3.4.2	15. SCR Relays	N.A.	N.A.	R	1, 2 and *	See ITS 3.3.1

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TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days. — L04

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows:

$\frac{RTP}{TP}$ [API_O - API_I] = Offset Error

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5%

(4) - AXIAL POWER IMBALANCE and loop flow indications only.

— See ITS 3.3.1

(5) - CHANNEL FUNCTIONAL TEST is not applicable. Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days. — See ITS 3.3.9 and ITS 3.3.10

(6) - Neutron detectors may be excluded from CHANNEL CALIBRATION. — See ITS 3.3.1, ITS 3.3.9, and ITS 3.3.10

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL. — See ITS 3.3.1

(8) - ~~The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers.~~ — LA02

SR 3.3.4.1 Frequency

(9) - Performed on a STAGGERED TEST BASIS.

(10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the Updated Safety Analysis Report.

— See ITS 3.3.1

APPLICABILITY

* - With any control rod drive trip breaker closed.

** - When Shutdown Bypass is actuated. — See ITS 3.3.1

DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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 Functional Unit 12 requires a minimum of two Control Rod Drive Trip Breakers per trip system to be OPERABLE. ITS LCO 3.3.4 requires four Control Rod Drive Trip Breakers to be OPERABLE. This changes the CTS by defining the total number of channels required to be OPERABLE instead of the minimum number of channels required per trip system.

This change is acceptable because the number of required channels has not changed. CTS Table 3.3-1 Functional Unit 12 requires a minimum of 2 Control Rod Drive Trip Breakers per trip system to be OPERABLE. Since there are two trip systems, the total number of required channels is four. ITS LCO 3.3.4 requires four Control Rod Drive Trip Breakers to be OPERABLE. 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 12 (Control Rod Drive Trip Breakers) includes a Note (#) that applies to ACTION 7 and ACTION 8 and states the provisions of Specification 3.0.4 are not applicable. In addition, CTS Table 3.3-1 Functional Unit 15 (CR Relays) includes the same Note that applies to ACTION 9. ITS 3.3.4 ACTIONS A, B, and E do not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

The purpose of the Note is to allow the plant to transition between modes with inoperable equipment. This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.4 ACTION B requires either a trip of the associated trip breaker or to remove power from the associated CRD trip breaker. ITS 3.3.4 ACTION A requires either a trip of the associated trip breaker or to remove power from the associated CRD trip breaker. If these actions are accomplished the plant can continue to operate. ITS 3.3.4 ACTION E requires inoperable SCR relay channels to be restored to OPERABLE status prior to entering MODE 4, when in MODE 5 for $\geq$ 24 hours. Whenever the plant discovers the inoperability a mode change is allowed. Therefore, the ITS allows the plant to change a MODE or other specified condition in the Applicability this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

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DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-1 Functional Unit 12 requires entry into ACTION 7 when one CRD Trip Breaker is inoperable and requires the CRD Trip Breaker to be placed in the trip condition within 1 hour or to remove power supplied to the CRD trip device associated with the inoperative channel. CTS Table 3.3-1 Functional Unit 12 requires entry into ACTION 8 when one of the CRD Trip Breaker diverse trip features (undervoltage or shunt trip devices) is inoperable and requires the restoration of the device within 48 hours or to place the breaker in the tripped condition within 1 hour. If any of these Actions are not met, CTS 3.0.3 would be entered requiring entry into Hot Standby (MODE 3) within 7 hours, Hot Shutdown (MODE 4) within 13 hours, and Cold Shutdown (MODE 5) within 37 hours, as applicable. ITS 3.3.4 ACTION C requires entry if in MODE 1, 2, or 3 with any Required Action and associated Completion Time not met and it requires the unit must be in MODE 3 within 6 hours with all CRD trip breakers open or with power removed from all CRD trip breakers. ITS 3.3.4 ACTION D requires entry if in MODE 4 or 5 with any Required Action and associated Completion Time not met and it requires the unit to open all CRD trip breakers or power must be removed from all CRD trip breakers within 6 hours. This changes the CTS by requiring the unit to be in MODE 3 in 6 hours instead of 7 hours and requires all CRD trip breakers to be tripped or to remove power from each CRD trip breaker within 6 hours if the ACTIONS for one or more CRD trip breakers could not be performed.

The purpose of ITS 3.3.4 ACTIONS C and D are to place the plant in a condition in which the LCO does not apply. This change requires the unit to be in MODE 3 in 6 hours instead of 7 hours and requires all CRD trip breakers to be tripped or to remove power from each CRD trip breaker within 6 hours if the ACTIONS for one or more CRD trip breakers could not performed. CTS 3.0.3 only requires the plant to be Hot Standby (MODE 3) within 7 hours, Hot Shutdown (MODE 4) within 13 hours, and Cold Shutdown (MODE 5) within 37 hours. It does not require the plant to exit the applicability. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. This change is acceptable because it provides sufficient time to perform the Required Actions. This change has been designated as more restrictive because This changes the CTS by requiring the unit to be in MODE 3 in 6 hours instead of 7 hours and requires all CRD trip breakers to be tripped or to remove power from each CRD trip breaker within 6 hours if the ACTIONS for one or more CRD trip breakers could not be performed.

M02 CTS Table 3.3-1 Functional Unit 12 requires entry into ACTION 8 when one of the CRD Trip Breaker diverse trip features (undervoltage or shunt trip devices) is inoperable and ACTION 8 requires restoring the device within 48 hours or placing the breaker in the tripped condition within the next hour. ITS 3.3.4 Required Action A.1 requires the inoperable CRD trip breaker to be placed in trip condition within 48 hours. It does not include a requirement to restore the trip device. This changes the CTS by reducing the Completion Time to place the breaker in trip from 49 hours to 48 hours and deleting an ACTION that is not necessary to include in the ITS.

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DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

The purpose of CTS Table 3.3-1 ACTION 8 is to provide sufficient time to restore an inoperable trip breaker. This change requires actions to be taken within 48 hours instead of 49 hours. This change is acceptable because 48 hours is considered a sufficient amount of time to restore each inoperable CRD trip breaker to OPERABLE status, or to place it in trip. The deletion of the specific Action to restore the CRD trip breaker is acceptable, since a default condition (tripping the CRD trip breaker) is provided and restoring is always an option, even if not specifically stated. This change has been designated as more restrictive because it reduces the Completion Time to place a trip breaker in trip.

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 RPS instrumentation has three columns stating various requirements for each Functional Unit. These columns are labeled, "TOTAL NO. OF CHANNELS," "CHANNELS TO TRIP," and "MINIMUM CHANNELS OPERABLE." ITS 3.3.4 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.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.3-1 Functional Unit 12 requires the performance of a CHANNEL FUNCTIONAL TEST of the CRD trip breakers and associated Note 8 states that the test shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the reactor trip breakers. ITS SR 3.3.4.1 requires the performance of a CHANNEL FUNCTIONAL TEST of the CRD trip breakers but does not specify the details of the test. This changes the CTS by removing details on the scope of the CHANNEL FUNCTIONAL TEST from the CTS and placing the information in the Bases.

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DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

The removal of these details for performing a Surveillance Requirement 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 CHANNEL FUNCTIONAL TEST of the CRD trip breakers. 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 Functional Unit 12 requires entry into ACTION 7 when one CRD trip breaker is inoperable and requires the CRD trip breaker to be placed in the trip condition within 1 hour or to remove power supplied to the CRD trip device associated with the inoperative channel. CTS Table 3.3-1 Functional Unit 12 requires entry into ACTION 8 when one of the CRD trip breaker diverse trip features (undervoltage or shunt trip devices) is inoperable and requires the restoration of the device within 48 hours or to place the breaker in the tripped condition within 1 hour. With more than one CRD trip breaker inoperable or with more than one CRD trip breaker with a diverse trip feature inoperable, entry into LCO 3.0.3 is required and the plant must initiate action within one hour to be in MODE 3 within the next 6 hours. ITS 3.3.4 ACTIONS are modified by a Note that states "Separate Condition entry is allowed for each CRD trip device." ITS 3.3.4 ACTION A covers inoperabilities for one or more CRD trip breaker(s) undervoltage or shunt trip Functions. ITS 3.3.4 ACTION B covers inoperabilities for one or more CRD trip breaker(s) for reasons other than those in Condition A. This changes the CTS by allowing separate Condition entry for each CRD trip device thus eliminating the requirement to enter LCO 3.0.3 if more than one CRD trip breaker is inoperable. The addition of the default conditions (ITS 3.3.4 ACTIONS C and D) is discussed in DOC M01.

The purpose of CTS Table 3.3-1 ACTIONS 7 and 8 is to allow a short time to restore the devices to OPERABLE status. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change will allow separate Condition entry for each CRD trip device thus eliminating the requirement to enter LCO 3.0.3 if more than one CRD trip breaker is inoperable. This change will effectively allow 48 hours to restore any CRD trip breaker undervoltage or shunt trip Functions. It will also allow one hour to restore any CRD trip breaker

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DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

for any other reason without require entry into LCO 3.0.3. This is acceptable since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable CRD trip breaker. ITS 3.3.4 will not allow both the undervoltage or shunt trip Functions of any device to be inoperable at the same time therefore the trip capability still exists. If a CRD trip breaker is inoperable for some other reason then ITS 3.3.4 only allows a short time to restore or trip the device. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-1 Action 7b states that "one additional channel may be bypassed for up to 2 hours for surveillance testing per specification 4.3.1.1.1, and the inoperable channel may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel." The ITS does not retain this specific allowance, but allows the guidance provided in LCO 3.0.5 to control the amount of time an inoperable CRD trip breaker can be bypassed in lieu of complying with the Required Actions. This changes the CTS by removing the specific time limits an inoperable CRD trip breaker can be bypassed for testing.

The purpose of CTS Table 3.3-1 Action 7b is to allow a specific time for testing other OPERABLE CRD trip breakers after the first CRD trip breaker was declared inoperable in CTS Table 3.3-1 Action 7a. This requirement is based upon the assumption that when it is time to test the other OPERABLE channels, the OPERABLE channels cannot be tested with the inoperable channel in trip. ITS LCO 3.0.5 is a generic allowance requirement that will allow the inoperable channel to be restored to service in order to perform Surveillances on the other OPERABLE channels in the associated Function. Thus, using this generic allowance, it is possible to test the remaining OPERABLE channels and there is no need for the allowance provided in CTS Table 3.3-1 Action 7b. The administrative controls required by ITS LCO 3.0.5 will ensure the time the CRD trip breaker is returned to service or returned to meeting the requirements of ITS 3.3.4 ACTION B is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY of the other channels. In addition, this specific example (taking an inoperable channel out of the tripped condition) is discussed in the Bases of ISTS LCO 3.0.5. This change is designated as less restrictive because less stringent time limits to not meet the Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-1 ACTION 8 requires the CRD trip breaker to be placed in the tripped condition. ITS 3.3.4 ACTION A includes this same Required Action but provides an option to remove power from the associated CRD trip breaker. This changes the CTS by providing an option to remove power from the associated CRD trip breaker instead of tripping the CRD breaker.

The purpose of the CTS Table 3.3-1 ACTION 8 is to perform the safety function of the CRD trip breaker. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response

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DISCUSSION OF CHANGES
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change provides an option to the requirement to trip the inoperable reactor trip breakers. The action requires the removal of power from the inoperable CRD trip breaker if the CRD breaker is not tripped. This action will remove one source of power to the CRD mechanisms. This action is equivalent to tripping the CRD breaker because this also removes one source of power to the mechanism. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 7 – Relaxation of Surveillance Frequency - Non-24 Month Type Change)* CTS Table 4.3-1 Functional Unit 12, including Note 1 and Note 8, requires the performance of a CHANNEL FUNCTIONAL TEST of the CRD trip breakers, including the undervoltage and shunt trip devices, prior to each reactor startup if not performed in the previous 7 days. The ITS does not require this "during startup if not performed in the previous 7 days" test. This changes the CTS by deleting the requirement to perform the startup CHANNEL FUNCTIONAL TEST Surveillance on the CRD Trip Breakers, including the undervoltage and shunt trip devices.

The purpose of the CTS Table 4.3-1 Functional Unit 12 CHANNEL FUNCTIONAL TEST is to ensure CRD trip breakers are functioning properly. This change is acceptable because the normal periodic CHANNEL FUNCTIONAL TEST Surveillance Frequency is adequate to ensure that the CRD trip breakers are OPERABLE. This change deletes the requirement to perform the startup Surveillance on the CRD Trip Breakers, including the undervoltage and shunt trip devices. ITS SR 3.0.4 requires the normal periodic Surveillances to be performed and be current prior to entry into the applicable operational conditions. Once the applicable conditions are entered, the normal, periodic Surveillance Frequency provides adequate assurance of OPERABILITY. Therefore, the removal of this Frequency is considered acceptable. In addition, the CRD trip breakers are tested as part of the RPS Manual Reactor trip CHANNEL FUNCTIONAL TEST once prior to each reactor startup if not performed within the previous 7 days (ITS SR 3.3.2.1). This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.4 CONTROL ROD Drive (CRD) Trip Devices (8)

3.3.1.1, Table 3.3-1 Functional Units 12 and 15

LCO 3.3.4 The following CRD trip devices shall be OPERABLE:

a. Four ~~Two AC~~ CRD trip breakers; and (1) (2)

b. ~~Two DC CRD trip breaker pairs, and~~ (1)

c. ~~Eight electronic trip assembly (ETA) relays.~~ (1)

b. Two silicon controlled rectifier (SCR) relay trip channels.

3.3.1.1. Table 3.3-1 Functional Units 12 and 15, including Note *

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5 when any CRD trip breaker is in the closed position and the CRD System is capable of rod withdrawal.

ACTIONS

----------NOTE----------

DOC L01 Separate Condition entry is allowed for each CRD trip device.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Table 3.3-1 ACTION 8	A. One or more CRD trip breaker~~(s)~~ ~~[or breaker pair]~~ undervoltage or shunt trip Functions inoperable.	A.1 Trip the associated CRD trip breaker(s). .	48 hours	(7) (6) (3)
		OR		
		A.2 Remove power from the associated CRD trip breaker(s).	48 hours	(7)
Table 3.3-1 ACTION 7	B. One or more CRD trip breaker~~(s)~~ ~~[or breaker pair]~~ inoperable for reasons other than those in Condition A.	B.1 Trip the associated CRD trip breaker(s).	1 hour	(7) (6) (3)
		OR		
		B.2 Remove power from the associated CRD trip breaker(s).	1 hour	(7)

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more ETA relays inoperable.	C.1 Transfer affected CONTROL ROD group to power supply with OPERABLE ETA relays.	1 hour
	OR	
	C.2 Trip corresponding AC CRD trip breaker.	1 hour
DOC M01 D. Required Action and associated Completion Time not met in MODE 1, 2, or 3. (C) (of Condition A or B)	D.1 Be in MODE 3.	6 hours
	AND	
	D.2.1 Open all CRD trip breakers.	6 hours
	OR	
	D.2.2 Remove power from all CRD trip breakers.	6 hours
DOC M01 E. Required Action and associated Completion Time not met in MODE 4 or 5. (D) (of Condition A or B)	E.1 Open all CRD trip breakers.	6 hours
	OR (D)	
	E.2 Remove power from all CRD trip breakers.	6 hours

INSERT 2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.3.1.1.1, Table 4.3-1 Functional Unit 12 including Note 9	SR 3.3.4.1 Perform CHANNEL FUNCTIONAL TEST on CRD trip breakers	[23] days on a STAGGERED TEST BASIS

INSERT 3

CTS

4

INSERT 2

Table 3.3-1 ACTION 9	E.	----------NOTE--------- Required Action E.1 shall be completed whenever this Condition is entered. ---------- One or both SCR relay trip channels inoperable.	E.1 Restore the channel(s) to OPERABLE status.	Prior to entering MODE 4, when in MODE 5 for ≥ 24 hours

1

INSERT 3

4.3.1.1.1. Table 4.3-1 Functional Unit 15	SR 3.3.4.2	Perform CHANNEL FUNCTIONAL TEST on SCR relay trip channels.	24 months

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

1. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific design and current licensing basis.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

3. The brackets have been removed and the information deleted to reflect the plant specific design.

4. ISTS 3.3.4 ACTION C requires the transfer of affected CONTROL ROD group to a power supply with OPERABLE ETA relays or to trip the corresponding AC CRD trip breaker when one or more ETA relays inoperable. This action has been replaced with the current licensing basis requirement for inoperable silicon controlled rectifier relay trip channels. The Required Action is to restore the channel(s) to OPERABLE status prior to entering MODE 4, when in MODE 5 for ≥ 24 hours. This change is acceptable because the CRD trip breakers are still capable of tripping the plant even with a single failure of one CRD breaker in each trip system. Since ISTS 3.3.4 Conditions D and E do not apply to this new SCR Action, the Conditions have been modified to only apply to ISTS 3.3.4 Conditions A and B. The ISTS 3.3.4 ACTIONS D and E have also been renumbered and reordered consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.v. Thus, the SCR Action that replaces ISTS 3.3.4 ACTION C is now ITS 3.3.4 ACTION E, and ISTS 3.3.4 ACTIONS D and E are renumbered as ITS 3.3.4 ACTIONS C and D.

5. The brackets have been removed and the proper plant specific information/value has been provided.

6. Typographical error corrected.

7. Added the word "associated" to ITS 3.3.4 Required Actions A.1, A.2, B.1, and B.2, since without the amplifying information, the Required Actions imply that all CRD trip breakers must be tripped. All CRD trip breakers are required to be tripped only by ITS 3.3.4 Required Actions C.2.1 and D.1.

8. The defined term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of a system.

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

B 3.3 INSTRUMENTATION

B 3.3.4 CONTROL ROD Drive (CRD) Trip Devices (6)

BASES

two types of

BACKGROUND

four CRD trip breakers and two silicon controlled rectifier (SCR) relay trip channels.

trip systems

The Reactor Protection System (RPS) contains multiple CRD trip devices: two AC trip breakers, two DC trip breaker pairs, and eight electronic trip assembly (ETA) relays. The system has two separate paths (or channels), with each path having one AC breaker in series with either a pair of DC breakers or four ETA relays in parallel. Each path provides independent power to the CRDs. Either path can provide sufficient power to operate the entire CRD System. (1)

two

,

s

SCRs are utilized in the CRD power supply to energize the CRD mechanism (CRDM) windings.

7.4-1 U Section 7.4

Figure [1], FSAR, Chapter [7] (Ref. 1), illustrates the configuration of CRD trip devices. To trip the reactor, power to the CRDs must be removed. Loss of power causes the CRD's mechanisms to release the CONTROL RODS, which then fall by gravity into the core. (1) (2)

Power to CRDs is supplied from two separate unit sources through the AC trip circuit breakers. These breakers are designated A and B, and their undervoltage and shunt trip coils are powered by RPS channels A and B, respectively. From the circuit breakers, the CRD power travels through voltage regulators and stepdown transformers. These devices in turn supply redundant buses that feed the DC power supplies and the regulating rod power supplies. (1)

INSERT 1

The DC power supplies rectify the AC input and supply power to hold the safety rods in their fully withdrawn position. One of the redundant power sources supplies phase A; the other, phase C. Either phase being energized is sufficient to hold the rod. Two breakers are located on the output of each power supply. Each breaker controls power to one of the four safety rod groups. The undervoltage and shunt trip coils on the two circuit breakers on the output of one of the power supplies is controlled by RPS channel C. The other two breakers are controlled by RPS channel D. (1)

In addition to the DC power supplies, the redundant buses also supply power to the regulating and auxiliary power supplies. These power supplies consist of ETAs that are gated on by programming lamps. Programming lamp power is controlled by contactors (E and F), which are controlled by RPS power. One of the redundant programming lamp supplies is controlled by RPS channel C; the other, by RPS channel D.

1

INSERT 1

The CRD Control System trip system is designed so that when power is removed from the CRDM, the roller nuts disengage from the lead screw, and a free-fall gravity insertion of the control rods occurs. Two diverse and independent trip methods, in series, are provided for removal of power to the mechanisms. First, a trip is initiated when power is interrupted to the undervoltage coils of the main AC feeder breakers and to the undervoltage relays in the shunt trip circuits. Second, a trip is initiated when the gating signals to the SCRs are interrupted. Since parallel power feeds are provided, interruption of both feeds is required for trip action in either method of trip. Two diverse and independent methods of CRDM power interruption are provided in order to ensure that trip will occur when commanded.

The trip circuits consists of four independent RPS protective trip channels, four independent Anticipatory Reactor Trip System (ARTS) protective trip channels, and two manual reactor trip switches in series. The RPS protective trip channels are discussed in the Bases of LCO 3.3.3, "Reactor Protection System (RPS) - Reactor Trip Module (RTM)," while the manual trip switches are discussed in the Bases of LCO 3.3.2, "Reactor Protection System (RPS) Manual Reactor Trip." Each of the four RPS trip channels receives power from the RPS and is energized for the non-tripped (normal) condition. A channel is defined as tripped when it is de-energized.

The primary method of trip interrupts the three-phase AC power to the CRDM motor power supplies. Three-pole, metal-clad power circuit breakers equipped with instantaneous undervoltage coils and shunt trip devices are used as primary trip devices. Because two parallel power circuits feed the CRDM motor power supplies, two AC trip breakers are provided in series in each feed. RPS Channel 2 energizes the undervoltage coil of breaker A and RPS Channel 4 energizes the undervoltage coil of breaker C to form the trip mechanism for the main bus (Channel A). RPS Channel 1 energizes the undervoltage coil of breaker B and RPS Channel 3 energizes the undervoltage coil of breaker D to form the trip mechanism for the secondary bus (Channel B). The trip breaker can remain closed only if its undervoltage coil is energized. Upon loss of voltage at the undervoltage coil due to interruption by an RPS, ARTS or manual trip signal, the breaker trips (opens). Each trip breaker's shunt trip circuit operates as follows. An undervoltage sensing relay is installed in parallel with the undervoltage coil of the trip breaker. A voltage sensing relay monitoring the undervoltage relay will cause it to energize the shunt trip device which is powered by 125 VDC, thereby tripping the breaker, as a diverse and redundant trip.

The second trip method interrupts the gate control signals to the SCRs in each of the nine CRDM motor power supplies, and the motor return power supply. The trip is provided by means of an electronic trip relay (K2) connected across the undervoltage device of trip breakers C and D. Loss of power to a K2 relay will cause a contact to open to trip ten relays connected with their coils in parallel.

1

INSERT 1 (continued)

Contacts of these relays interrupt the gate control signals to the SCR's in each power supply. When the gate signals are interrupted, the SCR's will revert to their open state on the next negative half-cycle of the applied AC voltage, thus removing all power at the outputs of the motor power supplies. Because the power supplies have redundant halves, two sets of ten relays each are provided. RPS Channel 3 energizes one set of trip relays and RPS Channel 4 energizes the other set through auxiliary relays in the breakers. The trip relays can remain in their non-tripped state only if the associated RPS channel is energized. When an RPS channel trips, the associated trip relays de-energize, interrupting the SCR gate control signals.

BASES

BACKGROUND (continued)

The AC breaker and DC breakers are in series in one of the power supplies; whereas, the redundant AC breaker and DC breakers are in series in the other power supply to the CONTROL RODS. The logic required to cause a reactor trip is the opening of a circuit breaker in each of the redundant power supplies. (The pair of DC circuit breakers on the output of the power supply are treated as one breaker.) This is known as a one-out-of-two taken twice logic. The following examples illustrate the operation of the reactor trip circuit breakers.

a. If the A AC circuit breaker opens:

   1. The input power to associated DC power supply is lost and

   2. The SCR supply from the associated power source is lost.

b. If the D DC circuit breaker(s) and F contactors open:

   1. The output of the redundant DC power supply is lost and the safety rods de-energize and

   2. When the F contactor opens, programming lamp power is lost and the regulating rods will be de-energized.

c. The combination of (a) and (b) causes a reactor trip.

Any other combination of at least one circuit breaker opening in each power supply will cause a reactor trip.

In summary, two tripped RPS channels will cause a reactor trip. For example, a reactor trip occurs if RPS channel B senses a low Reactor Coolant System (RCS) pressure condition and if RPS channel C senses a variable low RCS pressure condition. When the channel B bistable relay de-energizes, the channel trip relay de-energizes and opens its associated contacts. The same thing occurs in channel C, except the variable lower pressure bistable relay de-energizes the channel C trip relay. When the output logic relays de-energize, the B and C contacts in the undervoltage and E and F contacts de-energize, all circuit breakers open, and programming lamp power is removed. All rods fall into the core, resulting in a reactor trip.

1

BASES

APPLICABLE SAFETY ANALYSES

Accident analyses rely on a reactor trip for protection of reactor core integrity, reactor coolant pressure boundary integrity, and reactor building OPERABILITY. A reactor trip must occur when needed to prevent accident consequences from exceeding those calculated in the accident analyses. The control rod insertion limits ensure that adequate rod worth is available upon reactor trip to shut down the reactor to the required SDM. Further, OPERABILITY of the CRD trip devices ensures that all CONTROL RODS (except Group 8) will trip when required. More detailed descriptions of the applicable accident analyses are found in the Bases for each of the individual RPS trip Functions in LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation."

The CRD trip devices satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires all of the CRD trip devices to be OPERABLE. Failure of any CRD trip device renders a portion of the RPS inoperable and reduces the reliability of the affected Functions. Without reliable CRD reactor trip circuit breakers and associated support circuitry, a reactor trip cannot occur when initiated either automatically or manually.

All CRD trip devices shall be OPERABLE to ensure that the reactor remains capable of being tripped any time it is critical. OPERABILITY is defined as the CRD trip device being able to receive a reactor trip signal and to respond to this trip signal by interrupting AC power to the CRDs. Both of the AC breaker's trip devices and the breaker itself must be functioning properly for the AC breaker to be OPERABLE.

Requiring all breakers and ETA relays to be OPERABLE ensures that at least one device in each of the two power paths to the CRDs will remain OPERABLE even with a single failure. Requiring all devices OPERABLE also ensures that a single failure will not cause an unwanted reactor trip.

APPLICABILITY

The CRD trip devices shall be OPERABLE in MODES 1 and 2, and in MODES 3, 4, and 5 when any CRD trip breaker is in the closed position and the CRD System is capable of rod withdrawal.

The CRD trip devices are designed to ensure that a reactor trip would occur if needed any time the reactor is critical. Since this condition can exist in all of these MODES, the CRD trip devices shall be OPERABLE.

BASES

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each CRD trip device.

Condition A 10

Condition A represents reduced redundancy in the CRD trip Function. Condition A applies when:

- One diverse trip Function (undervoltage or shunt trip device) is inoperable in one or more CRD trip breaker(s) [or breaker pair] or 4
- One diverse trip Function is inoperable in both DC trip breakers associated with one protection channel. In this case, the inoperable trip Function does not need to be the same for both breakers. 1

A.1 and A.2 10

If one of the diverse trip Functions on a CRD trip breaker [or breaker pair] 4 becomes inoperable, actions must be taken to preclude the inoperable CRD trip device from preventing a reactor trip when needed. This is done by manually tripping the inoperable CRD trip breaker or by removing power from the channel containing the inoperable CRD trip breaker. 1 Either of these actions places the affected CRDs in a one-out-of-two trip configuration, which precludes a single failure, which in turn could prevent tripping of the reactor. The 48 hour Completion Time has been shown to be acceptable through operating experience.

B.1 and B.2 Condition B 10

Condition B represents a loss of redundancy for the CRD trip Function. Condition B applies when:

- One or more CRD trip breaker(s) [or breaker pair] will not function 10 1 either undervoltage or shunt trip Functions, or 5
- Both diverse trip Functions are inoperable in one or both DC trip breakers associated with one protection channel. 1

for reasons other than an inoperable undervoltage or shunt trip Function

more CRD

BASES

ACTIONS (continued)

B.1 and B.2 (10)

Required Action B.1 and Required Action B.2 are the same as Required Action A.1 and Required Action A.2, but the Completion Time is shortened. The 1 hour Completion Time allowed to trip or remove power from the CRD trip breaker allows the operator to take all the appropriate actions for the inoperable breaker and still ensures that the risk involved is acceptable.

C.1 and C.2

Condition C represents a loss of redundancy for the CRD trip Function. Condition C applies when one or more ETA relays are inoperable. The preferred action is to restore the ETA relay to OPERABLE status. If this cannot be done, the operator can perform one of two actions to eliminate reliance on the failed ETA relay. This first option is to switch the affected control rod group to an alternate power supply. This removes the failed ETA relay from the trip sequence, and the unit can operate indefinitely. The second option is to trip the corresponding AC CRD trip breaker. This results in the safety function being performed, thereby eliminating the failed ETA relay from the trip sequence. The 1 hour Completion Time is sufficient to perform the Required Action. (6)

C

D.1, D.2.1, and D.2.2 (and associated Completion Time)

any B is (6)

If the Required Actions of Condition A, B, or C are not met within the required Completion Time in MODE 1, 2, or 3, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3, with all CRD trip breakers open or with power from all CRD trip breakers removed within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. (7)

condition

BASES

ACTIONS (continued)

D

E.1 and E.2

any

and associated Completion Time

B

is

If the Required Actions of Condition A, B, or C are not met within the required Completion Time in MODE 4 or 5, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, all CRD trip breakers must be opened or power from all CRD trip breakers removed within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to open all CRD trip breakers or remove power from all CRD trip breakers without challenging unit systems. INSERT 2

condition

6 7 6

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

----------REVIEWER'S NOTE----------
The CHANNEL FUNCTIONAL TEST Frequency is approved for all B&W plants except for TMI based on an approved topical report. No further evaluations or justifications are required for the evaluated plants to incorporate the 23 day STAGGERED TEST BASIS Frequency.

8

B.1 and B.2

SR 3.3.4.1 is to perform a CHANNEL FUNCTIONAL TEST every 23 days on a STAGGERED TEST BASIS. This test verifies the OPERABILITY of the trip devices by actuation of the end devices. Also, this test independently verifies the undervoltage and shunt trip mechanisms of the AC breakers. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Calculations have shown that the Frequency (23 days) maintains a high level of reliability of the Reactor Trip System in BAW-10167A, Supplement 3 (Ref. 2). INSERT 3

6 9 6

REFERENCES

1. FSAR, Chapter [7]. Section 7.4, Figure 7.4-1 U
2. BAW-10167A, Supplement 3, February 1998.

1 2

6

INSERT 2

E.1

Condition E represents a loss of redundancy for the CRD trip Function. Condition E applies when one or both SCR relay channels are inoperable. The action is to restore the channel(s) to OPERABLE status prior to entering MODE 4, when in MODE 5 for ≥ 24 hours.

The Completion Time is acceptable because the CRD breakers are still available to trip the reactor on an RPS, ARTS, or Manual Trip signal.

Condition E is modified by a Note requiring Required Action E.1 to be completed whenever the Condition is entered. The Note is necessary to ensure the inoperable SCR(s) are restored to OPERABLE status when MODE 5 is entered for ≥ 24 hours.

6

INSERT 3

SR 3.3.4.2

SR 3.3.4.2 is to perform a CHANNEL FUNCTIONAL TEST of the SCR relay trip channels every 24 months. This test verifies the OPERABILITY of the trip devices by actuation of the end devices. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.4 BASES, CONTROL ROD DRIVE (CRD) TRIP DEVICES

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Changes are made to be consistent with changes made to another Specification.

4. The brackets have been removed and the information deleted to reflect the plant specific design and current licensing basis.

5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

6. Changes are made to reflect changes made to the Specifications.

7. Changes are made to reflect the Specification.

8. The reviewers Note is deleted as it is not part of the plant specific ITS.

9. The discussion of a successful test of the required contact(s) of a channel relay in ISTS SR 3.3.4.1 has been deleted since the end device (CRD trip breaker) is opened during the performance of this test.

10. Changes made to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 2.7.2.c.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.4, CONTROL ROD DRIVE (CRD) TRIP DEVICES

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.3.5, SAFETY FEATURES ACTUATION SYSTEM (SFAS) INSTRUMENTATION

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

ITS

A01

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.5 3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

Add proposed ACTIONS Note

A02

ACTION A a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

ACTION A b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

SR Table Note 4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

~~4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.~~

L01

A03

SR 3.3.5.5 4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of ~~each~~ SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. ~~Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.~~

on a STAGGERED TEST BASIS

A04

~~* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.~~

A05

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ITS

A01

Table 3.3.5-1

TABLE 3.2-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LA01

A06

Add MODE 4

M01

A07

	FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
	1. INSTRUMENT STRINGS					
	a. DELETED	DELETED	DELETED	DELETED	DELETED	DELETED
3	b. Containment Pressure - High	4	2	3	1, 2, 3	10 A
4	c. Containment Pressure - High-High	4	2	3	1, 2, 3	10 A
1	d. RCS Pressure - Low	4	2	3	1, 2, 3*	10 A
2	e. RCS Pressure - Low-Low	4	2	3	1, 2, 3**	10 A
5	f. BHST Level - Low-Low	4	2	3	1, 2, 3	10 A
	2. OUTPUT LOGIC					
	a. Incident Level #1: Containment Isolation	2	1	2	1, 2, 3, 4	11
	b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	2	1	2	1, 2, 3, 4	11
	c. Incident Level #3: Low Pressure Injection	2	1	2	1, 2, 3, 4	11
	d. Incident Level #4: Containment Spray	2	1	2	1, 2, 3, 4	11
	e. Incident Level #5: Containment Sump Recirculation Permissive	2	1	2	1, 2, 3, 4	11

LCO 3.3.5

4

See ITS 3.3.7

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A01

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION	
3. MANUAL ACTUATION						
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12	See ITS 3.3.6
b. Containment Spray	2	2	2	1,2,3,4	12	See ITS 3.3.8 and ITS 3.8.1
4. SEQUENCE LOGIC CHANNELS						
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#	See ITS 3.8.1
b. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15#	See ITS 3.3.8
c. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15#	
5. INTERLOCK CHANNELS						
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#	See ITS 3.4.14
b. Pressurizer Heaters	2	2	2	3******	14	LA04

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ITS

A01

TABLE 3.3-3 (Continued)

TABLE NOTATION

Table 3.3-5-1 Footnote a

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

LA02

Table 3.3-5-1 Footnote b

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

*** DELETED

**** DELETED

See ITS 3.3.8

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

LA04

****** When either Decay Heat Isolation Valve is open.

A07

The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION A

ACTION 10 - With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.

SR 3.3.5.2 Note

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.3.7

Add proposed ACTION B

M02

A01

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit 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.

See ITS 3.3.6

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure ≥ 328 psig, both Decay Heat Isolation Valves (DH11 and DH12) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

See ITS 3.4.14

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

LA04

ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

See ITS 3.3.8 and 3.8.1

ITS

A01

Table 3.3.5-1

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION ALLOWABLE VALUES

	FUNCTIONAL UNIT	ALLOWABLE VALUES##
	INSTRUMENT STRINGS	
	a. DELETED	DELETED
3	b. Containment Pressure – High	≤ 19.38 psia
4	c. Containment Pressure - High-High	≤ 41.65 psia
1	d. RCS Pressure – Low	≥ 1576.2 psig
2	e. RCS Pressure - Low-Low	≥ 441.42 psig
5	f. BWST Level	≥ 101.6 and ≤ 115.4 in. H_2O
	SEQUENCE LOGIC CHANNELS	
	a. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	≥ 3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ≥ 6.4 and ≤ 7.9 sec
	b. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	≥ 2071 volts (dropout) and ≤ 2492 volts (pickup) with a time delay of ≥ 0.42 and ≤ 0.58 sec
	INTERLOCK CHANNELS	
	a. Decay Heat Isolation Valve and Pressurizer Heater	< 328 psig *

See ITS 3.3.8

See ITS 3.4.14

LA04

See ITS 3.4.14

LA03

* Referenced to the RCS Pressure instrumentation tap.

Allowable Values for CHANNEL FUNCTIONAL TEST

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TABLE 3.3-5

SAFETY FEATURES SYSTEM RESPONSE TIMES

DELETED

ITS

A01

SR 3.3.5.3, SR 3.3.5.4

SR 3.3.5.2

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	SR 3.3.5.1 CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
	1. INSTRUMENT STRINGS				
	a. DELETED	DELETED	DELETED	DELETED	DELETED
3	b. Containment Pressure - High	S - 1	E - 3	M(2) - 2	1, 2, 3
4	c. Containment Pressure - High-High	S - 1	E - 3	M(2) - 2	1, 2, 3
1	d. RCS Pressure - Low	S - 1	R - 4	M - 2	1, 2, 3
2	e. RCS Pressure - Low-Low	S - 1	R - 4	M - 2	1, 2, 3
5	f. BWST Level - Low-Low	S - 1	E - 4	M - 2	1, 2, 3
	2. OUTPUT LOGIC				
	a. Incident Level #1: Containment Isolation	S	E	M	1, 2, 3, 4
	b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
	c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
	d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
	e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
	3. MANUAL ACTUATION				
	a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	1, 2, 3, 4
	b. Containment Spray	NA	NA	M(1)	1, 2, 3

L02

Add MODE 4

M01

See ITS 3.3.7

See ITS 3.3.6

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ITS

A01

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
4. SEQUENCE LOGIC CHANNELS					See ITS 3.3.8 and ITS 3.8.1
a. Sequencer	S	NA	M	1, 2, 3, 4	See ITS 3.8.1
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A(3)	M(3)	1, 2, 3, 4	See ITS 3.3.8
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A(3)	M(3)	1, 2, 3, 4	
5. INTERLOCK CHANNELS					See ITS 3.4.14
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3	LA04
b. Pressurizer Heater	S	R	**	3 ##	

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days. — See ITS 3.3.6

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter. — L02

(3) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit. — See ITS 3.3.8

** See Specification 4.5.2.d.1 — See ITS 3.4.14

When either Decay Heat Isolation Valve is open. — LA04

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DISCUSSION OF CHANGES
ITS 3.3.5, SAFETY FEATURES ACTUATION SYSTEM (SFAS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.1 Actions and CTS Table 3.3-3 provide the compensatory actions to take when SFAS instrumentation is inoperable. ITS 3.3.5 ACTIONS provide the compensatory actions for inoperable SFAS Instrumentation. The ITS 3.3.5 ACTIONS include a Note that allows separate Condition entry for each Parameter. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable SFAS instrumentation Parameter.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFAS instrumentation Parameter to be separate and independent from the others. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.3.2.1.3 requires SAFETY FEATURES RESPONSE TIME testing of "each" SFAS function. ITS SR 3.3.5.5 is the SFAS RESPONSE TIME testing Surveillance, but in ITS Table 3.3.5-1, it is only required for Functions 1 (Reactor Coolant System Pressure - Low), 2 (Reactor Coolant System Pressure – Low Low, 3 (Containment Pressure – High), and 4 (Containment Pressure – High High). This changes the CTS by specifically stating that the Surveillance is only applicable to certain Functions, not "each" Function.

The purpose of CTS 4.3.2.1.3 is to ensure that the actuation response times are less than or equal to the maximum values assumed in the accident analysis. Technical Requirements Manual (TRM) Table 3.3-5, which was previously in CTS 3.3.5 as Table 3.3-5, only specifies response times for those SFAS Functions assumed in the Davis-Besse safety analyses. These response times were removed from CTS 3.3.5 and placed under Davis-Besse control as documented in the NRC Safety Evaluation Report for License Amendment 225, dated July 7, 1998. Prior to this removal, the Borated Water Storage Tank outlet valves response time was listed as "NA" (i.e., not applicable). This change is acceptable since ITS 3.3.5 requires SFAS RESPONSE TIME testing (ITS SR 3.3.5.5) for only those Functions listed in TRM Table 3.3-5. Furthermore, Function 5, Borated Water Storage Tank – Low Low, provides an alarm only – no automatic SFAS action is initiated by this Function. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 4.3.2.1.3 states, in part, that the SAFETY FEATURES RESPONSE TIME of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. The requirement specifies that each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL, where N is the total

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number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" column of Table 3.3-3. ITS SR 3.3.5.5 requires the verification of SFAS RESPONSE TIME every 24 months "on a STAGGERED TEST BASIS." The ITS definition of STAGGERED TEST BASIS is consistent with the CTS testing Frequency. This changes the CTS by utilizing the ITS definition of STAGGERED TEST BASIS.

This change is acceptable because the requirements for SFAS RESPONSE TIME testing for the SFAS Parameter 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 4.3.2.1.3 footnote * states that the response times (except for manual initiation) include the diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure. ITS SR 3.3.5.5 does not provide these details, however the definition of SFAS RESPONSE TIME states, in part, states "SFAS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its SFAS actuation setpoint at the channel sensor until the SFAS 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)." In addition, the definition states that "Times shall include diesel generator starting and sequence loading delays, where applicable." This changes the CTS by incorporating the details of the testing requirements into the SFAS RESPONSE TIME definition.

This change is acceptable because the requirements have not changed. The definition of SFAS RESPONSE TIME in ITS Section 1.1 states that "SFAS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its SFAS actuation setpoint at the channel sensor until the SFAS 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)." In addition, the definition states that "Times shall include diesel generator starting and sequence loading delays, where applicable. The SFAS RESPONSE TIME definition encompasses all aspects of the testing requirements currently included in the CTS 4.3.2.1.3 footnote *. This change is designated as administrative because it does not result in technical changes to the CTS.

A06 CTS Table 3.3-3 specifies the "TOTAL NO. OF UNITS" and the "MINIMUM UNITS OPERABLE" associated with each SFAS Instrument String. For CTS Table 3.3-3 Instrument String b, c, d, and e the number of units listed in the "TOTAL NO. OF UNITS" column is greater than that listed in the "UNITS OPERABLE" column. CTS Table 3.3-3 Action 10 specify the actions to take with the number of OPERABLE functional units one less than required by the "Total Number of Units" requirement. ITS LCO 3.3.5 requires four channels to be OPERABLE and this is consistent with the number of channels listed in the CTS "TOTAL NO. OF UNITS" column. The ITS 3.3.5 ACTIONS require entry when the OPERABLE channels are one less than required by the LCO. This changes

the CTS by increasing the number of channels listed in the LCO to match the number listed in the "TOTAL NO. OF UNITS" column.

This change is acceptable because the requirements for when actions must be taken remain unchanged. The LCO reflects the current requirements in the CTS Actions for when actions are required to be taken. The "MINIMUM UNITS OPERABLE" column for CTS Table 3.3-3 Instrument String b, c, d, and e have changed to correspond to the number of channels in the "TOTAL NO. OF UNITS" column as reflected in ITS LCO 3.3.5. This change is designated as administrative because it does not result in technical changes to the CTS.

A07 CTS Table 3.3-3 Instrument String b, c, d, and e include a Note # that applies to Action 10 and states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.5 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.5 ACTION A requires the plant to place the inoperable channels in trip and allow operation to continue for an unlimited period of time. Therefore, because the ITS still allows the plant to change a MODE or other specified condition in the Applicability, this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-3 Instrument String b (Containment Pressure - High), Instrument String c (Containment Pressure - High High), and Instrument String f (BWST Level - Low Low) only require the units to be OPERABLE in MODES 1, 2, and 3. CTS Table 4.3-2 includes the same Applicability for the Surveillances. ITS 3.3.5 Table 3.3.5-1 Parameters 3, 4 and 5 require the same channels to be OPERABLE in MODES 1, 2, 3, and 4. This changes the CTS by expanding the Applicability of the three Parameters.

The purpose of the Containment Pressure - High, Containment Pressure - High High, and the BWST Level – Low Low Parameters is to mitigate the consequences of accidents. The Containment Pressure - High, Containment Pressure - High High, and BWST Level - Low Low actuation channels of SFAS are currently required to be OPERABLE in MODES 1, 2, and 3. In the ITS the Applicability also includes MODE 4. This change is acceptable because operation in these MODES is when there is a potential for a high energy line break to exist and the proposed MODES are consistent with the Applicability of the "Output Logic" channels in CTS Table 3.3-3. The Parameters provide input into the Output Logic channels. This change is designated as more restrictive

because it requires the SFAS Parameter channels to be OPERABLE in an additional MODE (i.e., MODE 4).

M02 CTS Table 3.3-3 ACTION 10 does not provide any actions if the specified Action (ACTION 10) is not met or if more than one channel is inoperable. Entry into CTS 3.0.3 is required since no actions are specified. CTS 3.0.3 allows 1 hour to prepare for shutdown of the unit, and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.3.5 ACTION B requires the unit to be in MODE 3 within 6 hours, if the Reactor Coolant System Pressure - Low channels are inoperable to also reduce RCS pressure to < 1800 psig within 36 hours, if the Reactor Coolant System Pressure - Low Low channels are inoperable to also reduce RCS pressure to < 660 psig within 36 hours, and if the Containment Pressure - High and Containment Pressure - High High channels are inoperable to be in MODE 5 within 36 hours. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3 and reduces the time to reach the applicable conditions.

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

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for SFAS instrumentation has three columns stating various requirements for each instrument string. These columns are labeled, "TOTAL NO. OF UNITS," "UNITS TO TRIP," and "MINIMUM UNITS OPERABLE." ITS Table 3.3.5-1 does not retain the "TOTAL NO. OF UNITS" or "UNITS TO TRIP" columns. This changes the CTS by moving the information of the "TOTAL NO. OF UNITS" and "UNITS 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.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 Note * applies to the Reactor Coolant System Pressure - Low channels while CTS Table 3.3-3 Note ** applies to the Reactor Coolant System - Low Low channels. CTS Table 3.3-3 Note * states that the bypass shall be automatically removed when RCS pressure exceeds 1800 psig. CTS Table 3.3-3 Note ** states that the bypass shall be automatically removed when RCS pressure exceeds 660 psig. This changes the CTS by moving the detail that the trip is automatically bypassed from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the Reactor Coolant System Pressure - Low channels to be OPERABLE above ≧ 1800 psig and for the Reactor Coolant System Pressure - Low Low channels to be OPERABLE above ≥ 660 psig . 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 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 3.3-4 specifies the Allowable Values for the SFAS Instrumentation Instrument Strings and the table includes a Note ## that states the Allowable Values are specified for the CHANNEL FUNCTIONAL TEST. ITS Table 3.3.5-1 only provides the Allowable Value. This changes the CTS by moving the details that the specified Allowable Value is for the CHANNEL FUNCTIONAL TEST 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 the Allowable Value for each SFAS instrument channel. 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.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 Functional Unit 5.b, including footnote ******, provides the LCO requirements for the Pressurizer Heaters interlock channels. CTS Table 3.3-3 Action 14 provides the actions if a pressurizer heater interlock

channel is inoperable. CTS Table 3.3-4 provides the Allowable Value for the Pressurizer Heater interlock channels. CTS Table 4.3-2 provides the Surveillance Requirements for the Pressurizer Heater interlock channels. ITS 3.5.2 does not include any Pressurizer Heater interlock channel requirements. This changes the CTS by moving the Pressurizer Heater interlock channel requirements, including the LCO, Actions, Allowable Values , and Surveillance Requirements to the Technical Requirements Manual (TRM).

The Pressurizer Heater Interlocks prevent the pressurizer heaters from being a source for overpressurizing the DHR System suction piping. The Pressurizer Heater Interlocks are derived from the signal comparators located in the SFAS channels 1 and 4. The signal comparators receive their RCS pressure signal from the RCS loop 1 or 2 wide range pressure transmitters that supply the signal for the corresponding SFAS channel. The DHR System outboard suction isolation valve, DH11, utilizes the same signal comparator for the Decay Heat Isolation Valve interlock. The DHR System inboard suction isolation valve, DH12, utilizes a pressure switch in RC loop 1 for the Decay Heat Isolation Valve interlock. The Pressurizer Heater Interlocks are not credited in the safety analysis, nor are modeled in the Davis Besse Probabilistic Risk Assessment. Therefore, the pressurizer heater portion of the interlock, which provides a backup type signal, is not necessary to be included in the ITS and is being moved to the TRM. The removal of these details 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. Also this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to meeting a Technical Specification requirement is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.3.2.1.2 states the logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. The CTS further states that this RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation. ITS 3.3.5 does not include this specific Surveillance Requirement. This changes the CTS by deleting this specific CTS 4.3.2.1.2 requirement.

The purpose of CTS 4.3.2.1.2 is to ensure the operating bypass for the RCS pressure instruments are properly tested. This change is acceptable because the requirements have not changed. Separate delineation of the inclusion of bypasses in the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION Surveillances are not necessary. The current industry standard, IEEE-603-1998

(IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations), which replaced IEEE-279, clearly indicates the operating bypasses are a part of the system function. This industry standard has been endorsed by the NRC in Regulatory Guide 1.153. Furthermore, IEEE 338-1987 (IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems), Section 6.3.2 also states that the CHANNEL FUNCTIONAL TEST should include the testing of such bypasses. This change is designated as less restrictive because a CTS Surveillance Requirement for the operating bypasses is not specifically delineated in the ITS.

L02 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)*
CTS Table 4.3-2 Functional Unit 1.b, Containment Pressure-High, and Functional Unit 1.c, Containment Pressure-High High require the performance of a CHANNEL FUNCTIONAL TEST every 31 days. This Surveillance is modified by Note 2 that states that the CHANNEL FUNCTIONAL TEST shall include transmitter exercising, by applying either vacuum or pressure to the appropriate side of the transmitter. SR 3.3.5.2 for ITS 3.3.5 Functions 3 and 4 does not include this requirement. This changes the CTS by deleting this Note.

The purpose of the CHANNEL FUNCTIONAL TEST is to ensure all devices in the channel required for channel OPERABILITY are functioning properly. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The requirements for the CHANNEL FUNCTIONAL TEST are described in the definition section (ITS 1.1). The test is defined as the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The original transmitters for Containment Pressure-High and Containment Pressure-High High Functions were replaced with a transmitter made by a different manufacturer in 1993. These transmitters are similar to other instrumentation in the plant which to do not include the requirements to exercise the transmitter. Furthermore, the similar instruments are also located in a similar environment and location as the Containment Pressure-High and Containment Pressure-High High transmitters. The CHANNEL CALIBRATION for these similar instruments are performed every 24 months in accordance with CTS Table 4.3-10, Instrument 16 and 17 (ITS Table 3.3.17-1 Functions 5 and 6). A review of the Surveillance history was performed and the transmitters for these similar instruments have not demonstrated a history of sticking or sluggish behavior during the CHANNEL CALIBRATION. A review of the Surveillance history was also performed for the Containment Pressure-High and Containment Pressure-High High transmitters and demonstrated no history of sticking exists. Therefore, the requirement has been deleted and the requirement for testing these transmitters will be in accordance with the CHANNEL CALIBRATION definition. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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

All changes are (1) unless otherwise noted

CTS

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

(S)

(Four)

3.3.2.1 LCO 3.3.5 Three channels of ESFAS instrumentation for each Parameter in Table 3.3.5-1 shall be OPERABLE in each ESFAS train. (2) (2)

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.3.2.1 Actions a and b, Table 3.3-3 ACTION 10	A. One or more Parameters with one channel inoperable.	A.1 Place channel in trip.	1 hour
DOC M02	B. One or more Parameters with two or more channels inoperable. OR Required Action and associated Completion Time not met. (of Condition A)	B.1 Be in MODE 3. AND	6 hours (3) (4)

All changes are (1) unless otherwise noted

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M02	B.2.1 ----------NOTE---------- Only required for RCS Pressure - Low setpoint channels ----------	Reactor Coolant System (RCS) (10)
	Reduce RCS pressure < [1800] psig.	36 hours (5)
	AND	
	B.2.2 (3) ----------NOTE---------- Only required for RCS Pressure - Low Low setpoint channels ----------	(10)
	Reduce RCS pressure < [900] psig. (660)	36 hours (5)
	AND	
	B.2.3 (4) ----------NOTE---------- Only required for Reactor Building Pressure High setpoint and High High setpoint channels ---------- (, and Borated Water Storage Tank - Low Low)	Containment - , Containment Pressure - (10) (9)
	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.5-1 to determine which SRs apply to each SFAS instrumentation Parameter.
---------- (6)

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform CHANNEL CHECK.	12 hours

Table 4.3-2 Instrument Strings b, c, d, and e

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
Table 3.3-3 ACTION 10, Table 4.3-2 Instrument Strings b, c, d, and e	SR 3.3.5.2	----------NOTE---------- When an ESFAS channel is placed in an inoperable status solely for performance of this Surveillance, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided the remaining two channels of ESFAS instrumentation are OPERABLE or tripped. ---------- (the same; other; Parameter; 2; 7)	
		Perform CHANNEL FUNCTIONAL TEST.	31 days
Table 4.3-2 Instrument Strings b and c	SR 3.3.5.3	Perform CHANNEL CALIBRATION. (INSERT 1; 6; 5)	[18] months
4.3.2.1.3	SR 3.3.5.4 (5)	Verify ESFAS RESPONSE TIME within limits. (24; 6; 5)	[18] months on a STAGGERED TEST BASIS

6

INSERT 1

Table 4.3-2 Instrument Strings d and e	SR 3.3.5.4	Perform CHANNEL CALIBRATION.	24 months

All changes are (1) unless otherwise noted

CTS

Table 3.3.5-1 (page 1 of 1)
Engineered Safety Feature Actuation System Instrumentation

Table and Instrument String	(1) PARAMETER	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS (8) (5)	(5) ALLOWABLE VALUE	SURVEILLANCE REQUIREMENTS (6)
Table 3.3-3 (d), Table 3.3-4 (d), Table 4.3-2 (d)	1. Reactor Coolant System Pressure - Low Setpoint (HPI Actuation, RB Isolation, RB Cooling, EDG Start)	1, 2, 3 [a] ≥ [1800] psig	≥ [1600] psig (1576.2)	SR 3.3.5.1, SR 3.3.5.2, SR 3.3.5.4, SR 3.3.5.5
Table 3.3-3 (e), Table 3.3-4 (e), Table 4.3-2 (e)	2. Reactor Coolant System Pressure - Low Low Setpoint (HPI Actuation, LPI Actuation, RB Isolation, RB Cooling)	1, 2, 3 [b] ≥ [900] psig	≥ [400] psig (441.42)	SR 3.3.5.1, SR 3.3.5.2, SR 3.3.5.4, SR 3.3.5.5
Table 3.3-3 (b), Table 3.3-4 (b), Table 4.3-2 (b)	3. Reactor Building (RB) (Containment) Pressure - High Setpoint (HPI Actuation, LPI Actuation, RB Isolation, RB Cooling)	1,2,3,4	≤ [5] psig (19.38 psia)	SR 3.3.5.1, SR 3.3.5.2, SR 3.3.5.3, SR 3.3.5.5
Table 3.3-3 (7), Table 3.3-4 (7), Table 4.3-2 (7)	4. Reactor Building (Containment) Pressure - High High Setpoint (RB Spray Actuation)	1,2,3,4	≤ [30] psig (41.65 psia)	INSERT 3 (9)

Table 3.3-3 Note * — (a) With Reactor Coolant System (RCS) pressure ≥ 1800 psig.

Table 3.3-3 Note ** — (b) With RCS pressure ≥ 660 psig.

(8)

CTS

9

INSERT 3

Tables 3.3-3, 3.3-4, 4.3-2 Instrument String 1.f	5.	Borated Water Storage Tank Level- Low Low	1,2,3,4	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.3	≥ 101.6 and ≤ 115.4 inches of water

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5, SAFETY FEATURES ACTUATION SYSTEM (SFAS) INSTRUMENTATION

1. Changes are made to reflect plant specific nomenclature.

2. ISTS LCO 3.3.5 requires three channels of ESFAS instrumentation for each Parameter to be OPERABLE in each ESFAS train. ITS LCO 3.3.5 requires four channels to be OPERABLE. This change is consistent with the current licensing basis and design. The details of the requirements for OPERABILITY are included in the Bases. In addition, the Note to ITS SR 3.3.5.2 has been modified due to this change.

3. Editorial change made.

4. This change is made consistent with the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Sections 4.1.6 and 4.1.6.i.5.v.

5. Brackets have been removed and the proper plant specific information/value has been provided.

6. ITS SR 3.3.5.4, A CHANNEL CALIBRATION at a 24 month Frequency, has been added consistent with the current licensing basis. Subsequent SRs have been renumbered as required. In addition, since all of the SFAS Parameters do not include all of the same Surveillance Requirements a Surveillance Note has been added and Table 3.3.5-1 has been modified to include the Surveillance Requirements for each individual Parameter. This format is consistent with the format in ISTS 3.3.1.

7. A Note to ITS SR 3.3.5.2 has been modified consistent with the CTS.

8. ISTS Table 3.3.5-1 Parameters 1 and 2 are required to be OPERABLE when ≥ 1800 psig and ≥ 660 psig, respectively. ITS Table 3.3.5-1 Parameters 1 and 2 are applicable in MODES 1, 2, 3 with Reactor Coolant System (RCS) Pressure ≥ 1800 psig and ≥ 660 psig, respectively. The values for the pressures are consistent with the specified conditions in the CTS. The ISTS does not include MODES in the Applicability. This would mean that the Parameters must be OPERABLE at all times even when fuel is not in the core. The proposed MODE is consistent with the ISTS since the default condition for Parameters 1 and 2 is to be in MODE 3 with RCS pressure below the specified pressure.

9. A new Function has been added to Table 3.3.5-1 as Parameter 5 consistent with the current licensing requirements for Borated Water Storage Tank Level - Low Low Functional Unit. As a result of this change the Note to Required Action B.2.3 has been modified to reflect this Parameter.

10. Changes made to be consistent with ITS Section 1.2.

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

All changes are 1 unless otherwise noted

B 3.3 INSTRUMENTATION

B 3.3.5 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based on the values of selected unit Parameters, to protect against violating core design limits and reactor coolant pressure boundary and to mitigate accidents. 2

INSERT 1

ESFAS actuates the following systems:

- High pressure injection (HPI) Actuation
- Low pressure injection (LPI) Actuation
- Reactor building (RB) Cooling
- RB Spray
- RB Isolation and
- Emergency diesel generator (EDG) Start.

ESFAS also provides a signal to the Emergency Feedwater Isolation and Control (EFIC) System. This signal initiates emergency feedwater (EFW) when HPI is initiated. 2

INSERT 2

The ESFAS operates in a distributed manner to initiate the appropriate systems. The ESFAS does this by determining the need for actuation in each of three channels monitoring each actuation Parameter. Once the need for actuation is determined, the condition is transmitted to automatic actuation logics, which perform the two-out-of-three logic to determine the actuation of each end device. Each end device has its own automatic actuation logic, although all automatic actuation logics take their signals from the same point in each channel for each Parameter. 2

Four Parameters are used for actuation: 2

- Low Reactor Coolant System (RCS) Pressure 4 2
- Low Low RCS Pressure 4 2

2 **INSERT 1**

to automatically prevent or limit fission product and energy release from the core, to isolate the containment vessel, and to initiate the operation of Engineered Safety Features (ESF) equipment in the event of a loss-of-coolant accident (LOCA) and main steam line break (MSLB).

2 **INSERT 2**

SFAS also actuates other systems and components. A detailed list of systems and components actuated by each SFAS Parameter is identified in the UFSAR, Table 7.3-2 (Ref. 1) and UFSAR, Figures 7.3-1 through 7.3-8 (Ref. 2).

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

- High RB Pressure and
- High High RB Pressure

Containment ; . Containment 3 4 4 1

A fifth parameter, Borated Water Storage Tank Level - Low Low, is used to provide a permissive to allow manual transfer to the containment sump.

and

LCO 3.3.5 covers only the instrumentation channels that measure these Parameters. These channels include all intervening equipment necessary to produce actuation before the measured process Parameter exceeds the limits assumed by the accident analysis. This includes sensors, bistable devices, operational bypass circuitry, block timers, and output relays. LCO 3.3.6, "Engineered Safety Feature Actuation System (ESFAS) Manual Initiation," and LCO 3.3.7, "Engineered Safety Feature Actuation System (ESFAS) Automatic Actuation Logic," provide requirements on the manual initiation and automatic actuation logic Functions. 2 s

INSERT 3

The ESFAS consists of three protection channels. Each channel provides input to logics that initiate equipment with a two-out-of-three logic on each component. Each protection channel includes bistable inputs from one instrumentation channel of Low RB Pressure, Low Low RCS Pressure, High RB Pressure, and High High RB Pressure. Automatic actuation logics combine the three protection channel trips in each train to actuate the individual Engineered Safety Feature (ESF) components needed to initiate each ESF System. Figure [ ] , FSAR, Chapter [7] (Ref. 1), illustrates how instrumentation channel trips combine to cause protection channel trips. 2

The RCS pressure sensors are common to both trains. Isolation is provided via separate bistables for each train. Separate RB pressure sensors are used for the high and high high pressure Functions in each train, and separate sensors are used for each train. 2

The following matrix identifies the measurement channels and the Function actuated by each. 2

1

(2) **INSERT 3**

The SFAS consists of four identical redundant instrument (sensing) and logic channels and two identical redundant actuation channels. Each instrument channel includes analog circuits with analog isolation devices, and trip bistable modules with digital (optical electronic) isolation devices. The isolated output of the trip bistable module is used to comprise coincidence matrices with the terminating relays within the actuation channel of SFAS. The isolation devices also provide isolation between channels. The trip bistables in each of the four sensing channels provide inputs to the corresponding output modules of their logic channels and the output modules of the remaining three logic channels. Should any two out of four trip bistables monitoring a given variable trip, the output modules in all four logic channels connected to that trip bistable will trip. The terminating (output) relays de-energize when the associated output module trips. The terminating relays of instrumentation and logic channels 1 and 3, must both be de-energized to activate SFAS actuation channel 1. Similarly, instrumentation and logic channels 2 and 4 are de-energized to activate SFAS actuation channel 2. The terminating relays act on the actuation control devices such as motor controllers and solenoid valves. Figures 7.3-1 and 7.3-2, UFSAR, Section 7.3.1.1.2 (Ref. 3), illustrates how instrumentation channel trips combine to cause protection channel trips.

The equipment actuation by SFAS depends upon the severity of the accident, as indicated by the sensor channels. The actuated equipment is separated into five Incident Levels. A brief description of the five SFAS Incident Levels follows. Note that the listings of the actuated equipment are a summary. A complete listing is provided in UFSAR, Figures 7.3-3 through 7.3-8 (Ref. 2).

An Incident Level 1 actuation will occur when the RCS Pressure-Low or Containment Pressure-High setpoint is reached. The Containment Purge and Exhaust and Containment Sampling Systems are isolated, the Station Emergency Ventilation System is actuated, and the Control Room Normal Ventilation System is isolated.

An Incident Level 2 actuation also occurs when the RCS Pressure-Low or Containment Pressure-High setpoint is reached. High pressure injection is initiated, the Component Cooling Water System, Service Water System, containment air coolers, and emergency diesel generators are started, various containment isolation valves are closed, and the containment spray valves are opened (although containment spray pumps are not started).

An Incident Level 3 actuation occurs when the RCS Pressure-Low Low or Containment Pressure-High setpoint is reached. Low pressure injection is initiated and additional containment isolation valves are closed.

INSERT 3 (continued)

2

An Incident Level 4 actuation occurs when the Containment Pressure-High High setpoint is reached. The Containment Spray System is started and additional containment isolation valves are closed.

An Incident Level 5 actuation occurs when the BWST Level - Low Low setpoint is reached, indicating that the BWST has been nearly depleted. A permissive is generated to allow manual transfer to the containment emergency sump.

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

PARAMETER	LOW RCS PRESSURE	LOW LOW RCS PRESSURE	HIGH RB PRESSURE	HIGH HIGH RB PRESSURE
HPI	X	X	X	
LPI		X		X
RB Cooling	X	X	X	(b)
RB Spray	(b)			
RB Isolation[a]	X	X	X	
EDG Start	X	X	X	
Control Room Isolation			X	

(a) Only isolates systems not required for RB or RCS heat removal.
(b) Actuates on High High RB Pressure coincident with HPI actuation.

2

INSERT 4

Engineered safeguards bus undervoltage will also sequence on the HPI loads started by the HPI block timers. However, HPI will not occur unless the ESFAS HPI signal is also present. LCO 3.3.8, "Emergency Diesel Generator (EDG) Loss of Power Start (LOPS)," contains the requirements for the undervoltage channels.

2

2 **INSERT 4**

The SFAS will automatically sequence the protective action by loading equipment in steps if the normal or reserve power is not available. Each logic channel has one sequencer module. One of the SFAS actions during an Incident Level 2 is to start the EDG. In the event of a loss of offsite power concurrent with an SFAS trip, the EDGs will energize the 4.16 kV buses, and the SFAS sequencers will sequence the SFAS initiated loads onto the diesel generator.

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

The ESF equipment is divided between the two redundant actuation trains A and B. The division of the equipment between the two actuation trains is based on the equipment redundancy and function and is accomplished in such a manner that the failure of one of the actuation channels and the related safeguards equipment will not inhibit the overall ESF Functions. Where a motor operated or a solenoid operated valve is driven by either of two matrices, one is from actuation channel A and one from actuation channel B. Redundant ESF pumps are controlled from separate and independent actuation channels.

1 and 2 | equipment is | 2 | 2

The actuation of ESF equipment is also available by manual actuation switches located on the control room console.

The ESFAS, in conjunction with the actuated equipment, provides protective functions necessary to mitigate Design Basis Accidents (DBAs), specifically the loss of coolant accident (LOCA) and steam line break (SLB) events. The ESFAS relies on the OPERABILITY of the automatic actuation logic for each component to perform the actuation of the selected systems of LCO 3.3.7.

main | M | 2

s

Engineered Safety Feature Actuation System Bypasses

INSERT 5 | 2

No provisions are made for maintenance bypass of ESFAS instrumentation channels. Operational bypass of certain channels is necessary to allow accident recovery actions to continue and, for some channels, to allow reactor shutdown without spurious ESFAS actuation.

undesired | 2

before pressure reaches the point at which they are required to be OPERABLE

The ESFAS RCS pressure instrumentation channels include permissive bistables that allow manual bypass when reactor pressure is below the point at which the low and low low pressure trips are required to be OPERABLE. Once permissive conditions are sensed, the RCS pressure trips may be manually bypassed. Bypasses are automatically removed when bypass permissive conditions are exceeded.

2

Each High RB Pressure channel may be manually bypassed after the other two channels in the Parameter have tripped. The manual bypass allows operators to take manual control of ESF Functions after initiation to allow recovery actions. The bypass may be manually removed and is automatically removed when RB pressure returns to below the trip setpoint.

2

Components can be blocked to allow for accident recovery actions. This is accomplished by manually blocking the associated output logic modules from switches located on control room panels.

2

The shutdown bypass is provided to prevent spurious actuation of the SFAS and is only allowed to be used in MODES 5 and 6 or when the core is defueled.

2

2 **INSERT 5**

SFAS includes channel bypasses, operating bypasses, and shutdown bypasses. Each SFAS instrument and logic channel is provided with one key operated test trip bypass switch. This switch enables the operator to change the two-out-of-four coincidence matrices into a two-out-of-three mode for one Parameter. In effect the operator may bypass one channel of either RCS pressure, Containment Pressure, and BWST level. These channel bypasses permit test, calibration, or maintenance of the SFAS transmitters.

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

Reactor Coolant System Pressure

four

containment

The RCS pressure is monitored by three independent pressure transmitters located in the RB. These transmitters are separate from the transmitters that feed the Reactor Protection System (RPS). Each of the pressure signals generated by these transmitters is monitored by four bistables to provide two trip signals, at 1500 psig and 500 psig, and two bypass permissive signals, at 1700 psig and 900 psig. 2

one at low pressure and the other at low-low pressure

one at low pressure and one at low-low pressure

The outputs of the three bistables, associated with the low RCS pressure, 1500 psig, trip drive relays in two sets (actuation channels A and B) of identical and independent channels. These two sets of HPI channels each use three logic channels used in two-out-of-three coincidence networks for HPI Actuation. The outputs of the three bistables associated with the Low Low RCS Pressure [500 psig] trip drive relays in two sets (actuation channels A and B) of identical and independent channels. These two sets of LPI channels each use three logic channels used in two-out-of-three coincidence networks for LPI Actuation. The outputs of the three Low Low RCS Pressure bistables also trip the drive relays in the corresponding HPI Actuation channel as previously described. 2

Containment

Reactor Building Pressure

INSERT 6

RB pressure inputs to the ESFAS are provided by 12 pressure switches. Six pressure switches are used for the High RB Pressure Parameter, and six pressure switches are used for the High High Pressure Parameter. 2

The output contacts of six High RB Pressure switches are used in two sets of identical and independent actuation trains. These two trains each use three logic channels. The outputs of these channels are used in two-out-of-three coincidence networks. The output contacts of the six RB pressure switches also trip the drive relays in the corresponding HPI and LPI Actuation channels as previously described.

The output contacts of six High High RB Pressure switches are used in two sets of identical and independent actuation trains. These two trains each use three logic channels (RB4, RB5, and RB6). The outputs of these channels are used in two-out-of-three coincident networks for RB Spray Actuation. Each high high pressure train actuates one RB Spray train when the High High RB signal and the HPI signal are coincident in that train. 2

INSERT 7

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INSERT 6

2

Containment pressure is monitored by four independent pressure transmitters located in the auxiliary building. These transmitters are separate from the pressure switches that feed the Reactor Protection System (RPS). Each of the pressure signals generated by these transmitters is monitored by two bistables to provide two trip signals, one at high pressure and the other at high high pressure.

1

INSERT 7

Borated Water Storage Tank Level

Borated water storage tank level is monitored by four independent level transmitters (differential cell design). Each of the differential pressure signals generated by these transmitters is monitored by a bistable to provide a trip signal at a low low level.

BASES

BACKGROUND (continued)

Trip Setpoints and Allowable Values

Trip setpoints are the nominal value at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION accuracy (i.e., ± [rack calibration + comparator setting accuracy]). 2

setpoint calculations

The trip setpoints used in the bistables are based on the analytical limits stated in Figure [ ], FSAR, Chapter [7] (Ref. 1). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment induced errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 2), the Allowable Values specified in Table 3.3.5-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the trip setpoints, including their explicit uncertainties, is provided in the "Unit Specific Setpoint Methodology" (Ref. 3). The actual nominal trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a CHANNEL FUNCTIONAL TEST. One example of such a change in measurement error is drift during the surveillance interval. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

2 2 2 4 5

uncertainties

The trip setpoint is established using Method 1 or Method 2 of Reference 5 or 6.

Setpoints, in accordance with the Allowable Values, ensure that the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the DBA and the equipment functions as designed.

Each channel can be tested online to verify that the 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. 2

the setpoint calculation

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

established using Method 1 or Method 2 of Reference 5 or 6

The Allowable Values listed in Table 3.3.5-1 are based on the methodology described in FSAR, Chapter [14] (Ref. 4), which incorporates all of the known uncertainties applicable for each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes. 2

---REVIEWER'S NOTE---
The ESFAS LCOs in the BWOG Standard Technical Specifications are based on a system representative of the Crystal River Unit 3 design.

As discussed earlier, this arrangement involves measurement channels shared among all actuation functions, with separate actuation logic channels for each actuated component. In this arrangement, multiple components are affected by each instrumentation channel failure, but a single automatic actuation logic failure affects only one component. The organization of BWOG STS ESFAS LCOs reflects the described logic arrangement by identifying instrumentation requirements on an instrumentation channel rather than on a protective function basis. This greatly simplifies delineation of ESFAS LCOs. Furthermore, the LCO requirements on instrumentation channels, automatic actuation logics, and manual initiation are specified separately to reflect the different impact each has on ESFAS OPERABILITY. 6

APPLICABLE SAFETY ANALYSES

The following ESFAS Functions have been assumed within the accident analyses.

High Pressure Injection

The ESFAS actuation of HPI has been assumed for core cooling in the LOCA analysis and is credited with boron addition in the SLB analysis. 2

M

Low Pressure Injection

The ESFAS actuation of LPI has been assumed for large break LOCAs. 2

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES (continued)

Containment

Reactor Building Spray, Reactor Building Cooling, and Reactor Building Isolation

containment | containment air | containment

The ESFAS actuation of the RB coolers and RB Spray have been credited in RB analysis for LOCAs, both for RB performance and equipment environmental qualification pressure and temperature envelope definition. Accident dose calculations have credited RB Isolation and RB Spray.

containment

Emergency Diesel Generator Start

The ESFAS initiated EDG Start has been assumed in the LOCA analysis to ensure that emergency power is available throughout the limiting LOCA scenarios. 7

7

The small and large break LOCA analyses assume a conservative 35 second delay time for the actuation of HPI and LPI in FSAR, Chapter [14] (Ref. 4). This delay time includes allowances for EDG starting, EDG loading, Emergency Core Cooling Systems (ECCS) pump starts, and valve openings. Similarly, the RB Cooling, RB Isolation, and RB Spray have been analyzed with delays appropriate for the entire system analyzed. Typical values used in the analysis are 35 seconds for RB Cooling, 60 seconds for RB Isolation, and 56 seconds for RB Spray. U 7 2 2

Section 6.3 | containment air | containment | containment

Accident analyses rely on automatic ESFAS actuation for protection of the core temperature and containment pressure limits and for limiting off site dose levels following an accident. These include LOCA, SLB, and feedwater line break events that result in RCS inventory reduction or severe loss of RCS cooling. and M 2

The ESFAS channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

four

The LCO requires three channels of ESFAS instrumentation for each Parameter in Table 3.3.5-1 to be OPERABLE in each ESFAS train. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. 7

Parameter and affected systems or components

All changes are 1 unless otherwise noted

BASES

LCO (continued)

Only the Allowable Value is specified for each ESFAS Function in the LCO. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal trip setpoints are selected to ensure the setpoints measured by CHANNEL FUNCTIONAL TESTS do not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the unit specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties appropriate to the trip Parameter. These uncertainties are defined in the "Unit Specific Setpoint Methodology" (Ref. 3).

setpoint calculations 2

The Allowable Values are specified for the CHANNEL FUNCTIONAL TEST.

The Allowable Values for bypass removal functions are stated in the Applicable MODES or Other Specified Condition column of Table 3.3.5-1.

Four

for each parameter.

Three ESFAS instrumentation channels shall be OPERABLE in each ESFAS train to ensure that a single failure in one channel will not result in loss of the ability to automatically actuate the required safety systems. 2

Failure of any channel reduces the reliability of the affected Parameter.

The bases for the LCO on ESFAS Parameters include the following.

Reactor Coolant System Pressure

Four

and block permissive

Three channels each of RCS Pressure - Low and RCS Pressure - Low Low are required OPERABLE in each train. Each channel includes a sensor, trip bistable, bypass bistable, bypass relays, output relays, and block timers. The analog portion of each pressure channel is common to both trains of both RCS Pressure Parameters. Therefore, failure of one analog channel renders one channel of the low pressure and low low pressure Functions in each train inoperable. The bistable portions of the channels are Function and train specific. Therefore, a bistable failure renders only one Function in one train inoperable. Failure of a bypass bistable or bypass circuitry, such that a trip channel cannot be bypassed, does not render the channel inoperable. Output relays and block timer relays are train specific but may be shared among Parameters. Therefore, output or block timer relay failure renders all affected Functions in one train inoperable. 2 2

Parameters

All changes are (1) unless otherwise noted

BASES

LCO (continued)

1. Reactor Coolant System Pressure - Low Setpoint

Allowable Value of ≥ 1576.2 psig

The RCS Pressure - Low Setpoint is based on HPI actuation for small break LOCAs. The setpoint ensures that the HPI will be actuated at a pressure greater than or equal to the value assumed in accident analyses plus the instrument uncertainties. The maximum value assumed for the setpoint of the RCS Pressure - Low trip of HPI in safety analyses is 1480 psig. The setpoint for the low RCS and Allowable Value of ≥ [1600] psig for the low pressure Parameter is selected to ensure actuation occurs when actual RCS pressure is above 1480 psig. The RCS Pressure instrumentation must function while subject to the severe environment created by a LOCA. Therefore, the trip setpoint Allowable Value accounts for severe environment induced errors. (4) (2)

To ensure the RCS Pressure - Low trip is not bypassed when required to be OPERABLE by the safety analysis, each channel's bypass removal bistable must be set with an Allowable Value of ≤ [1800] psig. The bypass removal does not need to function for accidents initiated from RCS Pressures below the bypass removal setpoint. Therefore, the bypass removal setpoint Allowable Value need not account for severe environment induced errors. (2)

a reset

block permissive

2. Reactor Coolant System Pressure - Low Low Setpoint

is selected to

The RCS Pressure - Low Low Setpoint LPI actuation occurs in sufficient time to ensure LPI flow prior to the emptying of the core flood tanks during a large break LOCA. The Allowable Value of ≥ [400] psig ensures sufficient overlap of the core flood tank flow and the LPI flow to keep the reactor vessel downcomer full during a large break LOCA. The RCS Pressure instrumentation must function while subject to the severe environment created by a LOCA. Therefore, the trip setpoint Allowable Value accounts for severe environment induced errors. (2)

(5) 441.42

a reset

660

To ensure the RCS Pressure - Low Low trip is not bypassed when assumed OPERABLE by the safety analysis, each channel's bypass removal bistable must be set with an Allowable Value of ≤ [900] psig. The bypass removal does not need to function for accidents initiated by RCS Pressure below the bypass removal setpoint. Therefore, the bypass removal setpoint Allowable Value need not account for severe environment induced errors. (5) (2)

block permissive

block permissive

All changes are 1 unless otherwise noted

BASES

LCO (continued)

The analog portion of each containment pressure channel is common to both Containment Pressure Parameters. Therefore, failure of one analog channel renders one channel of Containment Pressure - High and Containment Pressure - High High Parameters inoperable.

Reactor Building Pressure

Three channels each of RCS Pressure - Low and RB Pressure - High are required to be OPERABLE in each train. Each channel includes a pressure switch, bypass relays, and output relays. The high pressure channels also include block timers. Each pressure switch is Function and train specific, so there are 12 pressure switches total. Therefore, a pressure switch renders only one Function in one train inoperable. Output relays and block timer relays are train specific but may be shared among Parameters. Therefore, output or block timer relay failure renders all affected Functions in one train inoperable. 2

The RB Pressure switches may be subjected to high radiation conditions during the accidents that they are intended to mitigate. The sensor portion of the switches is also exposed to the steam environment present in the RB following a LOCA or high energy line break. Therefore, the trip setpoint Allowable Value accounts for measurement errors induced by these environments. 2

1. Reactor Building Pressure - High Setpoint

The RB Pressure - High Setpoint Allowable Value ≤ [5] psig was selected to be low enough to detect a rise in RB Pressure that would occur due to a small break LOCA, thus ensuring that the RB high pressure actuation of the safety systems will occur for a wide spectrum of break sizes. The trip setpoint also causes the RB coolers to shift to emergency mode to prevent damage to the cooler fans due to the increase in the density of the air steam mixture present in the containment following a LOCA. 2

2. Reactor Building Pressure - High High Setpoint

The RB Pressure - High High Setpoint Allowable Value ≤ [30] psig was chosen to be high enough to avoid actuation during an SLB, but also low enough to ensure a timely actuation during a large break LOCA. 2

INSERT 8

1 **INSERT 8**

Borated Water Storage Tank - Low Low

The Borated Water Storage Tank Allowable Value of ≥ 101.6 inches of water and ≤ 115.4 inches of water was chosen to provide the operator with an alarm and a permissive to allow timely operation of the borated water storage tank (BWST) outlet and containment emergency sump valves to the long term recirculation position. This is to protect the pumps from cavitation for lack of proper net positive suction head and allow transfer of ECCS suction to the containment emergency sump from the BWST during the recirculation mode of operation before the inventory of the BWST is depleted.

All changes are 1 unless otherwise noted

BASES

APPLICABILITY Three (Four) channels of ESFAS instrumentation for each Parameter listed next shall be OPERABLE in each ESFAS train.

1. Reactor Coolant System Pressure - Low Setpoint

The RCS Pressure - Low Setpoint actuation (at and) Parameter shall be OPERABLE during operation (in MODE 1 and 2 and in MODE 3 with RCS pressure) above 1800 psig. This requirement ensures the capability to automatically actuate safety systems and components during conditions indicative of a LOCA or secondary unit overcooling. Below 1800 psig, the low RCS Pressure actuation Parameter can be bypassed to avoid actuation during normal unit cooldowns when safety system actuations are not required. 7

The allowance for the bypass is consistent with the transition of the unit to a lower energy state, providing greater margins to safety limits. The unit response to any event, given that the reactor is already tripped, will be less severe and allows sufficient time for operator action to provide manual safety system actuations. This is even more appropriate during unit heatups when the primary system and core energy content is low, prior to power operation.

In MODES 5 (4.) and 6 (.), there is adequate time for the operator to evaluate unit conditions and respond by manually starting individual systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. Plant pressure and temperature are very low, and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems. (MODE 3 below 1800 psig. and in)

2. Reactor Coolant System Pressure - Low Low Setpoint

The RCS Pressure - Low Low Setpoint actuation Parameter shall be OPERABLE during operation above [900] psig. This requirement ensures the capability to automatically actuate safety systems and components during conditions indicative of a LOCA or secondary unit overcooling. Below [900] psig, the low low RCS Pressure actuation Parameter can be bypassed to avoid actuation during normal unit cooldowns when safety system actuations are not required. 660 660 4 5 5 7

The allowance for the bypass is consistent with the transition of the unit to a lower energy state, providing greater margins to safety limits. The unit response to any event, given that the reactor is already tripped, will be less severe and allows sufficient time for operator action to provide manual safety system actuations. This is even more appropriate during unit heatups when the primary system and core energy content is low, prior to power operation.

All changes are 1 unless otherwise noted

BASES

APPLICABILITY (continued)

MODE 3 with RCS pressure below 660 psig, and in

4. ,

In MODES 5 and 6, there is adequate time for the operator to evaluate unit conditions and respond by manually starting individual systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. Plant pressure and temperature are very low, and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems.

3. 4. Reactor Building Pressure - High and Reactor Building Pressure – High High Setpoints

Containment Containment

The RB Pressure - High and RB Pressure - High High actuation Functions of ESFAS shall be OPERABLE in MODES 1, 2, 3, and 4 when the potential for a HELB exists. In MODES 5 and 6, the unit conditions are such that there is insufficient energy in the primary and secondary systems to raise the containment pressure to either the RB Pressure - High or RB Pressure - High High Setpoints. Furthermore, in MODES 5 and 6, there is adequate time for the operator to evaluate unit conditions and respond by manually starting individual systems, pumps, and other equipment to mitigate the consequences of an abnormal condition or accident. Plant pressure and temperature are very low and many ESF components are administratively locked out or otherwise prevented from actuating to prevent inadvertent overpressurization of unit systems.

Containment Containment Parameter Containment

INSERT 9

ACTIONS

Required Actions A and B apply to all ESFAS instrumentation Parameters listed in Table 3.3.5-1.

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each Parameter.

If a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the transmitter, instrument loop, signal processing electronics, or ESFAS bistable is found inoperable, then all affected functions provided by that channel should be declared inoperable and the unit must enter the Conditions for the particular protection Parameter affected.

When the number of inoperable channels in a trip Parameter exceeds those specified, then the unit is outside the safety analysis. Therefore, LCO 3.0.3 shall be immediately entered if applicable in the current MODE of operation. 4

1 **INSERT 9**

5. Borated Water Storage Tank - Low Low

The Borated Water Storage Tank - Low Low shall be OPERABLE in MODES 1, 2, 3, and 4 when the potential for a LOCA exists. In MODES 5 and 6, the BWST does not support any equipment required to be OPERABLE, therefore the Borated Water Storage Tank - Low Low Function is not required to be OPERABLE.

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

A.1

Condition A applies when one channel becomes inoperable in one or more Parameters. If one ESFAS channel is inoperable, placing it in a tripped condition leaves the system in a one-out-of-two condition for actuation. Thus, if another channel were to fail, the ESFAS instrumentation could still perform its actuation functions. This action is completed when all of the affected output relays and block timers are tripped. This can normally be accomplished by tripping the affected bistables or tripping the individual output relays and block timers. [At this unit, the specific output relays associated with each ESFAS instrumentation channel are listed in the following document:]

The 1 hour Completion Time is sufficient time to perform the Required Action.

B.1, B.2.1, B.2.2, and B.2.3

Condition B applies when Required Action A.1 is not met within the required Completion Time or when one or more parameters have more than one inoperable channel. If Condition B applies, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and, for the RCS Pressure - Low Setpoint, to < [1800] psig, for the RCS Pressure - Low Low Setpoint, to < [900] psig, and for the RB Pressure High Setpoint and High High Setpoint, to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

All ESFAS Parameters listed in Table 3.3.5-1 are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, CHANNEL CALIBRATION, and response time testing. The operational bypasses associated with each ESFAS instrumentation channel are also subject to these SRs to ensure OPERABILITY of the ESFAS instrumentation channel.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1

Performance of the CHANNEL CHECK every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. ~~If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.~~ 9

12 hours

The Frequency, ~~about once every shift~~, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel operability during normal operational use of the displays associated with the LCO's ~~required channels~~. 4 7

channels required by the LCO

SR 3.3.5.2

INSERT 10

~~A Note defines a channel as being OPERABLE for up to 8 hours while bypassed for Surveillance testing provided the remaining two ESFAS channels are OPERABLE or tripped. The Note allows channel bypass for testing without defining it as inoperable, although during this time period it cannot initiate ESFAS.~~ This allowance is based on the inability to perform the Surveillance in the time permitted by the Required Actions. Eight hours is the average time required to perform the Surveillance. It is not acceptable to routinely remove channels from service for more than 8 hours to perform required Surveillance testing. 4

4 **INSERT 10**

The Surveillance is modified by a Note that states when an SFAS channel is placed in an inoperable status solely for performance of this Surveillance, entry into the associated Conditions and Required Actions may be delayed for up to 8 hours, provided two other channels of the same SFAS instrumentation Parameter are OPERABLE. Upon completion of the Surveillance, or expiration of the 8 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This is acceptable since the other two required channels will continue to ensure the associated SFAS Parameter can perform its assumed function.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

A CHANNEL FUNCTIONAL TEST is performed on each required ESFAS channel to ensure the entire channel will perform the intended 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 CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current unit specific setpoint analysis. (if) (8)

The Frequency of 31 days is based on unit operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given function in any 31 day interval is a rare event.

SR 3.3.5.3 (and SR 3.3.5.4)

CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the unit specific setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis.

This Frequency (of SR 3.3.5.3) is justified by the assumption of an 18 month calibration interval to determine the magnitude of equipment drift in the setpoint analysis. (INSERT 11) (5)

SR 3.3.5.4 (5)

SR 3.3.5.4 ensures that the ESFAS actuation channel response times are less than or equal to the maximum times assumed in the accident analysis. The response time values are the maximum values assumed in the safety analyses. Individual component response times are not modeled in the analyses. Response time testing acceptance criteria for this unit are included in Reference 1. The analyses model the overall or total elapsed time from the point at which the parameter exceeds the (8) (7)

(Move to end of paragraph on Page B 3.3.5-17)

1 **INSERT 11**

The Frequency of SR 3.3.5.4 is justified by the assumption of a 24 month calibration interval to determine the magnitude of equipment drift in the setpoint analysis.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT from Page (B 3.3.5-16)

actuation setpoint value at the sensor to the point at which the end device is actuated. Thus, this SR encompasses the automatic actuation logic components covered by LCO 3.3.7 and the operation of the mechanical ESF components.

24

Response time tests are conducted on an [18] month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. Therefore, staggered testing results in response time verification of these devices every [18] months. The 18 month test Frequency is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation but not channel failure are infrequent occurrences. 5

24 24 5

REFERENCES

1. FSAR, Chapter [7].
2. 10 CFR 50.49.
3. [Unit Specific Setpoint Methodology.]
4. FSAR, Chapter [14].

INSERT 12 2 5

INSERT 12

2 5

1. UFSAR, Table 7.3-2.
2. UFSAR, Figures 7.3-1 through 7.3-8.
3. UFSAR, Section 7.3.1.1.2.
4. 10 CFR 50.49.
5. ISA RP 67.04-Part II - 1994, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation."
6. ISA RP 67.04.02 - 2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation."
7. UFSAR, Section 6.3.
8. Technical Requirements Manual.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5 BASES, SAFETY FEATURES ACTUATION SYSTEM (SFAS) INSTRUMENTATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. Changes made to reflect the Specification.

5. The brackets have been removed and the proper plant specific information/value has been provided.

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

7. Editorial changes with no change in intent.

8. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

9. Normally the channels are not off scale during performances of the CHANNEL CHECK. Also, this type of statement is not needed since the definition of CHANNEL CHECK adequately covers a normal off scale low or high reading. Furthermore, this type of statement is not in other CHANNEL CHECK Bases descriptions in the ISTS, even though it could apply. Therefore, this statement has been deleted.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.5, SAFETY FEATURES ACTUATION SYSTEM (SFAS) INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

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

ITS

A01

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.6 3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

Add proposed ACTIONS Note

A02

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

See ITS 3.3.5 and ITS 3.3.8

ACTION A b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1 4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

See ITS 3.3.5

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

See ITS 3.3.5 and ITS 3.3.8

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

See ITS 3.3.5

ITS

A01

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
LCO 3.3.6.a a. SFAS ~~(except Containment Spray and Emergency Sump Recirculation)~~	2	2	2	1,2,3,4	12 A
LCO 3.3.6.b b. Containment Spray	2	2	2	1,2,3,4	12 A
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#
b. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15#
c. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15#
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

LA01

L01

LA2

See ITS 3.3.8 and ITS 3.8.1

See ITS 3.8.1

See ITS 3.3.8

See ITS 3.4.14

See ITS 3.3.5

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ITS

A01

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTIONS A and B

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit 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. 72 L02

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure ≥ 328 psig, both Decay Heat Isolation Valves (DH11 and DH12) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

See ITS 3.4.14

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

See ITS 3.3.5

ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

See ITS 3.3.8 and ITS 3.8.1

ITS

A01

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	S	E	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	E	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M	1, 2, 3
f. BWST Level - Low-Low	S	E	M	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	S	E	M	1, 2 ,3, 4
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
3. MANUAL ACTUATION				
a. SFAS ~~(Except Containment Spray and Emergency Sump Recirculation)~~	NA	NA	M(1)	1, 2, 3, 4
b. Containment Spray	NA	NA	M(1)	1, 2, 3

See ITS 3.3.5

See ITS 3.3.7

L03

L02

LA2

SR 3.3.6.1

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ITS

A01

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
4. SEQUENCE LOGIC CHANNELS					See ITS 3.3.8 and ITS 3.8.1
a. Sequencer	S	NA	M	1, 2, 3, 4	See ITS 3.8.1
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A(3)	M(3)	1, 2, 3, 4	See ITS 3.3.8
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A(3)	M(3)	1, 2, 3, 4	
5. INTERLOCK CHANNELS					See ITS 3.4.14
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3	See ITS 3.3.5
b. Pressurizer Heater	S	R	**	3 ##	

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days. — L03

SR 3.3.6.1

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter. — See ITS 3.3.5

(3) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit. — See ITS 3.3.8

** See Specification 4.5.2.d.1 — See ITS 3.4.14

When either Decay Heat Isolation Valve is open. — See ITS 3.3.5

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DISCUSSION OF CHANGES
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.1 Actions and CTS Table 3.3-3 provide the compensatory actions to take when SFAS instrumentation is inoperable. ITS 3.3.6 ACTIONS provide the compensatory actions for inoperable SFAS manual initiation channels. The ITS 3.3.6 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable SFAS manual Function.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFAS manual initiation Function to be separate and independent from the others. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for SFAS instrumentation has three columns stating various requirements for each instrument string. These columns are labeled, "TOTAL NO. OF UNITS," "UNITS TO TRIP," and "MINIMUM UNITS OPERABLE." ITS 3.3.6 does not retain the "TOTAL NO. OF UNITS" or "UNITS TO TRIP" columns. This changes the CTS by moving the information of the "TOTAL NO. OF UNITS" and "UNITS 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.

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DISCUSSION OF CHANGES
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

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.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 Functional Unit 3.a and CTS Table 4.3-2 Functional Unit 3.a specify requirements for the "SFAS (Except Containment Spray and Emergency Sump Recirculation)" Manual Actuation Functional Unit. ITS 3.3.6 part a specifies requirements for the SFAS Manual Initiation Function. This changes the CTS by moving the information of "Except Containment Spray and Emergency Sump Recirculation" 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 SFAS Manual Initiation Function, the appropriate Conditions to enter if the channels become inoperable, and a Surveillance Requirement. 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 requires Functional Unit 3 (Manual Actuation), both the SFAS and Containment Spray Manual Initiation Functional Units, to be OPERABLE in MODES 1, 2, 3, and 4. In addition, the MODES in which Surveillances are required (CTS Table 4.3-2 Function Unit 3.a, SFAS manual actuation) also includes MODES 1, 2, 3, and 4. However, the MODES in which Surveillances are required for the Containment Spray manual actuation is MODES 1, 2, and 3. ITS LCO 3.3.6 requires two channels of SFAS manual initiation and two channels of Containment Spray manual initiation to be OPERABLE in MODES 1, 2, 3, and MODE 4 when associated engineered safety feature equipment is required to be OPERABLE. This changes the CTS by relaxing the Applicability in MODE 4 so that the SFAS Manual Initiation Function is only required to be OPERABLE when the associated equipment it supports is required to be OPERABLE. This change also aligns the Applicability of the LCO with the Surveillances.

The purpose of CTS Table 3.3-3 Functional Units 3.a and 3.b is to ensure the SFAS and Containment Spray manual initiation channels are OPERABLE. This change is acceptable because the requirements continue to ensure that the equipment are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. This change relaxes the

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DISCUSSION OF CHANGES
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

Applicability in MODE 4 so that the manual initiation channels are only required to be OPERABLE when the associated equipment it supports is required to be OPERABLE. The SFAS supported equipment is not required to be OPERABLE at all times in MODE 4, therefore OPERABILITY requirements for the SFAS manual initiation channels are not necessary. However, the Containment Spray System (both trains) is required to be OPERABLE at all times when in MODE 4. Since the Containment Spray System is always required in MODE 4, the change to the Applicability does not affect the Containment Spray manual initiation channel requirements. The Containment Spray manual initiation channels are required at all times in MODE 4, consistent with the CTS Table 3.3-3 requirements. This change is designated as less restrictive because the SFAS manual initiation channel LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 3 - Relaxation of Completion Time)* CTS Table 3.3-3 Action 12 requires the restoration of the manual initiation Functional Units (CTS Table 3.3-3 Functional Units 3.a and 3.b) within 48 hours. ITS 3.3.6 ACTION A allows 72 hours to restore the channel to OPERABLE status. This changes the CTS by providing an additional 24 hours to restore a channel to OPERABLE status when any manual initiation channel is inoperable.

The purpose of the Required Actions is 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 acceptable because the Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant instrumentation channels. This includes the capacity and capability of remaining channels, a reasonable time for repairs or replacement, and the low probability of a design basis accident (DBA) occurring during the repair period. The ITS 3.3.6 ACTION A will allow 72 hours to restore the channel to OPERABLE status when one channel is inoperable. This is a reasonable period of time because of the low probability of an event occurring that would require a manual initiation, the redundant manual initiation function remaining, and since the equipment is not credited in any safety analyses. Also, the Completion Time of 72 hours is based on unit operating experience and administrative controls, which provide alternative means of SFAS Function initiation via individual component controls. The 72 hour Completion Time is consistent with the allowed outage time for when a High Pressure Injection System is inoperable. This change is designated as less restrictive because the Completion Time for one inoperable SFAS manual initiation channel has been extended.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-2 Functional Unit 3.a (SFAS Manual Actuation) and Functional Unit 3.b (Containment Spray Manual Actuation) require the performance of a CHANNEL FUNCTIONAL TEST. CTS Table 4.3-2 Note 1 specifies that the manual actuation switches to be tested at least once per REFUELING INTERVAL and that all other circuitry associated with the manual safety feature actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days. ITS SR 3.3.6.1 only requires the CHANNEL FUNCTIONAL TEST to be performed every 24 months consistent with the CTS REFUELING INTERVAL. This changes the CTS by deleting the

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DISCUSSION OF CHANGES
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

31 day CHANNEL FUNCTIONAL TEST requirements for all other circuitry associated with manual safety feature.

The purpose of the CHANNEL FUNCTIONAL TEST is to test the entire circuitry for the Manual Actuation Functions. Currently the testing requirements include a test of the manual actuation switches at least once per REFUELING INTERVAL and all other circuitry associated with the manual safety feature actuation to be tested at least once per 31 days. ITS SR 3.3.6.1 only requires the CHANNEL FUNCTIONAL TEST to be performed every 24 months consistent with the CTS REFUELING INTERVAL. This changes the CTS by deleting the 31 day CHANNEL FUNCTIONAL TEST requirements for all other circuitry associated with manual safety feature. The manual initiation circuitry inputs into the output logic. The output logic will actuate if there is an automatic signal or a manual signal. The automatic actuation logic is tested every 31 days on a STAGGERED TEST BASIS (ITS SR 3.3.7.1). This test will help confirm that most of the circuitry remains OPERABLE during the cycle. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

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

CTS

All changes are 1 unless otherwise noted

3.3 INSTRUMENTATION

3.3.6 Engineered Safety Feature Actuation System (SFAS) Manual Initiation

s

3.3.2.1, Table 3.3-3 Functional Unit 2

LCO 3.3.6 Two manual initiation channels of each one of the SFAS Functions below shall be OPERABLE:

a. High Pressure Injection,

b. Low Pressure Injection,

[c. Reactor Building (RB) Cooling,]

[d. RB Spray,]

e. RB Isolation, and

[f. Control Room Isolation.]

a. SFAS; and

b. Containment Spray.

2

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when associated engineered safeguard equipment is required to be OPERABLE.

safety features

ACTIONS

----------NOTE----------

DOC A02 Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more SFAS Functions with one channel inoperable. (3.3.2.1 Action b, Table 3.3-3 Functional Unit 3 and ACTION 12)	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met. (3.3.2.1 Action b, Table 3.3-3 Functional Unit 3 and ACTION 12)	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

CTS

All changes are 1 unless otherwise noted

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.3.2.1, Table 4.3-2 Functional Unit 3	SR 3.3.6.1	Perform CHANNEL FUNCTIONAL TEST.	[18] months (24) (3)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

1. Changes are made to reflect plant specific nomenclature.

2. ISTS LCO 3.3.6 has been revised to be consistent with the current licensing basis and design.

3. Brackets have been removed and the proper plant specific information/value has been provided.

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

All changes are 1 unless otherwise noted

B 3.3 INSTRUMENTATION

B 3.3.6 Engineered Safety Feature Actuation System (ESFAS) Manual Initiation

BASES

BACKGROUND

The ESFAS manual initiation capability allows the operator to actuate ESFAS Functions from the main control room in the absence of any other initiation condition. Manually actuated Functions include High Pressure Injection, Low Pressure Injection, Reactor Building (RB) Cooling, RB Spray, RB Isolation, and Control Room Isolation. This ESFAS manual initiation capability is provided in the event the operator determines that an ESFAS Function is needed and has not been automatically actuated. Furthermore, the ESFAS manual initiation capability allows operators to rapidly initiate Engineered Safety Feature (ESF) Functions if the trend of unit parameters indicates that ESF actuation will be needed.

INSERT 1 2

s

LCO 3.3.6 covers only the system level manual initiation of these Functions. LCO 3.3.5, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," and LCO 3.3.7, "Engineered Safety Feature Actuation System (ESFAS) Automatic Actuation Logic," provide requirements on the portions of the ESFAS that automatically initiate the Functions described earlier.

INSERT 2 2

s

The ESFAS manual initiation Function relies on the OPERABILITY of the automatic actuation logic (LCO 3.3.7) for each component to perform the actuation of the systems. A manual trip push button is provided on the ESF panel of the control room console for each of the levels of protection for each actuation. Operation of the push button energizes relays whose contacts perform a logical "OR" function with the matrices of the automatic actuation, except for the matrices which are part of the ESF buses loading sequence. Manual actuation of the ESF buses loading sequence is made by de-energizing the timed output relays. The power supply for the manual trip relays is taken from the station batteries. Different batteries are used for the two actuations.

INSERT 2 2 INSERT 3

The ESFAS manual initiation channel is defined as the instrumentation between the console switch and the automatic actuation logic, which actuates the end devices. Other means of manual initiation, such as controls for individual ESF devices, may be available in the control room and other unit locations. These alternative means are not required by this LCO, nor may they be credited to fulfill the requirements of this LCO.

control 2

INSERT 1

One set of control switches (push button) will actuate Incident Levels 1 through 4, except for the containment spray pumps and containment spray discharge valves. These switches do not provide a signal to Incident Level 5 components (borated water storage tank suction valves and emergency sump). These manual initiation channels will be referred to as the SFAS manual initiation channels. Another set of control switches will only initiate the containment spray pumps and containment spray discharge valves. These manual initiation channels will be referred to as the Containment Spray System manual initiation channels.

2 **INSERT 2**

SFAS manual initiation channels and the Containment Spray System manual initiation channels.

2 **INSERT 3**

Operation of a control switch will provide inputs to the output modules which de-energize relays to actuate the associated equipment.

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES

The ESFAS, in conjunction with the actuated equipment, provides protective functions necessary to mitigate Design Basis Accidents, specifically, the loss of coolant accident and steam line break events. main 2

The ESFAS manual initiation ensures that the control room operator can rapidly initiate ESF Functions at any time. The manual initiation trip Function is required as a backup to automatic trip functions and allows operators to initiate ESFAS whenever any parameter is rapidly trending toward its trip setpoint. Furthermore, the ESFAS manual initiation may be specified in operating procedures for verification that ESF systems are running. actuation 2 of

The ESFAS manual initiation functions satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two ESFAS manual initiation channels of each ESFAS Function shall be OPERABLE whenever conditions exist that could require ESF protection of the reactor or RB. Two OPERABLE channels ensure that no single random failure will prevent system level manual initiation of any ESFAS Function. The ESFAS manual initiation Function allows the operator to initiate protective action prior to automatic initiation or in the event the automatic initiation does not occur. 2 containment required

of SFAS manual initiation and two OPERABLE channels for Containment Spray manual initiation

APPLICABILITY

The ESFAS manual initiation Functions shall be OPERABLE in MODES 1, 2, and 3, and in MODE 4 when the associated engineered safeguard equipment is required to be OPERABLE. The manual initiation channels are required because ESF Functions are designed to provide protection in these MODES. In MODES 5 and 6, ESFAS initiates systems that are either reconfigured or disabled for shutdown cooling operation. Accidents in these MODES are slow to develop and would be mitigated by manual operation of individual components. Adequate time is available to evaluate unit conditions and to respond by manually operating the ESF components, if required. 2

safety features

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each ESFAS manual initiation Function.

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

A.1

Condition A applies when one manual initiation channel of one or more ESFAS Functions becomes inoperable. Required Action A.1 must be taken to restore the channel to OPERABLE status within the next 72 hours. The Completion Time of 72 hours is based on unit operating experience and administrative controls, which provide alternative means of ESFAS Function initiation via individual component controls. The 72 hour Completion Time is consistent with the allowed outage time for the safety systems actuated by ESFAS. (i.e., Required Action B.1 in LCO 3.5.2, "Emergency Core Cooling System - Operating") 4

B.1 and B.2 If the Required Action and associated Completion Time of Condition A is not met

Required Action B.1 and Required Action B.2 apply if Required Action A.1 cannot be met within the required Completion Time. If Required Action A.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging unit systems. 5

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the ESFAS manual initiation. This test verifies that the initiating circuitry is OPERABLE and will actuate the end device (i.e., pump, valves, etc.). A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. 2 The [18] month Frequency is based on the need 24 6 to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This Frequency is demonstrated to be sufficient, based on operating experience, which shows these components usually pass the Surveillance when performed 24 on the [18] month Frequency. 6

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.6 BASES, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes are made to justify the allowance in the ACTIONS Note.

4. Changes are made to be consistent with other Specifications.

5. Changes are made to reflect the Specification.

6. The brackets have been removed and the proper plant specific information/value has been provided.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.6, SAFETY FEATURES ACTUATION SYSTEM (SFAS) MANUAL INITIATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 7

ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

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

ITS

A01

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.7 3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION: Add proposed ACTIONS Note

A02

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

See ITS 3.3.5 and ITS 3.3.8

ACTION A b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

SR 3.3.7.1 4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

See ITS 3.3.5

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

See ITS 3.3.5 and ITS 3.3.8

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

See ITS 3.3.5

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A01

TABLE 3.3-3

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
1. INSTRUMENT STRINGS					
a. DELETED	DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	4	2	3	1, 2, 3	10#
c. Containment Pressure - High-High	4	2	3	1, 2, 3	10#
d. RCS Pressure - Low	4	2	3	1, 2, 3*	10#
e. RCS Pressure - Low-Low	4	2	3	1, 2, 3**	10#
f. BHST Level - Low-Low	4	2	3	1, 2, 3	10#
2. OUTPUT LOGIC					
a. Incident Level #1: Containment Isolation	2	1	2	1, 2, 3, 4	11 A
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	2	1	2	1, 2, 3, 4	11 A
c. Incident Level #3: Low Pressure Injection	2	1	2	1, 2, 3, 4	11 A
d. Incident Level #4: Containment Spray	2	1	2	1, 2, 3, 4	11 A
e. Incident Level #5: Containment Sump Recirculation Permissive	2	1	2	1, 2, 3, 4	11 A

LA01

See ITS 3.3.5

LA01

L01

Add proposed LCO 3.3.7

LA02

ITS

A01

TABLE 3.3-3 (Continued)

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

See ITS 3.3.5

*** DELETED

**** DELETED

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

See ITS 3.3.8

****** When either Decay Heat Isolation Valve is open.

See ITS 3.3.5

The provisions of Specification 3.0.4 are not applicable.

See ITS 3.3.5, ITS 3.3..8 and ITS 3.8.1

ACTION STATEMENTS

ACTION 10 - With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.

See ITS 3.3.5

ACTION A

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Actions A.2 and A.3

L02

ITS

A01

TABLE 4.3-2

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. INSTRUMENT STRINGS				
a. DELETED	DELETED	DELETED	DELETED	DELETED
b. Containment Pressure - High	S	E	M(2)	1, 2, 3
c. Containment Pressure - High-High	S	E	M(2)	1, 2, 3
d. RCS Pressure - Low	S	R	M	1, 2, 3
e. RCS Pressure - Low-Low	S	R	M	1, 2, 3
f. BWST Level - Low-Low	S	E	M	1, 2, 3
2. OUTPUT LOGIC				
a. Incident Level #1: Containment Isolation	S	E	M	1, 2, 3, 4
b. Incident Level #2: High Pressure Injection and Starting Diesel Generators	S	E	M	1, 2, 3, 4
c. Incident Level #3: Low Pressure Injection	S	E	M	1, 2, 3, 4
d. Incident Level #4: Containment Spray	S	E	M	1, 2, 3, 4
e. Incident Level #5: Containment Sump Recirculation Permissive	S	E	M	1, 2, 3, 4
3. MANUAL ACTUATION				
a. SFAS (Except Containment Spray and Emergency Sump Recirculation)	NA	NA	M(1)	1, 2, 3, 4
b. Containment Spray	NA	NA	M(1)	1, 2, 3

See ITS 3.3.5

See ITS 3.3.6

LA02

L03

L04

L01

DISCUSSION OF CHANGES
ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.1 Actions and CTS Table 3.3-3 provide the compensatory actions to take when SFAS output logic is inoperable. ITS 3.3.7 ACTIONS provide the compensatory actions for inoperable SFAS output logic. The ITS 3.3.7 ACTIONS include a Note that allows separate Condition entry for each automatic actuation logic. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable automatic actuation logic.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFAS automatic actuation logic to be separate and independent from the others. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for SFAS instrumentation has three columns stating various requirements for each instrument string. These columns are labeled, "TOTAL NO. OF UNITS," "UNITS TO TRIP," and "MINIMUM UNITS OPERABLE." ITS 3.3.7 does not retain the "TOTAL NO. OF UNITS" or "UNITS TO TRIP" columns. This changes the CTS by moving the information of the "TOTAL NO. OF UNITS" and "UNITS 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 retains the requirement that all SFAS automatic actuation logics shall be OPERABLE and the appropriate Condition to enter if one or more automatic actuation logics are inoperable. Also,

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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.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 includes requirements that 2 channels of Incident Level 1 through 5 output logic shall be OPERABLE (CTS Table 3.3-3 Functional Unit 2, Output Logic, Parts a through e). It also states that Incident Level 1 includes Containment Isolation, Incident Level 2 includes High Pressure Injection and Starting Diesel Generators, Incident Level 3 includes Low Pressure Injection, Incident Level 4 includes Containment Spray, and Incident Level 5 includes Sump Recirculation Permissive. CTS Table 4.3-2 also identifies the incident levels and the associated SFAS Functions. ITS LCO 3.3.7 requires all the SFAS automatic logics to be OPERABLE. This changes the CTS by moving the details of the design (number of channels, incident levels, and associated SFAS Functions) from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement that all SFAS automatic actuation logics shall be OPERABLE and the appropriate Condition to enter if one or more automatic actuation logics are 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS Table 3.3-3 requires Functional Unit 2 (Output Logic) to be OPERABLE in MODES 1, 2, 3, and 4. In addition, the MODES in which Surveillances are required (CTS Table 4.3-2 Function Unit 2) also include MODES 1, 2, 3, and 4. ITS LCO 3.3.7 requires the SFAS automatic logics to be OPERABLE in MODES 1, 2, 3, and MODE 4 when associated engineered safeguard equipment is required to be OPERABLE. This changes the CTS by relaxing the Applicability in MODE 4 so that the actuation logics are only required to be OPERABLE when the associated equipment it supports is required to be OPERABLE.

The purpose of CTS Table 3.3-3 Functional Units 2 is to ensure that all SFAS automatic actuation logics are OPERABLE. This change is acceptable because

DISCUSSION OF CHANGES
ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

the requirements continue to ensure that the equipment is maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. This change relaxes the Applicability in MODE 4 so that the output logic channels are only required to be OPERABLE when the associated equipment it supports is required to be OPERABLE. Not all of the supported equipment is required to be OPERABLE at all times in MODE 4 therefore OPERABILITY requirements for the actuation logics are not necessary. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Action 11, with any component in the Output Logic channels inoperable (CTS Table 3.3-3 Functional Units 2.a through 2.e), requires action to be taken within one hour to trip the associated components or to shut down the unit. ITS 3.3.7 ACTION A requires the associated output logic to be tripped, the associated component(s) to be placed in the safety feature configuration, or to declare the associated component(s) inoperable within 1 hour. This changes the CTS by providing additional options to either place the associated components in the safety features configuration or declare the associated components inoperable, in lieu of shutting down the unit.

The purpose of CTS Table 3.3-3 Action 11 is to ensure the associated output logic is placed in the tripped condition in a short period of time. 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. This change allows the safety feature to be actuated or the associated components to be declared inoperable within the same hour period, in lieu of shutting down the unit. The requirement to place the associated component(s) in the safety feature configuration is considered equivalent to the existing action. This change is less restrictive because it allows the safety feature component(s) to be declared inoperable, in lieu of shutting down the unit. This change is acceptable because the associated LCOs of the supported equipment provide the appropriate compensatory actions to take. In addition, placing the component in its safety feature configuration may violate unit safety or operational considerations. In these cases, the component status should not be changed, but the supported system component must be declared inoperable. Conditions which would preclude the placing of a component in its engineered safeguard configuration include, but are not limited to, violation of system separation, activation of fluid systems that could lead to thermal shock, or isolation of fluid systems that are normally functioning. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-2 Functional Unit 2 (Output Logic) requires the performance of a CHANNEL CHECK every 12 hours and a CHANNEL CALIBRATION every 18 months. ITS 3.3.7 does not require these tests. This changes the CTS by deleting the CHANNEL CHECK and CHANNEL CALIBRATION requirements for the Output Logic channels.

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DISCUSSION OF CHANGES
ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

The purpose of the CHANNEL CHECK and CHANNEL CALIBRATION associated with CTS Table 4.3-2 Functional Unit 2 is to ensure all circuitry associated with the Output Logic channels are OPERABLE. The output logic channels receive input from the bistables, and if there is a 2-out-of-4 coincidence in the associated parameter obtained from two logics an actuation signal is sent to the associated device. The CHANNEL FUNCTIONAL TEST (ITS SR 3.3.7.1) verifies the complete circuitry associated with the Output Logic channels. The Frequency of testing of the CHANNEL FUNCTIONAL TEST is every 31 days on a STAGGERED TEST BASIS. In reviewing the test history it has been determined that the performance of the CHANNEL FUNCTIONAL TEST is sufficient to ensure the circuitry remains OPERABLE. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L04 *(Category 7 – Relaxation of Surveillance Frequency - Non-24 Month Type Change)* CTS Table 4.3-2 requires a CHANNEL FUNCTIONAL TEST on the SFAS Output Logic channels (Functional Unit 2) every 31 days. The Surveillance Frequency for ITS SR 3.3.7.1 is every 31 days on a STAGGERED TEST BASIS. This changes the CTS by extending the Frequency of testing a channel from 31 days to 62 days and placing the requirement to test the channels on a STAGGERED TEST BASIS.

The purpose of CTS Table 4.3-2 is to verify the SFAS Output Logic channels are OPERABLE. Currently, a CHANNEL FUNCTIONAL TEST is performed on the SFAS Output Logic channels every 31 days. In the ITS, the CHANNEL FUNCTIONAL TEST is performed every 31 days on a STAGGERED TEST BASIS. This changes the CTS by extending the Frequency of testing a channel from 31 days to 62 days and places the requirement to test the channels on a STAGGERED TEST BASIS. This change is acceptable because the periodic Surveillance Frequency provides an acceptable level of equipment reliability. The testing Frequency on a STAGGERED TEST BASIS is acceptable is based on operating experience that demonstrates the rarity of more than one channel failing within the same 31 day interval. These changes are designated as less restrictive because Surveillances 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)

CTS

3.3 INSTRUMENTATION

3.3.7 Engineered Safety Feature Actuation System (ESFAS) Automatic Actuation Logic

3.3.2.1, Table 3.3-3 Functional Unit 2 — **LCO 3.3.7** All the ESFAS automatic actuation logic matrices shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when associated engineered safeguard equipment is required to be OPERABLE.

ACTIONS

DOC A02 ----------NOTE----------
Separate Condition entry is allowed for each automatic actuation logic matrix.

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.3.2.1 Action b, Table 3.3-3 Action 11 — A. One or more automatic actuation logic matrices inoperable.	A.1 Place associated component(s) in engineered safeguard configuration.	1 hour
	OR	
	A.2 Declare the associated component(s) inoperable.	1 hour

A.1 Place associated output logic in trip.
OR

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.3.2.1, Table 4.3-2 Functional Unit 2 — SR 3.3.7.1	Perform automatic actuation logic CHANNEL FUNCTIONAL TEST.	31 days on a STAGGERED TEST BASIS

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

1. Changes are made to reflect plant specific nomenclature.

2. The Davis-Besse SFAS design includes two actuation logics for each SFAS incident level. Each actuation logic includes two output logic channels that must trip for the actuation logic to actuate the affected components. When the associated output logic channel is placed in trip, the affected components will not actuate until the other output logic channel trips. Therefore, the Required Actions have been modified to allow an individual output logic channel to be placed in trip (ITS 3.3.7 Required Action A.1) in lieu of actuation of the affected components. This is consistent with the current licensing basis. The subsequent Required Actions have been renumbered.

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

All changes are 1 unless otherwise noted

B 3.3 INSTRUMENTATION

B 3.3.7 Engineered Safety Feature Actuation System (ESFAS) Automatic Actuation Logic

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BASES

BACKGROUND

The automatic actuation logic channels of ESFAS are defined as the logic between the buffers of the sensing channels and the controllers that actuate ESFAS equipment. Each of the components actuated by the ESFAS Functions has an associated automatic actuation logic matrix. If two-out-of-three ESFAS instrumentation channels indicate a trip, or system level manual initiation occurs, the automatic actuation logic is activated and the associated component is actuated. The purpose of requiring OPERABILITY of the ESFAS automatic actuation logic is to ensure that the Functions of the ESFAS can be automatically initiated in the event of an accident. Automatic actuation of some Functions is necessary to prevent the unit from exceeding the Emergency Core Cooling Systems (ECCS) limits in 10 CFR 50.46 (Ref. 1). It should be noted that OPERABLE automatic actuation logic channels alone will not ensure that each Function can be activated; the instrumentation channels and actuated equipment associated with each Function must also be OPERABLE to ensure that the Functions can be automatically initiated during an accident. 2

four

INSERT 1

LCO 3.3.7 covers only the automatic actuation logic that initiates these Functions. LCO 3.3.5, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," and LCO 3.3.6, "Engineered Safety Feature Actuation System (ESFAS) Manual Initiation," provide requirements on the instrumentation and manual initiation channels that input to the automatic actuation logic. 2

s

The ESFAS, in conjunction with the actuated equipment, provides protective functions necessary to mitigate Design Basis Accidents (DBAs), specifically, the loss of coolant accident (LOCA) and steam line break (SLB) events. The ESFAS relies on the OPERABILITY of the automatic actuation logic for each component to perform the actuation of the selected systems. 2

main

M

The small and large break LOCA analyses assume a conservative 35 second delay time for the actuation of high pressure injection (HPI) and low pressure injection (LPI) in BAW-10103A, Rev. 3 (Ref. 2). This delay time includes allowances for emergency diesel generator (EDG) starts, EDG loading, ECCS pump starts, and valve openings. Similarly, the reactor building (RB) Cooling, RB Isolation, and RB Spray have been analyzed with delays appropriate for the entire system. 2

UFSAR, Section 6.3

containment air

containment

2

INSERT 1

The SFAS consists of four identical redundant instrument (sensing) and logic channels and two identical redundant actuation channels. Each instrument channel includes analog circuits with analog isolation devices and trip bistable modules with digital (optical electronic) isolation devices. The isolated output of the trip bistable module is used to comprise coincidence matrices with the terminating relays within the actuation channel of SFAS. The isolation devices also provide isolation between channels. The trip bistables in each of the four sensing channels provide inputs to the corresponding output modules of their logic channels and the output modules of the remaining three logic channels. Should any two out of four trip bistables monitoring a given variable trip, the output modules in all four logic channels connected to that trip bistable will trip. The terminating (output) relays de-energize when the associated output module trips. The terminating relays of instrumentation and logic channels 1 and 3, must both be de-energized to activate SFAS actuation channel 1. Similarly, instrumentation and logic channels 2 and 4 are de-energized to activate SFAS actuation channel 2. The terminating relays act on the actuation control devices such as motor controllers and solenoid valves. Figure 7.3-2, UFSAR, Section 7.3.1.1.2 (Ref. 2), illustrates how instrumentation channel trips combine to cause protection channel trips.

The equipment actuation by SFAS depends upon the severity of the accident, as indicated by the sensor channels. The actuated equipment is separated into five Incident Levels. A brief description of the five SFAS Incident Levels follows. Note that the listings of the actuated equipment are a summary. A complete listing is provided in UFSAR Figures 7.3-3 through 7.3-8.

An Incident Level 1 actuation will occur when the RCS Pressure-Low or Containment Pressure-High setpoint is reached. The Containment Purge and Exhaust and Containment Sampling Systems are isolated, the Station Emergency Ventilation System is actuated, and the Control Room Normal Ventilation System is isolated.

An Incident Level 2 actuation also occurs when the RCS Pressure-Low or Containment Pressure-High setpoint is reached. High pressure injection is initiated, the Component Cooling Water System, Service Water System, containment air coolers, and emergency diesel generators are started, various containment isolation valves are closed, and the containment spray valves are opened (although containment spray pumps are not started).

An Incident Level 3 actuation occurs when the RCS Pressure-Low Low or Containment Pressure-High setpoint is reached. Low pressure injection is initiated and additional containment isolation valves are closed.

2

INSERT 1 (Continued)

An Incident Level 4 actuation occurs when the Containment Pressure-High High setpoint is reached. The Containment Spray System is started and additional containment isolation valves are closed.

An Incident Level 5 actuation occurs when the BWST Level-Low Low setpoint is reached, indicating that the BWST has been nearly depleted. A permissive is generated to allow manual transfer to the containment emergency sump.

BASES

BACKGROUND (continued)

Typical values used in the analyses are 35 seconds for RB Cooling, 60 seconds for RB Isolation, and 58 seconds for RB Spray. 2

The ESFAS automatic initiation of Engineered Safety Feature (ESF) Functions to mitigate accident conditions is assumed in the DBA analysis and is required to ensure that consequences of analyzed events do not exceed the accident analysis predictions. Automatically actuated features include HPI, LPI, RB Cooling, RB Spray, and RB Isolation. 2

containment air

containment

The ESFAS LCOs in the BWOG Standard Technical Specifications (STS) are based on a system representative of the Crystal River Unit 3 design. As discussed earlier, this arrangement involves measurement channels shared among all actuation functions, with separate actuation logic channels for each actuated component. In this arrangement, multiple ESF components are affected by a measurement channel failure, but a single automatic actuation logic failure affects only one component. The organization of BWOG STS ESFAS LCOs reflect the described logic arrangement by linking actions for automatic actuation logic failures directly to the actions for the affected ESF component. The overall philosophy is that if an automatic actuation logic fails, the affected component is put into its engineered safeguard configuration. This action eliminates the need for the automatic actuation logic. If the affected component cannot be placed in its engineered safeguard configuration, actions are taken to address the inoperability of the supported system component. This greatly simplifies delineation of ESFAS LCOs. Furthermore, the LCO requirements on instrumentation channels, automatic actuation logics, and manual initiation are specified separately to reflect the different impact each has on ESFAS OPERABILITY. 2

APPLICABLE SAFETY ANALYSES

Accident analyses rely on automatic ESFAS actuation for protection of of the core and RB and for limiting off site dose levels following an accident. These include LOCA, SLB, and feedwater line break events that result in Reactor Coolant System (RCS) inventory reduction or severe loss of RCS cooling. The automatic actuation logic is an integral part of the ESFAS. 3 2

containment

and M

The ESFAS automatic actuation logics satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

All changes are 1 unless otherwise noted

BASES

output

LCO

The automatic actuation logic matrix for each component actuated by the ESFAS is required to be OPERABLE whenever conditions exist that could require ESF protection of the reactor or the RB. This ensures automatic initiation of the ESF required to mitigate the consequences of accidents.

containment

2

output

safety features

APPLICABILITY

The automatic actuation logic Function shall be OPERABLE in MODES 1, 2, and 3, and in MODE 4 when the associated engineered safeguard equipment is required to be OPERABLE, because ESF Functions are designed to provide protection in these MODES. Automatic actuation in MODE 5 or 6 is not required because the systems initiated by the ESFAS are either reconfigured or disabled for shutdown cooling operation. Accidents in these MODES are slow to develop and would be mitigated by manual operation of individual components. Adequate time is available to evaluate unit conditions and respond by manually operating the ESF components, if required.

2

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each ESFAS automatic actuation logic matrix

output

, A.2, and A.3

output

either the output logic may be tripped or

A.1 and A.2

2

s

Required Action A.1 places the associated output logic in its actuated condition while

When one or more automatic actuation logic matrices are inoperable, the associated component(s) can be placed in its engineered safeguard configuration. Required Action A.1 is equivalent to the automatic actuation logic performing its safety function ahead of time. In some cases, placing the component in its engineered safeguard configuration would violate unit safety or operational considerations. In these cases, the component status should not be changed, but the supported system component must be declared inoperable. Conditions which would preclude the placing of a component in its engineered safeguard configuration include, but are not limited to, violation of system separation, activation of fluid systems that could lead to thermal shock, or isolation of fluid systems that are normally functioning. The Completion Time of 1 hour is based on operating experience and reflects the urgency associated with the inoperability of a safety system component.

output

safety features

3

Required Action A.2 requires entry into the Required Actions of the affected supported systems, since the true effect of automatic actuation logic failure is inoperability of the supported system. The Completion Time of 1 hour is based on operating experience and reflects the urgency associated with the inoperability of a safety system component.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.7.1

SR 3.3.7.1 is the performance of a CHANNEL FUNCTIONAL TEST on a 31 day STAGGERED TEST BASIS. The test demonstrates that every automatic actuation logic associated with one of the two safety system trains successfully performs the two-out-of-three logic combinations every 31 days. All automatic actuation logics are thus retested every 62 days. The test simulates the required one-out-of-three inputs to the logic circuit and verifies the successful operation of the automatic actuation logic. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency is based on operating experience that demonstrates the rarity of more than one channel failing within the same 31 day interval.

actuation

four 2

four

2

Automatic actuation logic response time testing is incorporated into the response time testing required by LCO 3.3.5.

REFERENCES

1. 10 CFR 50.46.
2. BAW-10103A, Rev. 3, July 1977 — UFSAR, Section 6.3 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.7 BASES, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Grammatical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.7, SAFETY FEATURES ACTUATION SYSTEM (SFAS) AUTOMATIC ACTUATION LOGIC

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 8

ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

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

ITS

A01

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION — A02

LIMITING CONDITION FOR OPERATION

LCO 3.3.8

3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION: — Add proposed ACTIONS Note — A03

ACTIONS A and B

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

ACTIONS A and B

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1 and SR 3.3.8.2

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation. — See ITS 3.3.5

~~4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.~~ — A04

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure. — See ITS 3.3.5

ITS

A01

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LA01

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12
b. Containment Spray	2	2	2	1,2,3,4	12
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	4	2/BUS	2/BUS	1,2,3,4	15#
LCO 3.3.8 b. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15# A,B,C
LCO 3.3.8 c. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15# A,B,C
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

See ITS 3.3.6

See ITS 3.8.1

LA02

LA01

Add proposed second Applicability

M01

A05

See ITS 3.4.14

See ITS 3.3.5

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ITS

A01

TABLE 3.3-3 (Continued)

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig.

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

See ITS 3.3.5

*** DELETED

**** DELETED

LCO 3.3.8 Note

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump.

****** When either Decay Heat Isolation Valve is open.

See ITS 3.3.5

The provisions of Specification 3.0.4 are not applicable.

A05

ACTION STATEMENTS

ACTION 10 - With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE.

See ITS 3.3.5

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.3.7

ITS

A01

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit 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.

See ITS 3.3.6

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure ≥ 328 psig, both Decay Heat Isolation Valves (DH11 and DH12) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

See ITS 3.4.14

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

See ITS 3.3.5

ACTION A

ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

See ITS 3.8.1

M02

Add proposed ACTION C

L01

ACTION B

b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

ACTION C

Add proposed Required Action B.1

L02

ITS

A01

TABLE 3.3-4

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION ALLOWABLE VALUES

FUNCTIONAL UNIT	ALLOWABLE VALUES##	
INSTRUMENT STRINGS		
a. DELETED	DELETED	
b. Containment Pressure – High	≤ 19.38 psia	See ITS 3.3.5
c. Containment Pressure - High-High	≤ 41.65 psia	See ITS 3.3.5
d. RCS Pressure – Low	≥ 1576.2 psig	See ITS 3.3.5
e. RCS Pressure - Low-Low	≥ 441.42 psig	See ITS 3.3.5
f. BWST Level	≥ 101.6 and ≤ 115.4 in. H_2O	See ITS 3.3.5
SEQUENCE LOGIC CHANNELS		
SR 3.3.8.3.a a. ~~Essential Bus Feeder Breaker Trip~~ Degraded Voltage ~~Relay~~ (DVR)	≥ 3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ≥ 6.4 and ≤ 7.9 sec	LA02
SR 3.3.8.3.b b. ~~Diesel Generator Start, Load Shed on Essential Bus~~ Loss of Voltage ~~Relay~~ (LVR)	≥ 2071 volts (dropout) and ≤ 2492 volts (pickup) with a time delay of ≥ 0.42 and ≤ 0.58 sec	LA02
INTERLOCK CHANNELS		
a. Decay Heat Isolation Valve	< 328 psig *	See ITS 3.4.14
and Pressurizer Heater		See ITS 3.3.5

* Referenced to the RCS Pressure instrumentation tap. — See ITS 3.4.14

** Allowable Values for CHANNEL FUNCTIONAL TEST — See ITS 3.3.5

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ITS

A01

SR 3.3.8.1

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	SR 3.3.8.2 CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. SEQUENCE LOGIC CHANNELS				
a. Sequencer	S	NA	M	1, 2, 3, 4
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A(3) -2	M(3) -1	1, 2, 3, 4
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A(3) -2	M(3) -1	1, 2, 3, 4
5. INTERLOCK CHANNELS				
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3
b. Pressurizer Heater	S	R	**	3 ##

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days.

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter.

(3) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

** See Specification 4.5.2.d.1

When either Decay Heat Isolation Valve is open.

See ITS 3.8.1

Add proposed second Applicability

M01

L03

LA02

See ITS 3.4.14

See ITS 3.3.5

See ITS 3.3.6

See ITS 3.3.5

See ITS 3.4.14

See ITS 3.3.5

SR 3.3.8.1 Note,
SR 3.3.8.2 Note

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DISCUSSION OF CHANGES
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.1 requires the Safety Feature Actuation System (SFAS) functional units shown in Table 3.3-3 to be OPERABLE. ITS 3.3.8 requires specific channels per bus for the Loss of Voltage and specific channels per bus for the Degraded Voltage Functions to be OPERABLE. This changes the CTS by having a separate Specification for the EDG LOPS in lieu of including it with the SFAS Instrumentation Specification.

This change is acceptable because the technical requirements for the EDG LOPS instrumentation are maintained with the change in format. The EDG LOPS Specification continues to require the start of the EDGs on Loss of Voltage and Degraded Voltage signals. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.3.2.1 Actions and CTS Table 3.3-3 provide the compensatory actions to take when EDG LOPS instrumentation are inoperable. ITS 3.3.8 ACTIONS provide the compensatory actions for inoperable LOPS instrumentation. The ITS 3.3.8 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing clarification regarding entry into the Action for each inoperable EDG LOPS Function.

This change is acceptable because it clearly states the current requirement. CTS considers each EDG LOPS Function to be separate and independent from the others. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 4.3.2.1.3 requires SAFETY FEATURES RESPONSE TIME testing of "each" SFAS function. ITS 3.3.8 does not include response time testing for the EDG LOPS Instrumentation Functions. This changes the CTS by clearly identifying that the SAFETY FEATURES RESPONSE TIME testing does not apply to the EDG LOPS Instrumentation Functions.

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. Technical Requirements Manual (TRM) Table 3.3-5, which was previously in CTS 3.3.2.1 as Table 3.3-5, only specifies response times for those SFAS Functions assumed in the Davis-Besse safety analyses. These response times were removed from CTS 3.3.2.1 and placed under Davis-Besse control as documented in the NRC Safety Evaluation Report for License Amendment 225. In addition, TRM Table 3.3-5 currently does not require response time testing of

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the CTS 3.3.2.1 Loss of Power Functions. This change is designated as administrative because it does not result in technical changes to the CTS.

A05 CTS Table 3.3-3, Functional Units 4.b and 4.c (Degraded Voltage and Loss of Voltage) include a Note # that applies to Action 15 and states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.8 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the CTS. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.8 ACTION A requires the plant to place the inoperable channels in trip and allows operation to continue for an unlimited period of time. Therefore, because the ITS still allows the plant to change MODE or other specified condition in the Applicability, this change is considered to be consistent with the current allowance provided by the CTS Note. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Tables 3.3-3 and 4.3-2 requirements for the Degraded Voltage and Loss of Voltage Functional Units are applicable in MODES 1, 2, 3, and 4. ITS 3.3.8 requires the Degraded Voltage and Loss of Voltage Functions to be OPERABLE in MODES 1, 2, 3, and 4 and when the associated EDG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown." This changes the CTS by expanding the conditions under which the Degraded Voltage and Loss of Voltage Functions must be OPERABLE.

This change is acceptable because requiring the Degraded Voltage and Loss of Voltage Functions to be OPERABLE when LCO 3.8.2 requires an EDG to be OPERABLE ensures that the automatic loss of power start of the EDG is available when needed. This change is designated as more restrictive because it expands the applicability in which equipment is required to be OPERABLE.

M02 CTS Table 3.3-3 Action 15a allows a loss of voltage or degraded voltage channel to be inoperable and bypassed for up to 2 hours to perform Surveillance testing per Specification 4.3.2.1.1 (i.e., a CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION). ITS 3.3.8 does not include this allowance. This changes the CTS by deleting an allowance to bypass, for 2 hours, a channel made inoperable solely to perform Surveillance testing.

The purpose of the allowance provided in CTS Table 3.3-3 Action 15a is to allow some time to perform Surveillance testing on a channel made inoperable solely due to Surveillance testing without requiring the 1 hour action to trip the inoperable channel (CTS Table 3.3-3 Action 15a) to be performed. However, the Davis-Besse design does not include a bypass switch for these two Functions

DISCUSSION OF CHANGES
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

(loss of voltage and degraded voltage). Therefore, the allowance cannot normally be used without the use of lifted leads or jumpers. This change is acceptable because the channels will be declared inoperable during testing and the 1 hour action to trip the channel will be imposed, similar to when the channel is inoperable for other reasons. This change is designated as more restrictive because it deletes an allowance to not enter an action for up to 2 hours due to Surveillance testing.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 specifies the "TOTAL NO. OF UNITS" and "UNITS TO TRIP" for the Degraded Voltage and Loss of Voltage Functional Units. ITS 3.3.8 does not include these details. This changes the CTS by moving the information of the "TOTAL NO. OF UNITS" and "UNITS TO TRIP" columns 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 minimum number of required channels for each Function. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Section 5.0 of ITS. 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 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 Functional Unit 4.b specifies requirements for the "Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)" units. CTS Table 3.3-3 Functional Unit 4.c specifies requirements for the "Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)" units. CTS Table 3.3-4 and CTS Table 4.3-2 specify other requirements for the same Functional Units. ITS LCO 3.3.8 requires the Loss of Voltage Function and the Degraded Voltage Function Emergency Diesel Generator (EDG) Loss of Power Start (LOPS) instrumentation to be OPERABLE. This changes the CTS by moving the information that the Degraded Voltage channel trips the essential bus feeder breaker and that the channel includes a Degraded Voltage "relay" to the Bases. This change also moves the information that the Loss of Voltage instrumentation starts the diesel generator and causes a load shed of essential bus and that the channel includes a degraded voltage "relay" to the Bases.

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DISCUSSION OF CHANGES
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

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, the appropriate Condition to enter if a required channel becomes inoperable, and the appropriate Surveillance Requirements. 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Action 15.a requires, with the number of OPERABLE channels one less than the Minimum Units Operable per Bus, that the inoperable channel be placed in trip within 1 hour. If this action is not accomplished, the shutdown requirements of CTS 3.0.3 would apply. ITS 3.3.8 ACTION C requires, when the Required Action and associated Completion Time are not met, that the associated EDG be immediately declared inoperable. This changes the CTS by allowing the associated EDG to be declared inoperable instead of entering CTS 3.0.3 and shutting down the unit.

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. This change is acceptable because the Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This instrumentation provides a start signal for the EDGs (i.e., it supports EDG OPERABILITY) and the appropriate action in this condition is to declare the EDG inoperable. The current requirements are overly restrictive. For example, if an EDG were inoperable for other reasons, then a 7 day allowed outage time is provided. However, if a single instrument is inoperable but the EDG is otherwise fully OPERABLE, then an immediate shutdown is required. Also, CTS Table 3.3-3 allows the EDG to be declared inoperable when the number of OPERABLE units are two less than the Minimum Units Operable per Bus (i.e., an immediate shutdown is not required). This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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DISCUSSION OF CHANGES
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

L02 *(Category 4 – Relaxation of Required Actions)* CTS Table 3.3-3 Action 15.b states that with the number of OPERABLE units two less than the Minimum Units Operable per bus, to declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and to take the Action required of Specification 3.8.1.1. This is addressed in ITS by Conditions and Required Actions B and C. ITS 3.3.8 ACTION B requires, with one or more Functions with two channels per bus inoperable, restoration of one channel per bus to OPERABLE status in 1 hour. This changes the CTS to allow two channels per bus of the Loss of Voltage and Degraded Voltage Functions to be inoperable for one hour before declaring the associated EDG inoperable.

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. This change is acceptable because the Required Actions are consistent with safe operation under the specified Condition, considering a reasonable time for repairs or replacement of most failures and the low probability of a DBA occurring during the repair period. The ITS ACTION will allow 1 hour to restore one channel per bus to OPERABLE status. This is a reasonable period of time because of the low probability of an event occurring that would require an EDG LOPS. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.3-2 Functional Unit 4.b requires a CHANNEL CHECK of the Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR). CTS 4.3-2 Functional Unit 4.c requires a CHANNEL CHECK of the Diesel Generator Start and Load Shed on Essential Bus, Loss of Voltage Relay (LVR). ITS 3.3.8 does not require a CHANNEL CHECK. This changes the CTS by not requiring a CHANNEL CHECK of the two relays.

The purpose of performing a CHANNEL CHECK, as described in ITS Section 1.0, is to qualitatively assess, by observation, channel behavior during operation. It should include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameters. However, these Functions are relays that do not provide any indication of voltage to the operators. The only indications they provide are to alarms – if they are tripped, an alarm annunciates in the control room - and to a local target indicator that basically shows if the channel is tripped or not tripped. However, the local indicator does not provide a value for the tripped relay; it just shows that it is tripped. Thus, the CHANNEL CHECK requirement provides no qualitative information as to what voltage each relay is actually sensing. Therefore, there is no way during the CHANNEL CHECK, other than looking for an absence of an alarm, to determine if the relays are performing properly. Since the operators routinely monitor the status of alarms in the control room, there is no need to specify a CHANNEL CHECK for these instruments. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO is consistent with the safety analysis. Thus,

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DISCUSSION OF CHANGES
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the assumptions in the safety analyses are protected. Each Degraded Voltage and Loss of Voltage relay will continue to be tested in a manner to ensure the safety analyses assumptions will be met. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

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

CTS

3.3 INSTRUMENTATION

3.3.8 Emergency Diesel Generator (EDG) Loss of Power Start (LOPS)

3.3.2.1, Table 3.3-3, Functional Units 4.b and 4.c

LCO 3.3.8 Three channels of loss of voltage Function and three channels of degraded voltage Function EDG LOPS instrumentation per EDG shall be OPERABLE.

Two (1) two (1) (2) bus (1) INSERT 1 (3)

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

ACTIONS

----------NOTE----------
DOC A02 Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-3 Action 15.a	A. One or more Functions with one channel per EDG inoperable. (bus) (1)	A.1 Place channel in trip.	1 hour
Table 3.3-3 Action 15.b	B. One or more Functions with two or more channels per EDG inoperable. (bus) (1)	B.1 Restore all but one channel to OPERABLE status.	1 hour
Table 3.3-3 Action 15.b	C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action for EDG made inoperable by EDG LOPS. (4)	Immediately

Declare associated EDG inoperable.

CTS

3 **INSERT 1**

Table 3.3-3. NOTE *****

----------NOTE ----------

All Degraded Voltage channels may be bypassed for ≤ 1 minute when starting a reactor coolant pump or circulating water pump.

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.8.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.8.2 (4.3.2.1.1. Table 4.3-2. Functional Units 4.b and 4.c including Note 3)	----------NOTE---------- When EDG LOPS instrumentation is placed in an inoperable status solely for performance of this Surveillance, entry into associated Conditions and Required Actions may be delayed as follows: (a) up to 4 hours for the degraded voltage Function, and (b) up to 4 hours for the loss of voltage Function, provided the two channels monitoring the Function for the bus are OPERABLE or tripped. ----------	
	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 3.3.8.3 (4.3.2.1.1, Table 3.3-4. Sequence Logic Channels, Table 4.3-2 Functional Units 4.b and 4.c including Note 3)	Perform CHANNEL CALIBRATION with setpoint Allowable Value as follows: a. Degraded voltage ≥ [ ] and ≤ [ ] V with a time delay of [ ] seconds ± [ ] seconds at [ ] V and b. Loss of voltage ≥ [ ] and ≤ [ ] V with a time delay of [ ] seconds ± [ ] seconds at [ ] V	18 months

≥ 3712 volts (dropout) and ≤ 3771 volts (pickup) with a time delay of ≥ 6.4 seconds and ≤ 7.9 seconds

≥ 2071 volts (dropout) and ≤ 2492 volts (pickup) with a time delay of ≥ 0.42 seconds and ≤ 0.58 seconds

----------NOTE----------
The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

1. ISTS LCO 3.3.8 requires three channels of the loss of voltage Function and three channels of the degraded voltage Function per EDG to be OPERABLE. ISTS LCO 3.3.8 is revised in ITS LCO 3.3.8 to reflect the design of the Davis-Besse Functions. The design includes two channels per bus for each Function. The Degraded Voltage relays do not start the EDG at Davis-Besse, however they trip the essential bus feeder breaker which will result in a loss of voltage on the bus which will start the associated EDG. Therefore, ITS LCO 3.3.8 requires two channels of the Loss of Voltage Function and two channels of Degraded Voltage Function EDG LOPS instrumentation per bus to be OPERABLE. Commensurate changes to ISTS 3.3.8 ACTIONS A and B to address the 2 channels per bus design of the Functions are made.

2. Grammatical/editorial change made for consistency.

3. A Note has been added to the ISTS LCO 3.3.8 that allows all Degraded Voltage channels to be bypassed for < 1 minute when starting a reactor coolant pump or circulating water pump. This is consistent with the CTS.

4. Required Action C.1 has been revised consistent with ISTS 3.8.3 Required Action F.1.

5. ISTS SR 3.3.8.2 is modified by a Note that allows an instrument to be placed in an inoperable status solely for the performance of this Surveillance and not enter the associated Conditions and Required Actions for up to 4 hours provided two channels monitoring the Function for the bus are OPERABLE to trip. For Davis-Besse, the design of each Function only includes two channels per bus and both must trip for logic initiation. As such, when one channel of a Function on a bus is inoperable the logic will not actuate on an actual Loss of Voltage or Degraded Voltage condition. Therefore, the ISTS SR 3.3.8.2 Note is not included in the Davis-Besse ITS SR 3.3.8.1.

6. The Frequency of the CHANNEL CALIBRATION Surveillance has been modified to be consistent with current licensing requirements.

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

8. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

9. ISTS SR 3.3.8.1 has been deleted as justified in Discussion of Change L03.

10. These Notes were required to be added to the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION Surveillances by Amendment 275.

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

All changes are 1 unless otherwise noted

B 3.3 INSTRUMENTATION

B 3.3.8 Emergency Diesel Generator (EDG) Loss of Power Start (LOPS)

BASES

BACKGROUND

The EDGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. Undervoltage protection will generate a LOPS in the event a loss of voltage or degraded voltage condition occurs in the switchyard. There are two LOPS Functions for each 4.16 kV vital bus.

INSERT 1

Three undervoltage relays with [inverse voltage time] characteristics are provided on each 4.16 kV Class 1E instrument bus for the purpose of detecting a sustained undervoltage condition or a loss of bus voltage. The relays are combined in a two-out-of-three logic to generate a LOPS if the voltage is below 75% for a short time or below 90% for a long time. 2

The LOPS initiated ACTIONS are described in FSAR, Section [8.3] (Ref. 1). 8.3.1.1 2

U

Trip Setpoints and Allowable Value

relays

The trip setpoints used in the bistables are based on the analytical limits presented in accident analysis in FSAR, Chapter [14] (Ref. 2). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. The actual nominal trip setpoint entered into the bistable is more conservative than that required by the unit specific setpoint calculations. A channel is inoperable if its actuation trip setpoint is not within its required Allowable Value.

relay trip

Setpoints in accordance with the Allowable Value will assure that limits of Chapter 2.0, "Safety Limits," in the Technical Specifications are not violated during anticipated operational occurrences (AOOs); that the consequences of accidents will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or accident; and that the equipment functions as designed.

The undervoltage protection scheme has been designed to protect the unit from spurious trips caused by the offsite power source. This is made possible by the inverse voltage time characteristics of the relays used. A complete loss of offsite power will result in approximately a [1] second delay in LOPS actuation. The EDG starts and is available to accept loads within a 10 second time interval on the Engineered Safety Feature Actuation System (ESFAS) or LOPS. Emergency power is established within the maximum time delay assumed for each event analyzed in the accident analysis (Ref. 2).

delay 10 2 s

interruption of the power supply

1

INSERT 1

Four undervoltage relays with time delays are provided on each 4.16 kV essential bus for the purpose of detecting a loss of voltage condition. Two undervoltage relays and an auxiliary relay per essential bus are associated with a channel. Either undervoltage relay in a channel will actuate its associated auxiliary relay. The actuation of both auxiliary relays (two-out-of-two logic) will disconnect the offsite source, load shed the essential bus, and generate an EDG LOPS.

Four undervoltage relays with time delays are provided on each 4.16 kV essential bus for the purpose of detecting a sustained undervoltage condition (degraded voltage condition). Two undervoltage relays and an auxiliary relay per essential bus are associated with a channel. Either undervoltage relay in a channel will actuate its associated auxiliary relay. The actuation of both auxiliary relays (two-out-of-two logic) will disconnect the offsite source. Disconnecting the offsite source causes the loss of voltage relays to actuate. As described above, the loss of voltage relays will disconnect the offsite source, load shed the essential bus, and generate an EDG LOPS.

BASES

BACKGROUND (continued)

two

one-out-of two. taken twice

essential bus

With three protection channels in a two-out-of-three trip logic for each division of the 4.16 kV power supply, no single failure will cause or prevent protective system actuation. This arrangement meets IEEE-279-1971 criteria (Ref. 3).

APPLICABLE SAFETY ANALYSES

The EDG LOPS is required for the Engineered Safety Features (ESF) to function in any accident with a loss of offsite power. Its design basis is that of the ESFAS.

Accident analyses credit the loading of the EDG, based on the loss of offsite power, during a loss of coolant accident (LOCA). The actual EDG Start has historically been associated with the ESFAS actuation. The diesel loading has been included in the delay time associated with each safety system component requiring EDG supplied power following a loss of offsite power. The analysis assumes a nonmechanistic EDG loading, which does not explicitly account for each individual component of the loss of power detection and subsequent actions. The total actuation time for the limiting systems, high pressure injection, and low pressure injection is 35 seconds. This delay time includes contributions from the EDG Start, EDG loading, and safety injection system component actuation. The response of the EDG to a loss of power must be demonstrated to fall within this analysis response time when including the contributions of all portions of the delay.

The required channels of LOPS, in conjunction with the ESF systems powered from the EDGs, provide unit protection in the event of any of the analyzed accidents discussed in the accident analysis (Ref. 2), in which a loss of offsite power is assumed.

The delay times assumed in the safety analysis for the ESF equipment include the 10 second EDG Start delay and, if applicable, the appropriate sequencing delay. The response times for ESFAS actuated equipment in LCO 3.3.5, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate EDG loading and sequencing delay.

The EDG LOPS channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

The LCO for the LOPS requires that three channels per bus of each LOPS instrumentation Function shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOPS supports safety systems associated with the ESFAS. In MODES 5 and 6, the three channels must be OPERABLE whenever the associated EDG is required to be OPERABLE to ensure that the automatic start of the EDG is available when needed.

two

per bus of each EDG LOPS instrument function.

two

A channel is considered OPERABLE as long as one of the two undervoltage relays are OPERABLE.

1

1

Loss of LOPS function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss of offsite power, which is an AOO, the EDG powers the motor driven emergency feedwater pumps. Failure of these pumps to start would leave only the one turbine driven pump and an increased potential for a loss of decay heat removal through the secondary system.

1

Only Allowable Values are specified for each Function in the LCO. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal setpoints are selected to ensure that the setpoint measured by CHANNEL FUNCTIONAL TESTS does not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within the Allowable Value, is acceptable provided that operation and testing is consistent with the assumptions of the unit specific setpoint calculation. Each Allowable Value specified is more conservative than the analytical limit assumed in the transient and accident analysis to account for instrument uncertainties appropriate to the trip function. These uncertainties are defined in the "[Unit Specific Setpoint Methodology]" (Ref. 4).

relay

setpoint calculations

1

2

Degraded Voltage LOPS

Voltage: The minimum Allowable Value includes an allowance for relay coil calibration error and is based on maintaining at least [90%] of rated voltage on the 480 V motor control centers, with a [4.1%] V drop across the [4160/480] V stepdown transformers. The [4.1%] V drop associated with these transformers is the maximum expected due to ESF bus loading, while the MCC contactors are considered to require at least [90%] V for proper operation.

INSERT 1A

1

The maximum Allowable Value is not based on equipment operability concerns, but rather avoidance of unnecessary EDG starts due to spurious channel trip.

1 **INSERT 1A**

The minimum voltage (dropout) Allowable Value is the lowest voltage that results in all safety related loads having sufficient voltage to perform their safety related functions. With 4.16 kV essential bus voltages at the analytical limit of 3700 volts, all voltages are sufficient to meet this requirement. The Allowable Value includes channel uncertainty without including drift, calibration uncertainties, and uncertainties observed during normal operation.

The maximum voltage (pickup) Allowable Value corresponds to the lowest bus voltage that will ensure reset of the degraded voltage relays, as well as preclude unnecessary operation of the relays on a temporary voltage dip. The Allowable Value includes channel uncertainty without including drift, calibration uncertainties, and uncertainties observed during normal operation. An additional 3 Volts was subtracted from the Allowable Value for consistency with the Davis-Besse Nuclear Power Station AC Power Distribution analyses.

The minimum time delay Allowable Value is the bounding acceleration time for 4.16 kV motors expected to start due to a SFAS, based on the start time of the hgh pressure injection (HPI) pump motors at 70% of nominal voltage. The Allowable Value includes instrument channel uncertainty without including drift, and uncertainties observed during normal operation.

The maximum time delay Allowable Value is based on not exceeding the maximum EDG start time of 10 seconds. It includes a deduction to account for feeder breaker trip time, field collapse time, EDG breaker closure time, interposing relays, and uncertainties in the loss of voltage relays and dead bus timer settings, so that these delays, combined with the delays from the degraded voltage relays and loss of voltage relays, do not exceed the maximum EDG start time. The Allowable Value includes instrument channel uncertainty without including drift, and uncertainties observed during normal operation.

BASES

LCO (continued)

Time Delay: The response time includes [5 seconds] for undervoltage relay actuation following detection of degraded ES bus voltage, [13 seconds] for the bus trip delay timer, and [3 seconds] for the dead bus timer. Note that the acceptance criteria of [21 seconds] does not account for the setpoint tolerance of [10%] or [± 2.1 seconds]. 1

Loss of Voltage LOPS

INSERT 1B

Voltage and Response Time: The Allowable Value for the loss of voltage channels is ≥ 0 V. This Allowable Value and the associated channel response time are based on the physical characteristics of the loss of voltage sensing relays. The loss of voltage channels respond to a complete loss of ES bus voltage, providing automatic starting and loading of the associated EDG. However, their response time is not critical to the overall ES equipment response time following an actuation, since the degraded voltage LOPS instrumentation will also respond to the complete loss of voltage, and will do so earlier than the loss of voltage instrumentation. The loss of voltage channel response includes only the time response associated with the undervoltage relays, including the nominal setpoint of [7.8 seconds] and a tolerance of [7%] or [0.55 seconds]. 1

INSERT 2 3

APPLICABILITY

The EDG LOPS actuation Function s shall be OPERABLE in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. Actuation is also required whenever the EDG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown," so that the EDG can perform its function on a loss of power or degraded power to the essential vital bus. 4 1

ACTIONS

If a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that the channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected. Since the required channels are specified on a per EDG basis, the Condition may be entered separately for each EDG. bus 3

A Note has been added to the ACTIONS indicating that separate Condition entry is allowed for each Function.

1 **INSERT 1B**

The minimum voltage (dropout) Allowable Value is based on ensuring that the relays will not actuate until below the lowest (worst case) bus voltage expected during the start of the large 4.16 kV motors and block loading of the SFAS loads while the offsite power sources are supplying power to the 4.16 kV essential buses.

The maximum voltage (pickup) Allowable Value is based on precluding an undesired interaction between the loss of voltage relays and the EDG loading sequence. The Allowable Value includes instrument channel uncertainty without including drift, calibration uncertainties, and uncertainties observed during normal operation.

The minimum time delay Allowable Value is based on preventing spurious trips due to transient events that may occur on the Offsite Transmission System or within the Onsite Electrical Distribution System. The Allowable Value includes instrument channel uncertainty without including drift, and uncertainties observed during normal operation.

The maximum time delay Allowable Value is based on providing for instrument uncertainty in maintaining the lower Allowable Value. The Allowable Value includes instrument channel uncertainty without including drift, and uncertainties observed during normal operation.

3 **INSERT 2**

The Note allows all degraded voltage channels to be bypassed while starting a reactor coolant pump or circulating water pump. This prevents an actuation of the LOPS during the voltage decrease from the starting load of these pump motors. The one minute limit provides time for the starting current to decrease and bus voltage to return to normal.

All changes are 3 unless otherwise noted

BASES

ACTIONS (continued)

A.1

bus | one | EDG

If one channel per EDG in one or more Functions is inoperable, it must be tripped within 1 hour. With a channel in trip, the LOPS channels are configured to provide a one-out-of-two logic to initiate a trip of the incoming offsite power. In trip, one additional valid actuation will cause a LOPS signal on the bus. The 1 hour Completion Time is reasonable to evaluate and to take action by correcting a degraded condition in an orderly manner and takes into account the low probability of an event requiring LOPS occurring during this interval.

generate an EDG LOPS signal. | an EDG | an EDG | 1 | 5

B.1

Condition B applies when two or more undervoltage or two or more degraded voltage channels on a single bus are inoperable.

per | as described above | 4

Required Action B.1 requires all but one inoperable channel to be restored to OPERABLE status within 1 hour. With two or more channels inoperable, the logic is not capable of providing an automatic EDG LOPS signal for valid loss of voltage or degraded voltage conditions. The 1 hour Completion Time is reasonable to evaluate and to take action by correcting the degraded condition in an orderly manner and takes into account the low probability of an event requiring LOPS occurring during this interval.

an EDG

C.1

Condition C applies if the Required Action of Condition A or Condition B and the associated Completion Time is not met.

requires the associated EDG to be declared inoperable, which | EDG | 4

Required Action C.1 ensures that Required Actions for affected diesel generator inoperabilities are initiated. Depending on unit MODE, the Actions specified in LCO 3.8.1, "AC Sources - Operating," or LCO 3.8.2, are required immediately.

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1

SR 3.3.8.1 is the performance of the CHANNEL CHECK once every 12 hours to ensure that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. 3

The Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with this LCO's required channels.

SR 3.3.8 2 ← 1 3

The Note allows channel bypass for testing without defining it as inoperable although during this time period it cannot actuate a diesel start. This allowance is based on the assumption that 4 hours is the average time required to perform channel Surveillance. The 4 hour testing allowance does not significantly reduce the probability that the EDG will start when necessary. It is not acceptable to routinely remove channels from service for more than 4 hours to perform required Surveillance testing. 3

A CHANNEL FUNCTIONAL TEST is performed on each required EDG LOPS channel to ensure the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL

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BASES

SURVEILLANCE REQUIREMENTS (continued)

if

FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustments shall be consistent with the assumptions of the current unit specific setpoint analysis. The Frequency of 31 days is considered reasonable based on the reliability of the components and on operating experience that demonstrates channel failure is rare. 6 1

calculations

SR 3.3.8.3 2 3

As noted, the as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

A CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The setpoints and the response to a loss of voltage and a degraded voltage test shall include a single point verification that the trip occurs within the required delay time, as shown in Reference 1. CHANNEL CALIBRATION shall find that measurement setpoint errors are within the assumptions of the unit specific setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis in Reference 4. 3 1 1

calculations

12

The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an 18 month calibration interval in the determination of equipment drift in the setpoint calculation. 1

REFERENCES

1. FSAR, Section [8.3]. 8.3.1.1
2. FSAR, Chapter [14]. Section 6.3 1 2
3. IEEE-279-1971, April 1972. 1 2
4. [Unit Name] [Unit Specific Setpoint Methodology]. 1

U

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8 BASES, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

1. Changes are made to (additions, deletions and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis and licensing basis description.

2. The brackets have been removed and proper plant specific information has been provided.

3. Changes are made to reflect changes made to the Specification.

4. Editorial/grammatical error corrected.

5. Changes made to reflect the Specification.

6. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.8, EMERGENCY DIESEL GENERATOR (EDG) LOSS OF POWER START (LOPS)

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 9

ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.9 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE.

See ITS 3.3.1

A02

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR 3.3.9.1, SR 3.3.9.2 4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

A01

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation.

See ITS 3.3.1

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

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ITS

A01

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

LA01

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1. Manual Reactor Trip	2	1	2	1, 2 and *	1	See ITS 3.3.2
2. High Flux	4	2	3	1, 2	2#, 10	See ITS 3.3.1
3. RC High Temperature	4	2	3	1, 2	3#, 10	
4. Flux - ΔFlux - Flow	4	2(a)(b)	3	1, 2	2#, 10	
5. RC Low Pressure	4	2(a)	3	1, 2	3#, 10	
6. RC High Pressure	4	2	3	1, 2	3#, 10	
7. RC Pressure-Temperature	4	2(a)	3	1, 2	3#, 10	
8. High Flux/Number of Reactor Coolant Pumps On	4	2(a)(b)	3	1, 2	3#, 10	
9. Containment High Pressure	4	2	3	1, 2	3#, 10	
10. Intermediate Range, Neutron Flux and Rate	2	N/A	2(c)	1, 2 and *	4	See ITS 3.3.10
11. Source Range, Neutron Flux and Rate						
A. Startup	2	N/A	2	2## and *	5A, C	
B. Shutdown	2	N/A	1	3, 4 and 5	6B	
12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#, 8#	See ITS 3.3.4
13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#	See ITS 3.3.3
14. Shutdown Bypass High Pressure	4	2	3	2**, 3** 4**, 5**	6#	See ITS 3.3.1
15. CR Relays	2	2	2	1, 2 and *	9#	See ITS 3.3.4

LA02

LA01

2

M01

A04

M01

Add proposed ACTION A

LCO 3.3.9

DAVIS-BESSE, UNIT 1

3/4 3-2

Amendment No. 122, 135, 185

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ITS

A01

TABLE 3.3-1 (Continued)

TABLE NOTATION

*With the control rod drive trip breakers in the closed position and the control rod drive system capable of rod withdrawal. — A04

**When Shutdown Bypass is actuated. — See ITS 3.3.1

#The provisions of Specification 3.0.4 are not applicable. — See ITS 3.3.1, ITS 3.3.3, and ITS 3.3.4

LCO 3.3.9 NOTE

##High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels.

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect. — See ITS 3.3.1

(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect. — See ITS 3.3.10

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers. — See ITS 3.3.2

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours. — See ITS 3.3.1

ITS

A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION A — ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. $\leq 10^{-10}$ amps on the Intermediate Range (IR) instrumentation, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10^{-10} amps on the IR instrumentation.

ACTION C

b. $> 10^{-10}$ amps on the IR instrumentation, operation may continue.

Add proposed ACTION B — M02

ACTION B — ACTION 6 - 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 within one hour and at least once per 12 hours thereafter.

Add proposed Required Actions B.1, B.2, and B.3 — M03

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied:

a. Within 1 hour:

1. Place the inoperable channel in the tripped condition, or

2. Remove power supplied to the control rod trip device associated with the inoperative channel.

b. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1, and the inoperable channel above may be bypassed for up to 30 minutes in any 24 hour period when necessary to test the trip breaker associated with the logic of the channel being tested per Specification 4.3.1.1.1. The inoperable channel above may not be bypassed to test the logic of a channel of the trip system associated with the inoperable channel.

See ITS 3.3.3 and ITS 3.3.4

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A01

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

A01

FUNCTIONAL UNIT	SR 3.3.9.1 CHANNEL CHECK	SR 3.3.9.2 CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.	See ITS 3.3.2
2. High Flux	S	D(2), and Q(6,9)	N.A.	1, 2	See ITS 3.3.1
3. RC High Temperature	S	R	SA(9)	1, 2	
4. Flux - ΔFlux - Flow	S(4)	M(3) and Q(6,7,9)	N.A.	1, 2	
5. RC Low Pressure	S	R	SA(9)	1, 2	
6. RC High Pressure	S	R	SA(9)	1, 2	
7. RC Pressure-Temperature	S	R(10)	SA(9,10)	1, 2	
8. High Flux/Number of Reactor Coolant Pumps On	S	Q(6,9)	N.A.	1, 2	
9. Containment High Pressure	S	E	SA(9)	1, 2	
10. Intermediate Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	1, 2 and *	See ITS 3.3.10
11. Source Range, Neutron Flux and Rate	S -1	E(6) -2	N.A. S	2, 3, 4 and 5	
12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *	See ITS 3.3.4
13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *	See ITS 3.3.3
14. Shutdown Bypass High Pressure	S	R	SA(9)	2**, 3**, 4**, 5**	See ITS 3.3.1
15. SCR Relays	N.A.	N.A.	R	1, 2 and *	See ITS 3.3.4

LA02

LA03

A01

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ITS

A01

TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days. — See ITS 3.3.2 and ITS 3.3.4

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows:

$$\frac{RTP}{TP}[API_O - API_I] = \text{Offset Error}$$

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5% — See ITS 3.3.1

(4) - AXIAL POWER IMBALANCE and loop flow indications only.

A01

(5) - ~~CHANNEL FUNCTIONAL TEST is not applicable.~~ Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days. — LA03

SR 3.3.9.2 (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL. — See ITS 3.3.1

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers. — See ITS 3.3.4

(9) - Performed on a STAGGERED TEST BASIS. — See ITS 3.3.1, ITS 3.3.3, ITS 3.3.4

(10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the Updated Safety Analysis Report. — See ITS 3.3.1

* - With any control rod drive trip breaker closed. — See ITS 3.3.3, ITS 3.3.4, ITS 3.3.10

** - When Shutdown Bypass is actuated. — See ITS 3.3.1

DISCUSSION OF CHANGES
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.1, "Reactor Protection System Instrumentation," requires the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 to be OPERABLE. ITS 3.3.9, "Source Range Neutron Flux," requires source range neutron flux channels to be OPERABLE. This changes the CTS by having a separate Specification for the Source Range Neutron Flux, in lieu of including it with the Reactor Protection System Instrumentation Specification.

This change is acceptable because the technical requirements for the source range neutron flux channel of the Source Range Neutron Flux are maintained with the change in format. The Source Range Neutron Flux Specification continues to require the OPERABILITY of the source range neutron flux channels. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 4.3.1.1.3 and the * footnote require REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME testing of "each" reactor trip function. ITS 3.3.9 does not include response time testing for the source range neutron flux channels. This changes the CTS by clearly identifying that the REACTOR PROTECTION SYSTEM RESPONSE TIME testing does not apply to the source range neutron flux channels.

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. TRM Table 3.3-2, which was previously in CTS 3.3.1.1 as Table 3.3-2, only specifies response times for those RPS Functions assumed in the Davis-Besse safety analyses. These response times were removed from CTS 3.3.1.1 and placed under Davis-Besse control as documented in the NRC Safety Evaluation Report for License Amendments 225. This change is acceptable because there are no response time test requirements for the source range neutron flux instrumentation. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS Table 3.3-1 Functional Unit 11.A (Startup) requires the Source Range Neutron Flux channels to be OPERABLE in MODE 2 and in MODE * (With the control rod drive trip breakers in the closed position and the control rod drive system capable of rod withdrawal). CTS Table 3.3-1 Functional Unit 11.B (Shutdown) requires the Source Range Neutron Flux channels to be OPERABLE in MODES 3, 4, and 5. ITS LCO 3.3.9 does not specify the MODE * requirement. This changes the CTS by deleting the requirement for the Source Range Neutron Flux channels to be OPERABLE in MODE *.

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DISCUSSION OF CHANGES
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

The purpose of the MODE * requirement is to ensure that the source range instrumentation is available to provide an inhibit when the control rods are capable of rod withdrawal. MODE 2 is defined at a THERMAL POWER of $\leq$ 5% RTP with a reactivity condition of $k_{eff} \geq 0.99$ irregardless of the status of the control rod drive trip breakers or the capability of control rod withdrawal. MODE 1 is defined at a THERMAL POWER of > 5% RTP with a reactivity condition of $k_{eff} > 0.99$. MODES 3, 4, and 5 are defined with a reactivity condition of $k_{eff} < 0.99$ and different average reactor coolant temperatures. This change is acceptable because the requirements of MODE 2, 3, 4, and 5 encompasses all conditions when the control rod drive trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal. This change is designated as administrative because it does not result in any technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-1 "MINIMUM CHANNELS OPERABLE" column only requires one Source Range, Neutron Flux and Rate channel to be OPERABLE in MODES 3, 4, and 5. Furthermore, CTS Table 3.3-1 ACTION 6, which is the ACTION referenced in Table 3.3-1 for the Source Range, Neutron Flux and Rate Functional Unit in MODES 3, 4, and 5, is only applicable when the number of channels OPERABLE is one less than required by the Minimum Channels OPERABLE requirement. Thus, while the CTS Table 3.3-1 states that the Source Range Neutron Flux Functional Unit includes "2" in the Total Number Of Channels column, only 1 channel is required to be OPERABLE by CTS 3.3-1. ITS LCO 3.3.9 requires two source range neutron flux channels to be OPERABLE in MODES 3, 4, and 5. In addition, ITS 3.3.9 ACTION A provides the requirements when one of the two channels are inoperable, and requires the inoperable channel to be restored to OPERABLE status prior to increasing neutron flux. This changes the CTS by requiring an additional source range neutron flux monitoring channel to be OPERABLE in MODES 3, 4, and 5, and provides an appropriate Action when the additional channel is inoperable.

The purpose of the additional channel requirement of ITS LCO 3.3.9 is to provide single failure protection. The change is acceptable since an additional source range neutron flux monitoring channel will be required to assist the operator in recognizing changes in reactivity. This change is designated as more restrictive because more source range neutron flux monitoring channels are required in the ITS than in the CTS.

M02 CTS Table 3.3-1 Functional Unit 11.A provides requirements for source range instrumentation in MODE 2. Two channels are required to be OPERABLE however there are no compensatory actions provided with two channels inoperable. ITS 3.3.9 ACTION B requires the immediate suspension of operations involving positive reactivity changes and the immediate initiation of actions to insert all CONTROL RODS and within one hour to open CONTROL ROD (CRD) trip breakers and to verify SDM is within limit. In addition there is a requirement to verify SDM once per 12 hours thereafter. This changes the CTS by providing specific actions for two inoperable source range channels.

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DISCUSSION OF CHANGES
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

The purpose of ITS 3.3.9 ACTION B is to place the plant in a safe condition where reactivity excursions are minimized. The change is acceptable because it places the plant in a safe condition. This change is designated as more restrictive because it adds Required Actions during MODE 2 operations that are not currently required by the CTS.

M03 CTS Table 3.3-1 Functional Unit 11.B provides requirements for source range neutron flux instrumentation during shutdown. One channel is required to be OPERABLE and if one channel is inoperable CTS Table 3.3-1 ACTION 6 requires the verification of compliance with the SDM within one hour and at least once per 12 hours thereafter. ITS 3.3.9 includes the same requirement however it also requires the immediate suspension of operations involving positive reactivity changes and the immediate initiation of actions to insert all control rods, and within one hour to open control rod drive (CRD) trip breakers and to verify SDM is within limit. This changes the CTS by providing additional compensatory actions for two inoperable source range channels during shutdown conditions.

The purpose of ITS 3.3.9 ACTION B is to place the plant in a safe condition where reactivity excursions are minimized. The change is acceptable because it places the plant in a safe condition. This change is designated as more restrictive because it adds Required Actions during shutdown conditions that are not currently required by the CTS.

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 RPS 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 LCO 3.3.9 does not retain the "TOTAL NO. OF CHANNELS" or "CHANNELS TO TRIP" columns. For the Source Range Neutron Flux and Rate channels the "CHANNELS TO TRIP" value is N/A. This changes the CTS by moving the information of the "TOTAL NO. OF CHANNELS" column 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

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DISCUSSION OF CHANGES
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

as a less restrictive removal of detail change because information relating to system design is 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 and CTS Table 4.3-1 require Source Range "Neutron Flux" and "Rate" Functions to be OPERABLE. ITS LCO 3.3.9 requires the source range neutron flux channels to be OPERABLE. This changes the CTS by moving the detail that the channels require "Neutron Flux" level and "Rate" from the Specification to the Bases.

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

LA03 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, UFSAR, ODCM, QAPM, IST Program, or IIP)* CTS Table 4.3-1 Note 5 applies to the source range neutron flux channels and requires verification of at least one decade of overlap with the intermediate range neutron flux channels prior to each reactor startup if not performed in the previous 7 days. This test is not included in ITS 3.3.9. This changes the CTS by moving the source range neutron flux/intermediate range neutron flux overlap test to the Technical Requirements Manual (TRM).

The removal of this Surveillance Requirement 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 CHANNEL CHECK and CHANNEL CALIBRATION (ITS SR 3.3.9.1 and SR 3.3.9.2, respectively), which will ensure the instruments are OPERABLE. Also, this change is acceptable because these types of procedural details will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a Surveillance Requirement is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

LESS RESTRICTIVE CHANGES

None

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

3.3 INSTRUMENTATION

3.3.9 Source Range Neutron Flux

3.3.1.1, Table 3.3-1 Functional Unit 11, including Note ##

LCO 3.3.9 Two source range neutron flux channels shall be OPERABLE.

----------NOTE----------
High voltage to detector may be de-energized with neutron flux > 1E-10 amp on intermediate range channels.

APPLICABILITY: MODES 2, 3, 4, and 5.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-1 Action 5. DOC M01	A. One source range neutron flux channel inoperable with neutron flux ≤ 1E-10 amp on the intermediate range neutron flux channels.	A.1 Restore channel to OPERABLE status.	Prior to increasing neutron flux
Table 3.3-1 Action 6, DOC M02	B. Two source range neutron flux channels inoperable with neutron flux ≤ 1E-10 amp on the intermediate range neutron flux channels.	B.1 ----------NOTE---------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ---------- Suspend operations involving positive reactivity changes.	Immediately
		AND	
		B.2 Initiate action to insert all CONTROL RODS.	Immediately
		AND	

4

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.3 Open CONTROL ROD drive trip breakers.	1 hour (4)
	AND	
	B.4 Verify SDM is within the limits specified in the COLR.	1 hour AND (1) Once per 12 hours thereafter
Table 3.3-1 ACTION 5 C. One or more source range neutron flux channels inoperable with neutron flux > 1E-10 amp on the intermediate range neutron flux channels.	C.1 Initiate action to restore affected channel(s) to OPERABLE status.	1 hour (3)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
Table 4.3-1 Functional Unit 11	SR 3.3.9.1	Perform CHANNEL CHECK.	12 hours
Table 4.3-1 Functional Unit 11, including Note 6	SR 3.3.9.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	18 months (2)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

1. Changes are made to be consistent with the format of the ITS. The location of where a parameter's limits reside, whether in the COLR or an actual LCO statement, is not normally specified in the Required Action. The Required Action normally states that the parameter shall be "within limit."

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Typographical error corrected.

4. The defined term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of a system.

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

B 3.3 INSTRUMENTATION

B 3.3.9 Source Range Neutron Flux

BASES

BACKGROUND

Reactor Protection System (RPS)

The source range neutron flux channels provide the operator with an indication of the approach to criticality at lower power levels than can be seen on the intermediate range neutron flux instrumentation. These channels also provide the operator with a flux indication that reveals changes in reactivity and helps to verify that SDM is being maintained. 1

The source range instrumentation has two redundant count rate channels originating in two high sensitivity proportional counters. Two source range detectors are externally located on opposite sides of the core 180°. These channels are used over a counting range of 0.1 cps to 1E6 cps and are displayed on the operator's control console in terms of log count rate. The channels also measure the rate of change of the neutron flux level, which is displayed for the operator in terms of startup rate from -0.5 decades to +5 decades per minute. An interlock provides a control rod withdraw "inhibit" on a high startup rate of +2 decades per minute in either channel.

The proportional counters of the source range channels are BF_3 chambers. The detector high voltage is automatically turned off when the flux level is approximately one decade above the useful operating range. Conversely, the high voltage is turned on automatically when the flux level returns to within approximately one decade of the detectors' maximum useful range. High voltage will be turned off automatically when the flux level is above 1E-~~1.0~~ 9 amp in both intermediate range channels (i.e., NI-5 or NI-6 and NI-7 or NI-8), or 10% power in power range channels. 1

APPLICABLE SAFETY ANALYSES

The source range neutron flux channels are necessary to monitor core reactivity changes. It is the primary means for detecting and triggering operator actions to respond to reactivity transients initiated from conditions in which the Reactor Protection System (RPS) is not required to be OPERABLE. It also triggers operator actions to anticipate RPS actuation in the event of reactivity transients ~~starting from shutdown or~~ during startup and shutdown ~~low power~~ conditions. However, the source range neutron flux channels are not credited in the safety analysis. 1

The source range neutron flux channels ~~satisfy Criterion 2 of~~ have no safety function and are not assumed to function during any UFSAR design basis accident or transient analysis. However, the source range neutron flux channels provide on scale monitoring of neutron flux levels during startup and shutdown conditions. Therefore, they are being retained in Technical Specifications. 10 CFR ~~50.36~~(c)(2)(ii). 1

BASES

(i.e., the channels associated with the RPS)

LCO

Two source range neutron flux channels shall be OPERABLE whenever the control rods are capable of being withdrawn to provide the operator with redundant source range neutron instrumentation. The source range instrumentation is the primary power indication at low power levels ≤ 1E-10 amp on intermediate range instrumentation and must remain OPERABLE for the operator to continue increasing power. (1)

A Note has been added allowing detector high voltage to be de-energized with neutron flux > 1E-10 amp on the intermediate range channels. Above this point, the source range instrumentation is no longer the primary power indicator. As such, the high voltage to the source range detectors may be de-energized.

APPLICABILITY

Two source range neutron flux channels shall be OPERABLE in MODE 2 to provide redundant indication during an approach to criticality. Neutron flux level is sufficient for monitoring on the intermediate range and on the power range instrumentation prior to entering MODE 1; therefore, source range instrumentation is not required in MODE 1.

In MODES 3, 4, and 5, source range neutron flux instrumentation shall be OPERABLE to provide the operator with a means of monitoring changes in SDM and to provide an early indication of reactivity changes.

The requirements for source range neutron flux instrumentation during MODE 6 refueling operations are addressed in LCO 3.9.2, "Nuclear Instrumentation." (2)

ACTIONS

A.1

The Required Action for one channel of the source range neutron flux indication inoperable with neutron flux ≤ 1E-10 amp on the intermediate range neutron flux instrumentation is to delay increasing reactor power until the channel is repaired and restored to OPERABLE status. This limits power increases in the range where the operators rely solely on the source range instrumentation for power indication. The Completion Time ensures the source range is available prior to further power increases.

BASES

ACTIONS (continued)

B.1, B.2, B.3, and B.4

With both source range neutron flux channels inoperable with neutron flux ≤ 1E-10 amp on the intermediate range neutron flux instrumentation, the operators must take actions to limit the possibilities for adding positive reactivity. This is done by immediately suspending positive reactivity additions, initiating action to insert all CONTROL RODS and opening the CONTROL ROD drive trip breakers within 1 hour. Periodic SDM verification is then required to provide a means for detecting the slow reactivity changes that could be caused by mechanisms other than control rod withdrawal or operations involving positive reactivity changes. Since the source range instrumentation provides the only reliable direct indication of power in this condition, the operators must continue to verify the SDM every 12 hours until at least one channel of the source range instrumentation is returned to OPERABLE status. Required Action B.1, Required Action B.2, and Required Action B.3 preclude rapid positive reactivity additions. The 1 hour Completion Time for Required Action B.3 and Required Action B.4 provides sufficient time for operators to accomplish the actions. The 12 hour Frequency for performing the SDM verification ensures that the reactivity changes possible with CONTROL RODS inserted are detected before SDM limits are challenged.

and to verify adequate SDM

and verifying SDM is within limit

3 6

6

Required Action B.1 is modified by a Note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM.

C.1

With neutron flux > 1E-10 amp ~~in MODE 2, 3, 4, or 5~~ on the intermediate range neutron flux instrumentation, continued operation is allowed with one or more source range neutron flux channels inoperable. The ability to continue operation is justified because the instrumentation does not provide a safety function during high power operation. However, actions are initiated within 1 hour to restore the channel(s) to OPERABLE status for future availability. The Completion Time of 1 hour is sufficient to initiate the action. The action must continue until channels are restored to OPERABLE status.

3

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.9.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the ~~transmitter~~ detector or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale. 1

~~The agreement criteria includes an expectation of one decade of overlap when transitioning between neutron flux instrumentation. For example, during a power reduction near the bottom of the scale for the intermediate range monitors, a source range monitor reading is expected with at least one decade overlap. Without such an overlap, the source range monitors are considered inoperable unless it is clear that an intermediate range monitor inoperability is responsible for the lack of the expected overlap.~~ 5

The Frequency, ~~about once every shift~~ 12 hours, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with the LCO's required channels. When operating in Required Action A.1, CHANNEL CHECK is still required. However, in this 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

condition, a redundant source range is not available for comparison. CHANNEL CHECK may still be performed via comparison with ~~intermediate range detectors~~, if available, and verification that the OPERABLE source range channel is energized and indicating a value consistent with current unit status. 1

Post Accident Monitoring source range detectors

SR 3.3.9.2

For source range neutron flux channels, CHANNEL CALIBRATION is a complete check and readjustment of the channels from the ~~preamplifier~~ input to the indicators. This test verifies the channel responds to measured parameters within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. 1

RPS cabinet

The SR is modified by a Note excluding neutron detectors from CHANNEL CALIBRATION. It is not necessary to test the detectors because generating a meaningful test signal is difficult. The detectors are of simple construction, and any failures in the detectors will be apparent as a change in channel output. 2

a

The Frequency of [18] months is based on demonstrated instrument CHANNEL CALIBRATION reliability over an [18] month interval, such that the instrument is not adversely affected by drift. 4

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.9 BASES, SOURCE RANGE NEUTRON FLUX

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Grammatical/editorial error corrected.

3. Changes are made to reflect the Specifications.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. The Bases discussion associated with the source range neutron flux monitor overlap has been deleted. This Bases requires an overlap check to be performed between the intermediate range and the source range monitors during power reduction and verify a one decade overlap. This requirement is not consistent with the CHANNEL CHECK requirements in the actual Surveillance Requirement. The definition of CHANNEL CHECK states "A CHANNEL CHECK shall be qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter." The definition does not require an overlap check of any type of channel. This overlap check described in the Bases is an additional requirement, over and above the requirements in the actual Surveillance Requirement.

6. Changes made to reflect changes made to the Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.9, SOURCE RANGE NEUTRON FLUX

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 10

ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

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

ITS

A01

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.10 3.3.1.1 As a minimum, the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 shall be OPERABLE.

See ITS 3.3.1

A02

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

SR 3.3.10.1, SR 3.3.10.2 4.3.1.1.1 Each Reactor Protection System instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the MODES and at the frequencies shown in Table 4.3-1.

A01

4.3.1.1.2 The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by shutdown bypass operation.

See ITS 3.3.1

4.3.1.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME* of each reactor trip function shall be demonstrated to be within its limit at least once per REFUELING INTERVAL. Neutron detectors are exempt from response time testing; the response time of the neutron flux signal portion of the channel shall be measured from the neutron detector output or from the input of the first electronic component in the channel. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL 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

* The response times include the sensor (except for the neutron detectors), Reactor Protection System instrument delay, and the control rod drive breaker delay. A delay time has been assumed for the Reactor Coolant Pump monitor in the determination of the response time of the High Flux/Number of Reactor Coolant Pumps On functional unit.

ITS

A01

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

LA01

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
1. Manual Reactor Trip	2	1	2	1, 2 and *	1	See ITS 3.3.2
2. High Flux	4	2	3	1, 2	2#, 10	See ITS 3.3.1
3. RC High Temperature	4	2	3	1, 2	3#, 10	
4. Flux - ΔFlux - Flow	4	2(a)(b)	3	1, 2	2#, 10	
5. RC Low Pressure	4	2(a)	3	1, 2	3#, 10	
6. RC High Pressure	4	2	3	1, 2	3#, 10	
7. RC Pressure-Temperature	4	2(a)	3	1, 2	3#, 10	
8. High Flux/Number of Reactor Coolant Pumps On	4	2(a)(b)	3	1, 2	3#, 10	
9. Containment High Pressure	4	2	3	1, 2	3#, 10	
10. Intermediate Range, Neutron Flux and Rate	~~1~~ 2	N/A	2(c)	~~1~~ 2 and *	4A	See ITS 3.3.9
11. Source Range, Neutron Flux and Rate						
A. Startup	2	N/A	2	2## and *	5	
B. Shutdown	2	N/A	1	3, 4 and 5	6	
12. Control Rod Drive Trip Breakers	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#, 8#	See ITS 3.3.4
13. Reactor Trip Module	2 per trip system	1 per trip system	2 per trip system	1, 2 and *	7#	See ITS 3.3.3
14. Shutdown Bypass High Pressure	4	2	3	2**, 3** 4**, 5**	6#	See ITS 3.3.1
15. CR Relays	2	2	2	1, 2 and *	9#	See ITS 3.3.4

LA02

LCO 3.3.10

LA01

L01

DAVIS-BESSE, UNIT 1

3/4 3-2

Amendment No. 108, 128, 185

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ITS

A01

TABLE 3.3-1 (Continued)

TABLE NOTATION

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

**When Shutdown Bypass is actuated. — See ITS 3.3.1

#The provisions of Specification 3.0.4 are not applicable. — See ITS 3.3.1, ITS 3.3.3, and ITS 3.3.4

##High voltage to detector may be de-energized above 10^{-10} amps on both Intermediate Range channels. — See ITS 3.3.9

(a) Trip may be manually bypassed when RCS pressure ≤ 1820 psig by actuating Shutdown Bypass provided that:

(1) The High Flux Trip Setpoint is ≤ 5% of RATED THERMAL POWER,

(2) The Shutdown Bypass High Pressure Trip Setpoint of ≤ 1820 psig is imposed, and

(3) The Shutdown Bypass is removed when RCS pressure > 1820 psig.

(b) Trip may be manually bypassed when Specification 3.10.3 is in effect.

— See ITS 3.3.1

~~(c) The minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect.~~ — A04

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 at least HOT STANDBY within the next 6 hours and/or open the control rod drive trip breakers. — See ITS 3.3.2

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

a. The inoperable channel is placed in the bypassed or tripped condition within one hour.

b. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL POWER and the High Flux Trip Setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours or the QUADRANT POWER TILT is monitored at least once per 12 hours.

— See ITS 3.3.1

ITS

A01

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 3 - 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 bypassed or tripped condition within one hour.

See ITS 3.3.1

ACTION A

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

Add proposed Required Action A.1

M01

a. ≤ 5% of RATED THERMAL POWER restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

b. > 5% of RATED THERMAL POWER, POWER OPERATION may continue.

L02

Add proposed ACTION B

M02

A01

TABLE 4.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	SR 3.3.10.1 CHANNEL CHECK	SR 3.3.10.2 CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	S/U(1)	N.A.
2. High Flux	S	D(2), and Q(6,9)	N.A.	1, 2
3. RC High Temperature	S	R	SA(9)	1, 2
4. Flux - ΔFlux - Flow	S(4)	M(3) and Q(6,7,9)	N.A.	1, 2
5. RC Low Pressure	S	R	SA(9)	1, 2
6. RC High Pressure	S	R	SA(9)	1, 2
7. RC Pressure-Temperature	S	R(10)	SA(9,10)	1, 2
8. High Flux/Number of Reactor Coolant Pumps On	S	Q(6,9)	N.A.	1, 2
9. Containment High Pressure	S	E	SA(9)	1, 2
10. Intermediate Range, Neutron Flux and Rate	S -1	E(6) -2	N.A. S	1, 2 and *
11. Source Range, Neutron Flux and Rate	S	E(6)	N.A.(5)	2, 3, 4 and 5
12. Control Rod Drive Trip Breakers	N.A.	N.A.	Q(8,9) and S/U(1)(8)	1, 2 and *
13. Reactor Trip Module Logic	N.A.	N.A.	Q(9)	1, 2 and *
14. Shutdown Bypass High Pressure	S	R	SA(9)	2**, 3**, 4**, 5**
15. SCR Relays	N.A.	N.A.	R	1, 2 and *

See ITS 3.3.2

See ITS 3.3.1

See ITS 3.3.10

See ITS 3.3.4

See ITS 3.3.3

See ITS 3.3.1

See ITS 3.3.4

A01

LA03

L01

A01

LA02

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ITS

A01

TABLE 4.3-1 (Continued)

Notation

(1) - If not performed in previous 7 days. — See ITS 3.3.2 and ITS 3.3.4

(2) - Heat balance only, above 15% of RATED THERMAL POWER.

(3) - When THERMAL POWER [TP] is above 50% of RATED THERMAL POWER [RTP], and at a steady state, compare out-of-core measured AXIAL POWER IMBALANCE [API_O] to incore measured AXIAL POWER IMBALANCE [API_I] as follows: — See ITS 3.3.1

$$\frac{RTP}{TP}[API_O - API_I] = \text{Offset Error}$$

Recalibrate if the absolute value of the Offset Error is $\geq$ 2.5%

(4) - AXIAL POWER IMBALANCE and loop flow indications only. — A01

(5) - ~~CHANNEL FUNCTIONAL TEST is not applicable.~~ Verify at least one decade overlap prior to each reactor startup if not verified in previous 7 days. — LA03

SR 3.3.10.2 (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) - Flow rate measurement sensors may be excluded from CHANNEL CALIBRATION. However, each flow measurement sensor shall be calibrated at least once each REFUELING INTERVAL. — See ITS 3.3.1

(8) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of both the undervoltage and shunt trip devices of the Reactor Trip Breakers. — See ITS 3.3.4

(9) - Performed on a STAGGERED TEST BASIS. — See ITS 3.3.1, ITS 3.3.3, ITS 3.3.4

(10) - If the as-found channel setpoint is conservative with respect to the Allowable Value but outside its predefined as-found acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.

The instrument channel setpoint shall be reset to a value that is within the as-left tolerance of the Limiting Trip Setpoint, or a value that is more conservative than the Limiting Trip Setpoint; otherwise, the channel shall be declared inoperable. The Limiting Trip Setpoint and the methodology used to determine the Limiting Trip Setpoint, the predefined as-found acceptance criteria band, and the as-left setpoint tolerance band are specified in a document incorporated by reference into the Updated Safety Analysis Report. — See ITS 3.3.1

Applicability * - With any control rod drive trip breaker closed.

** - When Shutdown Bypass is actuated. — See ITS 3.3.1

DISCUSSION OF CHANGES
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.1, "Reactor Protection System Instrumentation," requires the Reactor Protection System instrumentation channels and shutdown bypasses of Table 3.3-1 to be OPERABLE. ITS 3.3.10, "Intermediate Range Neutron Flux," requires intermediate range neutron flux channels to be OPERABLE. This changes the CTS by having a separate Specification for the Intermediate Range Neutron Flux, in lieu of including it with the Reactor Protection System Instrumentation Specification.

This change is acceptable because the technical requirements for the intermediate range neutron flux channel of the Intermediate Range Neutron Flux are maintained with the change in format. The Intermediate Range Neutron Flux Specification continues to require the OPERABILITY of the intermediate range neutron flux channels. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 4.3.1.1.3 and the * footnote require REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME testing of "each" reactor trip function. ITS 3.3.10 does not include response time testing for the intermediate range neutron flux channels. This changes the CTS by clearly identifying that the REACTOR PROTECTION SYSTEM RESPONSE TIME testing does not apply to the intermediate range neutron flux channels.

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. TRM Table 3.3-2, which was previously in CTS 3.3.1.1 as Table 3.3-2, only specifies response times for those RPS Functions assumed in the Davis-Besse safety analyses. These response times were removed from CTS 3.3.1.1 and placed under Davis-Besse control as documented in the NRC Safety Evaluation Report for License Amendment 225. This change is acceptable because there are no response time test requirements for the intermediate range neutron flux instrumentation. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 The Minimum Channels Operable requirement in CTS Table 3.3-1 for the Intermediate Range Neutron Flux channels is modified by Note (c) that states that the minimum channels OPERABLE requirement may be reduced to one when Specification 3.10.1 or 3.10.2 is in effect. ITS 3.3.10 does not contain the Note or a reference to the Special Test Exceptions.

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DISCUSSION OF CHANGES
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

The purpose of the footnote reference is to alert the user that a Special Test Exceptions exists that may modify the Applicability of the Specification. It is an ITS convention to not include these types of footnotes or cross-references. 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 10 provides requirements for intermediate range neutron flux instrumentation. Two channels are required to be OPERABLE and if one channel is inoperable CTS Table 3.3-1 ACTION 4 requires the inoperable channel to be restored to OPERABLE status prior to increasing THERMAL POWER above 5% RTP (MODE 1). ITS 3.3.10 ACTION A requires the reduction in neutron flux to < 10E-10 amp within two hours. If this is not met ITS 3.3.10 ACTION B requires the immediate suspension of operations involving positive reactivity changes and within one hour to open control rod drive (CRD) trip breakers. This changes the CTS by requiring a reduction of neutron flux within 2 hours instead of not allowing a THERMAL POWER increase above 5% RTP and adds a requirement to suspend operations involving positive reactivity changes and to open CRD trip breakers.

This change is acceptable because the reduction of neutron flux will place the unit at a point where source range neutron flux channels can provide neutron flux indication. The action prohibits increases in power above the source range capability. The 2 hour Completion Time allows controlled reduction of power into the source range and is based on unit operating experience that demonstrates the improbability of the second intermediate range channel failing during the allowed interval. If this Required Action cannot be met all operations involving a positive reactivity changes must be suspended and within 1 hour the CRD trip breakers must be opened. Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. Opening the trip breaker places the unit outside of the Applicability of the Specification. This change is designated as more restrictive because it adds Required Actions that are not currently required by the CTS.

M02 CTS Table 3.3-1 Functional Unit 10 provides requirements for intermediate range neutron flux instrumentation. Two channels are required to be OPERABLE and if one channel is inoperable CTS Table 3.3-1 ACTION 4 provides a compensatory action. The CTS does not provide compensatory actions for two inoperable intermediate range neutron flux instrumentation channels. ITS 3.3.10 ACTION B requires the immediate suspension of operations involving positive reactivity changes and within one hour to open CRD trip breakers. Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. This changes the CTS by adding specific actions for two inoperable intermediate range neutron flux channels.

This change is acceptable because with no intermediate channels operable positive reactivity change should be suspended and the CRD trip breakers should be opened. Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. Opening the trip

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DISCUSSION OF CHANGES
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

breaker places the unit outside of the Applicability of the Specification. This change is designated as more restrictive because it adds Required Actions for two inoperable intermediate range neutron flux instrumentation channels that are not currently required by the CTS.

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 RPS 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 LCO 3.3.9 does not retain the "TOTAL NO. OF CHANNELS" or "CHANNELS TO TRIP" columns. For the Intermediate Range Neutron Flux and Rate channels the "CHANNELS TO TRIP" value is N/A. This changes the CTS by moving the information of the "TOTAL NO. OF CHANNELS" column 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.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-1 and CTS Table 4.3-1 require Intermediate Range "Neutron Flux" and "Rate" Functions to be OPERABLE. ITS LCO 3.3.10 requires the intermediate range neutron flux channels to be OPERABLE. This changes the CTS by moving the detail that the channels require "Neutron Flux" level and "Rate" from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the intermediate range neutron flux channels to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program

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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 4 – Removal of LCO, SR, or other TS Requirement to the TRM, UFSAR, ODCM, QAPM, IST Program, or IIP)* CTS Table 4.3-1 Note 5 applies to the intermediate range neutron flux channels and requires verification of at least one decade of overlap with the source range neutron flux channels prior to each reactor startup if not performed in the previous 7 days. This test is not included in ITS 3.3.10. This changes the CTS by moving the intermediate range neutron flux/source range neutron flux overlap test to the Technical Requirements Manual (TRM).

The removal of this Surveillance Requirement 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 CHANNEL CHECK and CHANNEL CALIBRATION (ITS SR 3.3.10.1 and SR 3.3.10.2, respectively), which will ensure the instruments are OPERABLE. Also, this change is acceptable because these types of procedural details will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a Surveillance Requirement is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS Tables 3.3-1 and 4.3-1 require the intermediate range neutron flux instrumentation to be OPERABLE and Surveillances required in MODES 1 and 2, and with the control rod drive trip breakers in the closed position and the control rod drive system capable of rod withdrawal. In addition, CTS Table 3.3-1 allows operation to continue with one inoperable intermediate range monitor if THERMAL POWER is > 5% RTP (i.e., operation in MODE 1). ITS 3.3.10 does not require the monitors to be OPERABLE in MODE 1. This changes the CTS by eliminating all requirements for the intermediate range neutron flux instrumentation during MODE 1.

The purpose of CTS Tables 3.3-1 and 4.3-1 Functional Unit 10 is to ensure the intermediate range neutron flux instrumentation is OPERABLE and tested whenever there is a potential to withdraw control rods. 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. This change eliminates requirements for the intermediate range neutron flux instrumentation during MODE 1. The intermediate range monitors are not credited in any accident or transient analyses. The intermediate range instrumentation is designed to detect power changes during initial criticality and power escalation when the power range and source range instrumentation cannot provide reliable

DISCUSSION OF CHANGES
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

indications. These conditions can exist in MODE 2 and in MODES 3, 4 and 5 with any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal. During MODE 1 operations the power range monitors are required to be OPERABLE to provide input to various Reactor Protection System Functions to mitigate the consequences of any analyzed accident or transient. Therefore, imposing requirements for the intermediate range neutron flux instrumentation during MODE 1 is unnecessary. This change is also consistent with the compensatory action CTS Table 3.3-1 ACTION 4 which allows operation to continue with one inoperable intermediate range monitor if THERMAL POWER is > 5% RTP (i.e., operation in MODE 1). This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.10 Intermediate Range Neutron Flux

3.3.1.1, Table 3.3-1 Functional Unit 10, including Note *

LCO 3.3.10 Two intermediate range neutron flux channels shall be OPERABLE.

APPLICABILITY: MODE 2,
MODES 3, 4, and 5 with any CONTROL ROD drive (CRD) trip breaker in the closed position and the CRD System capable of rod withdrawal. (3)

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Table 3.3-1 Action 4	A. One channel inoperable.	A.1	Reduce neutron flux to ≤ 1E-10 amp.	2 hours
DOC M02	B. Two channels inoperable. (Required Action and associated Completion Time of Condition A not met. OR)	B.1	----------NOTE---------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ----------	(1)
			Suspend operations involving positive reactivity changes.	Immediately
		AND		
		B.2	Open CRD trip breakers.	1 hour

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
3.3.1.1, Table 3.3-1 Functional Unit 10	SR 3.3.10.1	Perform CHANNEL CHECK.	12 hours

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.10.2 3.3.1.1, Table 3.3-1 Functional Unit 10, including Note 6	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	[18] months	2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

1. The ISTS 3.3.10 actions do not provide any actions if the Required Action and associated Completion Time of Condition A is not met. ITS 3.3.10 ACTION B includes an additional condition that states Required Action and associated Completion Time not met. The proposed Required Actions are consistent with the Required Actions for two inoperable channels. These actions place the plant outside of the Applicability of the Specification.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The defined term "CONTROL ROD" is not applicable in this context. The term "CRD" is the title of a system.

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

B 3.3 INSTRUMENTATION

B 3.3.10 Intermediate Range Neutron Flux

BASES

BACKGROUND

The intermediate range neutron flux channels provide the operator with an indication of reactor power at higher power levels than the source range instrumentation and lower power levels than the power range instrumentation.

The intermediate range instrumentation has two log N channels originating in two electrically identical gamma compensated ion chambers. Each channel provides eight decades of flux level information in terms of the log of ion chamber current from 1E-10 amp to 1E-2 amp. The channels also measure the rate of change of the neutron flux level, which is displayed for the operator in terms of startup rate from -0.5 decades to +5 decades per minute. A high startup rate of +3 decades per minute in either channel will initiate a control rod withdrawal inhibit.

The intermediate range compensated ion chambers are of the electrically adjustable gamma compensating type. Each detector has a separate adjustable high voltage power supply and an adjustable compensating voltage supply.

APPLICABLE SAFETY ANALYSES

Intermediate range neutron flux channels are necessary to monitor core reactivity changes and are the primary indication to trigger operator actions to anticipate Reactor Protection System actuation in the event of reactivity transients starting from low power conditions.

However, the intermediate range neutron flux channels are not credited in the safety analysis.

The intermediate range neutron flux channels satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Two intermediate range neutron flux instrumentation channels shall be OPERABLE to provide the operator with redundant neutron flux indication. These enable operators to control the increase in power and to detect neutron flux transients. This indication is used until the power range instrumentation is on scale. Violation of this requirement could prevent the operator from detecting and controlling neutron flux transients that could result in reactor trip during power escalation.

have no safety function and are not assumed to function during any UFSAR design basis accident or transient analysis. However, the intermediate range neutron flux channels provide on scale monitoring of neutron flux levels during startup and shutdown conditions. Therefore, they are being retained in Technical Specifications.

BASES

APPLICABILITY

The intermediate range neutron flux channels shall be OPERABLE in MODE 2 and in MODES 3, 4 and 5 with any CONTROL ROD drive (CRD) trip breaker in the closed position and the CRD System capable of rod withdrawal. 2

The intermediate range instrumentation is designed to detect power changes during initial criticality and power escalation when the power range and source range instrumentation cannot provide reliable indications. Since those conditions can exist in all of these MODES, the intermediate range instrumentation must be OPERABLE.

ACTIONS

A.1

If one intermediate range channel becomes inoperable when the channels indicate > 1E-10 amp, the unit is exposed to the possibility that a single failure will disable all neutron monitoring instrumentation. To RPS avoid this, the inoperable channel must be repaired or power must be reduced to the point where source range channels can provide neutron flux indication. Completion of Required Action A.1 places the unit in this state, and LCO 3.3.9, "Source Range Neutron Flux," requires OPERABILITY of two source range detectors once this state is reached. If the one channel failure occurs when indicated power is ≤ 1E-10 amp, the Required Action prohibits increases in power above the source range capability. 1

The 2 hour Completion Time allows controlled reduction of power into the source range and is based on unit operating experience that demonstrates the improbability of the second intermediate range channel failing during the allowed interval.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met or

With two intermediate range neutron flux channels inoperable when THERMAL POWER is ≤ 5% RTP, the operators must place the reactor in the next lowest condition for which the intermediate range instrumentation is not required. This involves providing power level indication on the source range instrumentation by immediately suspending operations involving positive reactivity changes and, within 1 hour, placing the reactor in the tripped condition with the CRD trip breakers open. The Completion Times are based on unit operating experience and allow the operators sufficient time to manually insert the CONTROL RODS prior to opening the CRD breakers. 2 3 2

BASES

ACTIONS (continued)

Required Action B.1 is modified by a Note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM.

SURVEILLANCE REQUIREMENTS

SR 3.3.10.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

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

detector

1

~~The agreement criteria includes an expectation of one decade of overlap when transitioning between neutron flux instrumentation. For example, during a power increase near the top of the scale for the source range monitors, an intermediate range monitor reading is expected with at least one decade overlap. Without such an overlap, the intermediate range monitors are considered inoperable unless it is clear that a source range monitor inoperability is responsible for the lack of the expected overlap. Further, during a power reduction near the bottom of the scale for the power range monitors, an intermediate range monitor reading is expected with at least one decade overlap. Without such an overlap, the intermediate range monitors are considered inoperable unless it is clear that a power range monitor inoperability is responsible for the lack of the expected overlap.~~

5

BASES

SURVEILLANCE REQUIREMENTS (continued)

12 hours

The Frequency, ~~about once every shift~~, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with the LCO's required channels. 3

When operating in Required Action A.1, CHANNEL CHECK is still required. However, in this condition, a redundant intermediate range is not available for comparison. CHANNEL CHECK may still be performed via comparison with power or source range detectors, if available, and verification that the OPERABLE intermediate range channel is energized and indicates a value consistent with current unit status.

SR 3.3.10.2

For intermediate range neutron flux channels, CHANNEL CALIBRATION is a complete check and readjustment of the channels, from the ~~preamplifier~~ RPS cabinet input to the indicators. This test verifies the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. 1

The SR is modified by a Note excluding neutron detectors from CHANNEL CALIBRATION. It is not necessary to test the detectors because generating a meaningful test signal is difficult. In addition, the detectors are of simple construction, and any failures in the detectors will be apparent as a change in channel output. The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by demonstrated instrument reliability over an [18] month interval such that the instrument is not adversely affected by drift. 4

REFERENCES None.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.10 BASES, INTERMEDIATE RANGE NEUTRON FLUX

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to reflect changes made to the Specifications.

3. Changes are made to reflect the Specifications.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. The Bases discussion associated with the source range neutron flux monitor overlap has been deleted. This Bases requires an overlap check to be performed between the intermediate range and the source range monitor during power reduction and verify a one decade overlap. This requirement is not consistent with the CHANNEL CHECK requirements in the actual Surveillance Requirement. The definition of CHANNEL CHECK states "A CHANNEL CHECK shall be qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter." The definition does not require an overlap check of any type of channel. This overlap check described in the Bases is an additional requirement, over and above the requirements in the actual Surveillance Requirement.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.10, INTERMEDIATE RANGE NEUTRON FLUX

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 11

ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

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

A01

ITS

INSTRUMENTATION

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.11 3.3.2.2 The Steam and Feedwater Rupture Control System (SFRCS) instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-12, with the exception of the Steam Generator Level-Low Functional Unit which shall be set consistent with the Allowable Value column of Table 3.3-12. LA01

APPLICABILITY: MODES 1, 2 and 3.

Add proposed ACTIONS Note A02

ACTION:

ACTION A a. With a SFRCS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-12, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-11, until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-12.

ACTION A b. With a SFRCS instrumentation channel inoperable, take the action shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

SR Table Note. 4.3.2.2.1 Each SFRCS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-11.

4.3.2.2.2 The logic for the shutdown bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by bypass operation. L01

SR 3.3.11.5 4.3.2.2.3 The STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM RESPONSE TIME* of each SFRCS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant channels in a specific SFRCS function as shown in the "Total No. of Channels" Column of Table 3.3-11.

on a STAGGERED TEST BASIS A03

Add proposed Note to SR 3.3.11.5

* The Main Steam Isolation Valves (MSIVs) response time is to be the time elapsed from the monitored variable exceeding the trip setpoint until the MSIV is fully closed. The Turbine Stop Valves (TSVs) response time is to be the time elapsed from the main steam line low pressure trip condition until the TSV is fully closed. LA02

ITS

A01

Table 3.3.11-1

1

TABLE 3.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LA03

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
1. Main Steam Pressure Low Instrument Channels*	2	1	2	16 A
a. PS 3689B Steam Line 1 Channel 1				
b. PS 3689D Steam Line 2 Channel 1				
c. PS 3689F Steam Line 1 Channel 1				
d. PS 3689H Steam Line 2 Channel 1				
e. PS 3687A Steam Line 2 Channel 2				
f. PS 3687C Steam Line 1 Channel 2				
g. PS 3687E Steam Line 2 Channel 2				
h. PS 3687G Steam Line 1 Channel 2				

LA04

A05

4 per steam line

A04

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ITS

A01

Table 3.3.11-1

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
2. Feedwater/Steam Generator Differential Pressure - High Instrument Channels	2	1	2	16 A (4 per feedwater line)
a. PDS 2685A Feedwater/Steam Generator 2 Channel 2 PDS 2685B Feedwater/Steam Generator 2 Channel 2 b. PDS 2685C Feedwater/Steam Generator 2 Channel 1 PDS 2685D Feedwater/Steam Generator 2 Channel 1 c. PDS 2686A Feedwater/Steam Generator 1 Channel 1 PDS 2686B Feedwater/Steam Generator 1 Channel 1 d. PDS 2686C Feedwater/Steam Generator 1 Channel 2 PDS 2686D Feedwater/Steam Generator 1 Channel 2				
3. Steam Generator Level - Low Instrument Channels	2	1	2	16 A (4 per SG)
a. LSLL SP9B8 Steam Generator 1 Channel 1 LSLL SP9B9 Steam Generator 1 Channel 1 b. LSLL SP9A6 Steam Generator 2 Channel 1 LSLL SP9A7 Steam Generator 2 Channel 1 c. LSLL SP9A8 Steam Generator 2 Channel 2 LSLL SP9A9 Steam Generator 2 Channel 2				

2

3

LA03 A05 A04 LA04 LA03 A05 A04 LA04

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ITS

A01

Table 3.3.11-1

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
3. Steam Generator Level - Low Instrument Channels (continued)				
d. ~~LSLL SP986 Steam Generator 1 Channel 2~~ ~~LSLL SP987 Steam Generator 1 Channel 2~~				
4. Loss of RCP Channels	2	1	2	16
5. Manual Initiation (Push buttons)				
a. Initiate AFPT #1	1	1	1	17
b. Initiate AFPT #2	1	1	1	17
c. Initiate AFPT #1 and Isolate SG #1	1	1	1	17
d. Initiate AFPT #2 and Isolate SG #2	1	1	1	17

LA03 LA04 LA03 A04 A05 4 A, B See ITS 3.3.12

3

4

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ITS

A01

TABLE 3.3-11 (Continued)

TABLE NOTATION

Note a of Table 3.3.11-1

- May be bypassed when steam pressure is below 750 psig. Bypass shall be automatically removed when the steam pressure exceeds 800 psig.

LA05

The provisions of Specification 3.0.4 are not applicable.

A05

ACTION STATEMENTS

ACTION A

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable section of the channel is placed in the tripped condition within 1 hour (except as noted below). When a channel is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided the remaining actuation channel is OPERABLE.

L02

SR 3.3.11.2 Note

Add proposed ACTION B

M01

ACTION 17 - 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.

See ITS 3.3.12

ITS

A01

Table 3.3.11-1

TABLE 3.3-12

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION TRIP SETPOINTS

LA01

	FUNCTIONAL UNITS	TRIP SETPOINTS	ALLOWABLE VALUES
1	1. Steam Line Pressure - Low	≥ 591.6 psig	≥ 591.6 psig* / ≥ 586.6 psig** (≥ 600.2 psig)
3	2. Steam Generator Level - Low (1)	N.A.	≥ 16.9"* (≥ 17.3 inches)
2	3. Steam Generator Feedwater Differential Pressure - High (2)	≤ 197.6 psid	≤ 197.6 psid* / ≤ 199.6 psid** (≤ 176.8 psid)
4	4. Reactor Coolant Pumps - Loss of	High ≤ 1384.6 amps Low ≥ 106.5 amps	≤ 1384.6 amps# / ≥ 106.5 amps#

LA01 M02 M02 M02 LA06

(1) Actual water level above the lower steam generator tubesheet.
(2) Where differential pressure is steam generator minus feedwater pressure.
*Allowable Value for CHANNEL FUNCTIONAL TEST
**Allowable Value for CHANNEL CALIBRATION
#Allowable Value for CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION

LA01 M02 LA06

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A01

DELETED

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ITS

A01

Table 3.3.11-1

TABLE 4.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	FUNCTIONAL UNIT	SR 3.3.11.1 CHANNEL CHECK	SR 3.3.11.3 SR 3.3.11.4 CHANNEL CALIBRATION	SR 3.3.11.2 CHANNEL FUNCTIONAL TEST	
	1. Instrument Channel				
1	a. Steam Line Pressure - Low	S -1	E -3	M -2	
3	b. Steam Generator Level - Low	S -1	R -4	M -2	
2	c. Steam Generator - Feedwater Differential Pressure - High	S -1	E -3	M -2	
4	d. Reactor Coolant Pumps - Loss of	S -1	E -3	M -2	
	2. Manual Actuation	NA	NA	R	See ITS 3.3.12

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DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.2 specifies compensatory actions to take when SFRCS Functional Units are inoperable. ITS 3.3.11 ACTIONS provides the compensatory actions for inoperable SFRCS Functions. The ITS 3.3.11 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable SFRCS Function.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFRCS Functional Unit to be separate and independent from the others. This change is considered administrative because it does not result in technical changes to the CTS.

A03 CTS 4.3.2.2.3 states, in part, that the SFRCS RESPONSE TIME of each trip function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL and that each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant channels in a specific SFRCS trip function as shown in the "Total No. of Channels" column of Table 3.3-11. ITS SR 3.3.11.5 requires the verification of SFRCS RESPONSE TIME every 24 months "on a STAGGERED TEST BASIS." Additionally, a Note has been added to ITS SR 3.3.11.5 stating "N" equals 2 channels for the purpose of determining the STAGGERED TEST BASIS Frequency. The ITS definition of STAGGERED TEST BASIS and the Note 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 SFRCS 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.

A04 CTS Table 3.3-11 Functional Unit 1 identifies that there are 8 pressure switches of Main Steam Pressure Low Instrument Channels. It also identifies that 4 of these switches are associated with Channel 1 (i.e., actuation channel 1) and that 2 of these switches are monitoring steam line 1 while the other 2 switches are monitoring steam line 2. It also identifies that 4 of these switches are associated with Channel 2 (i.e., actuation channel 2) and that 2 of these switches are monitoring steam line 1 while the other 2 switches are monitoring steam line 2.

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DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

CTS Table 3.3-11 Functional Unit 2 identifies that there are 8 differential pressure switches of Feedwater/Steam Generator Differential Pressure – High Instrument Channels. It also identifies that 4 of these switches are associated with Channel 1 (i.e., actuation channel 1) and that 2 of these switches are monitoring Feedwater/Steam Generator 1 while the other 2 switches are monitoring Feedwater/Steam Generator 2. It also identifies that 4 of these switches are associated with Channel 2 (i.e., actuation channel 1) and that 2 of these differential pressure switches are monitoring Feedwater/Steam Generator 1 while the other 2 differential pressure switches are monitoring Feedwater/Steam Generator 2. CTS Table 3.3-11 Functional Unit 3 identifies that there are 8 LSLL of Steam Generator Level - Low Instrument Channels. It also identifies that 4 of these LSLL are associated with Channel 1 (i.e., actuation channel 1) and that 2 of these LSLL are monitoring Steam Generator 1 while the other 2 LSLL are monitoring Steam Generator 2. It also identifies that 4 of these LSLL are associated with Channel 2 (i.e., actuation channel 1) and that 2 of these LSLL are monitoring Steam Generator 1 while the other 2 LSLL are monitoring Steam Generator 2. CTS Table 3.3-11 Functional Unit 4 requires the Loss of Reactor Coolant Pump (RCP) Channels to be OPERABLE. CTS Table 3.3-11 requires a minimum of 2 channels (i.e., actuation channels) to be OPERABLE. ITS Table 3.3.11-1 Function 1 (Main Steam Line Pressure-Low) requires 4 channels per steam line to be OPERABLE. ITS Table 3.3.11-1 Function 2 (Feedwater/Steam Generator Differential Pressure–High) requires 4 channels per feed line to be OPERABLE. ITS Table 3.3.11-1 Function 3 (Steam Generator Level-Low) requires 4 channels per steam generator to be OPERABLE. ITS Table 3.3.11-1 Function 4 requires 4 Loss of RCPs channels to be OPERABLE. This changes CTS by only specifying requirements for instrument channels to be OPERABLE. Requirements for the actuation channels are discussed in the Discussion of Changes for ITS 3.3.13.

This change is acceptable because it clearly states the current requirements. The CTS requires two actuation channels to be OPERABLE and identifies the instrument channels that provide inputs into each channel. ITS 3.3.11 specifies the instrument channels that must be OPERABLE for each safety function. Therefore, this change is considered to reflect current licensing requirements and is only considered a change in presentation. This change is considered administrative because it does not result in technical change to the ITS.

A05 CTS Table 3.3-11 Functional Units 1 through 4 include a Note # that applies to Action 16 and states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.11 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.11 ACTION A will allow the plant to place the inoperable channels in trip and continue operations. Therefore, because the

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allowances in the ITS allow the plant to change a MODE or other specified condition in the Applicability this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-3 Action 16 does not provide any actions if the specified Action (Action 10) is not met or if two or more channels are inoperable. Entry into CTS 3.0.3 is required since no actions are specified. CTS 3.0.3 allows 1 hour to prepare for shutdown of the unit, and requires the unit to be in MODE 3 within 7 hours, and MODE 4 within 13 hours. ITS 3.3.11 ACTION B requires the unit to be in MODE 3 within 6 hours, below a steam line pressure of 750 psig within 12 hours for a Steam Line Pressure-Low channel, and in MODE 4 in 12 hours for all other channels. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3 and reduces the time to reach the applicable conditions.

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

M02 CTS Table 3.3-12 Functional Unit 1, Steam Line Pressure-Low, specifies an Allowable Value of ≥ 591.6 psig for the CHANNEL FUNCTIONAL TEST and ≥ 586.6 psig for the CHANNEL CALIBRATION. CTS Table 3.3-12 Functional Unit 2, Steam Generator Level-Low, specifies an Allowable Value of ≥ 16.9 inches for the CHANNEL FUNCTIONAL TEST. CTS Table 3.3-12 Functional Unit 3, Steam Generator Feedwater Differential Pressure-High, specifies an Allowable Value of ≤ 197.6 psid for the CHANNEL FUNCTIONAL TEST and ≤ 199.6 psid for the CHANNEL CALIBRATION. ITS Table 3.3.11-1 Functions 1, 3, and 2 specify Allowable Values of ≥ 600.2 psig, ≥ 17.3 inches, and ≤ 176.8 psid, respectively. This changes the CTS by changing the Allowable Values for these three Functional Units.

This change is acceptable because the proposed new Allowable Values are needed to support the OPERABILITY of the Steam Line Pressure-Low, Steam Generator Level-Low, and Steam Generator Feedwater Differential Pressure-High Functions. The proposed Allowable Values are calculated using the Methods 1 or 2 defined in ISA RP 67.04.02-2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." Currently, two Allowable Values are provided for CTS Table 3.3-12 Functional Units 1 and 3, one applicable for a CHANNEL FUNCTIONAL TEST and the other applicable for a CHANNEL CALIBRATION. Furthermore, a single Allowable Value is provided for Functional Unit 2, and is applicable both during a CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST. The ITS will only specify a single Allowable Value, and the new Allowable Value is more restrictive than both the Allowable

DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

Values provided for the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION. In addition, these three Functions are not listed as Limiting Safety System Settings in TSTF-493 Rev. 2. This change is more restrictive because the proposed Allowable Values for the Steam Line Pressure-Low, Steam Generator Level-Low, and Steam Generator Feedwater Differential Pressure-High Functions will require the Functions to trip sooner that required by the Allowable Values specified in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.3.2.2 requires the SFRCS instrumentation trip setpoints to be set consistent with the values shown in the Trip Setpoint column of Table 3.3-12, with the exception of the Steam Generator Level-Low Functional Unit which shall be set consistent with the Allowable Value column of Table 3.3-12. CTS 3.3.2.2 Action a is required to be entered when the setpoint is less conservative than the Allowable Value. The channel is to be declared inoperable until adjusted consistent with Table 3.3-12 (consistent with the LCO). CTS Table 3.3-12 specifies the Trip Setpoints and Allowable Values for the SFRCS Instrumentation Functional Units. CTS Table 3.3-12 Note 1 applies to the Functional Unit 2 (Steam Generator Level – Low) and states that the "Actual water level above, the lower steam generator tube sheet." CTS Table 3.3-12 Note 2 applies to the Functional Unit 3 (Steam Generator Feedwater Differential Pressure - High) and states "Where differential pressure is steam generator minus feedwater pressure." ITS 3.3.11 requires the SFRCS instrumentation for each Function in Table 3.3.11-1 to be OPERABLE. ITS Table 3.3.11-1 specifies the Allowable Values for the SFRCS Instrumentation Functions. This changes the CTS by moving the Trip Setpoints and associated requirements and Notes to the Technical Requirements Manual (TRM).

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

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.3.2.2.3 specifies that the Steam and Rupture

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DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

Control System Response Time of each SFRCS function shall be demonstrated to be within the limit. This statement is modified by a Note * which states, in part, that the Main Steam Line Isolation Valves (MSIVs) response time is to be the time elapsed from the monitored variable exceeding the trip setpoint until the MSIV is fully closed. The Turbine Stop Valves (TSVs) response time is to be the time elapsed from the main steam line low pressure trip condition until the TSV is fully closed. ITS Table 3.3.11-1 does not contain this information. This changes the CTS by moving the procedural details on the SFRCS RESPONSE TIME testing from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these procedural details 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 test the response time for each applicable SFRCS Instrument Function. Furthermore, ITS Section 1.0 provides a definition of the SFRCS RESPONSE TIME, and the CTS 4.3.2.2.3 Note * clarification is encompassed by the definition (i.e., "...time interval from when the monitored parameter exceeds its SFRCS actuation setpoint at the channel sensor until the SFRCS equipment is capable of performing its safety function (i.e., valves travel to their required positions..."). Also, this change is acceptable because the removed procedural details will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-11 for SFRCS 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 3.3.11-1 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.

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DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-11 specifies the Functional Unit 1 (Main Steam Pressure Low Instrument Channels) channel instrument numbers to be PS 3689B Steam Line 1 Channel 1; PS 3689D Steam Line 2 Channel 1; PS 3689F Steam Line 1 Channel 1; PS 3689H Steam Line 2 Channel 1; PS 3687A Steam Line 2 Channel 2; PS 3687C Steam Line 1 Channel 2; PS 3687E Steam Line 2 Channel 2; PS 3687G Steam Line 1 Channel 2. CTS Table 3.3-11 specifies the Functional Unit 2 (Feedwater/Steam Generator Differential Pressure-High Instrument Channels) specifies channel instrument numbers to be PDS 2685A Feedwater/Steam Generator 2 Channel 2; PDS 2685B Feedwater/Steam Generator 2 Channel 2; PDS 2685C Feedwater/Steam Generator 2 Channel 1; PDS 2685D Feedwater/Steam Generator 2 Channel 1; PDS 2686A Feedwater/Steam Generator 1 Channel 1; PDS 2686B Feedwater/Steam Generator 1 Channel 1; PDS 2686C Feedwater/Steam Generator 1 Channel 2; and PDS 2686D Feedwater/Steam Generator 1 Channel 2. CTS Table 3.3-11 specifies the Functional Unit 3 (Steam Generator Level- Low Instrument Channels) specifies channel instrument numbers to be LSLL SP9B8 Steam Generator 1 Channel 1; LSLL SP9B9 Steam Generator 1 Channel 1; LSLL SP9A6 Steam Generator 2 Channel 1; LSLL SP9A7 Steam Generator 2 Channel 1; LSLL SP9A8 Steam Generator 2 Channel 2; LSLL SP9A9 Steam Generator 2 Channel 2; LSLL SP9B6 Steam Generator 1 Channel 2; and LSLL SP9B7 Steam Generator 1 Channel 2. ITS 3.3.11 does not specify the instrument numbers for these Functions. This changes the CTS by moving the instrument numbers and where the instrument channels provide input (i.e., Channel 1 or 2) to the Bases.

The purpose of the requirements of CTS Tables 3.3-11, 3.3-12 and 4.3-11 are to ensure that the appropriate SFRCS channels are OPERABLE. 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 channels for each SFRCS Function. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA05 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-11 Note * applies to the Functional Unit 1 (Main Steam Pressure Low) instrument channels and states that the channels may be bypassed when steam pressure is below 750 psig. CTS Table 3.3-11 Note * also states "Bypass shall be automatically removed when the steam pressure exceeds 800 psig." ITS 3.3.11 does not include this detail that the "Bypass shall be automatically removed when the steam pressure exceeds 800 psig." This changes the CTS by moving the detail that the trip is automatically removed from bypass to the Bases.

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DISCUSSION OF CHANGES
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for the Main Steam Pressure-Low channels to be OPERABLE above ≥ 750 psig. 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.

LA06 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-12 specifies the Allowable Values for SFRCS Instrumentation Functional Unit 4 and includes Note #, which states the Allowable Value is specified for the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION. ITS Table 3.3.11-1 only provides the Allowable Value. This changes the CTS by moving the details that the specified Allowable Value is for the CHANNEL FUNCTIONAL TEST and the CHANNEL CALIBRATION to the Bases in the form of a general discussion of the Allowable Value and trip setpoint.

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 continues to specify the Allowable Value for the SFRCS Instrument Function. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.3.2.2.2 states the logic for the shutdown bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The CTS further states that the shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by bypass operation. ITS 3.3.11 does not include this specific Surveillance Requirement. This changes the CTS by deleting this specific CTS 4.3.2.1.2 requirement.

The purpose of CTS 4.3.2.2.2 is to ensure the shutdown bypasses for the SFRCS instruments are properly tested. This change is acceptable because the requirements have not changed. Separate delineation of the inclusion of

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bypasses in the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION Surveillances are not necessary. The current industry standard, IEEE-603-1998 (IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations), which replaced IEEE-279, clearly indicates the operating bypasses are a part of the system function. This industry standard has been endorsed by the NRC in Regulatory Guide 1.153. Furthermore, IEEE 338-1987 (IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems), Section 6.3.2 also states that the CHANNEL FUNCTIONAL TEST should include the testing of such bypasses. This change is designated as less restrictive because a CTS Surveillance Requirement for the operating bypasses is not specifically delineated in the ITS.

L02 *(Category 4 - Relaxation of Required Action)* CTS Table 3.3-3 Action 16 states, in part, that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed "until performance of the next required CHANNEL FUNCTIONAL TEST" provided the inoperable section of the channel is placed in the tripped condition within 1 hour. ITS 3.3.11 ACTION A, when one channel is inoperable, requires the inoperable channel to be placed in trip within 1 hour and does not include the restoration time limit of "until performance of the next required CHANNEL FUNCTIONAL TEST." This changes the CTS by allowing operation with an inoperable channel for an unlimited amount of time provided the inoperable channel is in the tripped condition.

The purpose of CTS Table 3.3-3 Action 16 is to only allow operation until performance of the next required CHANNEL FUNCTIONAL TEST. This requirement is based upon the assumption that when it is time to test the other OPERABLE channels in the associated Function, the OPERABLE channels cannot be tested with the inoperable channel in trip. However, CTS 3.0.6 (ITS LCO 3.0.5) is a generic allowance that will allow the inoperable channel to be restored to service in order to perform Surveillances on the other OPERABLE channels in the associated Function. Thus, using this generic allowance, it is possible to test the remaining OPERABLE channels in the associated Function and there is no reason to restrict the generic allowance from applying to these specific channels. As such, the CTS Table 3.3-11 Action 16 statement is not necessary and has been deleted. The administrative controls required by ITS LCO 3.0.5 will ensure the time the channel is returned to service in conflict with the requirements of ITS 3.3.11 ACTION A are limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY of the other channels. In addition, this specific example (taking an inoperable channel out of the tripped condition) is discussed in the Bases of ISTS SR 3.0.5. Therefore, this change is acceptable for the above described reasons. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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

 (1)

CTS

3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control (SFRCS)

3.3.11 Emergency Feedwater Initiation and Control (EFIC) System Instrumentation (1)

SFRCS

3.3.2.2, Table 3.3-11 Functional Units 1, 2, 3, and 4

LCO 3.3.11 The EFIC System instrumentation channels for each Function in Table 3.3.11-1 shall be OPERABLE. (1)

APPLICABILITY: According to Table 3.3.11-1.

ACTIONS

----------NOTE----------

DOC A02 Separate Condition entry is allowed for each Function.

Table 3.3-11 ACTION 16

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Emergency Feedwater (EFW) Initiation, Main Steam Line Isolation, or Main Feedwater (MFW) Isolation Functions listed in Table 3.3.11-1 with one channel inoperable.	A.1 Place channel(s) in bypass or trip. (10) Functions AND (2) A.2 Place channel(s) in trip.	1 hour 72 hours
B. One or more EFW Initiation, Main Steam Line Isolation, or MFW Isolation Functions listed in Table 3.3.11-1 with two channels inoperable.	B.1 Place one channel in bypass. AND (2) B.2 Place second channel in trip. AND B.3 Restore one channel to OPERABLE status.	1 hour 1 hour 72 hours

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One EFW Vector Valve Control channel inoperable.	C.1 Restore channel to OPERABLE status.	72 hours
D. Three or more channels inoperable for Functions 1.a or 1.b. OR Required Action and associated Completion Time not met for Functions 1.a or 1.b. of Condition A OR One or more Functions with two or more channels inoperable.	D.1 Be in MODE 3. AND D.2.1 ----------NOTE---------- Only required for Function 1a. Function 1 ---------- Open CONTROL ROD drive trip breakers. AND D.2.2 ----------NOTE---------- Only required for Function 1b. Functions 2, 3, and 4 ---------- Be in MODE 4.	6 hours 6 hours Reduce SG pressure < 750 psig. 12 hours
E. Three or more channels inoperable for Functions 1.d. OR Required Action and associated Completion Time not met for Function 1.d.	E.1 Reduce THERMAL POWER to ≤ 10% RTP.	6 hours

DOC M01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Three or more channels inoperable for Functions 1.c, 2, 3, or 4. OR Required Action and associated Completion Time not met for Functions 1.c, 2, 3, or 4.	F.1 Reduce once through steam generator pressure to < 750 psig.	12 hours

(4)

SURVEILLANCE REQUIREMENTS

---NOTE---

4.3.2.2.1 Refer to Table 3.3.11-1 to determine which SRs shall be performed for each EF/C (SFRCS) Function. (1)

	SURVEILLANCE		FREQUENCY
4.3.2.2.1, Table 4.3-11 Functional Units 1.a, 1.b, 1.c, 1.d	SR 3.3.11.1	Perform CHANNEL CHECK.	12 hours
4.3.2.2.1, 4.3.2.2.2, Table 4.3-11 Functional Units 1.a, 1.b, 1.c, 1.d	SR 3.3.11.2	Perform CHANNEL FUNCTIONAL TEST.	31 days (INSERT 1) (6)
4.3.2.2.1, 4.3.2.2.2, Table 4.3-11 Functional Units1.a, 1.c, 1.d	SR 3.3.11.3	Perform CHANNEL CALIBRATION.	[18] months (7) (INSERT 2) (8)
4.3.2.2.3	SR 3.3.11.4 (8) (5)	Verify EF/C (SFRCS) RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS (24) (7) (INSERT 3) (9)

CTS

6 **INSERT 1**

Table 3.3-11
Action 16

----------NOTE----------
When a channel is placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST, entry into the associated Conditions and Required Actions may be delayed for up to 8 hours provided the channels providing input to the other actuation channel are OPERABLE.
---

8 **INSERT 2**

4.3.2.2.1, Table 4.3-11 Functional Unit 1.b	SR 3.3.11.4	Perform CHANNEL CALIBRATION.	24 months

9 **INSERT 3**

4.3.2.2.3

----------NOTE----------
"N" equals 2 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.

SFRCS

EFIC System Instrumentation 1
3.3.11

Steam and Feedwater Rupture Control

Table 3.3.11-1 (page 1 of 2)
Emergency Feedwater Initiation and Control System Instrumentation 1

10

INSERT 4

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. EFW Initiation				
a. Loss of MFW Pumps (Control Oil Pressure)	1,2[(a)],3[(a)]	4	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	> [55] psig 11
b. SG Level - Low	1,2,3	4 per SG	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.4	≥ [9] inches
c. SG Pressure - Low	1,2,3[(b)]	4 per SG	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	≥ [600] psig
d. RCP Status	≥ 10% RTP	4	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	NA
2. EFW Vector Valve Control				
a. SG Pressure - Low	1,2,3[(b)]	4 per SG	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	≥ [600] psig
b. SG Differential Pressure - High	1,2,3[(b)]	4	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	≤ [125] psid
c. [SG Level - High	1,2,3[(b)]	4	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3	≤ [ ] inches]
3. Main Steam Line Isolation				
a. SG Pressure - Low	1,2,3[(b)(c)]	4 per SG	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.4	≥ [600] psig

(a) When not in shutdown bypass.

(b) When SG pressure ≥ 750 psig.

(c) Except when all associated valves are closed and [deactivated].

CTS

(11) **INSERT 4**

4.3.2.2.1, 4.3.2.2.2, 4.3.2.2.3 Table 3.3-11 Functional Unit 1, Table 3.3-12 Functional Unit 1, Table 4.3-11 Functional Unit 1.a	1.	Main Steam Line Pressure – Low	1,2,3[(a)]	4 per steam line	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.5	≥ 600.2 psig
4.3.2.2.1, 4.3.2.2.2, 4.3.2.2.3 Table 3.3-11 Functional Unit 2, Table 3.3-12 Functional Unit 3, Table 4.3-11 Functional Unit 1.c	2.	Feedwater/ Steam Generator Differential Pressure – High	1,2,3	4 per feedwater line	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.5	≤ 176.8 psid
4.3.2.2.1, 4.3.2.2.2, 4.3.2.2.3 Table 3.3-11 Functional Unit 3, Table 3.3-12 Functional Unit 2, Table 4.3-11 Functional Unit 1.b	3.	Steam Generator Level – Low	1,2,3	4 per steam generator (SG)	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.4 SR 3.3.11.5	≥ 17.3 inches
4.3.2.2.1, 4.3.2.2.2. Table 3.3-11 Functional Unit 4, Table 3.3-12 Functional Unit 4, Table 4.3-11 Functional Unit 1.d	4.	Loss of RCPs	1,2,3	4	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.5	≤ 1384.6 amps and ≥ 106.5 amps

Table 3.3-11 Note *

(a) With SG pressure ≥ 750 psig.

Table 3.3.11-1 (page 2 of 2)
Emergency Feedwater Initiation and Control System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. MFW Isolation				
a. SG Pressure - Low	1,2,3[(b)(d)]	4 per SG	SR 3.3.11.1 SR 3.3.11.2 SR 3.3.11.3 SR 3.3.11.4	≥ [600] psig

(b) When SG pressure ≥ 750 psig.

(d) Except when all [MFSVs], [MFCVs], [or associated SFCVs] are closed and [deactivated] [or isolated by a closed manual valve].

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature.

2. ISTS 3.3.11 Condition A requires entry when one or more "Emergency Feedwater (EFW) Initiation, Main Steam Line Isolation, or Main Feedwater (MFW) Isolation" Functions listed in Table 3.3.11-1 with one channel inoperable. ISTS 3.3.11 Condition B requires entry when one or more "Emergency Feedwater (EFW) Initiation, Main Steam Line Isolation, or Main Feedwater (MFW) Isolation" Functions listed in Table 3.3.11-1 with two channel inoperable. ISTS 3.3.11 Condition C requires entry when "One EFW Vector Valve Control" channel is inoperable and requires restoration of the channel to OPERABLE status within 72 hours. In the ITS, ISTS 3.3.11 ACTION C has been deleted and all Functions are required to enter Condition A or B, as applicable, when Function channels are inoperable. Therefore, the Function names in Condition A and B have been deleted and Condition A has been revised to require entry with "One or more Functions with one channel inoperable" and Condition B has been revised to require entry with "One or more Functions with two or more channels inoperable." The new wording is consistent with current licensing basis. Subsequent Conditions and Required Actions have been revised and renumbered, as necessary.

3. ISTS 3.3.11 ACTION E requires entry when three or more channels for Function 1.d are inoperable or the Required Action and associated Completion Times associated with the channels are not met. The Required Action is to reduce THERMAL POWER to $\leq$ 10% RTP, since ISTS Table 3.3.11-1 Function 1.d is applicable $\geq$ 10% RTP. ITS Table 3.3.11-1 Function 4 is applicable in MODES 1, 2, and 3 consistent with the current requirements. Therefore, ISTS 3.3.11 ACTION E has been deleted and ISTS 3.3.11 ACTION D (ITS 3.3.11 ACTION C) has been modified accordingly.

4. ISTS 3.3.11 ACTION F requires entry when three or more channels for Function 1.c, 2, 3, or 4 channels are inoperable or the Required Action and associated Completion Times associated with the channels are not met. The Required Action is to reduce once through steam generator pressure to < 750 psig. Functions 1.c, 2, 3, and 4 are applicable in MODES 1, 2, and MODE 3 with steam generator pressure $\geq$ 750 psig. The appropriate default condition is to be in MODE 3 with steam generator pressure < 750 psig. These Required Actions have been incorporated into ISTS 3.3.11 ACTION D (ITS 3.3.11 ACTION B).

5. ISTS 3.3.11 Required Action D.2.1 requires the CONTROL ROD drive trip breakers to be opened and there is a Note that states this only applies to Function 1.a. ISTS Table 3.3.11-1 Function 1.a (Loss of MFW Pumps) channels are associated with Reactor Protection System Functions. The associated channels at Davis-Besse are not associated with the Reactor Protection System. Therefore the Required Actions is not necessary. The Required Action, Completion Time, and Note have been revised to incorporate the changes described in JFD 4. In addition the Note to Required Action D.2.2 (Required Action B.3) has been modified to reflect the necessary changes.

6. A Note has been added to ITS SR 3.3.11.2 to be consistent with the current licensing basis allowance approved by the NRC in Amendment 259, dated September 29, 2003.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

7. The brackets have been removed and the proper plant specific information/value has been provided.

8. ITS SR 3.3.11.4, a CHANNEL CALIBRATION every 24 months, has been added consistent with the current requirements. The subsequent SR has been renumbered and Table 3.3.11-1 has been revised to reflect the new Surveillance.

9. A Note has been added to ISTS SR 3.3.11.4 (ITS SR 3.3.11.5) consistent with current requirements.

10. Typographical error corrected.

11. ISTS Table 3.3.11-1 has been revised to be consistent with the current design and licensing basis, with the exception of the Allowable Values for Functions 1, 2, and 3 (See DOC M02). The details of the SFRCS safety functions (e.g., EFW Initiation) are adequately summarized in the Bases. The Notes have been deleted or renumbered, as applicable.

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

All changes are 2 unless otherwise noted

SFRCS

EFIC Instrumentation 1
B 3.3.11

B 3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control System (SFRCS)

B 3.3.11 Emergency Feedwater Initiation and Control (EFIC) Instrumentation 1

BASES

BACKGROUND

The EFIC System instrumentation is designed to provide safety grade means of controlling the secondary system as a heat sink for core decay heat removal. To ensure the secondary system remains a heat sink, the EFIC System takes action to initiate emergency feedwater (EFW) when the primary source of feedwater is lost and to isolate functional components from hydraulic faults within the secondary system. These actions ensure that a source of cooling water is available to be fed to a once through steam generator (OTSG) that has a controlled steam pressure, thereby fixing the heat sink temperature at the saturation temperature of the secondary system. The EFIC Functions that are supported and the parameters that are needed for each of these Functions are described next.

The EFIC instrumentation contains devices and circuitry that generate the following signals when monitored variables reach levels that are indicative of conditions requiring protective actions.

a. EFW Initiation,

b. EFW Vector Valve Control,

c. Main Steam Line Isolation, and

d. Main Feedwater (MFW) Isolation.

INSERT 1

EFW is initiated to restore a source of cooling water to the secondary system when conditions indicate that the normal source of feedwater is insufficient to continue heat removal. The two indications used for this are the loss of both MFW pumps and a low level in the steam generator (SG). Also, EFW is initiated when action is being taken to isolate the MFW from the SG during conditions of uncontrolled depressurizations. This is done by initiating EFW when steam pressure reaches the low SG pressure setpoint for isolation of main steam and MFW, and EFW vector valve control. Finally, EFW is initiated when the primary system experiences a total loss of forced circulation. This initiation, on the loss of all reactor coolant pumps (RCPs), ensures the EFW is available to raise SG levels to promote natural circulation cooling. Additionally, this ensures that EFW is available under the worst-case, small break loss of coolant accident (LOCA) conditions when secondary system cooling with high SG water levels is necessary.

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(2) INSERT 1

The SFRCS is designed to automatically start the Auxiliary Feedwater (AFW) System in the event of a main steam line break (MSLB), main feedwater (MFW) line rupture, a low level in the steam generators or a loss of all four reactor coolant pumps. SFRCS is designed to automatically isolate the Main Steam System and MFW System in the event of a MSLB or MFW line rupture. The AFW System is automatically aligned to feed the unaffected steam generator (SG) upon a loss of steam pressure in one of the SGs.

The SFRCS is required to ensure an adequate feedwater supply to remove reactor decay heat during periods when the normal feedwater supply has been lost.

The SFRCS instrumentation provides input to the logic from the following inputs:

1. Main Steam Line Pressure – Low;
2. Feedwater/Steam Generator Differential Pressure – High;
3. Steam Generator Level – Low; and
4. Loss of RCPs.

AFW is initiated to restore a source of cooling water to the SGs when conditions indicate that the normal source of feedwater is insufficient to meet heat removal requirements. A high Feedwater/SG Differential Pressure and a low level in the steam generator indicate a loss of MFW. AFW is initiated and SGs are isolated upon detection of a rupture of a main steam line or MFW line which is sensed when steam pressure reaches the low main steam line pressure setpoint or the differential pressure between the feedwater and SG reaches the high level setpoint, respectively. On the loss of all reactor coolant pumps (RCPs) the primary system experiences a total loss of forced circulation, AFW is initiated to promote natural circulation cooling.

The SFRCS will isolate main steam and MFW to an SG upon a loss of pressure control. A loss of pressure control in an SG identifies that heat sink temperature control is lost and the heat removal rate cannot be controlled. SFRCS automatically aligns the AFW System to the unaffected SG to avoid uncontrolled heat removal rates from the affected SG. Under other conditions (i.e., Feedwater/SG Differential Pressure – High, SG Level – Low, and Loss of RCPs), SFCRS will align both main steam lines to each AFW pump turbine and align each AFW train to discharge to its associated SG.

Figure 7.4-4, UFSAR Section 7.4.1.3 (Ref. 1), illustrates SFRCS logic operation. The SFRCS consists of two independent and redundant actuation channels. Each actuation channel consists of two electrically independent complementary logic channels. Each complementary logic channel contains identical sets of SFRCS instrumentation for monitoring

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

key parameters and issuing trip signals when a limiting condition has been reached within the actuation channel. The trip output of each complementary logic channel is combined in each actuation channel in a two-out-of-two logic, so that SFRCS will initiate an actuation channel trip when both of the complementary logic channels trip. The logic channel trip will result in de-energization of the SFRCS output relays contained within the actuation channel. Making the actual trip logic of each of the two redundant SFRCS actuation channels a two-out-of-two logic.

1. Main Steam Line Pressure – Low

Main Steam Line Pressure – Low is monitored by four pressure switches on each main steam line. Two pressure switches, one from each main steam line, provides input into each logic channel. The associated SFRCS actuation channel initiates a trip signal when both pressure switches associated with a main steam line actuate, one in each of the logic channels. The low pressure Function may be manually bypassed when both steam lines are less than 750 psig to accommodate normal shutdown of the facility without an SFRCS actuation. If either steam line exceeds 800 psig, the SFRCS channel bypass will be automatically removed.

The following instruments supply the input signals for the Main Steam Line Pressure – Low Function:

PS 3689B Steam Line 1 logic channel 1;
PS 3689D Steam Line 2 logic channel 1;
PS 3689F Steam Line 1 logic channel 3;
PS 3689H Steam Line 2 logic channel 3;
PS 3687A Steam Line 2 logic channel 2;
PS 3687C Steam Line 1 logic channel 2;
PS 3687E Steam Line 2 logic channel 4; and
PS 3687G Steam Line 1 logic channel 4.

Main Steam Line Pressure – Low is a primary indication and actuation signal for MSLB or MFW line break (MFWLB) downstream of the first check valve located upstream of the main feedwater stop valve (MFSV). For small breaks, which do not depressurize the SG or take a long time to depressurize, automatic actuation is not required. The operator has time to diagnose the problem and take appropriate actions.

2. Feedwater/Steam Generator Differential Pressure – High

Feedwater/SG Differential Pressure – High is monitored by four differential pressure switches that sense the differential pressure across a check valve located on each MFW line. Each logic

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

channel within an actuation channel contains two differential pressure switches, one from each MFW line. The associated SFRCS actuation channel will initiate a signal when two differential pressure switches associated with either feedwater line actuate, one in each of the logic channels. Feedwater/SG Differential Pressure is the primary indication for rapid pressure transients resulting from a MFWLB upstream of the first check valve located upstream of the MFSV. A Feedwater/SG Differential Pressure trip can actuate upon a loss of MFW pumps.

The following instruments supply the input signals for the Feedwater / Steam Generator Differential Pressure – High Function:

PDS 2685A Feedwater/Steam Generator 2 logic channel 2;
PDS 2685B Feedwater/Steam Generator 2 logic channel 4;
PDS 2685C Feedwater/Steam Generator 2 logic channel 1;
PDS 2685D Feedwater/Steam Generator 2 logic channel 3;
PDS 2686A Feedwater/Steam Generator 1 logic channel 1;
PDS 2686B Feedwater/Steam Generator 1 logic channel 3;
PDS 2686C Feedwater/Steam Generator 1 logic channel 2; and
PDS 2686D Feedwater/Steam Generator 1 logic channel 4.

3. Steam Generator Level – Low

Steam Generator Level – Low is monitored by four dedicated startup range level transmitters per SG which are used to generate the signals for detection of low level conditions within each SG. Two transmitters provide an input into each logic channel, one from each SG. The associated SFRCS actuation channel will initiate a trip when two transmitters associated with the same SG sense a low level condition. The SG startup level is measured from 0 inches to 300 inches.

Steam Generator Level – Low indicates that the primary feedwater source is insufficient to meet the heat removal requirements and, therefore, additional cooling water is necessary to ensure core decay heat removal.

The Steam Generator Level – Low is a backup to the Main Steam Line Pressure – Low trip and the Feedwater/Steam Generator Differential Pressure – High trip.

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

The following instruments supply the input signals for the Steam Generator Level – Low Function:

LSLL SP9B8 Steam Generator 1 logic channel 1;
LSLL SP9B9 Steam Generator 1 logic channel 3;
LSLL SP9A6 Steam Generator 2 logic channel 1;
LSLL SP9A7 Steam Generator 2 logic channel 3;
LSLL SP9A8 Steam Generator 2 logic channel 2;
LSLL SP9A9 Steam Generator 2 logic channel 4;
LSLL SP9B6 Steam Generator 1 logic channel 2; and
LSLL SP9B7 Steam Generator 1 logic channel 4.

4. Loss of RCPs

A loss of all four RCPs is an indication of a loss of forced flow in the Reactor Coolant System (RCS). Each RCP motor has four RCP current monitoring circuits. A current transformer on one phase of each RCP motor provides current signals to four current monitoring circuits. Each circuit is able to detect an RCP motor overcurrent condition, an overloaded or binding shaft, or an RCP motor undercurrent condition, sheared shaft. Each SFRCS logic channel receives an input from the RCP current monitoring circuit. The SFRCS associated actuation channel will initiate a trip when both logic channels receive input of an overcurrent or an undercurrent condition on all RCP motors.

All SFRCS functions will align AFW discharge valves and Main Steam valves concurrent with AFW initiation. The SFRCS logic aligns the AFW discharge valves and main steam valves to provide AFW to each SG and both main steam lines to each AFW turbine for a Feedwater/SG Differential Pressure – High trip, a SG Level – Low trip, or a Loss of RCPs trip. The signals provided to the AFW and Main Steam valves are consistent with the normal position of the valves except for the AFW Steam Admission valves and two Main Steam valves. The main steam valves that are repositioned do not prevent actuation of the AFW System if they fail to reposition.

For Main Steam Line Pressure – Low, the AFW discharge valves and main steam valves receive different open or close signals depending on the steam line affected. Upon a low pressure in main steam line 1, the two actuation channels will align both AFW pumps to provide feedwater to SG 2 and align the main steam supply of both AFW pump turbines to come from SG 2. SFRCS actuation channel 1 will close AFW pump 1 discharge valve to SG 1, open AFW pump 1 discharge valve to SG 2, close AFW pump turbine 1 main steam supply from SG 1 and open AFW pump turbine 1 main steam supply from SG 2. SFRCS actuation channel 2 will close AFW pump 2 discharge valve to SG 1, open AFW pump 2 discharge valve to SG 2, close AFW pump turbine 2 main steam

2 **INSERT 1 (continued)**

supply from SG 1 and open AFW pump turbine 2 main steam supply from SG 2. Upon a low pressure in main steam line 2, the two actuation channels will align both AFW pumps to provide feedwater to SG 1 and align the main steam supply of both AFW pump turbines to come from SG 1. SFRCS actuation channel 1 will open AFW pump 1 discharge valve to SG 1, close AFW pump 1 discharge valve to SG 2, open AFW pump turbine 1 main steam supply from SG 1 and close AFW pump turbine 1 main steam supply from SG 2. SFRCS actuation channel 2 will open AFW pump 2 discharge valve to SG 1, close AFW pump 2 discharge valve to SG 2, open AFW pump turbine 2 main steam supply from SG 1 and close AFW pump turbine 2 main steam supply from SG 2.

Main Steam line and MFW isolation is provided by the Main Steam Line Pressure – Low trip and the Feedwater/SG Differential Pressure – High trip. Once isolation of the SGs has occurred, manual action is required to defeat the isolation command as desired.

The Main Steam Line Isolation Function is accomplished by closing the main steam isolation valves (MSIVs) and the turbine stop valves (TSVs). The TSVs serve as a backup to the MSIVs.

The MFW Isolation Function limits the overcooling of the RCS following a MSLB or MFWLB. The isolation function limits the mass and energy released to containment following a MSLB or MFWLB. The function is accomplished by closing the MFSVs, the main feedwater control valves (MFCVs), and the startup feedwater control valves (SFCVs).

All changes are 2 unless otherwise noted

SFRCS

EFIC Instrumentation 1
B 3.3.11

BASES

BACKGROUND (continued)

The EFIC System also isolates main steam and MFW to an SG that has lost pressure control. With the loss of pressure control, the heat sink temperature control is lost and the heat removal rate cannot be controlled. The main steam and MFW are isolated to an SG when the steam pressure reaches a low setpoint, a condition which is beyond the normal operating point of the secondary system.

The EFIC System also performs an EFW control function to avoid delivering EFW to a depressurized SG when the other SG remains pressurized. This continues the function of isolating functional components from an SG whose pressure cannot be controlled. This function precludes the delivery of fluid to a depressurized SG, thereby avoiding an uncontrolled cooling condition as long as the other SG remains pressurized. When both of the SGs are depressurized, the EFIC logic provides EFW flow to both SGs until a significant pressure difference between the two SGs is developed, thereby ensuring that core cooling is maintained.

Trip Setpoints and Allowable Values

The trip setpoints are the nominal value at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION accuracy (i.e., ± [rack calibration + comparator setting accuracy]).

The trip setpoints used in the bistables are based on the analytical limits stated in FSAR, Section [14.1] (Ref. 1). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. The Allowable Values specified in Table 3.3.11-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits to allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environmental errors for those EFIC channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 2). A detailed description of the methodology used to calculate the trip setpoints, including their explicit uncertainties, is provided in "[Unit Specific Setpoint Methodology]" (Ref. 3). The actual nominal trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a CHANNEL FUNCTIONAL TEST. One example of such a change in measurement error is drift during the surveillance interval. A channel is inoperable if its actuation trip setpoint is not within its required Allowable Value.

uncertainties

5

SFRCS

2

The trip setpoint is established using Method 1 or Method 2 of Reference 3 or 4.

4

and CHANNEL CALIBRATION

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EFIC Instrumentation
B 3.3.11 (1)

All changes are (2) unless otherwise noted

BASES

BACKGROUND (continued)

Setpoints in accordance with the Allowable Value ensure that the consequences of Design Basis Accidents (DBAs) are acceptable, providing the unit is operated from within the LCOs at the onset of the DBA, and that the equipment functions as designed.

Each channel can be tested on line to verify that the setpoint accuracy is within the specified allowance requirements of Figure [ ] FSAR, Chapter [7] (Ref. 4). Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. The SRs for the channels are specified in the SRs Section.

U (4)

Table 7.4-1 (Ref. 5)

(5)

established using Method 1 or 2 of Reference 3 or 4

The Allowable Values listed in Table 3.3.11-1 are based on the "[Unit Specific Setpoint Methodology]" (Ref. 3), which incorporates all of the known uncertainties applicable for each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes. (4)

Figure [ ], FSAR, Chapter [7] (Ref. 4), illustrates EFIC EFW Initiation logic operation.

Each EFIC train actuates on a one-out-of-two taken twice combination of trip signals from the instrumentation channels. Each EFIC channel can issue an initiate command, but an EFIC actuation will take place only if at least two channels issue initiate commands. The one-out-of-two taken twice logic combinations are transposed between trains so that failure of two channels prevents actuation of, at most, one train.

More detailed descriptions of the EFIC instrumentation are provided next.

1. EFW Initiation

   Figure [ ], FSAR, Chapter [7] (Ref. 4), illustrates one channel of the EFIC EFW Initiation channel. The individual instrumentation channels that serve EFIC EFW Initiation Function are discussed next.

BASES

BACKGROUND (continued)

a. Loss of MFW Pumps (Control Oil Pressure)

Loss of both MFW Pumps is one of the four parameters within the EFIC System that automatically initiates EFW. Loss of MFW Pumps is detected by MFW Pump turbine control oil pressure. The MFW Pump status instrumentation is a part of the nuclear instrument (NI) and Reactor Protection System (RPS). Each RPS channel receives MFW Pump status information from pressure switches (four per pump). If both switches in a single channel trip, the associated RPS channel trips. Each RPS channel provides both MFW Pumps tripped signal to the associated EFIC channel. The trip Function is bypassed when THERMAL POWER ≤ 20% RTP and the RPS is in shutdown bypass. The bypass is automatically removed when THERMAL POWER is greater than 20% RTP.

Loss of both MFW Pumps was chosen as an EFW automatic initiating parameter because it is a direct and immediate indicator of loss of MFW.

b. SG Level - Low (2)

Four EFIC dedicated low range level transmitters per SG Level - Low are used to generate the signals used for detection for low level conditions for EFW actuation. There is one transmitter for each of the four channels A, B, C, and D. The signals are also used after EFW is actuated to control SG level at the low level setpoint [30 inches] when one or more RCPs are operational.

The lower and upper taps for the low range level transmitters are located at 6 inches and 277 inches, respectively, above the upper face of the SG's lower tube sheet. The calibrated range is 0-150 inches.

SG Level - Low was chosen as an EFW automatic initiating parameter because it indicates that the primary feedwater source is insufficient to meet the heat removal requirements and, therefore, additional cooling water is necessary to ensure core decay heat removal.

1

BASES

BACKGROUND (continued)

c. SG Pressure - Low

Four transmitters per SG provide the EFIC System with channels A through D of SG Pressure - Low. These are the same transmitters used by the MFW and Main Steam Line Isolation Functions. When the SG pressure drops below the bistable setpoint of 600 psig on a given channel, an EFW Initiation signal is sent to the automatic actuation logic. The low pressure Function may be manually bypassed when both SGs are less than 750 psig. If either SG input channel exceeds 750 psig, the EFIC channel bypass is automatically removed. The low pressure operational bypass allows for normal cooldown without EFIC actuation.

SG Pressure - Low is a primary indication and actuation signal for steam line breaks (SLBs) or feedwater line breaks (FWLBs). For small breaks, which do not depressurize the SG or take a long time to depressurize, automatic actuation is not required. The operator has time to diagnose the problem and take the appropriate actions.

d. RCP Status

2

A loss of power to all four RCPs is an indication of a pending loss of forced flow in the Reactor Coolant System. These sensing signals are input into the four channels of EFIC.

When at least two channels issue initiate commands based on loss of all RCPs, the EFIC System will automatically actuate EFW and switch the level control setpoint to approximately 50% in the SG. This higher setpoint provides a thermal center in the SG at a higher elevation than that of the reactor to ensure natural circulation of the reactor coolant.

To allow heatup and cooldown operations without actuation, a bypass permissive of 10% RTP is used. The 10% bypass permissive was chosen because it was an available, qualified Class 1E signal at the time the EFIC System was designed. When the first RCP is started, the "loss of four RCPs" initiation signal may be manually reset. If the bypass is not manually

1

BASES

BACKGROUND (continued)

reset, it will be automatically reset when the unit reaches 10% power. During cooldown, the bypass may be inserted at any time the power has been reduced below 10%. However, for most operating conditions, it is recommended that this trip function remain active until after the Decay Heat Removal System has been initiated and the system is ready for the last RCP to be tripped. This trip function must be bypassed prior to stopping the last RCP.

2. EFW Vector Valve Control

Figure [ ] , FSAR, Chapter [7] (Ref. 4), illustrates one channel of the EFIC EFW Vector Valve Control logic. The function of the EFW vector logic is to determine whether EFW should not be fed to one or the other SG. This is to preclude the continued addition of EFW to a depressurized SG and, thus, to minimize the overcooling effects of a steam leak.

Each set of vector logic receives SG pressure information from bistables located in the input logic of the same EFIC channel. The pressure information received is:

2

a. SG A pressure less than 600 psig,

b. SG B pressure less than 600 psig,

c. SG A pressure 125 psid greater than SG B pressure, and

d. SG B pressure 125 psid greater than SG A pressure.

Each vector logic also receives a vector/control enable signal from both EFIC channel A and channel B when EFW is initiated. [Each logic also receives an SG high level signal. High level in an SG prevents opening the associated vector valves and enables closing the valves without either EFIC train vector valve enable.]

The vector logic develops signals to open or to close SG A and B EFW valves.

BASES

BACKGROUND (continued)

The vector logic outputs are in a neutral state until enabled by the control/vector enable from the channel A or B trip logics. When enabled, the vector logic can issue open or close commands to the EFW control valves and EFW isolation valves per the selected channel assignments.

Each vector logic may isolate EFW to one SG or the other, never both.

The valve open or close commands are determined by the relative values of SG pressures as follows:

PRESSURE STATUS	SG VALVES "A"	SG VALVES "B"
SG A and SG B > 600 psig	Open	Open
| SG A - SG B | < 125 psid	Open	Open
SG A or SG B ≤ 600 psig and SG A - SG B ≥ 125 psid	Open	Close
SG A or SG B ≤ 600 psig and SG B - SG A ≥ 125 psid	Close	Open

Bypass

One of the four initiation channels can be put into "maintenance bypass." Bypassing one initiation channel isolates that channel's signal to the functions fed from initiation channel but does not bypass the trip logic within the actuation channel. An interlock feature prevents bypassing more than one channel at a time. In addition, since the EFIC System

All changes are 2 unless otherwise noted

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B 3.3.11

BASES

BACKGROUND (continued)

receives signals from NI and RPS, the maintenance bypass from the NI and RPS is interlocked with the EFIC System. If one channel of the NIS and RPS is in maintenance bypass, only the corresponding channel of the EFIC may be bypassed (e.g., channel A, NI or RPS, and channel A, EFIC). This ensures that only the corresponding channels of the EFIC and NI and RPS are placed in maintenance bypass at the same time.

EFIC channel maintenance bypass does not bypass EFW Initiation from Engineered Safety Feature Actuation System (ESFAS) high pressure injection (HPI). The EFIC HPI Actuation Function is, however, bypassed when ESFAS is bypassed.

The operational bypass provisions were discussed as part of the individual Functions described earlier.

Operational bypass of the OTSG Level - High input to the vector valve logic is possible after EFIC initiation. [For this unit, bypassing the overfill function is for the following reasons:] 2

3, 4. Main Steam Line and MFW Isolation

Figure [ ] , FSAR, Chapter [7] (Ref. 4) illustrates one channel of the EFIC Main Steam Line and MFW Isolation logic. Four pressure transmitters per SG provide EFIC with channels A through D logic of SG pressure. The channels are as described for EFW Initiation mentioned earlier.

Once isolated, manual action is required to defeat the isolation command if desired. The EFIC System is designed to perform its intended function with one channel in maintenance bypass (in effect, inoperable) with a single failure in one of the remaining channels. This is in compliance with IEEE-279-1971 (Ref. 5) due to the redundancy and independence in the EFIC design.

APPLICABLE SAFETY ANALYSES

1. EFW Initiation

Although loss of both MFW pumps is a direct and immediate indicator of loss of MFW, other scenarios such as valve closures could potentially cause loss of feedwater. The loss of MFW analysis, therefore, conservatively assures the actuation of EFW on low SG level. If the loss of feedwater is due to loss of MFW pumps, EFW will be actuated much earlier than assumed in the analysis, which will increase the SG heat transfer capability and will lessen the severity of the transient.

INSERT 2

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(2) INSERT 2

The MFW line break analysis assumes the Feedwater/Steam Generator Differential Pressure – High trip isolates the unaffected steam generator from the line break thus assuring adequate inventory and pressure to run the available AFW pump turbines. The analysis further assumes that the Main Steam Line Pressure – Low trip realigns the AFW System to take steam from and to feed the unaffected steam generator.

The MSLB analysis assumes the Main Steam Line Pressure – Low trip isolates the unaffected steam generator from the line break thus assuring adequate inventory and pressure to run the available AFW pump turbines. The analysis further assumes that the Main Steam Line Pressure – Low trip realigns the AFW System to take steam from and to feed the unaffected steam generator.

The Main Steam Isolation Function is accomplished by closing the MSIVs and the TSVs. While the TSVs serve as a backup to the MSIVs, closure of the TSVs ensures that both steam generators do not blowdown following a MSLB in conjunction with a failure of the unaffected steam generator's associated MSIV failing to close.

The Main Feedwater Isolation Function is accomplished by closing the MFSVs, the MFCVs, and the SFCVs.

The Loss of Feedwater (LOFW) analysis assumes the Steam Generator Level – Low trip initiates the AFW System.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The DBA which forms the basis for initiation of the EFW systems is a loss of MFW transient. In the analysis of this transient, SG Level - Low is the parameter assumed to automatically initiate EFW. This assumption yields the least SG inventory available for heat removal and is, therefore, conservative for evaluation of this DBA. SG Level - Low would be an indicator of all accidents involving a loss of primary to secondary heat removal.

SG Pressure - Low is a primary indication and provides the actuation signal for SLBs or FWLBs. For small breaks, which do not depressurize the SG or take a long time to depressurize, automatic actuation is not required. The operator has sufficient time to diagnose the problem and take the appropriate actions.

Loss of four RCPs is a primary indicator of the need for auxiliary feedwater (AFW) in the safety analyses for loss of electric power and loss of coolant flow. It also serves as a backup indicator for SLBs and small break LOCAs.

2. EFW Vector Valve Control

Most of the FSAR SLB analyses were performed prior to the development of the safety grade EFIC System. Therefore, the EFIC vector valve control was not credited in the original licensing basis for a main SLB analysis. Instead, operator action was credited with isolating AFW to the affected SG within the first 60 seconds. However, isolating the affected SG is a function automatically performed by the EFIC System. Therefore, the FSAR analysis remains conservative relative to the inclusion of the vector valve control.

3, 4. Main Steam Line and MFW Isolation

The FSAR analysis assumed integrated control system action for MFW and Main Steam Line Isolation. The analysis took credit for turbine stop valve closure and feedwater valve isolation on reactor trip and considered the isolation functions occurring on SG pressure < 600 psig as backup. These isolation functions are currently

All changes are 2 unless otherwise noted

SFRCS

EFIC Instrumentation 1
B 3.3.11

BASES

APPLICABLE SAFETY ANALYSES (continued)

provided by the safety grade EFIC System. Use of the EFIC System in the original safety analysis would have been consistent with the licensing position allowing mitigative functions to be performed by safety grade systems in accident analysis. For these reasons, the SLB accident analysis remains conservative with the assumed integrated control system actions.

SFRCS

The EFIC System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

SFRCS

All instrumentation performing an EFIC System Function in Table B 3.3.11-1 shall be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. 5 4

Functions as specified in Table 3.3.11-1

SFRCS

SFRCS

Four channels are required OPERABLE for all EFIC instrumentation channels to ensure that no single failure prevents actuation of a train. Each EFIC instrumentation channel is considered to include the sensors and measurement channels for each Function, the operational bypass switches, and permissives. Failures that disable the capability to place a channel in operational bypass, but which do not disable the trip Function, do not render the protection channel inoperable.

SFRCS

Only the Allowable Values are specified for each EFIC initiation and bypass removal function in the LCO. In Table 3.3.11-1, Allowable Values for the bypass removal functions are specified in terms of applicability limits on the associated trip Function. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal setpoints are selected to ensure the setpoints measured by CHANNEL FUNCTIONAL TESTS do not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the unit specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "[Unit Specific Setpoint Methodology]" (Ref. 3). 4

setpoint calculations

The Bases for the LCO requirements of each specific EFIC Function are discussed next.

SFRCS

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All changes are 2 unless otherwise noted

SFRCS

EF/C Instrumentation 1
B 3.3.11

BASES

LCO (continued)

2. Feedwater/Steam Generator Differential Pressure- High

setpoints set consistent with the Allowable Value.

1

Loss of MFW Pumps

SFRCS

per feedwater line

Four EF/C channels shall be OPERABLE with MFW pump turbines A and B control oil low pressure actuation setpoints of > [55] psig. The 55 psig setpoint is about half of the normal operating control oil pressure. The 55 psig setpoint Allowable Value was arbitrarily chosen as a good indication of Loss of MFW Pumps. Analysis only assumes Loss of MFW Pumps and a specific value of MFW pump control oil pressure is not used in the analysis. The Loss of MFW Pumps Function includes a bypass enable and removal function from the NI/RPS. The bypass removal function is based on maintaining consistency with RPS LCO and design of system.

MFWLB

Steam Generator

3.

SG Level – Low

set consistent with the Allowable Value.

startup

SFRCS

Steam Generator

Four EF/C dedicated low range level transmitters per SG shall be OPERABLE with SG Level - Low actuation setpoints of ≥ [9] inches, to generate the signals used for detection for low level conditions for EFW Initiation. There is one transmitter for each of the four channels A, B, C, and D. The signals are also used after EFW is actuated to control at the low level setpoint of 30 inches when one or more RCPs are in operation. In the determination of the low level setpoint, it is desired to place the setpoint as low as possible, considering instrument errors, to give the maximum operability margin between the integrated control system low load control setpoint and the EFW Initiation setpoint. This will minimize spurious or unwanted initiation of EFW. Credit is only taken for low level actuation for those transients which do not involve a degraded environment. Therefore, normal environment errors only are used for determining the SG Level - Low level setpoint.

1

INSERT 3

1.

SG Pressure – Low

Main Steam Line

1

SFRCS

main steam Line

Four EF/C channels per SG shall be OPERABLE with SG low pressure actuation setpoints of ≥ [600] psig. The setpoint is chosen to avoid actuation under transient conditions not requiring secondary system isolation, preferring to maintain a steaming path to the condenser, if possible. Small break LOCA analyses have indicated minimum secondary system pressures of approximately 700 psig. The SG Pressure - Low Function includes a bypass enable and removal function. The bypass removal Allowable Value is chosen to allow sufficient operating margin for the operator to bypass when cooling down.

set consistent with the Allowable Value

2 **INSERT 3**

The Allowable Value of 17.3 inches is based on actual water level above the lower steam generator tube sheet. This corresponds to an approximate indicated level of 23 inches. Operation of the Steam Generators on low level limit control at an indicated level of 40 inches is sufficiently above the Allowable Value.

SFRCS

All changes are 2 unless otherwise noted

BASES

LCO (continued)

SG Differential Pressure – High

Four EFIC channels for SG differential pressure shall be OPERABLE with setpoints of ≤ [125] psid. The setpoint ensures that automatic EFW isolation to a depressurized SG occurs for the range of sizes of SLBs that require rapid actuation early in the event. The setpoint has also been chosen to avoid spurious isolation of EFW during conditions due to relatively small deviations in SG pressures that can be caused by primary system conditions. The SG Differential Pressure - High Function includes a bypass enable and removal function. The bypass removal Allowable Value is chosen to allow sufficient operating margin for the operator to bypass when cooling down. 1

Loss of RCPs

4.

RCP Status 1

SFRCS

(with each channel receiving input from an RCP monitoring circuit monitoring the current on each RCP motor)

Four EF/C channels for RCP status shall be OPERABLE. This ensures that upon the loss of four RCPs, EFW will be automatically initiated with the EFW control level automatically raised to approximately 50%, providing a higher SG level for establishing and maintaining natural circulation conditions when the forced reactor coolant flow is lost. No setpoint is specified since the status indication as used by EFIC is binary in nature. The RCP Status Function includes a bypass enable and removal function from the RPS. The Allowable Value for the bypass removal is set high enough to avoid spurious actuations during low power operation.

A

INSERT 4

SG Level – High 1

[For this unit, the basis for SG Level - High signal is as follows:]

APPLICABILITY

The EF/C System instrumentation Functions shall be OPERABLE in accordance with Table 3.3.11-1. Each Function has its own requirements that are based on the specific accidents and conditions that it is designed to protect against.

SFRCS

1,

Feedwater/Steam Generator Differential Pressure- High

The initiation of EFW on the Loss of MFW Pumps shall only be required in MODE 1 and in MODES 2 and 3 when not in shutdown bypass, when core power production and heat removal requirements are the greatest. Below these unit conditions, the EFW Initiation on low SG level is rapid enough to avoid unnecessary primary system overheating. 1

,

the energy level is low and the secondary side feedwater flow is low or nonexistent

2 **INSERT 4**

. The Allowable Values are selected to detect an RCP motor overcurrent condition, as would be found with an overloaded or binding shaft, and an RCP motor undercurrent condition, as would be found with a sheared shaft.

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All changes are 2 unless otherwise noted

SFRCS

1

BASES

APPLICABILITY (continued)

Steam Generator Level-Low Function

EFW Initiation on low SG level shall be OPERABLE at all times the SG is required for heat removal. These conditions include MODES 1, 2, and 3. To avoid automatic actuation of the EFW pumps during normal heatup and cooldown transients, the low SG pressure Function can be bypassed at or below a secondary pressure of [750] psig. This secondary pressure can normally only be reached during MODE 3 operation.

A

level

6

Loss of

is not required to be OPERABLE in MODES 4, 5, and 6

The EFW System Initiation on loss of all RCPs Function shall be operable at ≥ 10% RTP. It is possible to bypass the Function below 10% RTP; however, for most cases, the Function is kept in service until the unit is placed on the Decay Heat Removal System. To prevent inadvertent actuation of the EFW pumps, it must be bypassed prior to stopping the last RCP.

5

INSERT 5

1

Main Steam Line Pressure-Low

The MFW, Main Steam Line Isolation, and EFW Vector Valve Control Functions shall be OPERABLE in MODES 1, 2, and 3 with SG pressure ≥ 750 psig because the SG inventory can be at a high energy level and contribute significantly to the peak pressure with a secondary side break. Both the normal feedwater and the EFW must be able to be isolated on each SG to limit overcooling of the primary and mass and energy releases to the reactor building. Once the SG pressures have decreased below 750 psig, the Main Steam Line and MFW Isolation Functions can be bypassed to avoid actuation during normal unit cooldowns. The EFW Vector Valve Control logic will not perform any function when both SG pressures are low; thus, the logic can also be bypassed at the same point. In MODES 4, 5, and 6, the energy level is low and the secondary side feedwater flow rate is low or nonexistent. In MODES 4, 5, and 6, the primary system temperatures are too low to allow the SGs to effectively remove energy and EF/C instrumentation is not required to be OPERABLE.

6

A

containment

Pressure – Low

1

SFRCS

ACTIONS

in Table 3.3.11-1

SFRCS

the

must be entered immediately

applicable

If a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or any of the transmitter, signal processing electronics, or EF/C channel cabinet modules are found inoperable, then all affected Functions provided by that channel must be declared inoperable and the unit must enter the Conditions for the particular protection Function affected.

1

A Note has been added to the ACTIONS indicating that a separate Condition entry is allowed for each Function.

1 **INSERT 5**

in MODES 1, 2, and 3 when the RCPs are required to be in operation.

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All changes are 1 unless otherwise noted

SFRCS

EFIC Instrumentation
B 3.3.11

BASES

ACTIONS (continued)

A.1 and A.2

inoperabilities

for one or more Functions.

Condition A applies to failures of a single EFW Initiation, Main Steam Line Isolation, or MFW Isolation instrumentation channel. This includes failure of a common instrumentation channel in any combination of the Functions.

With one channel inoperable in one or more EFW Initiation, Main Steam Line Isolation, or MFW Isolation Functions listed in Table 3.3.11-1, the channel(s) must be placed in bypass or trip within 1 hour. This Condition applies to failures that occur in a single channel, e.g., channel A, which when bypassed will remove initiate Functions within the channel from service. Since the RPS and EFIC channels are interlocked, only the corresponding channel in each system may be bypassed at any time. This feature is ensured by an electrical interlock. If testing of another channel in either the EFIC or RPS is required, the EFIC channel must be placed in trip to allow the other channel to be bypassed. With the channel in trip, the resultant logic is one-out-of-two. The Completion Time of 1 hour is adequate to perform Required Action A.1.

in the affected actuation channel

one

2

Required Action A.2 provides for placing the channel(s) in trip if the channel(s) is/are not restored to OPERABLE status within 72 hours.

A single inoperable EFIC instrumentation channel affects at most one train of EFW, Main Steam Line Isolation, and MFW Isolation. Therefore, the 72 hour Completion Time was selected to be consistent with the allowed out of service time for the EFW, Main Steam Line Isolation, and MFW Isolation Functions.

B.1, B.2, and B.3

Condition B applies to a situation where two instrumentation channels for multiple protection functions of EFW Initiation, Main Steam Line Isolation, or MFW Isolation instrumentation are inoperable. For example, Condition B applies if channel A and B of the EFW Initiation Function are inoperable.

Condition B does not apply if one channel of different Functions is inoperable in the same protection channel. That condition is addressed by Condition A.

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BASES

ACTIONS (continued)

With two EFW Initiation, Main Steam Line Isolation, or MFW Isolation protection channels inoperable, one channel must be placed in bypass (Required Action B.1). Bypassing one of the remaining OPERABLE channels is not possible due to system interlocks. Therefore, the second channel must be tripped (Required Action B.2) to prevent a single failure from causing loss of the EFIC Function. The Completion Times of 1 hour are adequate to perform the Required Actions.

One of the channels must be returned to OPERABLE status (Required Action B.3) to minimize the time the system is permitted to operate in a configuration that is not capable of withstanding a single failure and still initiate EFW, Main Steam Line Isolation, and MFW Isolation. Restoring one channel changes system status to that of Condition A. A single inoperable EFIC channel affects at most one train of EFW, Main Steam Line Isolation, and MFW Isolation. Therefore the 72 hour Completion Time was selected to be consistent with the allowed out of service time for the EFW, Main Steam Line Isolation, and MFW Isolation Functions.

C.1

The function of the EFW Vector Valve Control is to meet the single-failure criterion while being able to provide EFW on demand and isolate an SG when required. These conflicting requirements result in the necessity for two valves in series, in parallel with two valves in series, and a four channel valve command system. Refer to LCO 3.3.14, "Emergency Feedwater Initiation and Control (EFIC) Emergency Feedwater (EFW) - Vector Valve Logic."

With one EFW Vector Valve Control channel inoperable, the system cannot meet the single-failure criterion and still meet the dual functional criteria described earlier. This condition is analogous to having one EFW train inoperable. Therefore, when one vector valve control channel is inoperable, the channel must be restored to OPERABLE status (Required Action C.1) within 72 hours, which is consistent with the Completion Time associated with the loss of one train of EFW.

All changes are 1 unless otherwise noted

SFRCS

EF/C Instrumentation
B 3.3.11

BASES

ACTIONS (continued)

B.1, B.2, and B.3

D.1, D.2.1, D.2.2, E.1, and F.1

have two or more channels inoperable

for all Functions except Main Steam Line Pressure-Low

and for Main Steam Line Pressure-Low Function is MODE 3 with steam generator

If the Required Actions cannot be met within the required Completion Time or if more than two channels are inoperable in one or more Functions, the unit must be placed in a MODE or condition in which the requirement does not apply. This is done by placing the unit in a nonapplicable MODE for the particular Function. The nonapplicable MODE is to open the CRD trip breakers for Function 1.a, MODE 4 for Function 1.b, less than 10% RTP for Function 1.d, and SG pressure less than 750 psig for all other Functions. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. SFRCS

SURVEILLANCE REQUIREMENTS

SFRCS

and SFRCS RESPONSE TIME

A Note indicates that the SRs for each EF/C instrumentation Function are identified in the SRs column of Table 3.3.11-1. All Functions are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION. The SG - Low Level Function is the only Function that was modeled in transient analysis, and thus is the only EFW Initiation Function subjected to response time testing. Response time testing is also required for Main Steam Line and MFW Isolation. Individual EFIC subgroup relays must also be tested, one at a time, to verify the individual EFIC components will actuate when required. Some components cannot be tested at power since their actuation might lead to unit trip or equipment damage. These are specifically identified and must be tested when shut down. The various SRs account for individual functional differences and for test frequencies applicable specifically to the Functions listed in Table 3.3.11-1. The operational bypasses associated with each EFIC instrumentation channel are also subject to these SRs to ensure OPERABILITY of the EFIC instrumentation channel. 2 2

SR 3.3.11.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

12 hours

6

The Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel operability during normal operational use of the displays associated with the LCO required channels.

SR 3.3.11.2

A CHANNEL FUNCTIONAL TEST verifies the function of the required trip, interlock, and alarm functions of the channel. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay.

if

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 for both trip and bypass removal functions must be found within the Allowable Value specified in the LCO. (Note that the Allowable Values for the bypass removal functions are specified in the Applicable MODES or Other Specified Condition column of

7

All changes are 1 unless otherwise noted

SFRCS

EF/C Instrumentation
B 3.3.11

BASES

SURVEILLANCE REQUIREMENTS (continued)

Table 3.3.11-1 as limits on applicability for the trip Functions.) Any setpoint adjustment shall be consistent with the assumptions of the current unit specific setpoint analysis.

The Frequency of 31 days is based on unit operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given function in any 31 day interval is a rare event.

INSERT 5A 1

SR 3.3.11.3

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The test verifies the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channels adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the unit specific setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint analysis.

The Frequency is based on the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis. 4

INSERT 6

SR 3.3.11.4 5

This SR verifies individual channel actuation response times are less than or equal to the maximum value assumed in the accident analysis.

Response time testing acceptance criteria are included in "Unit Specific Response Time Acceptance Criteria" (Ref. 6). the Technical Requirements Manual (TRM) 2 8

Individual component response times are not modeled in the analysis. The analysis models the overall or total elapsed time, from the point at which the parameter exceeds the actuation setpoint value at the sensor, to the point at which the end device is actuated. INSERT 6A

(1) INSERT 5A

This SR is modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided the channels providing input to the other actuation channel are OPERABLE. Upon completion of the Surveillance, or expiration of the 8 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This is acceptable since the channels providing input to the other actuation channel will continue to ensure the associated SFRCS Function can perform its assumed function.

(1) INSERT 6

SR 3.3.11.4

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The test verifies the channel responds to a measured parameter with the necessary range and accuracy. CHANNEL CALIBRATION leaves the channels adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoints errors are within the assumption of the unit specific setpoint analysis. CHANNEL CALIBRATION must be performed consistent with the assumptions of the unit specific setpoint analysis.

The Frequency is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

(1) INSERT 6A

Thus, this SR encompasses the automatic actuation logic components covered by LCO 3.3.13, "Steam and Feedwater Rupture Control System (SFRCS) Actuation," and the operation of the mechanical components (i.e., auxiliary feedwater pumps, main steam isolation valves, main feedwater valves, and turbine stop valves).

All changes are 2 unless otherwise noted

SFRCS

EF/C Instrumentation 1
B 3.3.11

BASES

SURVEILLANCE REQUIREMENTS (continued)

SFRCS EF/C RESPONSE TIME tests are conducted on an [18] month 24 4
STAGGERED TEST BASIS. INSERT 7 Testing of the final actuation devices, which make up the bulk of the EF/C RESPONSE TIME, is included in the testing of each channel. Therefore, staggered testing results in response time 24 verification of these devices every [18] months. The [18] 24 month test 4 Frequency is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. EFIC RESPONSE TIMES cannot be determined at power since equipment operation is required.

REFERENCES

1. FSAR, Section [14.1]. UFSAR, Section 7.4.1.3, Figure 7.4-4. 2 4
2. 10 CFR 50.49. ISA RP 67.04-Part II-1994, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." 2
3. [Unit Name], [Unit Specific Setpoint Methodology]. 4
4. FSAR, Chapter [7]. Table 7.4-1 2 4 (U, 5)
5. IEEE-279-1971, April 1972. 2
6. [Unit Specific Response Time Acceptance Criteria]. Technical Requirements Manual (TRM) 4

4. ISA RP 67.04.02-2000, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." 4

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2 **INSERT 7**

SFRCS RESPONSE TIME testing includes the AFW pumps for Functions 1, 2, 3, and 4, the MSIVs for Functions 1 and 2, the main feedwater isolation valves (MFCVs, SFCVs, and MFSVs) for Functions 1 and 2, and the TSVs for Function 1.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11 BASES, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Typographical/grammatical error corrected.

6. Changes are made to be consistent with the Specification.

7. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

8. Editorial change for clarity.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.11, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 12

ITS 3.3.12, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

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

ITS

A01

INSTRUMENTATION

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.12 3.3.2.2 The Steam and Feedwater Rupture Control System (SFRCS) instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-12, with the exception of the Steam Generator Level-Low Functional Unit which shall be set consistent with the Allowable Value column of Table 3.3-12.

See ITS 3.3.11

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

Add proposed ACTIONS Note

A02

a. With a SFRCS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-12, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-11, until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-12.

See ITS 3.3.11

ACTION A and ACTION B

b. With a SFRCS instrumentation channel inoperable, take the action shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

SR 3.3.12.1 4.3.2.2.1 Each SFRCS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-11.

See TS 3.3.11

4.3.2.2.2 The logic for the shutdown bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

See ITS 3.3.11

4.3.2.2.3 The STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM RESPONSE TIME* of each SFRCS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant channels in a specific SFRCS function as shown in the "Total No. of Channels" Column of Table 3.3-11.

See ITS 3.3.11

* The Main Steam Isolation Valves (MSIVs) response time is to be the time elapsed from the monitored variable exceeding the trip setpoint until the MSIV is fully closed. The Turbine Stop Valves (TSVs) response time is to be the time elapsed from the main steam line low pressure trip condition until the TSV is fully closed.

See ITS 3.3.11

LA01

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
3. Steam Generator Level - Low Instrument Channels (continued)				See ITS 3.3.11
d. LSLL SP9B6 Steam Generator 1 Channel 2 LSLL SP9B7 Steam Generator 1 Channel 2				
4. Loss of RCP Channels	2	1	2	16#
5. Manual Initiation (Push buttons)				
a. Initiate AFPT #1	1	1	1	17A
b. Initiate AFPT #2	1	1	1	17A
c. Initiate AFPT #1 and Isolate SG #1	1	1	1	17A
d. Initiate AFPT #2 and Isolate SG #2	1	1	1	17A

LA01

LCO 3.3.12

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A01

ITS

TABLE 3.3-11 (Continued)

TABLE NOTATION

* May be bypassed when steam pressure is below 750 psig. Bypass shall be automatically removed when the steam pressure exceeds 800 psig.

See ITS 3.3.11

The provisions of Specification 3.0.4 are not applicable.

See ITS 3.3.11 and ITS 3.3.13

ACTION STATEMENTS

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable section of the channel is placed in the tripped condition within 1 hour (except as noted below). When a channel is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided the remaining actuation channel is OPERABLE.

See ITS 3.3.11 and ITS 3.3.13

ACTION A and ACTION B

ACTION 17 - 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.

MODE 4 within 12 hours

M01

A01

TABLE 4.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	SR 3.3.12.1 CHANNEL FUNCTIONAL TEST	
1. Instrument Channel				
a. Steam Line Pressure - Low	S	E	M	See ITS 3.3.11
b. Steam Generator Level - Low	S	R	M	
c. Steam Generator - Feedwater Differential Pressure - High	S	E	M	
d. Reactor Coolant Pumps - Loss of	S	E	M	
2. Manual Actuation	NA	NA	R	

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DISCUSSION OF CHANGES
ITS 3.3.12, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.2 specifies compensatory actions to take when SFRCS manual controls are inoperable. ITS 3.3.12 ACTIONS provides the compensatory actions for inoperable SFRCS manual initiation Functions. The ITS 3.3.12 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable SFRCS manual Function.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFRCS manual Function to be separate and independent from the others. This change is considered administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-11 Action 17 requires the unit to be in MODE 3 within 6 hours and MODE 5 within the following 30 hours if Functional Unit 5 channels are not restored within the 48 hour Completion Time. However, CTS Table 3.11-1 Functional Unit 5 is applicable only in MODES 1, 2, and 3. Thus, as described in CTS 3.0.1, CTS Table 3.3-11 Action 17 is only applicable in MODES 1, 2, and 3 for Functional Unit 5. ITS 3.3.12 ACTION B is the associated shutdown action for the above Function, and it only requires the unit to be in MODE 3 within 6 hours and MODE 4 within 12 hours. This changes the CTS by explicitly specifying that the unit is only required to be shut down to MODE 4, and that it must be performed within 12 hours, not 36 hours.

The purpose of CTS Table 3.3-11 Action 17 is to place the unit in a MODE in which Functional Unit 5 does not apply. The change is acceptable because the 12 hour time to reach MODE 4 is consistent with other CTS and ITS requirements, and provides adequate time to reach the MODE in a safe manner without challenging unit systems. This change is designated as more restrictive because the Completion Time for the unit to reach MODE 4 has been decreased by 24 hours.

RELOCATED SPECIFICATIONS

None

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DISCUSSION OF CHANGES
ITS 3.3.12, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-11 for SFRCS 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 3.3.12 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.

LESS RESTRICTIVE CHANGES

None

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

All changes are 1 unless otherwise noted

SFRCS

EF/C Manual Initiation
3.3.12

CTS

3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control System (SFRCS)

3.3.12 Emergency Feedwater Initiation and Control (EFIC) Manual Initiation

3.3.2.2, Table 3.3-11 Functional Unit 5

One

push button

LCO 3.3.12 Two manual initiation switches per actuation channel for each of the following EF/C Functions shall be OPERABLE:

SFRCS

a. Steam generator (SG) A Main Feedwater (MFW) Isolation, — Auxiliary Feedwater Pump Turbine 1 Initiation; 1 2

b. SG B MFW Isolation, — Auxiliary Feedwater Pump Turbine 2 Initiation; 1 2

c. SG A Main Steam Line Isolation, — Auxiliary Feedwater Pump Turbine 1 Initiation and Steam Generator 1 Isolation; and 1 2

d. SG B Main Steam Line Isolation, and — Auxiliary Feedwater Pump Turbine 2 Initiation and Steam Generator 2 Isolation. 1 2

e. Emergency Feedwater Actuation.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

DOC A02

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more EFIC Function(s) with one or both manual initiation switches inoperable in one actuation channel.	A.1 Place actuation channel for the associated EFIC Function(s) in trip.	72 hours
Table 3.3-11 ACTION 17 A B. One or more EF/C Function(s) with one or both manual initiation switches inoperable in both actuation channels. (s inoperable)	A A B.1 Restore one actuation channel for the associated EF/C Function(s) to OPERABLE status. (SFRCS)	1 hour (s) 48 3

All changes are 1 unless otherwise noted

SFRCS

EF/C Manual Initiation
3.3.12

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-11 ACTION 17 B ~~C~~. Required Action and associated Completion Time not met.	~~C~~.1 Be in MODE 3.	6 hours
	AND	
	B ~~C~~.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.3.2.2.1, Table 4.3-11 Functional Unit 2 SR 3.3.12.1	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~ 24 months

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.12, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, design, and licensing basis requirements.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

3. Typographical error corrected.

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

All changes are 1 unless otherwise noted

SFRCS

EF/C Manual Initiation
B 3.3.12

B 3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control System (SFRCS)

B 3.3.12 Emergency Feedwater Initiation and Control (EFIC) Manual Initiation

BASES

BACKGROUND

SFRCS

The EF/C manual initiation capability provides the operator with the capability to actuate EF/C Functions from the control room in the absence of any other initiation condition. Manually actuated Functions include main feedwater (MFW) Isolation for once through steam generator (SG) A, MFW Isolation for SG B, Main Steam Line Isolation for SG A, Main Steam Line Isolation for SG B, and Emergency Feedwater (EFW) Actuation. These Functions are provided in the event the operator determines that an EF/C Function is needed and does not automatically actuate. These are backup Functions to those performed automatically by EF/C.

INSERT 1

¶

SFRCS

SFRCS

The EF/C manual initiation circuitry satisfies the manual initiation and single-failure criterion requirements of IEEE-279-1971 (Ref. 1).

APPLICABLE SAFETY ANALYSES

SFRCS

EF/C Functions credited in the safety analysis are automatic. However, the manual initiation Functions are required by design as backups to the automatic trip Functions and allow operators to actuate EFW, Main Steam Line Isolation, or MFW Isolation whenever these Functions are needed. Furthermore, the manual initiation of EF/W Actuation, Main Steam Line Isolation, and MFW Isolation may be specified in unit operating procedures.

initiate AFPT and actuate SG isolation

the AFPT and isolation of the SG

SFRCS

The EF/C manual initiation functions satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

do not satisfy any criteria

INSERT 2

LCO

SFRCS

Each push button

All instrumentation performing an EF/C manual initiation Function shall be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

push button

Function

One

push button

for

Two manual initiation switches per actuation channel (A and B) of each Function (A and B MFW Isolation, A and B Main Steam Line Isolation, and EFW Actuation) are required to be OPERABLE whenever the SGs are being relied on to remove heat. Each Function (MFW Isolation, Main Steam Line Isolation, and EFW Initiation) has two actuation or "trip" channels, channels A and B. Within each channel A actuation logic there are two manual trip switches. When one manual switch is depressed, a half trip occurs. When both manual switches are depressed, a full trip of channel A actuation occurs for that particular Function. Similarly,

INSERT 3

(1) INSERT 1

Auxiliary Feedwater Pump Turbine (AFPT) 1 Initiation; AFPT 2 Initiation; AFPT 1 Initiation and Steam Generator (SG) 1 Isolation; and AFPT 2 Initiation and SG 2 Isolation.

Depressing switch HIS-6401 will start the AFPT 1. Main steam to AFPT 1 and feedwater from auxiliary feedwater pump (AFP) 1 will be lined up with SG 1. The cross connection of the auxiliary feedwater to SG 2 will be closed, while the cross connection of the main steam from SG 2 will remain as is; that means for normal system line-up, both steam generators will feed AFPT 1. Further, Anticipatory Reactor Trip System (ARTS) and the Main Turbine will be tripped.

Depressing switch HIS-6402 will start the AFPT 2. Main steam to AFPT 2 and feedwater from AFP 2 will be lined up with SG 2. The cross connection of the auxiliary feedwater to SG 1 will be closed, while the cross connection of the main steam from SG 1 will remain as is; that means for normal system line-up, both steam generators will feed AFPT 2. Further, ARTS and the Main Turbine will be tripped.

Depressing switch HIS-6403 will start AFPT 1. Main steam to AFPT 1 and feedwater from AFP 1 will be lined up with SG 1. The cross connection of the auxiliary feedwater to SG 2 will be closed, while the cross connection of the main steam from SG 2 will remain as is; that means for normal system line-up, both steam generators will feed AFPT 1. All SFRCS isolation valves of SG 1 from actuation channel 1 will be closed, including the main steam isolation valve (MSIV), the main steam warm-up isolation valve and the main feedwater isolation valves (MFIVs).

Depressing switch HIS-6404 will start AFPT 2. Main steam to AFPT 2 and feedwater from AFP 2 will be lined up with SG 2. The cross connection of the auxiliary feedwater to SG 1 will be closed, while the cross connection of the main steam from SG 1 will remain as is; that means for normal system line-up, both steam generators will feed AFPT 2. All SFRCS isolation valves of SG 2 from actuation channel 2 will be closed, including the MSIV, the main steam warm-up isolation valve and the MFIVs.

(1) INSERT 2

However, it is retained for the overall redundancy and diversity of the SFRCS as required by the NRC.

1 **INSERT 3**

AFPT 1 Initiation (with the exception of ARTS and Main Turbine Trip); AFPT 2 Initiation (with the exception of ARTS and Main Turbine Trip); AFPT 1 Initiation and SG 1 Isolation; and AFPT 2 Initiation and SG 2 Isolation) is

All changes are 1 unless otherwise noted

SFRCS

EF/IC Manual Initiation
B 3.3.12

BASES

LCO (continued)

channel B actuation logic for each Function has two manual trip switches. Both switches per actuation channel must be OPERABLE and must be depressed to get a full manual trip of that channel. The use of two manual trip switches for each channel of actuation logic allows for testing without actuating the end devices and also reduces the possibility of accidental manual actuation.

APPLICABILITY

The MFW and Main Steam Line Isolation manual initiation Functions shall be OPERABLE in MODES 1, 2, and 3 because SG inventory can be at a sufficiently high energy level to contribute significantly to the peak containment pressure during a secondary side break. In MODES 4, 5, and 6, the SG energy level is low and secondary side feedwater flow rate is low or nonexistent.

SFRCS s

The EFW manual initiation Function shall be OPERABLE in MODES 1, 2, and 3 because the SGs are relied on for Reactor Coolant System heat removal. In MODES 4, 5, and 6, heat removal requirements are reduced and can be provided by the Decay Heat Removal System.

INSERT 4 INSERT 5

ACTIONS

A Note has been added to the ACTIONS indicating that separate Condition entry is allowed for each EF/IC manual initiation Function.

SFRCS

A.1

With one or both manual initiation switches of one or more EFIC Function(s) inoperable in one channel, the channel for the associated EFIC Function(s) must be placed in the tripped condition within 72 hours. With the channel in the tripped condition, the single-failure criterion is met and the operator can still initiate one actuation channel given a single failure in the other channel. Failure to perform Required Action A.1 could allow a single failure of another switch to prevent manual actuation of at least one of two trip channels. The Completion Time allotted to trip the channel allows the operator to take all the appropriate actions for the failed channel and still ensure that the risk involved in operating with the failed channel is acceptable.

1 **INSERT 4**

and because SG inventory can be at a sufficiently high energy level to contribute significantly to the peak containment pressure during a secondary pipe break

1 **INSERT 5**

because the SG energy level is low and secondary side feedwater flow rate is low or nonexistent

All changes are 1 unless otherwise noted

SFRCS

EF/C Manual Initiation
B 3.3.12

BASES

ACTIONS (continued)

A → B.1

SFRCS

s

the

48

s

With one or both manual initiation switches of one or more EF/C Function(s) inoperable in both actuation channels, one actuation channel for each Function must be restored to OPERABLE status within 1 hour. With the channel restored, the second channel must be placed in the tripped condition within 72 hours (Required Action A.1). With the channel in the tripped condition, the single-failure criterion is met and the operator can still initiate one actuation channel given a single failure in the other channel. The Completion Time allotted to restore the channel allows the operator to take all the appropriate actions for the failed channel and still ensures that the risk involved in operating with the failed channel is acceptable.

B

C.1 and C.2

the

and associated Completion Time is not met

If Required Action A.1 or Required Action B.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging unit systems. 1 2

SURVEILLANCE REQUIREMENTS

SR 3.3.12.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST to ensure that the channels can perform their intended 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 CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. For MFW and Main Steam Line Isolation, the test need not include actuation of the end device. This is due to the risk of a unit transient caused by the closure of valves associated with MFW and Main Steam Line Isolation or actuating EFW during testing at power. The Frequency of 31 days is based on operating experience that demonstrates the rarity of more than one channel failing within the same 31 day interval.

24 months

the reliability of the components

REFERENCES

1. IEEE-279-1971, April 1972.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.12 BASES, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made to reflect the Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.12, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) MANUAL INITIATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 13

ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

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

A01

ITS

INSTRUMENTATION

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.3.13 — M01

LCO 3.3.13

3.3.2.2 The Steam and Feedwater Rupture Control System (SFRCS) instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-12, with the exception of the Steam Generator Level-Low Functional Unit which shall be set consistent with the Allowable Value column of Table 3.3-12.

See ITS 3.3.11

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

Add proposed ACTIONS Note — A02

a. With a SFRCS instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-12, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-11, until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-12.

See ITS 3.3.11

ACTION A

b. With a SFRCS instrumentation channel inoperable, take the action shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

SR 3.3.13.1

4.3.2.2.1 Each SFRCS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-11.

See ITS 3.3.11

4.3.2.2.2 The logic for the shutdown bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of channels affected by bypass operation. The shutdown bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each channel affected by bypass operation.

See ITS 3.3.11

4.3.2.2.3 The STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM RESPONSE TIME* of each SFRCS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one channel per function such that all channels are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant channels in a specific SFRCS function as shown in the "Total No. of Channels" Column of Table 3.3-11.

See ITS 3.3.11

* The Main Steam Isolation Valves (MSIVs) response time is to be the time elapsed from the monitored variable exceeding the trip setpoint until the MSIV is fully closed. The Turbine Stop Valves (TSVs) response time is to be the time elapsed from the main steam line low pressure trip condition until the TSV is fully closed.

See ITS 3.3.11

A01

LA01

M02

M01

LCO 3.3.13

TABLE 3.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
1. Main Steam Pressure Low Instrument Channels*	2	1	2	16 A
a. PS 3689B Steam Line 1 Channel 1				
b. PS 3689D Steam Line 2 Channel 1				
c. PS 3689F Steam Line 1 Channel 1				
d. PS 3689H Steam Line 2 Channel 1				
e. PS 3687A Steam Line 2 Channel 2				
f. PS 3687C Steam Line 1 Channel 2				
g. PS 3687E Steam Line 2 Channel 2				
h. PS 3687G Steam Line 1 Channel 2				

See ITS 3.3.11

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ITS

A01

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
LCO 3.3.13	2. Feedwater/Steam Generator Differential Pressure - High Instrument Channels a. PDS 2685A Feedwater/Steam Generator 2 Channel 2 PDS 2685B Feedwater/Steam Generator 2 Channel 2 b. PDS 2685C Feedwater/Steam Generator 2 Channel 1 PDS 2685D Feedwater/Steam Generator 2 Channel 1 c. PDS 2686A Feedwater/Steam Generator 1 Channel 1 PDS 2686B Feedwater/Steam Generator 1 Channel 1 d. PDS 2686C Feedwater/Steam Generator 1 Channel 2 PDS 2686D Feedwater/Steam Generator 1 Channel 2	2	1	2	16 A
LCO 3.3.13	3. Steam Generator Level - Low Instrument Channels a. LSLL SP9B8 Steam Generator 1 Channel 1 LSLL SP9B9 Steam Generator 1 Channel 1 b. LSLL SP9A6 Steam Generator 2 Channel 1 LSLL SP9A7 Steam Generator 2 Channel 1 c. LSLL SP9A8 Steam Generator 2 Channel 2 LSLL SP9A9 Steam Generator 2 Channel 2	2	1	2	16 A

See ITS 3.3.11

See ITS 3.3.11

LA01 M02 M01

LA01 M02 M01

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ITS

A01

TABLE 3.3-11 (Continued)

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION

LA01

	FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	ACTION
LCO 3.3.13	3. Steam Generator Level - Low Instrument Channels (continued)				
	d. LSLL SP9B6 Steam Generator 1 Channel 2 LSLL SP9B7 Steam Generator 1 Channel 2	See ITS 3.3.11			
LCO 3.3.13	4. Loss of RCP Channels	2	1	2	16 A
	5. Manual Initiation (Push buttons)				
	a. Initiate AFPT #1	1	1	1	17
	b. Initiate AFPT #2	1	1	1	17
	c. Initiate AFPT #1 and Isolate SG #1	1	1	1	17
	d. Initiate AFPT #2 and Isolate SG #2	1	1	1	17

LA01 M01 M02

See ITS 3.3.12

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A01

ITS

TABLE 3.3-11 (Continued)

TABLE NOTATION

• May be bypassed when steam pressure is below 750 psig. Bypass shall be automatically removed when the steam pressure exceeds 800 psig.

See ITS 3.3.11

The provisions of Specification 3.0.4 are not applicable.

M02

ACTION STATEMENTS

L01

ACTION A

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable section of the channel is placed in the tripped condition within 1 hour (except as noted below). When a channel is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided the remaining actuation channel is OPERABLE.

Add proposed Required Action A.1

SR 3.3.13.1 Note

ACTION 17 - 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.

See ITS 3.3.12

Add proposed ACTION B

M03

A01

TABLE 4.3-11

STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

See ITS 3.3.11

See ITS 3.3.11

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST SR 3.3.13.1
1. Instrument Channel			
a. Steam Line Pressure - Low	S	E	M -1
b. Steam Generator Level - Low	S	R	M -1
c. Steam Generator - Feedwater Differential Pressure - High	S	E	M -1
d. Reactor Coolant Pumps - Loss of	S	E	M -1
2. Manual Actuation	NA	NA	R

See ITS 3.3.12

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DISCUSSION OF CHANGES
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.2.2 specifies compensatory actions to take when SFRCS logic channels are inoperable. ITS 3.3.13 ACTIONS provides the compensatory actions for inoperable SFRCS Functions. The ITS 3.3.13 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable SFRCS Function.

This change is acceptable because it clearly states the current requirement. The CTS considers each SFRCS Function to be separate and independent from the others. This change is considered administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS Table 3.3-11 Functional Unit 1 identifies that there are 8 pressure switches of Main Steam Pressure Low Instrument Channels. It also identifies that 4 of these switches are associated with Channel 1 (i.e., actuation channel 1) and that 4 of these switches are associated with Channel 2 (i.e., actuation channel 2). CTS Table 3.3-11 Functional Unit 2 identifies that there are 8 differential pressure switches of Feedwater/Steam Generator Differential Pressure – High Instrument Channels. It also identifies that 4 of these switches are associated with Channel 1 (i.e., actuation channel 1) and that 4 of these switches are associated with Channel 2 (i.e., actuation channel 1). CTS Table 3.3-11 Functional Unit 3 identifies that there are 8 LSLL of Steam Generator Level - Low Instrument Channels. It also identifies that 4 of these LSLL are associated with Channel 1 (i.e., actuation channel 1) and that 4 of these LSLL are associated with Channel 2 (i.e., actuation channel 1). CTS Table 3.3-11 Functional Unit 4 requires the Loss of Reactor Coolant Pump (RCP) Channels to be OPERABLE. CTS Table 3.3-11 requires a minimum of 2 channels (i.e., actuation channels) to be OPERABLE. ITS LCO 3.3.13 requires Channels 1 and 2 of the Main Feedwater Isolation, the Main Steam Line Isolation, the Auxiliary Feedwater Initiation, and the Auxiliary Feedwater and Main Steam Valve Control Actuation Functions to be OPERABLE. This changes CTS by specifying the Actuation Functions to be OPERABLE. Requirements for the SFRCS instrumentation channel are discussed in the Discussion of Changes for ITS 3.3.11.

This change is acceptable because it defines the Actuation Functions required to be OPERABLE. The CTS requires two actuation channels to be OPERABLE

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DISCUSSION OF CHANGES
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

(CTS Table 3.3-11 Column labeled "MINIMUM CHANNELS OPERABLE") however it is not specific to which Actuation Functions. ITS LCO 3.3.13 clearly identifies the Actuation Functions. This changes is designated as more restrictive because the LCO is specific on the Actuation Functions required to be OPERABLE while the CTS only requires two actuation channels to be OPERABLE.

M02 CTS Table 3.3-11 Functional Units 1 through 4 include a Note # that applies to Action 16 that states the provisions of Specification 3.0.4 are not applicable. ITS 3.3.13 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

CTS 3.0.4 does not allow entry into an MODE or other specified applicability condition unless the requirements of the LCO are met, unless otherwise excepted. For ITS LCO 3.3.13, there is no exception to LCO 3.0.4. However, ITS LCO 3.0.4 will allow entry after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions. This change is more restrictive because a risk assessment must be performed if an SFRCS logic channel is inoperable. This change is acceptable because there are only two redundant SFRCS actuation channels for each SFRCS logic Function. With one actuation channel inoperable, the plant is susceptible to a single failure therefore a risk evaluation should be performed before the MODE is entered. This change is designated as more restrictive because the entry into the Conditions and Required Action can no longer be made unless a risk assessment is performed in accordance with LCO 3.0.4.

M03 CTS Table 3.3-11 Action 16 provides the compensatory actions to take when one channel is inoperable. If CTS Table 3.3-11 Action 16 is not met or if two actuation channels are inoperable, entry into CTS 3.0.3 is required since no further actions are specified. CTS 3.0.3 allows 1 hour to initiate action, 7 hours for the unit to be placed in MODE 3 and 13 hours for the unit to be in MODE 4. ITS 3.3.11 ACTION B requires the unit to be placed in MODE 3 in 6 hours and MODE 4 in 12 hours. This changes the CTS by providing a specific default condition instead of required entry into CTS 3.0.3, and reducing the time allowed to reach the applicable conditions.

This change is acceptable because the CTS requirements are modified to provide the necessary Required Actions and appropriate Completion Times. The Completion Time of 6 hours to reach MODE 3 and 12 hours to reach MODE 3 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 the specified MODES have been decreased by 1 hour.

RELOCATED SPECIFICATIONS

None

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DISCUSSION OF CHANGES
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-11 for SFRCS 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 3.3.13 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-11 Action 16 states, in part, that with the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST. The Action does not provide the appropriate actions for inoperable actuation channels since the actuation channels cannot be placed in trip. ITS 3.3.13 ACTION A requires entry when one actuation channel is inoperable for one or more Logic Functions and requires the restoration of the affected actuation channel(s) to OERABLE status within 72 hours. This changes CTS by replacing the CTS Action and adding a requirement to restore the inoperable channel to OPERABLE status within 72 hours.

The purpose of CTS Table 3.3-11 Action 16 is to allow operation until performance of the next required CHANNEL FUNCTIONAL TEST when instrument channels are inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a design basis accident occurring during the repair period. The proposed

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DISCUSSION OF CHANGES
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

Required Action is ITS 3.3.13 ACTION A and it requires entry when one actuation channel is inoperable for one or more Logic Functions and requires the restoration of the affected actuation channel(s) to OPERABLE status within 72 hours. This, the Completion Time of 72 hours has been chosen to be consistent with Completion Times for restoring one inoperable ESF System train. In addition, this change is consistent with NUREG-1430. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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

All changes are (1) unless otherwise noted

SFRCS Actuation

EFIC Logic

3.3.13

CTS

3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control System (SFRCS) Actuation

3.3.13 Emergency Feedwater Initiation and Control (EFIC) Logic

3.3.2.2, Table 3.3-11

LCO 3.3.13 Channels A (1) and B (2) of each Logic Function shown below shall be OPERABLE:

Functional Units 1, 2, 3, and 4

d — a. Main Feedwater Isolation ;

c — b. Main Steam Line Isolation ; and

Auxiliary — a — c. Emergency Feedwater Actuation and

b — d. Vector Valve Enable Logic

Initiation

Auxiliary Feedwater and Main Steam

Control

(2) (3)

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE

DOC A02 Separate Condition entry is allowed for each Function. Logic

CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-11 ACTION 16 A. One or more channel A Functions inoperable with all channel B Functions OPERABLE. OR One or more channel B Functions inoperable with all channel A Functions OPERABLE.	A.1 Restore affected (inoperable) channel to OPERABLE status.	72 hours (7)
One or more Logic Functions with one channel inoperable. (4)		
DOC M03 B. Required Action and associated Completion Time not met. (of Condition A) OR One or more Logic Functions with two channels inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

(5)

SFRCS Actuation

EFIC Logic

3.3.13

1

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.3.2.2.1, Table 4.3-11 Functional Units 1.a, 1.b, 1.c, 1.d	SR 3.3.13.1	Perform CHANNEL FUNCTIONAL TEST.	31 days

Table 3.3-11 Action 16

6

----------NOTE----------
When a channel is placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST, entry into the associated Conditions and Required Actions may be delayed for up to 8 hours provided the other actuation channel is OPERABLE.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

3. The logic Functions have been revised to reflect the plant specific design. These changes are consistent with changes made to LCO 3.3.11.

4. ISTS 3.3.13 Condition A requires entry when "One or more channel A Functions inoperable with all channel B Functions OPERABLE" or "One or more channel B Functions inoperable with all channel A Functions OPERABLE." The Bases of ITS 3.3.13 Condition states, in part, "the condition of one channel inoperable is analogous to having one train of a two train Engineered Safety Feature (ESF) System inoperable. The system safety function can be accomplished; however, a single failure cannot be taken." ITS 3.3.13 Condition A requires entry with "One or more Logic Functions with one channel inoperable." For example, this Condition will allow entry when Main Feedwater Isolation and Main Steam Line Isolation actuation channel 1 is inoperable and Auxiliary Feedwater Initiation actuation channel 2 is inoperable. In this situation the safety function can be accomplished and is consistent with the allowances in the Bases. This allowance is also consistent with the current licensing basis.

5. A new Condition has been added to ITS 3.3.13 ACTION B to cover the condition with "One or more Logic Functions with two channels inoperable." This change clearly identifies the appropriate Required Actions. Due to this change, the first Condition of Action B has also been changed to describe it as only applicable to Condition A.

6. A Note has been added to ITS SR 3.3.13.1 to be consistent with the current licensing basis allowance approved by the NRC in Amendment 259, dated September 29, 2003.

7. Editorial change for consistency with the Condition.

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

All changes are 2 unless otherwise noted

SFRCS Actuation 1

EFIC Logic
B 3.3.13

B 3.3 INSTRUMENTATION

Steam and Feedwater Rupture Control System (SFRCS) Actuation 1

B 3.3.13 Emergency Feedwater Initiation and Control (EFIC) Logic

BASES

BACKGROUND

Main Steam Line and Main Feedwater (MFW) Isolation 1

The four emergency feedwater initiation and control (EFIC) channels sensing a steam generator (SG) low outlet pressure condition input their initiate commands to the trip logic modules. Figure [ ], FSAR, Chapter [7] (Ref. 1), illustrates the Main Steam Line and MFW Isolation Logics. The trip logic modules are physically located in the "A" and "B" EFIC channel cabinets. Channel "A" actuation logic initiates when instrumentation channel "A" or "B" initiates and channel "C" or "D" initiates, which in simplified logic is:

"A" actuation = (A and C) or (A and D) or (B and C) or (B and D)

Channel "B" actuation logic initiates when instrumentation channel "A" or "C" initiates and channel "B" or "D" initiates, which in simplified logic is:

"B" actuation = (A and B) or (A and D) or (C and B) or (C and D)

Each of the four Functions (SG A Main Feedwater Isolation, SG B Main Feedwater Isolation, SG A Main Steam Line Isolation, and SG B Main Steam Line Isolation) has a channel "A" and a channel "B" of automatic actuation logic.

Both channels "A" and "B" of the SG A Main Feedwater Isolation automatic actuation logic send closure signals to the SG A main feedwater pump suction valve, the three SG A block valves, and the MFW pump discharge cross connect valve. In addition, the instrumentation trips MFW pump "A." INSERT 1

Both channels "A" and "B" of the SG A Main Steam Line Isolation automatic actuation logic send closure signals to both of the SG A Main Steam Isolation valves.

SG B MFW and Main Steam Line Isolation automatic actuation logics respond similarly for the SG B valves and MFW pump "B."

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(1) INSERT 1

Figure 7.4-4, UFSAR Section 7.4.1.3 (Ref. 1), illustrates SFRCS logic operation. The SFRCS consists of two independent and redundant actuation channels. Each actuation channel consists of two electrically independent complementary logic channels. Each complementary logic channel contains identical sets of SFRCS instrumentation for monitoring key parameters and issuing trip signals when a limiting condition has been reached within the logic channel. The trip output of each complementary logic channel is combined in each actuation channel in a two-out-of-two logic, so that SFRCS will initiate an actuation channel trip if both of the complementary logic channels trip. The logic channel trip will de-energize the SFRCS output relays contained within the actuation channel, making the actual trip logic of each of the two redundant SFRCS actuation channels a two-out-of-two logic.

Auxiliary Feedwater (AFW) Initiation

AFW is initiated to restore a source of cooling water to the steam generators (SGs) when conditions indicate that the normal source of feedwater is insufficient to meet heat removal requirements. A high Feedwater/SG Differential Pressure and a low level in the steam generator indicate a loss of main feedwater (MFW). AFW is initiated and SGs are isolated upon detection of a rupture of a main steam line or MFW line which is sensed when steam pressure reaches the low main steam line pressure setpoint or the differential pressure between the feedwater and SG reaches the high setpoint. On the loss of all reactor coolant pumps (RCPs), the primary system experiences a total loss of forced circulation, AFW is initiated to promote natural circulation.

Auxiliary Feedwater and Main Steam Valve Control

For Main Steam Line Pressure – Low, the AFW discharge valves and main steam valves receive different open or close signals depending on the affected main steam line. Upon a low pressure in main steam line 1, the two actuation channels will align both AFW pumps to provide feedwater to SG 2 and align the main steam supply of both AFW pump turbines to come from SG 2. SFRCS actuation channel 1 will close AFW pump 1 discharge valve to SG 1, open AFW pump 1 discharge valve to SG 2, close AFW pump turbine 1 main steam supply from SG 1 and open AFW pump turbine 1 main steam supply from SG 2. SFRCS actuation channel 2 will close AFW pump 2 discharge valve to SG 1, open AFW pump 2 discharge valve to SG 2, close AFW pump turbine 2 main steam supply from SG 1 and open AFW pump turbine 2 main steam supply from SG 2. Upon a low pressure in main steam line 2, the two actuation channels will align both AFW pumps to provide feedwater to SG 1 and align the main steam supply of both AFW pump turbines to come from SG 1. SFRCS actuation channel 1 will open AFW pump 1 discharge valve to SG 1, close AFW pump 1 discharge valve to SG 2, open AFW pump turbine 1 main steam supply from SG 1 and close AFW pump turbine 1 main steam supply from SG 2. SFRCS actuation channel 2 will open AFW pump 2 discharge valve to SG 1, close AFW pump 2 discharge valve to SG 2, open AFW pump turbine 2 main steam supply from SG 1 and close AFW pump turbine 2 main steam supply from SG 2.

1 **INSERT 1 (continued)**

Main Steam line and MFW isolation is provided by the Main Steam Line Pressure – Low trip and the Feedwater/SG Differential Pressure – High trip. Once isolation of the SGs has occurred, manual action is required to defeat the isolation command as desired.

Main Steam Line Isolation

The Main Steam Isolation Function is accomplished by closing the main steam isolation valves (MSIVs) and the turbine stop valves (TSVs). The TSVs serve as a backup to the MSIVs.

Main Feedwater Isolation

The MFW Isolation Function limits the mass and energy released to containment following a MSLB or MFWLB, and is accomplished by closing the main feedwater stop valves (MFSVs), the main feedwater control valves (MFCVs), and the startup feedwater control valves (SFCVs). While this Function also closes the MFW block valves, it is not required for this Function to be OPERABLE (the MFW block valves are not required to mitigate any accident and are not credited in any safety analysis).

All changes are 2 unless otherwise noted

SFRCS Actuation 1

EFIC Logic

BASES

BACKGROUND (continued) 1

Emergency Feedwater (EFW) Actuation

The four EFIC instrumentation channels for each of the parameters being sensed input their initiate commands to the trip logic modules. Figure [ ], FSAR Chapter [7] (Ref. 1), illustrates the EFW initiation logic. These trip logic modules are physically located in the "A" and "B" EFIC channel cabinets.

EFW Actuation functions are the same logic combinations as MFW and Main Steam Line Isolation. EFW initiation also occurs on high pressure injection (HPI) initiation. Both trains of HPI initiation are input into each EFW initiate logic channel.

EFIC automatically initiates the EFW System when any of the following conditions exist:

a. All four reactor coolant pumps are tripped,

b. Both MFW pumps are tripped and reactor power is > 20% RTP with the nuclear instrumentation Reactor Protection System not in shutdown bypass,

c. Low level in either once through SG,

d. Low pressure in either SG, or

e. HPI Actuation on both A and B Engineered Safety Feature Actuation System channels.

Vector Valve Enable Logic

The EFW module logic is responsible for sending open or close signals to the EFW control and isolation valves. Figure [ ], FSAR, Chapter [7] (Ref. 1), illustrates the vector valve logic. The vector module logic outputs are in a neutral state (neither commanding open nor close) until a signal is received from the Vector Valve Enable Logic. The Vector Valve Enable Logic monitors the channel A and B EFW Actuation logics. When an EFW Actuation occurs, the vector enable logic enables the vector logic to generate open or close signals to the EFW valves depending on the relative values of SG pressures.

All changes are 2 unless otherwise noted

SFRCS Actuation 1

EFIC Logic

BASES

APPLICABLE SAFETY ANALYSES

Automatic isolation of MFW and main steam line was assumed in the safety analyses to mitigate the consequences of main steam line or MFW line ruptures. The FSAR analyses for steam line breaks (SLBs) was generated before the development and installation of the safety grade EFIC System, which currently performs these automatic safety functions. The FSAR analysis, for example, assumes main steam line isolation through turbine stop valve closure based on an integrated control system signal. This same function is provided by the EFIC System by a safety grade signal that closes the Main Steam Line Isolation valves. The analyses are bounding, and the use of the EFIC System is consistent with the licensing position to take credit for safety grade systems to mitigate the consequences of an accident.

INSERT 2

Similarly, vector valve control was not credited in the FSAR SLB analysis. Operator action was credited with isolating EFW to the affected SG within the first 60 seconds. This function would be automatically performed by EFIC. Therefore, the FSAR analysis remains conservative relative to the inclusion of the vector valve logic.

Automatic initiation of EFW is credited in the loss of main feedwater analysis. The automatic actuation was based on the SG low level function of EFIC, although EFIC would initiate EFW based on the loss of both MFW pumps as well.

SFRCS Actuation

The EFIC logic satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two channels each of MFW and Main Steam Line Isolation, Vector Valve Enable, and EFW Actuation logics shall be OPERABLE. There are only two channels of automatic actuation logic per Function. Therefore, violation of this LCO could result in a complete loss of the automatic Function assuming a single failure of the other channel. 1

APPLICABILITY

The MFW and Main Steam Line Isolation automatic actuation logics shall be OPERABLE in MODES 1, 2, and 3 because SG inventory can be at a high energy level and can contribute significantly to the peak containment pressure during a secondary side line break. In MODES 4, 5, and 6, the energy level is low and the secondary side feedwater flow rate is low or nonexistent.

Auxiliary Feedwater Initiation, Auxiliary Feedwater and Main Steam Valve Control, Main Steam Line Isolation, and Main Feedwater Isolation 1

Auxiliary Feedwater Initiation, Auxiliary Feedwater and Main Steam Valve Control, Main Steam Line Isolation, and Main Feedwater Isolation

(1) INSERT 2

The MFW line break analysis assumes the Feedwater/Steam Generator Differential Pressure – High trip isolates the unaffected steam generator from the line break thus assuring adequate inventory and pressure to run the available AFW pump turbines. The analysis further assumes that the Main Steam Line Pressure – Low trip realigns the AFW System to take steam from and to feed the unaffected steam generator should the MFWLB affect the integrity of one of the SGs.

The MSLB analysis assumes the Main Steam Line Pressure – Low trip isolates the unaffected steam generator from the line break thus assuring adequate inventory and pressure to run the available AFW pump turbines. The analysis further assumes that the Main Steam Line Pressure – Low trip realigns the AFW System to take steam from and to feed the unaffected steam generator.

The Main Steam Isolation Function is accomplished by closing the main steam isolation valves (MSIVs) and the turbine stop valves (TSVs). The TSVs serve as a backup to the MSIVs. Closure of the TSVs ensures that both steam generators do not blowdown following a MSLB in conjunction with a failure of the affected steam generator's associated MSIV failing to close.

The Main Feedwater Isolation Function is accomplished by closing the MFSVs, the MFCVs, and the SFCVs. While this Function also closes the MFW block valves, it is not required for this Function to be OPERABLE.

The Loss of Feedwater (LOFW) analysis assumes the Steam Generator Level – Low trip initiates the AFW System.

All changes are 2 unless otherwise noted

SFRCS Actuation 1

EFIC Logic

B 3.3.13

BASES

APPLICABILITY (continued)

The EFW automatic actuation and vector enable logics shall be OPERABLE in MODES 1, 2, and 3 because the SGs are being used for heat removal from the primary system. During these MODES, the core power and heat removal requirements are the greatest, and if the normal source of feedwater is lost, EFW must be initiated rapidly to minimize the overheating of the primary system.

For portions of MODE 4 and for all of MODES 5 and 6, the primary system temperatures are too low to allow the SGs to effectively remove energy.

ACTIONS

If a channel is found inoperable, then all affected logic Functions provided by that channel must be declared inoperable and the LCO Condition entered for the particular protection function affected.

For this LCO, a Note has been added to the ACTIONS indicating that separate Condition entry is allowed for each EFIC logic Function.

SFRCS

A.1

channel is inoperable in one

Condition A applies when one or more EFIC logic Functions in a single channel are inoperable (i.e., channel A could be inoperable for all four EFIC logic Functions and Condition A would still be applicable) with all Functions in the other channel OPERABLE. This Condition is equivalent to failure of one EFW, Main Steam Line Isolation, and MFW Isolation train.

A

SFRCS

SFRCS

With one automatic actuation logic channel of one or more EFIC Functions inoperable, the associated EFIC train must be restored to OPERABLE status. Since there are only two automatic actuation logic channels per EFIC Function, the condition of one channel inoperable is analogous to having one train of a two train Engineered Safety Feature (ESF) System inoperable. The system safety function can be accomplished; however, a single failure cannot be taken. Therefore, the failed channel(s) must be restored to OPERABLE status to re-establish the system's single-failure tolerance.

SFRCS

Condition A can be thought of as equivalent to failure of a single train of a two train safety system (e.g., the safety function can be accomplished, but a single failure cannot be taken). Thus, the Completion Time of 72 hours has been chosen to be consistent with Completion Times for restoring one inoperable ESF System train.

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All changes are (2) unless otherwise noted

SFRCS Actuation (1)

EFIC Logic

BASES

ACTIONS (continued)

The EFIC System has not been analyzed for failure of one train of one Function and the opposite train of the same Function. In this condition, the potential for system interactions that disable heat removal capability on EFW has not been evaluated. Consequently, any combination of failures in both channels A and B is not covered by Condition A and must be addressed by entry into LCO 3.0.3.

B.1 and B.2

associated (5)

If Required Action A.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.13.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST to ensure that the channels can perform their intended functions. This test verifies MFW and Main Steam Line Isolation and EFW initiation automatic actuation logics are functional. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. This test simulates the required inputs to the logic circuit and verifies successful operation of the automatic actuation logic. The test need not include actuation of the end device. This is due to the risk of a unit transient caused by the closure of valves associated with MFW and Main Steam Line Isolation or actuation of EFW during testing at power. The Frequency of 31 days is based on operating experience, which has demonstrated the rarity of more than one channel failing within the same 31 day interval.

(A) ; and Auxiliary Feedwater and Main Steam Valve Control (:) (if) (6) (A) (INSERT 3) (1)

REFERENCES

1. FSAR, Chapter [7]. (Section 7.4.1.3) (3) (U)

1 **INSERT 3**

This SR is modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST, entry into associated Conditions and Required Actions may be delayed for up to 8 hours, provided the other actuation channel is OPERABLE. Upon completion of the Surveillance, or expiration of the 8 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This is acceptable since the other actuation channel will continue to ensure the associated SFRCS Function can perform its assumed function.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.13 BASES, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

1. Changes are made to reflect changes made to the Specifications.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

5. Changes are made to reflect the Specifications.

6. Currently, Davis-Besse does not utilize this allowance during performance of the CHANNEL FUNCTIONAL TEST. Therefore, the word "because" has been changed to "if" to ensure that if the allowance is used in the future, the requirements specified for using the allowance are met.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.13, STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (SFRCS) ACTUATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 14

ITS 3.3.14, FUEL HANDLING EXHAUST - HIGH RADIATION

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

A01

ITS

INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.14

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6. L01

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable. M01

ACTION A

b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6. A03

ACTIONS Note

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.3.14.1, SR 3.3.14.2, SR 3.3.14.3

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes at the frequencies shown in Table 4.3-3.

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ITS

A01

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	~~ALARM/TRIP SETPOINT~~	~~MEASUREMENT RANGE~~	ACTION
1. AREA MONITORS					
a. Fuel Storage Pool Area Emergency Ventilation System Actuation	~~1~~ 2	**	≤ 2 × background M02	0.1 - 10^7 mr/hr	22 A
2. PROCESS MONITORS					
a. Containment					
i. Gaseous Activity RCS Leakage Detection	1*	1, 2, 3, & 4	Not Applicable	10 - 10^6 cpm	21
ii. Particulate Activity RCS Leakage Detection	1*	1, 2, 3, & 4	Not Applicable	10 - 10^6 cpm	21

* As required by Specification 3.4.6.1.

~~**With fuel in the storage pool or building~~

LA01

ALLOWABLE VALUE

A02

LA01

See ITS 3.4.15

L01

3.3.14

3.3.14 Applicability

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A01

ITS

TABLE 3.3-6 (Continued)

TABLE NOTATION

	ACTION 21	-	With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.	See ITS 3.4.15
ACTION A	ACTION 22	-	With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.12.	

ITS

A01

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	SR 3.3.14.1 CHANNEL CHECK	SR 3.3.14.3 CHANNEL CALIBRATION	SR 3.3.14.2 CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. AREA MONITORS				
a. Fuel Storage Pool Area Emergency Ventilation System Actuation	S -1	E -3	M -2	**
2. PROCESS MONITORS				
a. Containment				
i. Gaseous Activity RCS Leakage Detection*	S	E	M	1, 2, 3 & 4
ii. Particulate Activity RCS Leakage Detection*	S	E	M	1, 2, 3 & 4

* If required by Specification 3.4.6.1 to be OPERABLE.

~~**With fuel in the storage pool or building~~

Add proposed Applicability

See ITS 3.4.15

L01

3.3.14 Applicability

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DISCUSSION OF CHANGES
ITS 3.3.14, FUEL HANDLING EXHAUST - HIGH RADIATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS Table 3.3-6, in part, specifies a "TRIP SETPOINT" for the Fuel Storage Pool Area Emergency Ventilation System Actuation Function. ITS SR 3.3.14.3 specifies an Allowable Value. This changes the CTS by replacing the terms "TRIP SETPOINT" with "Allowable Value."

The purpose of the "TRIP SETPOINT" in CTS Table 3.3-6 is to define the OPERABILITY limits for the radiation instrumentation Function. Therefore, the use of the terms "TRIP SETPOINT" in the CTS is the same as the use of the term "Allowable Value" in the ITS. This proposed change does not modify the Technical Specification OPERABILITY limit. This change is designated as administrative change and is acceptable because it does not result in any technical changes to the CTS.

A03 CTS 3.3.3.1 Action c states that the provisions of Specification 3.0.4 are not applicable. ITS 3.3.14 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. ITS 3.3.14 ACTION A requires the plant to declare the associated Spent Fuel Pool Area Emergency Ventilation System train inoperable and allows operation to continue for an unlimited period of time. Therefore, because the ITS still allows the plant to change a MODE or other specified condition in the Applicability, this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.3.1 Action a allows the alarm/trip setpoint of Table 3.3-6 to exceed the setpoint for 4 hours and then to declare the channel inoperable. ITS 3.3.14 requires the channel to be declared inoperable immediately when the channel is inoperable. This changes the CTS by deleting the 4 hour allowance to declare a channel inoperable.

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DISCUSSION OF CHANGES
ITS 3.3.14, FUEL HANDLING EXHAUST - HIGH RADIATION

The purpose of CTS 3.3.3.1 Action a is to provide a short time period to restore an inoperable channel. CTS 3.3.3.1 Action a allows the alarm/trip setpoint of Table 3.3-6 to exceed the setpoint for 4 hours and then to declare the channel inoperable. ITS 3.3.14 ACTION A requires the associated Spent Fuel Pool Area Emergency Ventilation System train to be declared inoperable. Each radiation channel provides input to the associated train, therefore this action is considered appropriate. This change is designated as more restrictive because the Completion Time has been reduced.

M02 CTS Table 3.3-6 requires one Fuel Storage Pool Area Emergency Ventilation System Actuation Function channel to be OPERABLE. ITS LCO 3.3.14 requires two channels to be OPERABLE. This changes the CTS by increasing the channels required to be OPERABLE from one to two.

The purpose of the Fuel Storage Pool Area Emergency Ventilation System Actuation channels is to isolate the Fuel Handling Area Ventilation System, lineup the ductwork to the Spent Fuel Pool Area Emergency Ventilation System, and start the Station Emergency Ventilation System fans. Each train of Spent Fuel Pool Area Emergency Ventilation System receives a signal from one radiation monitor. ITS LCO 3.7.13 requires two Spent Fuel Pool Area Emergency Ventilation System trains to be OPERABLE. This change is acceptable because there are only two radiation monitors and both are necessary to meet the single failure criteria while ensuring one train of Spent Fuel Pool Area Emergency Ventilation System is actuated. This change is more restrictive because an additional radiation channel is required to be OPERABLE.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-6 for the Fuel Storage Pool Area Emergency Ventilation System Actuation channels specifies an "ALARM/TRIP SETPOINT" and the measurement range of the instrumentation. ITS 3.3.14 does not retain this information. This changes the CTS by moving the information that the channel provides an alarm function at the trip setpoint and the measurement range of the instrumentation 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, the Allowable Value 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

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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 2 – Relaxation of Applicability)* CTS Table 3.3-6 and CTS Table 4.3-3 specifies an Applicability of "With fuel in the storage pool or building." ITS 3.3.14 is applicable "During movement of irradiated fuel assemblies in the spent fuel pool." This changes the CTS by restricting the Applicability of the radiation channels and performance of the Surveillance to only when there is a potential for a fuel handling accident.

The purpose of CTS Table 3.3-6 and CTS Table 4.3-3, in part, is to ensure that the assumption in the applicable fuel handling accident analysis is met. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the specified conditions assumed in the safety analyses and licensing basis. The Davis-Besse fuel handling accident outside containment analysis credits the automatic actuation of the Spent Fuel Pool Area Emergency Ventilation System during the fuel handling accident. Therefore, the ITS imposes the controls on the radiation detectors "During movement of irradiated fuel assemblies in the spent fuel pool." This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

1

3.3 INSTRUMENTATION

3.3.14 Fuel Handling Exhaust - High Radiation

3.3.3.1, Table 3.3-6 Instrument 1.a

LCO 3.3.14 Two channels of Fuel Handling Exhaust - High Radiation shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel pool.

ACTIONS

----------NOTE----------
LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.3-6 Action 22	A. One or more channels inoperable.	A.1 Declare the associated Spent Fuel Pool Area Emergency Ventilation System train inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
Table 4.3-3 Instrument 1.a	SR 3.3.14.1	Perform CHANNEL CHECK.	12 hours
Table 4.3-3 Instrument 1.a	SR 3.3.14.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
Table 4.3-3 Instrument 1.a	SR 3.3.14.3	Perform CHANNEL CALIBRATION with an Allowable Value of $\leq$ 2 times Background.	18 months

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.14, FUEL HANDLING EXHAUST - HIGH RADIATION

1. This Specification has been added to ensure the automatic actuation of the Spent Fuel Pool Area Emergency Ventilation System. The Specification is needed to satisfy Criterion 3 and is consistent with the CTS, as modified by changes discussed in the Discussion of Changes.

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

1

B 3.3 INSTRUMENTATION

B 3.3.14 Fuel Handling Exhaust - High Radiation

BASES

BACKGROUND	The Fuel Handling Exhaust - High Radiation instrumentation consists of two redundant channels. The two redundant channels monitor the radiation levels in the Fuel Handling Area Ventilation System (FHAVS) exhaust ductwork. If the radiation levels exceed the setpoint, the FHAVS and the Spent Fuel Pool Area Emergency Ventilation System (EVS) receive a signal from one radiation monitor. The FHAVS supply and exhaust fans will trip and their inlet and outlet dampers will isolate. The Station EVS fans start and will maintain a negative pressure in the spent fuel pool area and filter the exhaust through charcoal filters and high efficiency particulate air (HEPA) filters. Filtration of the exhaust ensures the accident dose at the site boundary will be well below the 10 CFR 100 limits. The measurement range of the radiation monitors is 0.1 to 10^7 mr/hr. The Allowable Value for the alarm and actuation function is $\leq$ 2 times the background. Background for this specification is defined as the design radiation levels for normal operation. The design radiation levels are shown on UFSAR, Figure 12.1-5 (Ref. 1).
APPLICABLE SAFETY ANALYSES	The Fuel Handling Exhaust – High Radiation Function has been assumed in the fuel handling accident outside containment analysis (Ref. 2). The Spent Fuel Pool Area EVS actuation aligns the ventilation flow path through the HEPA and charcoal filters prior to discharging to the station vent. Fuel Handling Exhaust - High Radiation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	The LCO requires two channels of Fuel Handling Exhaust - High Radiation to be OPERABLE. Failure of any channel renders the associated Spent Fuel Pool Area EVS train inoperable. These channels are required to monitor the radiation levels in the fuel storage pool area and building. Both channels are required to support OPERABILITY of the Spent Fuel Pool Area EVS, to ensure alignment through the HEPA and charcoal filter systems in the event of a fuel handling accident.

BASES

LCO (continued)

Only the Allowable Values are specified for each Fuel Handling Exhaust - High Radiation channel in SR 3.3.14.3. Nominal trip setpoints are specified in the Radiation Monitor Setpoint Manual. The nominal setpoints are based on the UFSAR design normal radiation levels and are set at 50% of the Allowable Value to ensure that conditions are well within the limits of 10 CFR 100.

APPLICABILITY

Two Fuel Handling Exhaust - High Radiation channels are required to be OPERABLE during movement of irradiated fuel assemblies in the spent fuel pool to ensure radiation doses are within the limits of the accident analyses.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

Condition A applies when one or more channel(s) are inoperable. These radiation monitors are required to be OPERABLE in support of LCO 3.7.13, "Spent Fuel Pool Area Emergency Ventilation System (EVS)." If Condition A applies, LCO 3.7.13 Conditions and Required Actions must immediately be applied.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.14.1

Performance of the CHANNEL CHECK every 12 hours ensures a 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the detector or the signal processing equipment has drifted outside its limit. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction.

The Frequency of every 12 hours is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel operability during normal operational use of the displays associated with the LCO's required channels.

SR 3.3.14.2

A CHANNEL FUNCTIONAL TEST is performed on each required Fuel Handling Exhaust – High Radiation channel to ensure the entire channel will perform the intended function.

The Frequency of 31 days is based on unit operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given function in any 31 day interval is a rare event.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.14.3

CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies the channel responds to a measured parameter within the necessary range and accuracy.

This 18 month Frequency is based on operating experience.

REFERENCES

1. UFSAR, Figure 12.1-5.
2. UFSAR, Section 15.4.7.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.14 BASES, FUEL HANDLING EXHAUST - HIGH RADIATION

1. This Specification Bases has been added consistent with the addition of the Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.14, FUEL HANDLING EXHAUST - HIGH RADIATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 15

ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION – HIGH RADIATION

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

ITS

A01

REFUELING OPERATIONS

CONTAINMENT PENETRATIONS

3.3.15 Containment Purge and Exhaust Isolation - High Radiation

LIMITING CONDITION FOR OPERATION

3.9.4 The containment penetrations shall be in the following status:

See ITS 3.9.3

a. The equipment hatch cover closed and held in place by a minimum of four bolts, except the equipment hatch may be open provided the requirements of Specification 3.9.12 are satisfied,

b. A minimum of one door in each air lock closed, but both doors of the containment personnel air lock may be open provided that at least one personnel air lock door is capable of being closed and a designated individual is available immediately outside the personnel air lock to close the door, and

c. Each penetration providing direct access from the containment atmosphere to the atmosphere outside containment shall be either:

1. Closed by a manual or automatic isolation valve, blind flange, or equivalent, or

2. Be capable of being closed from the control room by an OPERABLE containment purge and exhaust valve upon receipt of a high radiation signal from the containment purge and exhaust system noble gas monitor.

See ITS 3.9.3

LCO 3.3.15

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

recently

L01

ACTION:

ACTION A

a. With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment.

recently

b. With the requirements of Specification 3.9.4.c not satisfied for the containment purge and exhaust system, close at least one of the isolation valves for each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere within one hour.

immediately

M01

c. The provisions of Specification 3.0.3 are not applicable.

A02

SURVEILLANCE REQUIREMENTS

L01

4.9.4 Each of the above required containment penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE containment purge and exhaust valve, within 100 hours prior to the start of and at least once per X days during CORE ALTERATIONS or movement of irradiated fuel in the containment, by:

M02

L02

a. Verifying the penetrations are in their required condition, or

Applicability

b. Verifying that with the containment purge and exhaust system in operation, and the containment purge and exhaust system noble gas monitor capable of providing a high radiation signal to the control room, that after initiation of the high radiation signal, the containment purge and exhaust isolation valves can be closed from the control room.

See ITS 3.9.3

Add proposed SR 3.3.15.1, SR 3.3.15.2, and SR 3.3.15.3

M02

LA01

DISCUSSION OF CHANGES
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 The CTS 3.9.4 Action states "The provisions of Specification 3.0.3 are not applicable." ITS 3.3.15 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 When the requirements of CTS 3.9.4.c are not met, CTS 3.9.4 Action b requires the closure of at least one of the isolation valves for each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere within one hour. Under the same conditions, ITS 3.3.15 ACTION A requires immediately placing and maintaining one of the containment purge and exhaust valves in each penetration in the closed position or suspending movement of recently irradiated fuel assemblies within the containment. This changes the CTS by requiring the immediate closure of the containment purge and exhaust valves instead of the current requirement of 1 hour and adding the option of suspending movement of recently irradiated fuel assemblies within containment.

The purpose of CTS 3.9.4 Action b is to isolate the affected penetrations to support limiting the release of fission product to the atmosphere in case of a fuel handling accident. ITS 3.3.15 will require the immediate application of the actions. This means the Required Action should be pursued without delay and in a controlled manner. The allowance to perform the action in 1 hour is no longer permitted. The change is acceptable because the proposed Completion Time of "Immediately" is consistent with the urgency associated with the loss of the Containment Purge and Exhaust Isolation – High Radiation Function under the conditions in which the fuel handling accident is possible. Adding the option to suspend movement of recently irradiated fuel assemblies within containment is acceptable because it places the plant in a condition where the LCO does not apply. This change is designated as more restrictive because it reduces the amount of time provided to complete a Required Action. Refer to Discussion of Changes L01 for the justification in the change of the Applicability.

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DISCUSSION OF CHANGES
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

M02 CTS 4.9.4.b, in part, requires a verification that the containment purge and exhaust system noble gas monitor is capable of providing a high radiation signal to the control room every 7 days. The CTS does not prescribe the method of performance. ITS 3.3.15 includes ITS SR 3.3.15.1 (CHANNEL CHECK) every 12 hours, ITS SR 3.3.15.2 (CHANNEL FUNCTIONAL TEST) every 92 days, and ITS SR 3.3.15.3 (CHANNEL CALIBRATION) every 18 months. This changes the CTS by specifying specific testing requirements (CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION) all at specific Surveillance Frequencies.

The purpose of CTS 4.9.4.b is to ensure the noble gas monitor is capable of providing a high radiation signal to the control room. The ITS continues to include Surveillance Requirements to ensure the noble gas monitor is capable of providing a high radiation signal to the control room. The proposed Surveillance Requirements include ITS SR 3.3.15.1, a CHANNEL CHECK every 12 hours, a CHANNEL FUNCTIONAL TEST every 92 days, and ITS SR 3.3.15.3, a CHANNEL CALIBRATION every 18 months. This change is more restrictive because it is specific on how and when testing is required. This change is acceptable because it ensures the noble gas monitor will perform its intended function. This change is designated as more restrictive because the ITS is specific on the testing requirement and frequencies of testing.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.9.4.b states that the containment purge and exhaust system noble gas monitor must be capable of providing a high radiation signal to the control room. ITS LCO 3.3.15 requires the containment purge and exhaust noble gas monitor to be OPERABLE. This changes the CTS by moving the information of providing a high radiation signal to the control room 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 noble gas monitor to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.4 is applicable during CORE ALTERATIONS and movement of irradiated fuel within the containment. ITS 3.3.15 is applicable during movement of recently irradiated fuel assemblies within containment. This changes the CTS by eliminating requirements for Containment Purge and Exhaust Isolation - High Radiation channel during CORE ALTERATIONS and reduces the Applicability to only when moving "recently" irradiated fuel assemblies in lieu of all irradiated fuel assemblies.

The purpose, in CTS 3.9.4, of the containment purge and exhaust noble gas monitor function is to alert the control room operator of the need to close the Containment Purge System containment isolation valves in the event of a high radiation in the purge exhaust during CORE ALTERATIONS and movement of irradiated fuel within the containment. The Applicability of CORE ALTERATIONS is deleted. The only accident postulated to occur during CORE ALTERATIONS that is postulated to result in fuel cladding integrity damage is a fuel handling accident. Since the only accident postulated to occur during CORE ALTERATIONS that results in a significant radioactive release is the fuel handling accident, and this Applicability is specifically being maintained in ITS 3.3.15, the proposed deletion of CORE ALTERATIONS is justified. Furthermore, reducing the Applicability to "recently" irradiated fuel assemblies is justified based upon the accident analysis demonstrating that after 72 hours of radioactive decay, offsite doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100). This change is designated as less restrictive because the ITS LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency - Non-24 Month Type Change)* CTS 4.9.4 states that the Surveillances shall be performed, in part, "within 100 hours prior to the start of" the specified conditions in the Applicability. ITS SR 3.3.15.1 requires the performance of a CHANNEL CHECK every 12 hours. ITS SR 3.3.15.2 requires the performance of a CHANNEL FUNCTIONAL TEST every 92 days, and ITS SR 3.3.15.3 requires the performance of a CHANNEL CALIBRATION every 18 months (as described in Discussion of Changes M02). ITS SR 3.3.15.1, ITS SR 3.3.15.2, and ITS SR 3.3.15.3 do not include the "within 100 hours prior to the start of" Frequency. ITS SR 3.0.1 states "SRs shall be met during the MODES or other specified conditions in the Applicability for the individual LCOs, unless otherwise stated in the SR." Therefore, the ITS requires that the Surveillances must be met prior to the initiation of movement of irradiated fuel. This changes the CTS by eliminating the stipulation that the Surveillances be met within 100 hours prior to entering the conditions specified in the Applicability.

The purpose of CTS 4.9.4 is to verify the equipment required to meet the LCO is OPERABLE. This change is acceptable because the new Surveillance Frequencies are consistent with current requirements in the offsite dose calculation manual. ITS SR 3.3.15.1 requires the performance of a CHANNEL CHECK every 12 hours. ITS SR 3.3.15.2 requires the performance of a CHANNEL FUNCTIONAL TEST every 92 days, and ITS SR 3.3.15.3 requires the performance of a CHANNEL CALIBRATION every 18 months. These

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DISCUSSION OF CHANGES
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

Surveillances will ensure the noble gas monitor remains OPERABLE. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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

All changes are 1 unless otherwise noted

RB Purge Isolation - High Radiation 3.3.15 (and Exhaust) 1

CTS

3.3 INSTRUMENTATION

3.3.15 Reactor Building (RB) (Containment) Purge Isolation - High Radiation (and Exhaust) 1

3.9.4.c.2 LCO 3.3.15 [One] channel of Reactor Building Purge Isolation - High Radiation shall be OPERABLE. 2

(The containment purge and exhaust noble gas monitor channel)

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

During movement of [recently] irradiated fuel assemblies within the RB. 2

(containment)

ACTIONS (when the Containment Purge and Exhaust System is in service on containment) 1 5

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable in MODE 1, 2, 3, or 4.	A.1 Place and maintain RB purge valves in closed positions.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	36 hours
C. One channel inoperable during movement of [recently] irradiated fuel assemblies within the RB.	C.1 Place and maintain RB (one containment) purge valves (in each penetration) in closed positions (and exhaust).	Immediately
	OR	
	C.2 Suspend movement of [recently] irradiated fuel assemblies within the RB. (containment)	Immediately

3 3 3 2

(A) (A) (Containment purge and exhaust noble gas monitor)

3.9.4 Actions a and b

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
DOC M02	SR 3.3.15.1	Perform CHANNEL CHECK.	12 hours
DOC M02	SR 3.3.15.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
DOC M02	SR 3.3.15.3	Perform CHANNEL CALIBRATION with setpoint Allowable Value ≤ [25] mR/hr.	[18] months

2 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

1. Changes are made to reflect plant specific nomenclature.

2. Brackets have been removed and the proper plant specific information/value has been provided.

3. CTS 3.9.4 Applicability does not include MODES 1, 2, 3, and 4. The Containment Purge and Exhaust System isolation valves are required to be closed at all times in MODES 1, 2, 3, and 4 (ITS 3.6.3). Therefore, consistent with current licensing basis, the Applicability, Conditions, and Required Actions for MODES 1, 2, 3, and 4, have been deleted. Subsequent Conditions and Required Actions are renumbered to reflect this change.

4. The Allowable Value has not been incorporated in ITS SR 3.3.15.3. The current trip setpoint is not based on a specific safety analysis assumption or result, but is chosen based on historical operating experience to avoid spurious/nuisance alarms and to provide an early indication of increased activity to terminate the release prior to exceeding Offsite Dose Calculation Manual release limits.

5. CTS 4.9.4.b only requires the containment purge and exhaust noble gas monitor to actuate (i.e., alarm) when the Containment Purge and Exhaust System is in operation. The CTS provides this exception since the containment purge and exhaust noble gas monitor draws a sample from the containment purge and exhaust duct. Thus if the containment purge and exhaust system is not in operation, the noble gas monitor cannot perform its designed function (i.e., provide an alarm). Therefore, the second Applicability of ISTS 3.3.15 has been modified to include the exception "when the Containment Purge and Exhaust System is in service on containment."

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

Containment

and Exhaust

B 3.3 INSTRUMENTATION

B 3.3.15 Reactor Building (RB) Purge Isolation - High Radiation

and Exhaust

Containment

BASES

BACKGROUND

INSERT 1

The RB Purge Isolation - High Radiation Function closes the RB purge valves. This action isolates the RB atmosphere from the environment to minimize releases of radioactivity in the event an accident occurs. The high radiation signal indicates a failure of a barrier to the fuel radioactivity, and most likely a loss of coolant accident. The purge valves must begin to shut rapidly to ensure they reach a completely closed position prior to excessive pressures in the RB, against which the valves may not close.

fuel handling

The radiation monitoring system measures the activity in a representative sample of air drawn in succession through a particulate sampler, an iodine sampler, and a gas sampler. The LCO addresses only the gas sampler portion of this system. The sensitive volume of the gas sampler is shielded with lead and monitored by a Geiger-Mueller detector. The air sample is taken from the center of the purge exhaust duct through an isokinetic nozzle installed in the duct at a point selected for reduced turbulence.

beta

exceeds the trip setpoint

close Containment Purge and Exhaust System supply and exhaust fans inlet and outlet dampers and shut down Containment Purge and Exhaust System supply and exhaust fans

If a gaseous activity flow rate of approximately 1E-2 µCi/sec (Kr-85) is exceeded, the monitor will alarm and initiate closure of the purge valves. This activity flow rate is selected on the basis of 50,000 scfm flow rate in the purge exhaust and on the basis of a gas monitor setpoint equal to two times the expected background at the location of the monitor, which will provide fast detection of any release. The alarm setpoints for the particulate and iodine channels indicate that an alarm is obtained after the monitor samples a maximum permissible concentration level for 8 hours. Therefore, a maximum of 1.3 mCi of Cs-137 or 67 µCi of DOSE EQUIVALENT I-131 will be released to the atmosphere during this period.

setpoint

based on historical operating experience to avoid spurious/nuisance alarms and to provide an early indication of increased activity to terminate the release prior to exceeding Offsite Dose Calculation Manual limits.

containment

and exhaust containment isolation

through this pathway

The closure of the purge valves ensures the RB remains as a barrier to fission product release. There is no bypass for this function. The closure of the purge valves provides an RB isolation assumed in the accident analysis.

Trip Setpoints and Allowable Values

The trip setpoints are the nominal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION accuracy (i.e., ± [rack calibration + comparator setting accuracy]).

2 **INSERT 1**

provides a computer point alarm and automatically closes the containment purge and exhaust supply and exhaust fans inlet and outlet dampers and shuts down the containment purge and exhaust supply and exhaust fans. The control room operator will then manually close the containment purge and exhaust containment isolation valves. This will

Containment

1

BASES

BACKGROUND (continued)

The trip setpoints used in the bistables are based on the analytical limits derived from the FSAR, Section [14.1] (Ref. 1). The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account to allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 2). Allowable Values specified in LCO 3.3.15 are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the trip setpoints, including their explicit uncertainties, is provided in the "Unit Specific Setpoint Methodology" (Ref. 3). The actual nominal trip setpoint entered into the bistable is normally still more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a CHANNEL FUNCTIONAL TEST. One example of such a change in measurement error is drift during the surveillance interval. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. 1

The Allowable Value in SR 3.3.15.3 is based on the methodology described in Reference 3, which incorporates all of the known uncertainties applicable for each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint. All field sensors and signal processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes.

These Allowable Values are established to prevent violation of the accident acceptance criteria during anticipated operational occurrences (AOOs).

Setpoints in accordance with the Allowable Value will ensure that the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed.

APPLICABLE SAFETY ANALYSES

The analysis for the maximum hypothetical accident assumes the RB remains intact, with penetrations that are unnecessary for core cooling isolated early in the event, within approximately [60] seconds. The closure of the purge valves ensures the RB integrity assumed in the analysis is maintained. The isolation of the RB has not been analyzed mechanistically in the dose calculations, although its rapid isolation is assumed. 2

INSERT 2

(2) INSERT 2

Containment isolation is not assumed in the analysis of the fuel handling accident inside containment. The analysis assumes no fuel movement prior to 72 hours after shutdown; thus, containment isolation is not needed. While the Technical Specifications do not include a requirement on decay time, the Technical Requirements Manual (TRM) includes a requirement that no fuel movement will commence until 72 hours after shutdown. This ensures this assumption (that containment isolation is not needed) is valid. However, the Containment Purge and Exhaust Isolation – High Radiation is required to be OPERABLE during movement of recently irradiated fuel within the containment when the Containment Purge and Exhaust System is in service on containment to mitigate the consequences of a fuel handling accident if it occurs prior to the unit being shut down for 72 hours.

The Containment Purge and Exhaust Isolation – High Radiation has no safety function and is not assumed to function during any UFSAR design basis accident or transient analysis. However, they can provide mitigation of a fuel handling accident that occurs prior to the unit being shut down for 72 hours. Therefore, it is being retained in the Technical Specifications.

Containment

and Exhaust

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RB Purge Isolation System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

For sampling systems, OPERABILITY requires correct valve lineups, sample pump operation, filter motor operation, and detector OPERABILITY, when these sampling features are necessary to initiate a trip as assumed by the safety analysis or setpoint analysis.

The containment purge and exhaust noble gas monitor is required to be OPERABLE, which includes the correct valve lineup to the Containment Purge and Exhaust System, sample pump operation, and detector OPERABILITY.

Only the Allowable Values are specified for each RB Purge Isolation trip Function in the LCO. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal setpoints are selected to ensure the setpoint measured by CHANNEL FUNCTIONAL TESTS does not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing are consistent with the assumptions of the unit specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties associated with the trip function. These uncertainties are defined in the "Unit Specific Setpoint Methodology" (Ref. 3) and the Offsite Dose Calculation Manual.

Radiation Monitor Setpoint Manual

[For this unit, the basis for the setpoint Allowable Value is as follows:]

APPLICABILITY

The RB purge isolation - high radiation shall be OPERABLE in MODES 1, 2, 3, and 4. Outside of these MODES, the purge isolation must be OPERABLE whenever movement of [recently] irradiated fuel assemblies within the RB is taking place. These conditions are those under which the potential for fuel damage, and thus radiation release, is the greatest. While in MODES 5 and 6, without fuel handling [involving handling of recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [x] days)] in progress, the Purge Valve Isolation System does not need to be OPERABLE because the potential for a radioactive release is minimized and operator action is sufficient to ensure post accident offsite doses are maintained within the limits of 10 CFR 100. The need to use the purge valves in MODES 5 and 6 is in preparation for entry. This capability is required to minimize doses for personnel entering the building and is independent of the automatic isolation capability.

and exhaust noble gas monitor channel

with the Containment Purge and Exhaust System in service on containment

containment

This is the condition

INSERT 3

72 hours

containment purge and exhaust noble gas monitor channel

INSERT 4

containment

1 **INSERT 3**

Furthermore, the Applicability includes the requirement that the Containment Purge and Exhaust System must be in service on the containment since the containment purge and exhaust noble gas monitors draw a sample from the containment purge and exhaust duct. Thus if the Containment Purge and Exhaust System is not in operation, the noble gas monitor cannot perform its designed function (i.e., provide an alarm).

3 **INSERT 4**

accident analysis has demonstrated that after 72 hours of radioactive decay, offsite doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).

BASES

ACTIONS

A.1

With one channel inoperable in MODE 1, 2, 3, or 4, the RB purge valves must be placed and maintained in the closed position. This action accomplishes the safety function of the RB Purge Isolation - High Radiation Function. The 1 hour Completion Time is reasonable considering the time required to isolate the penetration and the relative importance of maintaining containment OPERABILITY during MODES 1, 2, 3, and 4.

B.1 and B.2

If Required Action A.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

A.1 and A.2

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

Condition C applies to failure of the high radiation purge function during movement of [recently] irradiated fuel assemblies within the RB.

the containment purge and exhaust noble gas channel inoperable

one containment

and exhaust

With one channel inoperable during movement of [recently] irradiated fuel assemblies within the RB, the RB purge valves must be closed, or movement of [recently] irradiated fuel assemblies within the RB must be suspended. Required Action C.1 accomplishes the function of the high radiation channel. Required Action C.2.1 and Required Action C.2.2 place the unit in a configuration in which purge isolation on high radiation is not required. The Completion Time of "Immediately" is consistent with the urgency associated with the loss of RB isolation capability under conditions in which the fuel handling accidents [involving handling recently irradiated fuel] are possible and the high radiation function provides the only automatic actions to mitigate radiation release.

in each penetration

A

containment

A.2

s

this instrumentation

Containment

and Exhaust

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.15.1

containment

SR 3.3.15.1 is the performance of the CHANNEL CHECK for the RB purge isolation - high radiation instrumentation once every 12 hours to ensure that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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 two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. Performance of the CHANNEL CHECK helps to ensure that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared to similar unit instruments located throughout the unit. If the radiation monitor uses keep alive sources or check sources OPERABLE from the control room, the CHANNEL CHECK should also note the detector's response to these sources.

and exhaust

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. The Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. [At this unit, the following administrative controls and design features (e.g., downscale alarms) immediately alert operators to loss of function.]

the radiation monitor

detector

12 hours

is

SR 3.3.15.2

its

This SR requires the performance of a CHANNEL FUNCTIONAL TEST once every 92 days to ensure that the channels can perform their intended functions. This test verifies the capability of the instrumentation to provide the RB isolation. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other

high radiation alarm

Containment

and Exhaust

BASES

SURVEILLANCE REQUIREMENTS (continued)

Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current unit specific setpoint analysis. (2)

In MODES 1, 2, 3, and 4, the test does not include the actuation of the purge valves, as these valves are normally closed. (1)

Is acceptable based on operating experience

The justification of a 92 day Frequency, in view of the fact that there is only one channel, is Draft NUREG-1366 (Ref. 4). (2)

SR 3.3.15.3

detector

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the unit specific setpoint analysis. (2)

The CHANNEL CALIBRATION is a complete check of the instrumentation and detector. (5) In MODES 1, 2, 3, and 4, the CHANNEL CALIBRATION does not include the actuation of the purge valves, since they are normally closed. (2)

acceptable

operating experience

The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. (3) (2)

REFERENCES

U

1. FSAR, Section [14.1]. 15.4.7.3 (2) (3)
2. 10 CFR 50.49.
3. [Unit Specific Setpoint Methodology].
4. Draft NUREG-1366.

(2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.15 BASES, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Brackets have been removed and the proper plant specific information/value has been provided.

4. The Bases Background includes details for the alarm setpoints for the particulate and iodine channels. Since these channels are not required by the LCO the details have been deleted.

5. This sentence is duplicative to the wording in the first paragraph, first sentence of SR 3.3.15.3 Bases. Therefore, it has been deleted.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.15, CONTAINMENT PURGE AND EXHAUST ISOLATION - HIGH RADIATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 16

ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

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

ITS

A01

PLANT SYSTEMS

3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM — A03

LIMITING CONDITION FOR OPERATION

3.3.16 3.7.6.1 Two independent control room emergency ventilation systems shall be OPERABLE. — A03

APPLICABILITY: MODES 1, 2, 3 and 4. — During movement of irradiated fuel assemblies — M03

ACTION:

a. With one control room emergency ventilation system inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — See ITS 3.7.10 and ITS 3.7.11

ACTION A b. With one channel of Station Vent Normal Range Radiation Monitoring instrumentation inoperable, restore the inoperable channel to OPERABLE status, or isolate the control room normal ventilation system and place at least one control room emergency ventilation system train in operation within 7 days. — A02

ACTION B c. With both channels of Station Vent Normal Range Radiation Monitoring instrumentation inoperable, within 1 hour, isolate the control room normal ventilation system and place at least one control room emergency ventilation system train in operation.

Add proposed ACTION C — M01

Add proposed ACTION D — M03

SURVEILLANCE REQUIREMENTS

4.7.6.1 Each control room emergency ventilation system shall be demonstrated OPERABLE: — See ITS 3.7.10

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 110°F when the control room emergency ventilation system is operating. — See ITS 3.7.11

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes. — See ITS 3.7.10

c. At least once each REFUELING INTERVAL and in accordance with the Ventilation Filter Testing Program (VFTP).

ITS

A01

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

1. [Deleted]
2. [Deleted]
3. [Deleted]

d. [Deleted]

e. At least once each REFUELING INTERVAL by:

1. [Deleted]
2. Verifying that the control room normal ventilation system is isolated by a SFAS test signal and a Station Vent Normal Range Radiation Monitoring test signal; and

See ITS 3.7.10

Add proposed SR 3.3.16.1, SR 3.3.16.2 and SR 3.3.16.3

M02

Add proposed SR 3.3.16.2 NOTE

L01

DISCUSSION OF CHANGES
ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.7.6.1 Action b requires restoring the inoperable channel to OPERABLE status or requires the isolation of the control room ventilation system. The ITS 3.3.16 ACTION A does not include the specific option to restore the inoperable channel to OPERABLE status. This changes the CTS by not explicitly stating the requirement to restore the inoperable channel to OPERABLE status.

The purpose of CTS 3.7.6.1 Action b is to provide appropriate compensatory actions for inoperable Station Vent Normal Radiation Monitoring Instrumentation. This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in any technical changes to the CTS.

A03 CTS 3.7.6.1 contains requirements for Control Room Emergency Ventilation System and Control Room Emergency Ventilation Instrument System. The ITS conversion is splitting the CTS Specification into two ITS Specifications ITS 3.7.10, "Control Room Emergency Ventilation System," and ITS 3.3.16, "Station Vent Normal Range Radiation Monitoring."

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

MORE RESTRICTIVE CHANGES

M01 CTS 3.7.6.1 does not provide any actions for when CTS 3.7.6.1 Actions b and c are not met. Entry into CTS 3.0.3 is required since no actions are specified. CTS 3.0.3 allows 1 hour to initiate action and 6 additional hours for the unit to be placed in HOT STANDBY (MODE 3), the following 6 hours to be in HOT STANDBY (MODE 4), and the subsequent 24 hours to be in COLD SHUTDOWN (MODE 5). ITS 3.3.16 ACTION C requires entry when the Required Action and associated Completion Time is not met and requires the plant to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing a specific default condition instead of requiring entry into CTS 3.0.3, reduces the time to reach MODE 3 (from 7 hours to 6 hours) and MODE 5 (from 37 hours to 36 hours) by 1 hour.

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DISCUSSION OF CHANGES
ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

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

M02 The CTS does not require a CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, or a CHANNEL CALIBRATION for the Station Vent Normal Range Radiation Monitoring instrumentation. ITS SR 3.3.16.1 requires performance of a CHANNEL CHECK every 12 hours. ITS SR 3.3.16.2 requires performance of a CHANNEL FUNCTIONAL TEST every 92 days. ITS SR 3.3.16.3 requires performance of a CHANNEL CALIBRATION every 18 months. This changes the CTS by adding new Surveillance Requirements.

The purpose of ITS SR 3.3.16.1, SR 3.3.16.2, and SR 3.3.16.3 is to ensure that the Station Vent Normal Range Radiation Monitoring instrumentation is OPERABLE. The change is acceptable because it will help ensure that the instrumentation is OPERABLE. This change is more restrictive because the ITS requires Surveillance Requirements not currently required by the CTS.

M03 The CTS does not have any requirements for the Control Room Emergency Ventilation System during movement of irradiated fuel assemblies. ITS 3.3.16 Applicability includes "During movement of irradiated fuel assemblies." ITS 3.3.16 ACTION D provides compensatory measures when Station Vent Normal Range Radiation Monitoring instrumentation is inoperable. This changes the CTS by adding additional Applicability criteria and associated ACTIONS.

The purpose of ITS 3.3.16 is to provide assurance that the Station Vent Normal Radiation Monitoring Instrumentation is OPERABLE when required to perform its function. The system is required during movement of irradiated fuel assemblies. This change is acceptable because it provides this Applicability with associated ACTIONS to provide additional assurance that the Station Vent Normal Range Radiation Monitoring instrumentation is available to perform its function when required. This change is designated as more restrictive because it adds an Applicability with associated ACTIONS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

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DISCUSSION OF CHANGES
ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* While CTS 4.7.6.1 does not provide any Surveillance Requirements for the Station Vent Normal Range Radiation Monitoring instrumentation, it also does not provide a delayed entry into associated CTS 3.7.6.1 Actions if a channel is inoperable solely for performance of a Surveillance demonstrating the OPERABILITY of the Station Vent Normal Range Radiation Monitoring channel. ITS SR 3.3.16.2 includes a Note to allow delayed entry into associated Conditions and Required Actions for up to 3 hours if a Station Vent Normal Range Radiation Monitoring instrumentation channel is placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST provided the other channel is OPERABLE. This changes the CTS by providing a delay time to enter Conditions and Required Actions for a Station Vent Normal Range Radiation Monitoring channel placed in an inoperable status solely for performance of the CHANNEL FUNCTIONAL TEST. The justification for adding the CHANNEL FUNCTIONAL TEST requirement (ITS SR 3.3.16.2) is provided in Discussion of Change M02.

ITS SR 3.3.16.2 Surveillance Requirement Note has been added to allow delayed entry into associated Conditions and Required Actions for up to 3 hours if a Station Vent Normal Range Radiation Monitoring channel is placed in an inoperable status solely for performance of a required CHANNEL FUNCTIONAL TEST. This change is acceptable because it provides a reasonable time for performing tests and reduces the risk of error during testing. This change is acceptable since the 3 hour testing allowance does not significantly reduce the probability of properly monitoring the parameter and providing an automatic isolation of the Control Room Normal Ventilation System, when necessary, since the other channel monitoring the variable must be OPERABLE for this allowance to be used, and the other channel is capable of automatically isolating the Control Room Normal Ventilation System. This change is less restrictive because less stringent Required Actions are being applied in ITS than were applied in CTS.

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

Control Room Isolation - High Radiation 3.3.16 (1)

Station Vent Normal Range Radiation Monitoring

CTS

3.3 INSTRUMENTATION

3.3.16 Control Room Isolation - High Radiation (1)

station vent normal range radiation monitoring instrumentation

Two | s

3.7.6.1 LCO 3.3.16 [One] channel of Control Room Isolation - High Radiation shall be OPERABLE. (1) (2)

and

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,] (2)
During movement of [recently] irradiated fuel assemblies.

ACTIONS (1)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.6.1 Action b	A. One channel inoperable in MODE 1, 2, 3, or 4	A.1 (2) ----------NOTE---------- Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ---------- (INSERT 1) (1)	Only applicable in MODES 1, 2, 3, and 4. (1) (4)
		Place one OPERABLE Control Room Emergency Ventilation System (CREVS) train in the emergency recirculation mode. (1)	1 hour (7 days) (1) operation (1)
		(INSERT 2) (1)	
DOC M01	B. Required Action and associated Completion Time of Condition A not met. (or B) (in MODE 1, 2, 3, or 4) (C)	B.1 Be in MODE 3. (1)	6 hours (1)
		AND (1)	
		B.2 Be in MODE 5. (1)	36 hours (1)
DOC M03	C. One channel inoperable during movement of [recently] irradiated fuel. (D)	C.1 Place one OPERABLE CREVS train in emergency recirculation mode. (1) OR	Immediately

Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies.

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CTS

(1) **INSERT 1**

3.7.6.1 Action b		A.1 Isolate the Control Room Normal Ventilation System. AND	7 days

CTS

(1) **INSERT 2**

3.7.6.1 Action c	B.	Two channels inoperable.	B.1 Isolate the Control Room Normal Ventilation System AND B.2 ----------NOTE---------- Only applicable in MODES 1, 2, 3, and 4. ---------- Place one OPERABLE CREVS train in operation.	1 hour 1 hour

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03	D.1	C.2 Suspend movement of [recently] irradiated fuel assemblies.	Immediately	1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M02	SR 3.3.16.1	Perform CHANNEL CHECK.	12 hours	
DOC M02, DOC L01	SR 3.3.16.2	a channel ----------NOTE---------- When the Control Room Isolation / High Radiation instrumentation is placed in an inoperable status solely for performance of this Surveillance, entry into associated Conditions and Required Actions may be delayed for up to 3 hours provided the other channel is OPERABLE ---------- Perform CHANNEL FUNCTIONAL TEST.	92 days	6 6
DOC M02	SR 3.3.16.3	Perform CHANNEL CALIBRATION with setpoint Allowable Value ≤ [25] mR/hr.	[18] months	2 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

1. ISTS LCO 3.3.16 includes a requirement to have one channel of Control Room Isolation-High Radiation OPERABLE. However, the number of channels "One" is bracketed. CTS 3/4.7.6.1 requires two channels to be OPERABLE, therefore, the required number of channels in ITS LCO 3.3.16 has been changed from "One" to "Two" channels. The ISTS 3.3.16 ACTIONS only include an action (ACTION A) for one channel inoperable. As a result, the Actions have been modified to reflect the current licensing basis (CTS 3.7.6.1 Actions b and c). The requirement to "Isolate the Control Room Normal Ventilation System" has been added as Required Action A.1 consistent with the current requirements. The Completion Time of Required Action A.1 has been extended from 1 hour to 7 days and a new ACTION (ITS 3.3.16 ACTION B) has been added. Additionally, a Note has been added to Required Actions A.2 and B.2 to only require Control Room Emergency Ventilation System (CREVS) to be placed in operation in MODES 1, 2, 3, and 4 consistent with the requirements for the CREVS (the CREVS is only required to be OPERABLE in MODES 1, 2, 3, and 4 as shown in ITS 3.7.10). Furthermore, ISTS Required Action D.1 has not been included for this same reason. Subsequent Conditions and Required Actions have been renumbered, as necessary.

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

3. The Allowable Value has not been included in ITS SR 3.3.16.3. The setpoint is not based on a specific safety analysis assumption or result, but is chosen to not exceed the offsite dose limits required by the Offsite Dose Calculation Manual and to prevent spurious actuations. Station Vent alarm setpoints are established to initiate Control Room isolation when the activity level exceeds the derived Air Concentration limits of 10 CFR 20 and to ensure the release rate of noble gas, radioiodine, and particulate effluents do not exceed any 10 CFR limit.

4. ISTS 3.3.16 Required Action A.1 includes a Note to "Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable." ITS 3.3.16 does not include this Note because it is not applicable to the Davis-Besse design. The Control Room Emergency Ventilation System does not include a toxic gas protection mode nor an automatic transfer to toxic gas protection.

5. The ISTS SR 3.3.16.2 Note has been revised to reflect the Davis-Besse design. The allowance to delay entry into the associated Conditions and Required Actions is only allowed as long as the other channel is OPERABLE.

6. Editorial with no change of intent.

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

Station Vent Normal Range Radiation Monitoring

B 3.3 INSTRUMENTATION

B 3.3.16 Control Room Isolation - High Radiation

Station Vent Normal Range Radiation Monitoring

BASES

Station Vent Normal Range Radiation Monitoring instrumentation

BACKGROUND

The principal function of the Control Room Isolation - High Radiation is to provide an enclosed environment from which the unit can be operated following an uncontrolled release of radioactivity. The high radiation isolation function provides assurance that under the required conditions, an isolation signal will be given. The noble gas monitors located in the station vent stack provide isolation and shutdown of the normal Control Room Emergency Ventilation System (CREVS). 1

radiation

Normal

INSERT 1

The control room isolation signal is provided by a single channel containing an iodine monitor with a scintillation detector and a gaseous monitor with a Geiger-Mueller detector. The iodine channel includes a particulate prefilter with the charcoal cartridge. If a radioactivity concentration above normal background level is detected or if sampling capability is lost, the monitor will initiate a shutdown of the normal duty supply fans and will place the ventilation dampers in their recirculation mode. 1

Trip Setpoints and Allowable Values

The trip setpoints are the nominal value at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION accuracy (i.e., ± [rack calibration + comparator setting accuracy]).

The trip setpoints used in the bistables are based on the analytical limits derived from the FSAR, Section [14.1] (Ref. 1). The selection of these trip setpoints indicates that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, and instrument drift, Allowable Values specified in LCO 3.3.15 are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the trip setpoints, including their explicit uncertainties, is provided in the "Unit Specific Setpoint Methodology" (Ref. 2). The actual nominal trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors that are detectable by a CHANNEL FUNCTIONAL TEST. One example of a change in measurement error is drift during the surveillance interval. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. 1

(1) **INSERT 1**

The control room isolation signal is provided by two normal range radiation monitors that continuously monitor the station vent for particulate, iodine, and gross gaseous radioactivity. Each normal range monitor consists of two filter-detectors, a paper filter beta scintillation detector particulate channel and a charcoal filter gamma scintillation detector iodine channel, plus a beta sensitive noble gas channel. Only the noble gas monitors are required to satisfy the requirements of this LCO. The station vent normal range radiation monitors actuate to isolate the Control Room Normal Ventilation System. The Control Room Emergency Ventilation System (CREVS) is manually operated after the station vent normal range radiation high setpoint is exceeded. An isolation signal from either monitor will result in an isolation of the Control Room Normal Ventilation System. The Station Vent Normal Range Radiation Monitoring performs an additional function of ensuring the average annual gaseous effluent concentrations at the boundary of the unrestricted area do not exceed 10 CFR 20 requirements. The setpoints for limiting the offsite dose are more limiting than would be required for control room isolation purposes. The detector setpoints are established so as not to exceed the offsite dose limits required by the Offsite Dose Calculation Manual (ODCM). This bounds the Technical Specification reason for the detectors.

Control Room Normal Ventilation System

Station Vent Normal Range Radiation Monitoring

BASES

APPLICABLE SAFETY ANALYSES

The CREVS is isolated when a reactor building high pressure Engineered Safety Feature Actuation System signal or a high radiation signal is received. For the first 4 days following a loss of coolant accident, the CREVS is operated in the total recirculation mode. Four days after the start of the accident, the CREVS is started in the intake and recirculation mode and continues to operate in this mode for 30 days. This intake slightly pressurizes the control room. In both cases, the air flows through charcoal filters that are 95% efficient for elemental, particulate, and organic materials. The high radiation function only performs the initial isolation function to begin the recirculation mode of operation.

INSERT 1A

1

The Control Room Isolation - High Radiation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

Station Vent Normal Range Radiation Monitoring

INSERT 2

2

LCO

Only the Allowable Value is specified for each Control Room Isolation - High Radiation trip Function in the LCO. Nominal trip setpoints are specified in the unit specific setpoint calculations. The nominal setpoints are selected to ensure the setpoint measured by the CHANNEL FUNCTIONAL TEST does not exceed the Allowable Value if the bistable is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable provided that operation and testing is consistent with the assumptions of the unit specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis to account for instrument uncertainties appropriate to the trip function. These uncertainties are defined in the "Unit Specific Setpoint Methodology" (Ref. 2).

1

[At this unit, the basis for the Allowable Value is as follows:]

APPLICABILITY

The control room isolation capability on high radiation shall be OPERABLE whenever there is a chance for a significant accidental and release of radioactivity. This includes MODES 1, 2, 3, 4, [5, and 6] and all MODES and conditions during movement of [recently] irradiated fuel [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [x] days)]. If a radioactive release were to occur during any of these conditions, the control room would have to remain habitable to ensure reactor shutdown and cooling can be controlled from the main control room.

3

1

(1) INSERT 1A

Containment Pressure – High or Reactor Coolant System Pressure – Low Safety Features Actuation System signal is received, or a Station Vent Normal Range Radiation Monitoring high radiation signal is received. The CREVS can be operated in either the recirculation mode or the outside air intake mode. In both cases, the air flows through charcoal and HEPA filters that have a total efficiency ≥ 95 percent. The fuel handling accident analyses, both inside and outside of containment, assume the Control Room Normal Ventilation System is isolated by the Station Vent Normal Range Radiation Monitoring high radiation signal.

(2) (1) INSERT 2

The Station Vent Normal Range Radiation Monitoring instrumentation measures radiation levels in the station vent. A high radiation level may pose a threat to the control room personnel; therefore, the Control Room Normal Ventilation System is automatically isolated.

The Station Vent Normal Range Radiation Monitoring channels consist of two station vent normal range noble gas radiation monitors. Two channels of Station Vent Normal Range Radiation Monitoring are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation of the Control Room Normal Ventilation System. The detector setpoints are established so as not to exceed the offsite dose limits required by the ODCM, and any setpoint for control room isolation is bounded by the setpoints for offsite dose limits.

Station Vent Normal Range Radiation Monitoring

Control Room Isolation - High Radiation
B 3.3.16

All changes are 3 unless otherwise noted

BASES

ACTIONS

A.1 and A.2

Station Vent Normal Range Radiation Monitoring

Condition A applies to failure of the Control Room Isolation - High Radiation Function in MODE 1, 2, 3, or 4.

action must be taken within 7 days to place the Control Room Normal Ventilation System and CREVS

With one channel of Control Room Isolation - High Radiation inoperable, the CREVS must be placed in a condition that does not require the isolation to occur. To ensure that the ventilation system has been placed in a state equivalent to that which occurs after the high radiation isolation has occurred, one OPERABLE train of the CREVS is placed in the emergency recirculation mode of operation. Reactor operation can continue indefinitely in this state. The 1 hour Completion Time is a sufficient amount of time in which to take the Required Action.

the Control Room Normal Ventilation System is isolated and

INSERT 3

The Required Action is modified by a Note, which requires the CREVS be placed in the toxic gas protection mode if automatic transfer to the toxic gas protection mode is inoperable, since the pressurization mode would increase vulnerability to toxic gas releases.

INSERT 4

C

B.1 and B.2

in operation

the Control Room Normal Ventilation System can not be isolated or

If the CREVS cannot be placed into recirculation mode while in MODE 1, 2, 3, or 4, actions must be taken to minimize the chances of an accident that could lead to radiation releases. The unit must be placed in at least MODE 3 within 6 hours, with a subsequent cooldown to MODE 5 within 36 hours. This places the reactor in a low energy state that allows greater time for operator action if habitation of the control room is precluded. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

D

C.1 and C.2

If the Control Room Normal Ventilation System can not be isolated

Required Action C.1 is the same as discussed earlier for Condition A, except for Completion Time. If the CREVS cannot be placed into recirculation mode during moving recently irradiated fuel assemblies, then Required Action C.2.1 and Required Action C.2.2 suspend actions that could lead to an accident that could release radioactivity resulting from a fuel handling accident.

movement of

D.1

requires the suspension of

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3 **INSERT 3**

However, as Noted (Required Action A.2 Note), CREVS is only required to be placed in operation in MODES 1, 2, 3, and 4, consistent with the CREVS Specification (CREVS is only required to be OPERABLE in MODES 1, 2, 3, and 4 as described in the Bases of LCO 3.7.10, "Control Room Emergency Ventilation System (CREVS)"). Plant operation may continue indefinitely in this state provided that control room temperature can be maintained in an acceptable range with the CREVS obtaining fresh air makeup as described in UFSAR, Section 9.4.1 (Ref. 1). The 7 day Completion Time is based on the low probability of a DBA occurring during this time period and the ability of the remaining Station Vent Normal Range Radiation Monitoring channel to provide its intended function.

3 **INSERT 4**

B.1 and B.2

With two channels inoperable, action must be taken within 1 hour to place the Control Room Normal Ventilation System and CREVS in a condition that does not require the isolation to occur. To ensure that the ventilation systems have been placed in a state equivalent to that which occurs after the high radiation isolation has occurred, the Control Room Normal Ventilation System is isolated and one OPERABLE train of the CREVS is placed in operation. However, as Noted (Required Action B.2 Note), CREVS is only required to be placed in operation in MODES 1, 2, 3, and 4, consistent with the CREVS Specification (CREVS is only required to be OPERABLE in MODES 1, 2, 3, and 4 as described in the Bases of LCO 3.7.10). Plant operation may continue indefinitely in this state provided that control room temperature can be maintained in an acceptable range with the CREVS obtaining fresh air makeup as described in UFSAR, Section 9.4.1 (Ref. 1). The 1 hour Completion Time is a sufficient amount of time in which to take the Required Action.

Station Vent Normal Range Radiation Monitoring

3

BASES

ACTIONS (continued)

D.1

Required Action C.2 places the core in a safe and stable configuration in which it is less likely to experience an accident that could result in a significant release of radioactivity. The reactor must be maintained in these conditions until the automatic isolation capability is returned to operation or when manual action places one train of the CREVS into the emergency recirculation mode. The Completion Time of "Immediately" for Required Action C.2.1 and Required Action C.2.2 is consistent with the urgency of the situation and accounts for the high radiation function, which provides the only automatic Control Room Isolation Function capable of responding to radiation release due to a fuel handling accident [involving handling recently irradiated fuel]. The Completion Time does not preclude placing any fuel assembly into a safe position before ceasing any such movement.

plant

this

isolates the Control Room Normal Ventilation System

D.1

3

Note that in certain circumstances, such as fuel handling [involving handling recently irradiated fuel] in the fuel building during power operation, both Condition A and Condition C may apply in the event of channel failure.

SURVEILLANCE REQUIREMENTS

SR 3.3.16.1

SR 3.3.16.1 is the performance of a CHANNEL CHECK for the Control Room Isolation - High Radiation actuation instrumentation once every 12 hours to ensure that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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.

Station Vent Normal Range Radiation Monitoring

3

INSERT 5

4

Performance of the CHANNEL CHECK helps ensure that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared with similar unit instruments located throughout the unit. If the radiation monitor uses keep alive sources or check sources operated from the control room, the CHANNEL CHECK should also note the detector's response to these sources.

3

4 **INSERT 5**

CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Station Vent Normal Range Radiation Monitoring

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. The Frequency, about once every shift, is based on operating experience that demonstrates channel failure is rare. [At this unit, the following administrative controls and design features (e.g., downscale alarms) immediately alert operators to loss of function.]

detector

12 hours

INSERT 6

SR 3.3.16.2

INSERT 7

A Note defines a channel as being OPERABLE for up to 3 hours while bypassed for surveillance testing. The Note allows channel bypass for testing without defining it as inoperable, although during this time period it cannot actuate a control room isolation. This is based on the average time required to perform channel surveillance. It is not acceptable to routinely remove channels from service for more than 3 hours to perform required surveillance testing.

SR 3.3.16.2 is the performance of a CHANNEL FUNCTIONAL TEST once every 92 days to ensure that the channels can perform their intended functions. This test verifies the capability of the instrumentation to provide the automatic Control Room Isolation. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current unit specific setpoint analysis.

The justification of a 92 day Frequency, in view of the fact that there is only one channel, is Draft NUREG-1366 (Ref. 3).

INSERT 8

5

INSERT 6

The CHANNEL CHECK supplements less formal but more frequent checks of channel OPERABILITY during normal operational use of the displays associated with the LCO's required channels.

3 2

INSERT 7

The Surveillance is modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of the required CHANNEL FUNCTIONAL TEST, entry into the associated Conditions and Required Actions may be delayed for up to 3 hours, provided the other channel is OPERABLE. Upon completion of the Surveillance, or expiration of the 3 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken.

1

INSERT 8

The Frequency of 92 days is based on the known reliability of the equipment and the available two channel redundancy.

Station Vent Normal Range Radiation Monitoring

3

BASES

SURVEILLANCE REQUIREMENTS (continued)

The CHANNEL CALIBRATION is performed every 18 months.

SR 3.3.16.3

This SR requires the performance of a CHANNEL CALIBRATION with a setpoint Allowable Value of ≤ [25] mR/hr to ensure that the instrument channel remains operational with the correct setpoint. This test is a complete check of the instrument loop and the transmitter.

3

detector

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the unit specific setpoint analysis.

is acceptable based on operational experience

s

The Frequency is based on the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis and is consistent with the typical refueling cycle.

1 5

REFERENCES

U

1. FSAR, Section [14.1]. 9.4.1

5 5

2. [Unit Specific Setpoint Methodology]

3. Draft NUREG-1366.

1

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.16 BASES, STATION VENT NORMAL RANGE RADIATION MONITORING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to reflect the Specification.

3. Changes are made to reflect changes made to the Specification.

4. Changes are made to reflect other places in the Bases (i.e., SR 3.3.1.1).

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

6. Editorial change with no change in intent.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.16, STATION VENT NORMAL RANGE RADIATION MONITORING

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 17

ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

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

INSTRUMENTATION

POST-ACCIDENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.17

3.3.3.6 The post-accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

Add proposed ACTIONS Note — A02

ACTIONS A and C

a. With the number of OPERABLE post-accident monitoring instrumentation channels less than the Minimum Channels OPERABLE required by Table 3.3-10, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours. — M01, L01

ACTIONS B, D, and E

b. The provisions of Specification 3.0/4 are not applicable.

Add proposed Required Action E.1 — M02

M03

SURVEILLANCE REQUIREMENTS

SR Table Note

4.3.3.6 Each post-accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-10.

Table 3.3.17-1

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE
13	1. SG Outlet Steam Pressure	1/Steam Generator
2	2. RC Loop Outlet Temperature	2/Loop
3	3. RC Loop Pressure	2/Loop
9	4. Pressurizer Level	2
10	5. SG Startup Range Level	2/Steam Generator
8	6. Containment Vessel Post-Accident Radiation	2
14	7. High Pressure Injection Flow	1/Channel
15	8. Low Pressure Injection (DHR) Flow	1/Channel
12	9. Auxiliary Feedwater Flow Rate	2/Steam Generator
	10. RC System Subcooling Margin Monitor	1
	11. PORV Position Indicator	1
	12. PORV Block Valve Position Indicator	1
	13. Pressurizer Safety Valve Position Indicator	1/Valve
16	14. BWST Level	~~2~~ 2
	15. Containment Normal/Sump Level	1
5	16. Containment Wide Range Water Level	~~1~~ 2

R01
L02
R01
M04

Table 3.3.17-1

TABLE 3.3-10 (Continued)

POST-ACCIDENT MONITORING INSTRUMENTATION

	INSTRUMENT	MINIMUM CHANNELS OPERABLE	
6	17. Containment Wide Range Pressure	2	M04
11	18. Incore Thermocouples	2 per core quadrant	
4	19. Reactor Coolant Hot Leg Level (Wide Range)	2	M04
1	20. Neutron Flux (Wide Range)	2	M04
17	21. Neutron Flux (Source Range)	2	M04
	Add proposed Function 7		M05

Table 3.3.17-1

TABLE 4.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT		SR 3.3.17.1 CHANNEL CHECK	SR 3.3.17.2, SR 3.3.17.3 CHANNEL CALIBRATION
13	1.	SG Outlet Steam Pressure	M -1	R -3
2	2.	RC Loop Outlet Temperature	M -1	R -3
3	3.	RC Loop Pressure	M -1	R -3
9	4.	Pressurizer Level	M -1	R -3
10	5.	SG Startup Range Level	M -1	R -3
	6.	Containment Vessel Post-Accident Radiation		
8.a		a.) Containment High Range Radiation	M -1	R -3
8.b		b.) Containment Wide Range Noble Gas	M -1	E -2
14	7.	High Pressure Injection Flow	M -1	E -2
15	8.	Low Pressure Injection (DHR) Flow	M -1	E -2
12	9.	Auxiliary Feedwater Flow Rate	M -1	E -2
	10.	RC System Subcooling Margin Monitor	M	R
	11.	PORV Position Indicator	M	R
	12.	PORV Block Valve Position Indicator	M	R
	13.	Pressurizer Safety Valve Position Indicator	M	R
16	14.	BWST Level	[illegible]	E -2
	15.	Containment Normal Sump Level	M	R
5	16.	Containment Wide Range Water Level	M -1	R -3

R01

31 days

L03

R01

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TABLE 4.3-10 (Continued)

Table 3.3.17-1 POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT	SR 3.3.17.1 CHANNEL CHECK	SR 3.3.17.2, SR 3.3.17.3 CHANNEL CALIBRATION
6	17. Containment Wide Range Pressure	M -1	R -3
11	18. Incore Thermocouples	M -1	E -2
4	19. Reactor Coolant Hot Leg Level (Wide Range)	M -1	R -3
1	20. Neutron Flux (Wide Range)	M -1	E** -2
17	21. Neutron Flux (Source Range)	M -1	E** -2

Add proposed Function 7

M05

Note for SR 3.3.17.2 **Neutron detectors may be excluded from CHANNEL CALIBRATION.

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.3.6 Action a provides the compensatory actions to take when PAM instrumentation is inoperable. ITS 3.3.17 ACTIONS provide the compensatory actions for inoperable PAM instrumentation. The ITS 3.3.17 ACTIONS include a Note that allows separate Condition entry for each Function. In addition, separate Condition entry is allowed within a Function on a reactor coolant loop basis for Functions 2 (Reactor Coolant Loop Outlet Temperature) and 3 (Reactor Coolant Loop Pressure), on a steam generator basis for Functions 10 (Steam Generator Startup Range Level), Function 12 (Auxiliary Feedwater Flow Rate), and Function 13 (Steam Generator Outlet Steam Pressure), and on a per core quadrant basis for Function 11 (Incore Thermocouples). This modifies the CTS by providing a specific allowance to enter the Action for each inoperable PAM instrumentation Function, for certain functions on a steam generator basis, for certain functions on a loop basis, and for certain functions on per quadrant basis.

This change is acceptable because it clearly states the current requirement. The CTS considers each PAM instrumentation Function to be separate and independent from the others. In addition, the channels associated with Functions 2 and 3 are allowed separate Condition entry on a reactor coolant loop basis, the channels associated with Functions 10, 12, and 13 are allowed separate Condition entry on steam generator basis, and the channels associated with Function 11 are allowed separate Condition entry on a core quadrant basis, which is consistent with the intent of the CTS. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.3.6 Action a requires, with the number of OPERABLE post accident monitoring channels less than the minimum channels OPERABLE requirements of Table 3.3-10, that the inoperable channel be restored to OPERABLE status within 30 days. ITS 3.3.17 ACTION C requires with one or more Functions with two required channels inoperable, restoration of one channel to OPERABLE status within 7 days. This changes the CTS requirement by reducing the allowed outage time when two required channels of PAM instrumentation Functions are inoperable from 30 days to 7 days.

This change is acceptable because it provides appropriate requirements for when two required channels of PAM instrumentation Function are inoperable. The PAM instrumentation are required to be OPERABLE to provide the control room operators with sufficient information on selected unit parameters to monitor

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

and assess unit status following an accident. This change is designated as more restrictive because it requires restoration of the inoperable PAM instrumentation channels in less time than is required by the CTS.

M02 CTS 3.3.3.6 Action a requires, when required channels are not restored within the allowed outage time that the unit be in at least HOT SHUTDOWN within the next 12 hours. ITS 3.3.17 ACTION E requires the unit to be placed in MODE 3 (HOT STANDBY) within 6 hours (Required Action E.1) and MODE 4 (HOT SHUTDOWN) within 12 hours (Required Action E.2). This changes the CTS requirement by requiring the unit to be in MODE 3 within 6 hours.

This change is acceptable because 6 hours is a reasonable period of time for the operator to safely decrease power from full power to MODE 3 without challenging plant systems. This Completion Time is consistent with other ITS requirements that specify a unit power reduction to MODE 3. The change is designated as more restrictive because it adds a requirement to place the unit in MODE 3 within 6 hours to the CTS.

M03 CTS 3.3.3.6 Action b states that the provisions of Specification 3.0.4 are not applicable. ITS 3.3.17 does not include this Note. This changes the CTS by deleting the specific exception to Specification 3.0.4.

The purpose of CTS 3.3.3.6 Action b is to allow the plant to enter the Applicability of the Specification with any number of PAM instrumentation channels inoperable. CTS 3.0.4 states, "Entry into an OPERATIONAL MODE or other specified applicability conditions shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted." CTS 3.0.4, in part, has been revised in the Discussion of Changes for ITS 1.0 to allow entry into a MODE or other specified condition in the Applicability if: a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time and b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications. The proposed Required Actions in ITS 3.3.17 for one inoperable channel (ITS 3.3.17 ACTIONS A and B) allow the plant to operate continuously. Therefore, the allowances in part a of ITS LCO 3.0.4 are applicable and the plant may still enter the Applicability. However, when two channels are inoperable, the ITS 3.3.17 ACTIONS (ITS 3.3.17 ACTIONS C and E) do not allow continuous operation. Therefore, under these conditions the plant may only enter the Applicability if the risk assessment is performed. This change is more restrictive because the risk evaluation must be performed when two channels of any required PAM instrument Function are inoperable. This change is designated as more restrictive because the entry into the Conditions and Required Action can no longer be made unless a risk assessment is performed in accordance with LCO 3.0.4 for two inoperable channels.

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

M04 CTS Table 3.3-10 Instruments 16 (Containment Wide Range Water Level), 17 (Containment Wide Range Pressure), 19 (Reactor Coolant Hot Leg Level (Wide Range)), 20 (Neutron Flux (Wide Range) and 21 (Neutron Flux (Source Range)) in part only require one channel to be OPERABLE. ITS Table 3.3.17-1 Functions 1 (Wide Range Neutron Flux), 4 (Reactor Coolant Hot Leg Level (Wide Range), 5 (Containment Water Level (Wide Range)), 6 (Containment Pressure (Wide Range)), and 17 (Neutron Flux Source Range)) require two channels to be OPERABLE. This changes the CTS by changing the number of OPERABLE channels per Function from one to two.

This change is acceptable because the ITS reflects the requirements for diversity and redundancy stated in Regulatory Guide 1.97, Revision 3, and NRC Generic Letter 82-33. This provides the operator an unambiguous source of information for decisions needed following design basis events. The change is designated as a more restrictive because the number of required channels for the indicated Functions is increased from one to two.

M05 CTS Table 3.3-10 does not require OPERABLE indication channels for Penetration Flow Path Containment Isolation Valve Position. ITS Table 3.3.17-1, Function 7 requires two channels per penetration flow path to be OPERABLE for each Penetration Flow Path Containment Isolation Valve Position. This requirement is modified by two footnotes, footnotes (a) and (b). Footnote (a) does not require position indication for isolation valves whose penetration is isolated by at least one closed and deactivated automatic valve, blind flange, or check valve with flow through the valve secured. Footnote (b) requires only one position indication channel per penetration flow path with only one installed control room indication channel. ITS 3.3.17 ACTION A has been added to cover the Condition when one or more of the above Functions have one required channel inoperable. ITS 3.3.17 Required Action A.1 allows 30 days to restore the required channel to OPERABLE status. If the Required Action and associated Completion Time of Condition A is not met, then ITS 3.3.17 Required Action B.1 requires the immediate initiation of the action specified in Specification 5.6.5. ITS 3.3.17 ACTION C has been added to cover the Condition when one or more Function have two required channels inoperable. ITS 3.3.17 Required Action C.1 requires restoration of one channel to OPERABLE status within 7 days. If the Required Action and associated Completion Time of Condition C cannot be met, then ITS 3.3.17 Condition D must entered, which will then require entry into Condition E. ITS 3.3.17 Required Action E.1 will require the unit to be in MODE 3 within 6 hours and ITS 3.3.17 Required Action E.2 will require the unit to be MODE 4 within 12 hours. A Note has been added to the ACTIONS to allow separate Condition entry for each Function. In addition, separate Condition entry is allowed within a Function for Function 7 on a penetration flow path basis, since the titles of the Function includes the term "per Penetration Flow Path." In addition, SRs are added for this Function. These SRs are a CHANNEL CHECK for each required instrumentation channel that is normally energized (SR 3.3.17.1) and a CHANNEL CALIBRATION (SR 3.3.17.3). This changes the CTS by adding new Functions, Footnotes, a Note, applicable ACTIONS, and SRs.

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

This change is acceptable because these instruments are Category 1. The change is designated as more restrictive because the new instrumentation function is added to the Technical Specifications.

RELOCATED SPECIFICATIONS

R01 CTS Table 3.3-10 provides requirements for Post-Accident Monitoring Instrumentation channels. Each individual post accident monitoring parameter has a specific purpose; however, the general purpose for all accident monitoring instrumentation is to ensure sufficient information is available following an accident to allow an operator to verify the response of automatic safety systems, and to take preplanned manual actions to accomplish a safe shutdown of the plant.

The NRC position on application of the screening criteria to post-accident monitoring instrumentation is documented in a letter dated May 9, 1988 from TE Murley (NRC) to W.S. Wilgus (B&W Owner Group). The screening criteria are now incorporated into 10 CFR 50.36(c)(2)(ii). The NRC position taken was that the post-accident monitoring instrumentation table list should contain, on a plant specific basis, all Regulatory Guide 1.97 Type A instruments specified in the plant's Safety Evaluation Report (SER) on Regulatory Guide 1.97, and all Regulatory Guide 1.97 Category 1 instruments. Accordingly, this position has been applied to the Davis-Besse Regulatory Guide 1.97 instruments. Those instruments meeting these criteria have remained in Technical Specifications. The instruments not meeting these criteria will be relocated from the Technical Specifications to the Technical Requirements Manual (TRM).

A review of the Davis-Besse UFSAR and the NRC Regulatory Guide 1.97 Safety Evaluation for Davis-Besse shows that the following CTS Table 3.3-10 Instruments do not meet Category 1 or Type A requirements.

Instrument 10	RC System Subcooling Margin Monitor
Instrument 11	PORV Position Indicator
Instrument 12	PORV Block Valve Position Indicator
Instrument 13	Pressurizer Safety Valve Position Indicator
Instrument 15	Containment Normal Sump Level

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. These instruments are not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA). These instruments do not meet criterion 1.

2. The monitored parameters are not process variables, design features, or operating restrictions that are initial conditions of a DBA or transient. These instruments do not meet criterion 2.

3. These instruments are not part of a primary success path in the mitigation of a DBA or transient. These instruments do not meet criterion 3.

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

4. These instruments are not structures, systems, or components which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in B&W Owners Group Technical Report 47-1170689-00 (Appendix A, pages A-37 through A-43), the loss of the above listed instruments were found to be non-significant risk contributors to core damage frequency and offsite releases. Davis-Besse has reviewed this evaluation, considers it applicable to Davis-Besse Nuclear Power Station, and concurs with the assessment. These instruments do not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met for instruments which do not meet Regulatory Guide 1.97 Type A variable requirements for non-Type A, Category 1, variable requirements, their associated LCO and Surveillances may be relocated out of the Technical Specifications. The Technical Specification requirements for these instruments will be relocated to the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a relocation because the LCO requirements for these instruments did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and have been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 3 – Relaxation of Completion Time)* CTS 3.3.3.6 Action a requires placing the plant in HOT SHUTDOWN within the next 12 hours if an inoperable PAM instrumentation channel has not been restored within the allowed outage time. ITS 3.3.17 Required Action B.1 requires the initiation of a report to the NRC if one inoperable PAM instrumentation channel (for Functions in Table 3.3.17-1 other than Functions 13, 14, and 15) has not been restored within the associated Completion Time. This changes the CTS by requiring a report be made in accordance with ITS 5.6.5 instead of requiring the unit to be in HOT SHUTDOWN with one required channel of a Function inoperable and not restored within the allowed outage time.

The purpose of these shutdown requirements is to limit plant operation in the MODES of Applicability when required equipment is inoperable. This change is acceptable due to the passive function of these instruments and the operator's ability to respond to an accident utilizing redundant or alternate instruments and methods for monitoring. The change is also considered acceptable since the probability of an event requiring the operator to utilize this instrumentation to respond to the event is low. The addition of a report is acceptable because it advises the NRC of the cause of the inoperability and the plans and schedule for restoring the instrumentation channel to OPERABLE status. This change is designated as less restrictive because additional time is allowed to restore instrument channels to OPERABLE status than was allowed in the CTS.

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DISCUSSION OF CHANGES
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

L02 *(Category 1 – Relaxation of LCO Requirements)* CTS Table 3.3-10 Instrument 14 requires 3 channels of Borated Water Storage Tank (BWST) Level to be OPERABLE. ITS Table 3.3.17-1 Function 16 only requires two channels to be OPERABLE. This changes the CTS by reducing the number of PAM BWST Level channels required to be OPERABLE from 3 to 2.

The purpose of the Borated Water Storage Tank PAM instrumentation is to provide the control room operator with indication of the Borated Water Storage Tank level in order to take operator actions to transfer suction to the containment sump. This change is acceptable because two OPERABLE channels provides redundant requirements for the parameter. If one should fail the other is available to take the appropriate actions. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 7 – Relaxation of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.3-10 Instrument 14 (BWST Level) requires performance of a Channel Check for the BWST Level every 12 hours. ITS Table 3.3.17-1 Function 16 requires performance of a CHANNEL CHECK for the BWST every 31 days. This changes the CTS by extending the Surveillance interval for performance of CHANNEL CHECK of the BWST Level Instrument 14 instrumentation from 12 hours to 31 days.

The purpose of the CHANNEL CHECK is to perform a qualitative assessment to ensure that gross instrumentation failure has not occurred. This change is acceptable due to the passive function of these instruments and the operator's ability to respond to an accident utilizing redundant or alternate instruments and methods for monitoring. The change is also considered acceptable since the probability of an event requiring the operator to utilize this instrumentation to respond to the event is low. This change extends the Surveillance Frequency for performance of a CHANNEL CHECK of the BWST Level instrument channels from 12 hours to 31 days. This change is acceptable since a Frequency of 31 days for the CHANNEL CHECK of this instrumentation provides adequate assurance that a gross failure will be detected since operating experience demonstrates that channel failure is rare. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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

CTS

3.3 INSTRUMENTATION

3.3.17 Post Accident Monitoring (PAM) Instrumentation

3.3.3.6, Table 3.3-10 LCO 3.3.17 The PAM instrumentation for each Function in Table 3.3.17-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

DOC A02

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.3.3.6 Action A	A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
3.3.3.6 Action A	B. Required Action and associated Completion Time of Condition A not met.	B.1 INSERT 1 Initiate action in accordance with Specification 5.6.5. INSERT 2	Immediately (12) (12)
3.3.3.6 Action A	C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
3.3.3.6 Action A	D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.17-1 for the channel.	Immediately

(12) **INSERT 1**

----------NOTE----------
Only applicable to Functions other than Functions 13, 14, and 15.
---

(12) **INSERT 2**

OR		
B.2	----------NOTE---------- Only applicable to Functions 13, 14, and 15. ---------- Enter the Condition referenced in Table 3.3.17-1 for the channel.	Immediately

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.3.3.6 Action A	E. As required by Required Action D.1 and referenced in Table 3.3.17-1. (B.2 or)	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours	(12)
	F. As required by Required Action D.1 and referenced in Table 3.3.17-1.	F.1 Initiate action in accordance with Specification 5.6.5.	Immediately	(11)

SURVEILLANCE REQUIREMENTS

(except where identified in the SR)

----------NOTE----------

4.3.3.6 These SRs apply to each PAM instrumentation Function in Table 3.3.17-1. (1)

	SURVEILLANCE		FREQUENCY
Table 4.3-10 Functions 1 – 9, 14, and 16 - 21	SR 3.3.17.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
Table 4.3-10 Functions 6.b, 7, 8, 9, 14, 18, 20, 21	SR 3.3.17.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
		Perform CHANNEL CALIBRATION.	[18] months (for Functions 1, 8.b, 11,12, 14, 15, 16, and 17) (1) (2)

INSERT 3 (1)

CTS

1

INSERT 3

Table 4.3-10 Functions 1-5, 6.a, 16, 17, 19; DOC M05

SR 3.3.17.3	Perform CHANNEL CALIBRATION for Functions 2, 3, 4, 5, 6, 7, 8.a, 9, 10, and 13.	24 months

Table 3.3.17-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

		FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1 (B.2 or) (12)
20		1. Wide Range Neutron Flux	2	E
2		2. RCS Hot Leg Temperature (Reactor Coolant Loop Outlet)	2 per loop	E
		3. RCS Cold Leg Temperature	2 per loop	E (4)
3	3 → 4	RCS Pressure (Wide Range) (Reactor Coolant Loop)	2 (per loop)	E (5)
19	4 → 5	Reactor Vessel Water Level (Coolant Hot Leg) (Wide Range)	2	E → F (11)
16	5 → 6	Containment Sump Water Level (Wide Range)	2	E
17	6 → 7	Containment Pressure (Wide Range)	2	E (10)
DOC M05	7 → 8	Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path[a][b]	E (11)
6	8 → 9	Containment Area Radiation (High Range) (Vessel Post-Accident)	2	F (10) (11) INSERT 4
4	9 → 10	Pressurizer Level	2	E
5	10 → 11	Steam Generator Water Level (Startup Range)	2 per SG	E (4)
		12. Condensate Storage Tank Level	2	E
18	11 → 13	Core Exit Temperature (Incore Thermocouples)	2 independent sets of 5[c] (per core quadrant)	E (6)
9	12 → 14	Emergency Feedwater Flow (Auxiliary) (Rate)	2 (per SG)	E (7) INSERT 5 (9)

REVIEWER'S NOTE

Table 3.3.17-1 shall be amended for each unit as necessary to list all U.S. NRC Regulatory Guide 1.97, Type A instruments and all U.S. NRC Regulatory Guide 1.97, Category I, non-Type A instruments in accordance with the unit's U.S. NRC Regulatory Guide 1.97, Safety Evaluation Report. (8)

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

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

(c) The subcooling margin monitor takes the average of the five highest CETs for each of the inadequate core cooling monitor (ICCM) trains. (6)

Two of the four total channels are required to be OPERABLE. (10)

CTS

Table 3.3-10
Table 4.3-10

(10) **INSERT 4**

				(11)
6	a.	Containment High Range Radiation	(c)	E
6	b.	Containment Wide Range Noble Gas	(c)	E

(9) **INSERT 5**

1	13.	Steam Generator Outlet Steam Pressure	1 per SG	E
7	14.	High Pressure Injection Flow	1 per injection line	E
8	15.	Low Pressure Injection (Decay Heat Removal) Flow	1 per train	E
14	16.	Borated Water Storage Tank Level	2	E
21	17.	Neutron Flux (Source Range)	2	E

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

1. ITS SR 3.3.17.3, a CHANNEL CALIBRATION at a 24 month Frequency, has been added consistent with the current licensing basis. In addition, the Note to the Surveillances and SR 3.3.17.2 has been modified for consistency.
2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature.

4. ISTS Table 3.3.17-1 Functions 3 (RCS Cold Leg Temperature) and 12 (Condensate Storage Tank Level) have been deleted. Based on correspondence between John F. Stolz, Chief, Operating Reactors Branch #4, USNRC and Joe Williams, Jr. Vice President Nuclear, Toledo Edison Company, "Conformance to Regulatory Guide 1.97 – Davis-Besse Nuclear Power Station, Unit No. 1," dated October 16, 1985, RCS Cold Leg Water Temperature and Condensate Storage are not required.

5. ISTS Table 3.3.17-1 Function 2 has been modified to state that the Required Channels are on a per loop basis. The change is consistent with the CTS.

6. ISTS Table 3.3.17-1 Function 13 (ITS Function 11) has been modified to state that the Required Channels are on a per core quadrant basis. Additionally, since the Required Channels are not independent set of 5, Note C has been deleted. The change is consistent with the CTS.

7. ISTS Table 3.3.17-1 Function 14 (ITS Function 12)has been modified to state that the Required Channels are on a per steam generator basis. The change is consistent with the CTS.

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

9. Specific Functions have been added to Table 3.3.17-1. Additionally, these functions have been added to the appropriate Surveillance Requirements. These Functions are categorized at Davis-Besse as Type A and/or Category 1 Regulatory Guide 1.97 instruments. This change is consistent with the CTS.

10. ITS Table 3.3.17-1 Function 8 has been modified to be consistent with current licensing basis.

11. The allowance to not shut down the Unit provided in ISTS 3.3.17 ACTION F has not been adopted in the Davis-Besse ITS. When all required channels of a PAM Function are inoperable and at least one channel is not restored within the requirements of ITS 3.3.17 ACTION C, a shutdown will be required in accordance with ITS 3.3.17 ACTION D. This is consistent with current licensing basis.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

12. A new Required Action, ITS 3.3.17 Required Action B.2, has been added to cover those PAM Instrumentation Functions that have only one required channel. Currently, ISTS 3.3.17 ACTIONS A and B are written to cover the inoperability of one channel for a Function. However, these ACTIONS are written with the understanding that all the Functions have two required channels. Thus, when one of the two channels are inoperable and not restored within the 30 day Completion Time of ISTS 3.3.17 ACTION A, ISTS 3.3.17 ACTION B is entered and allows the unit to continue to operate as long as a report is submitted. This Action is not appropriate for Functions that have only one required channel. Therefore, ITS Required Action B.2 has been added to direct entry into ITS 3.3.17 ACTION D (ISTS 3.3.17 ACTION D), which then subsequently through Table 3.3.17-1 directs entry into ITS 3.3.17 ACTION E (ISTS 3.3.17 ACTION E), an ACTION that requires a unit shutdown. For clarity, a Note is also added to ITS 3.3.17 Condition B.2 stating that it is only applicable to Functions 13, 14, and 15, the three Functions that require only one channel to be OPERABLE, and a Note has been added to ITS 3.3.17 Required Action B.1 stating that Required Action B.1 is only applicable to Functions other than Functions 13, 14, and 15. Also, ITS 3.3.17 Condition E and Table 3.3.17-1 has been modified to include new Required Action B.2.

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

B 3.3 INSTRUMENTATION

B 3.3.17 Post Accident Monitoring (PAM) Instrumentation

BASES

BACKGROUND

The primary purpose of the PAM instrumentation is to display unit variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Events.

The OPERABILITY of the accident monitoring instrumentation ensures that there is sufficient information available on selected unit parameters to monitor and to assess unit status and behavior following an accident.

The availability of accident monitoring instrumentation is important so that responses to corrective actions can be observed, and so that the need for and magnitude of further actions can be determined. These essential instruments are identified by [Unit Specific Documents] (Ref. 1) addressing the recommendations of Regulatory Guide 1.97 (Ref. 2) as required by Supplement 1 to NUREG-0737 (Ref. 3). 1

UFSAR Section 7.13

The instrument channels required to be OPERABLE by this LCO equate to two classes of parameters identified during unit specific implementation of Regulatory Guide 1.97 as Type A and Category [I] variables. 1 3

Type A variables are included in this LCO because they provide the primary information that permits the control room operator to take specific manually controlled actions that are required when no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Accidents (DBAs). Because the list of Type A variables widely differs between units, Table 3.3.17-1 in the accompanying LCO contains only those examples of Type A variables that may also be Category I. 2

Category I variables are the key variables deemed risk significant because they are needed to: 2

- Determine whether systems important to safety are performing their intended functions,

BASES

BACKGROUND (continued)

- Provide information to the operators that will enable them to determine the potential for causing a gross breach of the barriers to radioactivity release, and
- Provide information regarding the release of radioactive materials to allow for early indication of the need to initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

2

These key variables are identified by unit specific Regulatory Guide 1.97 analysis (Ref. 1). This analysis identifies the unit specific Type A and Category I variables and provides justification for deviating from the NRC proposed list of Category I variables. 3 6

1 guidance in Reference 2

----------REVIEWER'S NOTE----------
Table 3.3.17-1 provides a list of variables typical of those identified by a unit specific Regulatory Guide 1.97 analysis (Ref. 1). Table 3.3.17-1 in unit specific Technical Specifications shall list all Type A and Category I variables identified by the unit specific Regulatory Guide 1.97 analysis, as amended by the NRC's Safety Evaluation Report (SER).

The specific instrument Functions listed in Table 3.3.17-1 are discussed in the LCO Section
---------- 4

APPLICABLE SAFETY ANALYSES

The PAM instrumentation ensures the availability of information so that the control room operating staff can:

- Perform the diagnosis specified in the emergency operating procedures. These variables are restricted to preplanned actions for the primary success path of DBAs (e.g., loss of coolant accident (LOCA)). 5 2
- Take the specified, preplanned, manually controlled actions, for which no automatic control is provided, which are required for safety systems to accomplish their safety functions. 5 2
- Determine whether systems important to safety are performing their intended functions. 5

All changes are 1 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES (continued)

- Determine the potential for causing a gross breach of the barriers to radioactivity release; 5
- Determine if a gross breach of a barrier has occurred; and 5
- Initiate action necessary to protect the public and estimate the magnitude of any impending threat.

The unit specific Regulatory Guide 1.97 analysis documents the process that identifies Type A and Category 1 non-Type A variables. 3

PAM instrumentation that meets the definition of Type A in Regulatory Guide 1.97 satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). Category 1, non-type A, instrumentation must be retained in Technical Specifications because it is intended to assist operators in minimizing the consequences of accidents. Therefore, Category 1 non-Type A variables are important for reducing public risk. 3 3

LCO

LCO 3.3.17 requires two OPERABLE channels for ~~all but one~~ most Functions to ensure no single failure prevents the operators from being presented with the information necessary to determine the status of the unit and to bring the unit to, and maintain it in, a safe condition following that accident. 6

~~Furthermore, provision of two channels allows a CHANNEL CHECK during the post accident phase to confirm the validity of displayed information. [More than two channels may be required at some units if the Regulatory Guide 1.97 analysis determines that failure of one accident monitoring channel results in information ambiguity (i.e., the redundant displays disagree) that could lead operators to defeat or to fail to accomplish a required safety function.]~~ 6

One ~~The~~ exception to the two channel requirement is Penetration Flow Path Containment Isolation Valve position. In this case, the important information is the status of the containment penetrations. The LCO requires one position indicator for each active containment isolation valve. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active valve and prior knowledge of the passive valve or via system boundary status. If a normally active containment isolation valve is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE. 3 6

BASES

LCO (continued)

The following list is a discussion of the specified instrument Functions listed in Table 3.3.17-1. These discussions are intended as examples of what should be provided for each Function when the unit specific list is prepared. (6)

1. Wide Range Neutron Flux

is a Category 1 variable

Wide Range Neutron Flux indication is provided to verify reactor shutdown. [For this unit, the Wide Range Neutron Flux channels consist of the following:] (1)

instrumentation

INSERT 1

2, ~~3~~. Reactor Coolant System (RCS) Hot and Cold Leg Temperature (7)

monitors the hot leg and is a Type A

Loop Outlet

RCS Hot and Cold Leg Temperature instrumentation are Category ~~1~~ variables provided for verification of core cooling and long term surveillance. Reactor outlet temperature inputs to the RPS are provided by two fast response resistance elements and associated transmitters in each loop. The channels provide indication over a range of 32°F to 700°F. (3) (7) (6)

1

INSERT 2

Reactor Coolant

120

920

(6)

3 → ~~4~~. RCS Pressure (Wide Range) (7)

Loop

is a Category 1 variable

Reactor Coolant

RCS Pressure (Wide Range) instrumentation is provided for verification of core cooling and RCS integrity long term surveillance. (6)

reactor coolant

Wide range RCS loop pressure is measured by pressure transmitters with a span of 0 psig to 3000 psig. The pressure transmitters are located outside the RB. Redundant monitoring capability is provided by two trains of instrumentation. Control room indications are provided through the inadequate core cooling monitor (ICCM) plasma display. The inadequate core cooling plasma display is the primary indication used by the operator during an accident. Therefore, the accident monitoring specification deals specifically with this portion of the instrument string. (6)

in each loop measured by pressure transmitters with a span of 0 psig to 2500 psig

INSERT 3 (6)

In some units, RCS Pressure is a Type A variable because the operator uses this indication to monitor the cooldown of the RCS following a steam generator (SG) tube rupture or small break LOCA. Operator actions to maintain a controlled cooldown, such as (6)

6 **INSERT 1**

two channels; each consisting of a fission chamber detector providing continuous indication at a PAM panel located in the control room. This signal is processed for a wide range of 1E-8 % power to 2E2 % power.

6 **INSERT 2**

Reactor Coolant Loop Outlet Temperature consists of two channels per reactor coolant loop. Each channel consists of a resistance temperature detector located in thermowell providing continuous indication on the PAM panel in the control room.

6 **INSERT 3**

on the PAM panel and other control panels in the control room.

BASES

LCO (continued)

adjusting SG pressure or level, would use this indication. In addition, high pressure injection (HPI) flow is throttled based on RCS Pressure and subcooled margin. For some small break LOCAs, low pressure injection (LPI) may actuate with system pressure stabilizing above the shutoff head of the LPI pumps. If this condition exists, the operator is instructed to verify HPI flow and then terminate LPI flow prior to exceeding 30 minutes of LPI pump operation against a deadhead pressure. RCS Pressure, in conjunction with LPI flow, is also used to determine if a core flood line break has occurred. 6

4 → 5. Reactor Vessel Water Level (Wide Range) is a Category 1 variable 7 6

Coolant Hot Leg

Reactor Vessel Water Level instrumentation is provided for verification and long term surveillance of core cooling. The reactor vessel level monitoring system provides a direct measurement of the collapsed liquid level above the fuel alignment plate. The collapsed level represents the amount of liquid mass that is in the reactor vessel above the core. Measurement of the collapsed water level is selected because it is a direct indication of the water inventory.

INSERT 4 6

The collapsed level is obtained over the same temperature and pressure range as the saturation measurements, thereby encompassing all operating and accident conditions where it must function. Also, it functions during the recovery interval. Therefore, it is designed to survive the high steam temperature that may occur during the preceding core recovery interval.

The level range extends from the top of the vessel down to the top of the fuel alignment plate. The response time is short enough to track the level during small break LOCA events. The resolution is sufficient to show the initial level drop, the key locations near the hot leg elevation, and the lowest levels just above the alignment plate. This provides the operator with adequate indication to track the progression of the accident and to detect the consequences of its mitigating actions or the functionality of automatic equipment.

[For this unit, the Reactor Vessel Water Level channels consist of the following:] INSERT 4A 6

6 **INSERT 4**

The Reactor Coolant Hot Leg Level (Wide Range) provides a means to trend reactor coolant inventory and provides supplementary information to assist the operator in the assessment of the effectiveness of automatic safety functions.

6 **INSERT 4A**

two channels (one per hot leg); each with a differential pressure transmitter measuring the differential pressure between the top and bottom of the associated hot leg and compensating for the density of water. The sensing line fluid density compensation allows for variation in fluid density resulting from variation in the containment ambient temperature. This feature is accomplished by utilizing thermistor wire that tracks the entire length of the instrument reference leg. The signal is processed from a range of 0 inches to 968 inches. Level transmitters with a differential pressure range of 0 inches to 968 inches water measure the differential pressure between the upper tap reference leg (at the steam generator inlet) and the lower tap (hot leg at the reactor outlet). The transmitter and density compensation signal are sent to the plant computer. A computer algorithm takes these signals along with temperature and pressure signals and executes to determine actual hot leg level. The level can be accessed and displayed provided that the RCS pumps are off and rapid depressurization is not occurring.

BASES

LCO (continued)

5 → 6. Containment Sump Water Level (Wide Range) 7

is a Category 1 variable

Containment Sump Water Level (Wide Range) instrumentation is provided for verification and long term surveillance of RCS integrity. [For this unit, the Containment Sump Water Level instrumentation consists of the following:] INSERT 5 6 6

6 → 7. Containment Pressure (Wide Range) 7

is a Category 1 variable

Containment Pressure (Wide Range) instrumentation is provided for verification of RCS and containment OPERABILITY. [For this unit, Containment Pressure instrumentation consists of the following:] INSERT 6 1

7 → 8. Penetration Flow Path Containment Isolation Valve Position 7

(excluding check valves)

Penetration Flow Path Containment Isolation Valve (CIV) Position is provided for verification of containment OPERABILITY. a Category 1 variable

CIV position is provided for verification of containment integrity. In the case of CIV position, the important information is the isolation status of the containment penetration. The LCO requires one channel of valve position indication in the control room to be OPERABLE for each active CIV in a containment penetration flow path, i.e., two total channels of CIV position indication for a penetration flow path with two active valves. For containment penetrations with only one active CIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration via indicated status of the active valve, as applicable, and prior knowledge of passive valve or system boundary status. If a penetration flow path is isolated, position indication for the CIV(s) in the associated penetration flow path is not needed to determine status. Therefore, the position indication for valves in an isolated penetration flow path is not required to be OPERABLE. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path. INSERT 7 8

Penetration Flow Path

[For this plant, the CIV position PAM instrumentation consists of the following:] 1

INSERT 7A

6 **INSERT 5**

two channels. Each channel consists of a level transmitter with output to an indicator. The wide range containment water level monitors have an indicator on the PAM panel in the control room with a range of 0 feet to 55 feet.

6 **INSERT 6**

two channels. Each channel consists of a pressure transmitter with output to an indicator on the PAM panel in the control room. The indicators provide indication with a range of 0 psia to 200 psia.

8 **INSERT 7**

Note (a) to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

1 **INSERT 7A**

position switches mounted on the valves for the positions to be indicated, associated wiring, and control room indicating lamps for active CIVs (i.e., automatic CIV - check valves are not required to have position indication). These position switches and associated indicators in the control room provide the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with these portions of the instrument channel.

BASES

LCO (continued)

8 → 9. Containment Area Radiation (High Range) 6

Vessel Post-Accident

is a Category 1 variable

Containment Area Radiation (High Range) instrumentation is provided to monitor the potential for significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans. [For this unit, the Containment Area Radiation instrumentation consists of the following:] INSERT 8 6

9 → 10. Pressurizer Level 6

is a Type A and Category 1 variable

aid in

ing

Emergency Core Cooling Systems (ECCS)

Pressurizer Level instrumentation is used to determine whether to terminate safety injection (SI), if still in progress, or to reinitiate SI if it has been stopped. Knowledge of pressurizer water level is also used to verify the unit conditions necessary to establish natural circulation in the RCS and to verify that the unit is maintained in a safe shutdown condition. [For this unit, the Pressurizer Level instrumentation consists of the following:] INSERT 9 6

ECCS 6

Startup Range

10 → 11. Steam Generator Water Level 7

is a Category 1 variable

Startup Range

Steam Generator Water Level instrumentation is provided to monitor operation of decay heat removal via the SG. The indication of SG level is the extended startup range level instrumentation, covering a span of 6 inches to 394 inches above the lower tubesheet. The measured differential pressure is displayed in inches of water at 68°F. Temperature compensation for this indication is performed manually by the operator. Redundant monitoring capability is provided by two trains of instrumentation. The uncompensated level signal is input to the unit computer, a control room indicator, and the Emergency Feedwater (EFW) Control System. 7 6 # 9 INSERT 10 6

SG level indication is used by the operator to manually raise and control SG level to establish boiler condenser heat transfer. Operator action is initiated on a loss of subcooled margin. Feedwater flow is increased until the indicated extended startup range level reaches the boiler condenser setpoint.

6 **INSERT 8**

four channels. There are two channels of Containment High Range Radiation. Each channel consists of two gamma photon radiation detectors with a calibrated range of 1E0 R/hr to 1E8 R/hr. Continuous indicators have been provided in the PAM panel located in the control room. In addition, both strings provide an output to recorders in the radiation monitoring panels located in the control room. There are two channels of Containment Wide Range Noble Gas, which detect and measure the activity level in the containment atmosphere. Each channel utilizes three detectors to cover the gaseous activity range from 1E-7 μCi/cc to 1E5 μCi/cc. As noted in Footnote (c) to Table 3.3.17-1, only two of the four channels are required to be OPERABLE.

6 **INSERT 9**

two channels. Each channel consists of a pressurizer level transmitter with an indicator in the control room. The indicators have a 0 inches to 320 inches range.

6 **INSERT 10**

Steam Generator Startup Range Level consists of two channels per steam generator. Two readouts are 0 inches to 250 inches of water, two are 0 inches to 300 inches of water. Indicators are provided on the PAM panel and another control panel in the control room.

If the Steam and Feedwater Rupture Control System has actuated, and either the Safety Features Actuation System (SFAS) level 2 has actuated or if Subcooling Margin is not adequate, then the Auxiliary Feedwater (AFW) System is used to maintain steam generator water level at the SFAS high level setpoint, to promote boiler-condenser heat transfer. The Main Feedwater System can be used, if available, if the AFW System is not available.

BASES

LCO (continued)

12. Condensate Storage Tank (CST) Level

CST Level instrumentation is provided to ensure a water supply for EFW. The CST provides the assured, safety grade water supply for the EFW System. The CST consists of two identical tanks connected by a common outlet header. Inventory is monitored by a 0 inch to 144 inch level indication for each tank. CST Level is displayed on a control room indicator, strip chart recorder, and unit computer. In addition, a control room annunciator alarms on low level. 7

CST Level is the primary indication used by the operator to identify loss of CST volume and replenish the CST or align suction to the EFW pumps from the hotwell.

11 → 13. Core Exit Temperature 7

Incore Thermocouples

a Category 1 variable

Core Exit Temperature is provided for verification and long term surveillance of core cooling. An evaluation was made of the minimum number of valid core exit thermocouples (CETs) necessary for inadequate core cooling detection. The evaluation determined the reduced complement of CETs necessary to detect initial core recovery and to trend the ensuing core heatup. The evaluations account for core nonuniformities and cold leg injection. Based on these evaluations, adequate or inadequate core cooling detection is ensured with two sets of five valid CETs. 6

INSERT 11 6

The subcooling margin monitor takes the average of the five highest CETs for each of the ICCM trains. Two channels ensure that a single failure will not disable the ability to determine the representative core exit temperature. 6

12 → 14. Emergency Feedwater Flow 7

Auxiliary

Rate

a Category 1 variable

A

EFW Flow instrumentation is provided to monitor operation of decay heat removal via the SGs. The EFW Flow to each SG is determined from a differential pressure measurement calibrated to a span of 0 gpm to 1200 gpm. Redundant monitoring capability is provided by two independent trains of instrumentation for each SG. Each differential pressure transmitter provides an input to a control room indicator and the unit computer. 6

A 6

1000 6

associated with each SG

One

6

on the PAM panels and the other provides indication to the control room panels

6 **INSERT 11**

assessing the existence of inadequate core cooling.

There are two channels of incore thermocouples. Each channel consists of two thermocouples from each reactor quadrant, for a total of eight, selectable for each indicator and T_{sat} meter located on the PAM panels. The thermocouples are redundant to the hot leg RTD's. The switch and temperature indicators are located in the control room. The range of the thermocouples is 0°F to 2300°F.

BASES

LCO (continued)

A

EFW Flow is the primary indication used by the operator to determine the need to throttle flow during an SLB accident to prevent the EFW pumps from operating in runout conditions. EFW Flow is also used by the operator to verify that the EFW System is delivering the correct flow to each SG. However, the primary indication used by the operator to ensure an adequate inventory is SG level. 6 A

RCS pressure is used by the operator to monitor the cooldown of the RCS following an SG tube rupture or small break LOCA. In addition, HPI flow is throttled based on RCS pressure and subcooled margin. The indication is also used to identify an LPI pump operating at system pressures above its shutoff head. If this condition exists, the operator is instructed to verify this condition exists, to verify HPI flow, and to terminate LPI flow prior to exceeding 30 minutes of LPI pump operation against a deadhead pressure. RCS pressure, in conjunction with LPI flow, is also used to determine if a core flood line break has occurred. INSERT 12 6

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and preplanned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event occurring that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

A Note is 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 3.3.17-1. The Completion Time(s) of the inoperable channels of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

When one or more Functions have one required channel inoperable, the inoperable channel must be restored to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience. This takes into account the remaining OPERABLE channel (or, in the case of a Function that has only one required channel, other non-Regulatory Guide 1.97 instrument channels to monitor the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

6 **INSERT 12**

13. Steam Generator Outlet Steam Pressure

    Steam Generator Outlet Steam Pressure is a Category 1 variable provided to monitor operation of decay heat removal via the SG. Steam Generator Outlet Steam Pressure instrumentation consists of two (one per Steam Generator) channels with indicators in the control room and corresponding plant computer points. The range of these channels is 0 psig to 1200 psig.

14. High Pressure Injection Flow

    High Pressure Injection Flow instrumentation is a Type A and Category 1 variable provided to monitor the status of the high pressure injection. There is one channel for each HPI injection line with indicators in the control room. The channels have a 0 gpm to 500 gpm range.

15. Low Pressure Injection (Decay Heat Removal) Flow

    Low Pressure Injection (Decay Heat Removal) Flow is a Type A and Category 1 variable used to monitor the status of the low pressure injection (decay heat removal) train. There are two channels; one for each train with indicators in the control room. These channels have a 0 gpm to 5000 gpm range.

16. Borated Water Storage Tank Level

    Borated Water Storage Tank (BWST) Level is a Type A and Category 1 variable used to monitor the level in the BWST. Level instrumentation consists of four level strings with indicators in the control room. Only two channels are required to satisfy this LCO. The range of these strings is 0 feet to 50 feet.

17. Neutron Flux (Source Range)

    Source Range Neutron Flux is a Category 1 variable provided to verify the reactor is subcritical. Source Range Neutron Flux instrumentation consists of two channels. Each channel consists of a fission chamber with a range from 1E-1 cps to 1E5 cps. Continuous indicators have been provided in the PAM panels located in the control room.

BASES

ACTIONS (continued)

Condition B applies when the Required Action and associated Completion Time of Condition A are not met.

and B.2

B.1

immediate

which

7

8

"Post Accident Monitoring Report,"

9

into the cause

Required Action B.1 specifies initiation of action described in Specification 5.6.5, that requires a written report to be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability and given the likelihood of unit conditions that would require information provided by this instrumentation. The Completion Time of "Immediately" for Required Action B.1 ensures the requirements of Specification 5.6.5 are initiated.

INSERT 13

7

7

s

and B.2

or the proper Condition dictated by Table 3.3.17-1 is entered.

C.1

When one or more Functions have two required channels inoperable (i.e., two channels inoperable in the same Function), one channel in the Function should be restored to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrumentation action operation and the availability of alternative means to obtain the required information. Continuous operation with two required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance of qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur.

D.1

Required Action D.1 directs entry into the appropriate Condition referenced in Table 3.3.17-1. The applicable Condition referenced in the Table is Function dependent. Each time an inoperable channel has not met the Required Action of Condition C and the associated Completion Time has expired, Condition D is entered for that channel and provides for transfer to the appropriate subsequent Condition.

7 **INSERT 13**

As Noted, Required Action B.1 is only applicable for Functions other than Functions 13, 14, and 15.

Required Action B.2 directs entry in the appropriate Condition referenced in Table 3.3.17-1. The applicable Condition in the Table is Function dependent. Each time an inoperable channel has not met the Required Action of Condition A and the associated Completion Time has expired, Required Action B.2 is entered for that channel and provides for transfer to the appropriate subsequent Condition. As noted, Required Action B.2 is only applicable for Functions 13, 14, and 15, as these are the only Functions with only one required channel. Since these Functions have only one channel, continued operations past the 30 days of ACTION A is not allowed.

BASES

ACTIONS (continued)

(for all other Functions)

A (for Functions 13, 14, and 15) or

E.1

If the Required Action and associated Completion Time of Condition C is not met and Table 3.3.17-1 directs entry into Condition E, the unit must be brought to a MODE in which the requirements of this LCO do not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. 7

F.1

At this unit, alternative means of monitoring Containment Area Radiation have been developed and tested. These alternative means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allowed time.

If these alternative means are used, the Required Action is not to shut the unit down, but rather to follow the directions of Specification 5.6.5, in the Administrative Controls section of the Technical Specifications. The report provided to the NRC should discuss the alternative means used, describe the degree to which the alternative means are equivalent to the installed PAM channels, justify the areas in which they are not equivalent, and provide a schedule for restoring the normal PAM channels. 7

In the case of reactor vessel level, Reference 4 determined that the appropriate Required Action was not to shut the unit down, but rather to follow the directions of Specification 5.6.5.

[At this unit, the alternative monitoring provisions consist of the following:]

BASES

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs apply to each PAM instrumentation Function in Table 3.3.17-1. except as stated in the SR (7)

SR 3.3.17.1

Performance of the CHANNEL CHECK once every 31 days for each required instrumentation channel that is normally energized ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel with 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The high radiation instrumentation should be compared with similar unit instruments located throughout the unit. If the radiation monitor uses keep alive sources or check sources OPERABLE from the control room, the CHANNEL CHECK should also note the detector's response to these sources. (7)

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. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Offscale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

The Frequency is based on unit 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 this LCO's required channels.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.17.2

A CHANNEL CALIBRATION is performed every [18] months or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. This test verifies the channel responds to measured parameters within the necessary range and accuracy. (1)

A Note clarifies that the neutron detectors are not required to be tested as part of the CHANNEL CALIBRATION. There is no adjustment that can be made to the detectors. Furthermore, adjustment of the detectors is unnecessary because they are passive devices, with minimal drift. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration and the monthly axial channel calibration. (7)

High Range Radiation Monitors

For the Containment Area Radiation instrumentation, a CHANNEL CALIBRATION may consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr, and a one point calibration check of the detector below 10 R/hr with a gamma source. (7) INSERT 14

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. (6)

Incore

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the Core Exit thermocouple sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element. (6)

The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift. (6) (1) (7) INSERT 15

REFERENCES

1. [Unit Specific Documents (e.g., FSAR, NRC Regulatory Guide 1.97 SER letter).] (6) UFSAR, Section 7.13.
2. Regulatory Guide 1.97.
3. NUREG-0737, 1979.
4. 32-1177256-00, "Technical Basis for Reactor Vessel Level Indication System (RVLIS) Action Statement," April 10, 1990. (7)

6 **INSERT 14**

For the Containment Wide Range Noble Gas Radiation monitors, a CHANNEL CALIBRATION may consist of an electronic calibration of the channel, not including the detector for ranges up to 1.0E5 uCi/cc. A three point check of the detector is performed using the Kaman Calibration Button Sources.

7 **INSERT 15**

SR 3.3.17.3

A CHANNEL CALIBRATION is performed every 24 months. CHANNEL CAILIBRATION is a complete check of the instrument channel, including the sensor. This test verifies the channel responds to measured parameters within the necessary range and accuracy.

The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by an assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.17 BASES, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. The Background section of ISTS 3.3.17 Bases contains information that describes the Type A variables and Category 1 variables. This same descriptive information is effectively duplicate descriptive information in the Background section of the Bases and is deleted.

3. Grammatical/editorial error corrected.

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

5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

6. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

7. Changes are made to reflect changes made to the Specification.

8. Changes made to reflect the Specification.

9. Editorial change for clarity and consistency.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.17, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 18

ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

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

A01

ITS

INSTRUMENTATION

REMOTE SHUTDOWN INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.18 3.3.3.5.1 The remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room. LA01 LA02

3.3.3.5.2 The control circuits and transfer switches required for a serious control room or cable spreading room fire shall be OPERABLE. R01

APPLICABILITY: MODES 1, 2 and 3.

ACTION: Add proposed ACTIONS Note A02

ACTIONS A and B a. With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours. Add proposed Required Action B.1 M01

b. With one or more control circuits or transfer switches required for a serious control room or cable spreading room fire inoperable, restore the inoperable circuit(s) or switch(es) to OPERABLE status within 30 days, or prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the circuit(s) or switch(es) to OPERABLE status. R01

c. The provisions of Specification 3.0.4 are not applicable. M02

SURVEILLANCE REQUIREMENTS

SR 3.3.18.1 SR 3.3.18.2 4.3.3.5.1 Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

4.3.3.5.2 At least once per REFUELING INTERVAL, verify each control circuit and transfer switch required for a serious control room or cable spreading room fire is capable of performing the intended function. R01

LA01

TABLE 3.3-9

REMOTE SHUTDOWN MONITORING INSTRUMENTATION

INSTRUMENT	READOUT LOCATION	MEASUREMENT RANGE	MINIMUM CHANNELS OPERABLE
1. Reactor Trip Breaker Indication	(a) 480v P&DC CH. 2 Switchgear Room	OPEN-CLOSE	(a) 1 (Trip Breaker A)
	(b) 480v E&DC CH. 1 Switchgear Room		(b) 1 (Trip Breaker B)
	(c) 480v P&DC CH. 2 Switchgear Room		(c) 1 (Trip Breaker C)
	(d) CRDC Cabinet Room		(d) 1 (Trip Breaker D)
2. Reactor Coolant Temperature - Hot Leg	Aux. Shutdown Panel	520-620 °F	1
3. Reactor Coolant System Pressure	Aux. Shutdown Panel	0-3000 psig	1
4. Pressurizer Level	Aux. Shutdown Panel	0-320 inches	1
5. Steam Generator Outlet Steam Pressure	Aux. Shutdown Panel	0-1200 psig	1/steam generator
6. Steam Generator Level Startup Range	Aux. Shutdown Panel	0-250 inches	1/steam generator
7. Control Rod Position Switches	Control Rod Drive Control Cabinets, System Logic Cabinet #4	0, 25, 50, 75 and 100%	1/rod

A01

LA01

TABLE 4.3-6

REMOTE SHUTDOWN MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	SR 3.3.18.1 CHANNEL CHECK	SR 3.3.18.2 CHANNEL CALIBRATION
1. Reactor Trip Breaker Indication	M	N.A.
2. Reactor Coolant Temperature-Hot Legs	M	R
3. Reactor Coolant System Pressure	M	R
4. Pressurizer Level	M	R
5. Steam Generator Outlet Steam Pressure	M	R
6. Steam Generator Startup Range Level	M	R
7. Control Rod Position Switches	M	N.A.

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DISCUSSION OF CHANGES
ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.3.3.5.1 Action a provides the compensatory actions to take when remote shutdown monitoring instrumentation is inoperable. ITS 3.3.18 ACTIONS provide the compensatory actions for inoperable remote shutdown monitoring instrumentation Functions. The ITS 3.3.18 ACTIONS include a Note that allows separate Condition entry for each Function. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable remote shutdown monitoring instrumentation Function.

This change is acceptable because it clearly states the current requirement. The CTS considers each remote shutdown monitoring instrumentation Function to be separate and independent from the others. This change is considered administrative because the technical requirements have not changed.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.3.5.1 Action a requires, if an inoperable channel cannot be returned to OPERABLE status within the allowed outage time, then the unit shall be placed in HOT SHUTDOWN within the next 12 hours. ITS 3.3.18 ACTION B requires, if a required channel cannot be returned to OPERABLE status within the associated Completion Time, then the unit shall be in MODE 3 (HOT STANDBY) within 6 hours and MODE 4 (HOT SHUTDOWN) within 12 hours. This changes the CTS requirements by specifying that MODE 3 must be achieved within 6 hours.

The purpose of ITS 3.3.18 Required Action B.1 is to specify consistent Completion Times to shutdown the unit from full power to MODE 3. This change is acceptable because the proposed Completion Time is sufficient to allow an operator to reduce power from full power to MODE 3 in a controlled manner without challenging unit safety systems. The 6 hour time provided to reach MODE 3 is also consistent with the time provided in similar actions in both the CTS and ITS. The change has been designated as more restrictive because it specifies the amount of time within which the unit must be placed in MODE 3.

M02 CTS 3.3.3.5.1 Action c states that "the provisions of Specification 3.0.4 are not applicable." CTS 3.0.4 states, "Entry into an OPERATIONAL MODE or other specified applicability conditions shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted." ITS 3.3.18 contains no provision excepting the requirements of ITS LCO 3.0.4. However, ITS LCO 3.0.4

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states "When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time; b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications; or c. When an allowance is stated in the individual value, parameter, or other Specification. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit" (See 3.0 DOC L01 for discussion of this change). Therefore, ITS LCO 3.0.4.b would be applicable to ITS 3.3.18. This changes the CTS by removing the allowance to enter the specified applicability with an inoperable remote shutdown monitoring instrumentation Function while relying on the provisions contained in the ACTION statements, and only allowing entry into the specified applicability with an inoperable remote shutdown monitoring instrumentation Function after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate.

The purpose of ITS LCO 3.0.4 is to provide guidance when an LCO is not met and entry into a MODE or other specified condition in the Applicability is desired. The change is acceptable because CTS 3.3.3.5.1 would allow unrestricted entry into MODE 3 from MODE 4, and further operation in MODE 1, 2, or 3, with inoperable remote shutdown monitoring instrumentation Function(s); while ITS LCO 3.0.4 provides additional appropriate guidance to enter the Applicability when the LCO is not met. ITS LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It allows placing the unit in a MODE or other specified condition stated in that Applicability (e.g., the Applicability desired to be entered) when unit conditions are such that the requirements of the LCO would not be met, in accordance with ITS LCO 3.0.4.a, LCO 3.0.4.b, or LCO 3.0.4.c. For an inoperable remote shutdown monitoring instrumentation Function in MODE 4, 5, or 6, the risk assessment of ITS LCO 3.0.4.b would be required before entry could be made into MODE 3. The change is designated as more restrictive because it places additional requirements before allowing entry into the Applicability of the CTS with inoperable remote shutdown monitoring instrumentation Function(s)."

RELOCATED SPECIFICATIONS

R01 CTS 3.3.3.5.2 states that the control circuits and transfer switches required for a serious control room or cable spreading room fire shall be OPERABLE. CTS 3.3.3.5.2 Action b states that, with one or more control circuits or transfer switches required for a serious control room or cable spreading room fire inoperable, restore the inoperable circuit(s) or switch(es) to OPERABLE status within 30 days or to prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the action taken,

the cause of the inoperability, and the plan and schedule for restoring the circuit(s) or switches to OPERABLE status. CTS 4.3.3.5.2 requires verifying each control circuit and transfer switch required for a serious control room or cable spreading room fire is capable of performing the intended function at least once per REFUELING INTERVAL. These requirements were added to the Davis-Besse CTS in License Amendment 187, dated June 14, 1994, to include testing requirements for transfer switches used to meet 10 CFR 50 Appendix R safe shutdown requirements. The 10 CFR 50 Appendix R control circuits and transfer switches are used to ensure that a fire in the control room or cable spreading room will not preclude achieving safe shutdown. These control circuits and transfer switches are independent of areas where a fire could damage systems normally used to shutdown the reactor. However, the control circuits and transfer switches are not used to detect a degradation of the reactor coolant pressure boundary, and are not assumed to mitigate a design basis accident (DBA) or transient event. The 10 CFR 50 Appendix R control circuits and transfer switches capability is consistent with the requirements of 10 CFR 50 Appendix R. This Specification does not meet the criteria for retention in the Improved Technical Specifications (ITS); therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3.3.3.5.2, including the LCO requirements, Action b, and CTS 4.3.3.5.2 do not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The 10 CFR 50 Appendix R control circuits and transfer switches are not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a DBA. The 10 CFR 50 Appendix R control circuits and transfer switches Specification do not satisfy criterion 1.

2. The 10 CFR 50 Appendix R control circuits and transfer switches are not used to indicate status of, or monitor a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient. The 10 CFR 50 Appendix R control circuits and transfer switches Specification does not satisfy criterion 2.

3. The 10 CFR 50 Appendix R control circuits and transfer switches are not part of a primary success path in the mitigation of a DBA or transient. The 10 CFR 50 Appendix R control circuits and transfer switches Specification does not satisfy criterion 3.

4. The 10 CFR 50 Appendix R control circuits and transfer switches are installed to ensure that systems, structures, and components important to safe shutdown will be available after a fire in the control room or cable spreading room. This ensures compliance with 10 CFR 50 Appendix R requirements. The Davis-Besse PRA was reviewed and the risk significance of the control circuits and transfer switches are not explicitly addressed in the PRA. The 10 CFR 50 Appendix R control circuits and transfer switches Specification does not satisfy criterion 4.

DISCUSSION OF CHANGES
ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the 10 CFR 50 Appendix R control circuits and transfer switches LCO, Action, and Surveillance may be relocated out of the Technical Specifications. The 10 CFR 50 Appendix R control circuits and transfer switches Specification will be relocated to the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.3.5.1 requires the remote shutdown monitoring instrumentation channels in Table 3.3-9 to be OPERABLE. CTS Table 3.3-9 lists each of the required remote shutdown monitoring instruments, the measurement range of each instrument, the location of the remote shutdown monitoring instrumentation readout, and the minimum number of channels required for each instrument. CTS Table 4.3-6 lists the required remote shutdown monitoring instruments and their associated Surveillance Requirements. ITS LCO 3.3.18 states that the remote shutdown monitoring instrumentation Functions shall be OPERABLE. This changes the CTS by moving the details in Tables 3.3-9 and 4.3-6, with the exception of the Surveillance Requirements, from the Technical Specifications 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 remote shutdown monitoring instrumentation Functions to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.3.5.1 states that the remote shutdown monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE "with readouts displayed external to the control room." ITS LCO 3.3.18 states that the remote shutdown monitoring instrumentation Functions shall be OPERABLE. This changes the CTS by moving the requirement for readouts displayed external to the control room from the Technical Specifications 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

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DISCUSSION OF CHANGES
ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

the remote shutdown monitoring instrumentation Functions to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

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

CTS

3.3 INSTRUMENTATION

3.3.18 Remote Shutdown ~~System~~ Monitoring Instrumentation

3.3.3.5.1 LCO 3.3.18 The ~~R~~emote ~~S~~hutdown ~~System~~ monitoring instrumentation Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
DOC A02 Separate Condition entry is allowed for each Function.

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.3.3.5.1, Table 4.3-6	SR 3.3.18.1	[~~]Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days[~~]
	SR 3.3.18.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	[18] month

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.3.3.5.3, Table 4.3-6	SR 3.3.18.~~3~~ 2	
	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
	Perform CHANNEL CALIBRATION for each required instrumentation channel.	~~18~~ 24 months

Reactor trip breaker indication and control rod position switches are excluded from this Surveillance.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

1. ISTS 3.3.18 requires Remote Shutdown System Functions to be OPERABLE. As stated in the Bases, these Functions include not only instrumentation to monitor plant parameters, but also control switches and circuits to operate equipment necessary to shut down and maintain the unit in MODE 3. The requirements of ITS 3.3.18 only include the instrumentation necessary to monitor the prompt shutdown to MODE 3, including the necessary instrumentation to support maintaining the unit in a safe condition in MODE 3. This change is consistent with the current licensing basis for the Remote Shutdown Instrumentation as indicated in CTS 3.3.3.5.1 and Table 3.3-9. As a result of this change, the Specification's title has been changed from "Remote Shutdown System" to "Remote Shutdown Monitoring Instrumentation," the LCO statement has been changed from "Remote Shutdown System" to "remote shutdown monitoring instrumentation," ISTS SR 3.3.4.2, which verifies control circuit and transfer switch capability, has been deleted, and the Note to ISTS SR 3.3.18.3 (ITS SR 3.3.18.2) has been deleted since the remote shutdown monitoring Functions in the CTS do not include neutron detectors.

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

3. This change is made consistent with existing requirements in CTS Table 4.3-6.

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

All changes are 1 unless otherwise noted

B 3.3 INSTRUMENTATION

B 3.3.18 Remote Shutdown System

BASES

BACKGROUND

The Remote Shutdown System provides the control room operator with sufficient instrumentation and controls to place and maintain the unit in a safe shutdown condition from locations other than the control room. This capability is necessary to protect against the possibility that the control room becomes inaccessible. A safe shutdown condition is defined as MODE 3. With the unit in MODE 3, the Emergency Feedwater (EFW) System and the steam generator (SG) safety valves or the SG atmospheric dump valves can be used to remove core decay heat and meet all safety requirements. The long term supply of water for the EFW System and the ability to borate the Reactor Coolant System (RCS) from outside the control room allows extended operation in MODE 3.

In the event that the control room becomes inaccessible, the operators can establish control at the remote shutdown panel and place and maintain the unit in MODE 3. Not all controls and necessary transfer switches are located at the remote shutdown panel. Some controls and transfer switches will have to be operated locally at the switchgear, motor control panels, or other local stations. The unit automatically reaches MODE 3 following a unit shutdown and can be maintained safely in MODE 3 for an extended period of time.

The OPERABILITY of the Remote Shutdown System control and instrumentation Functions ensures that there is sufficient information available on selected unit parameters to place and maintain the unit in MODE 3 should the control room become inaccessible.

APPLICABLE SAFETY ANALYSES

The Remote Shutdown System is required to provide equipment at appropriate locations outside the control room with a capability to promptly shut down and maintain the unit in a safe condition in MODE 3.

The criteria governing the design and the specific system requirements of the Remote Shutdown System are located in 10 CFR 50, Appendix A, GDC 19 (Ref. 1).

The Remote Shutdown System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

All changes are 1 unless otherwise noted

BASES

LCO

The Remote Shutdown System LCO provides the requirements for the OPERABILITY of the instrumentation and controls necessary to place and maintain the unit in MODE 3 from a location other than the control room. The instrumentation and controls required are listed in Table B 3.3.18-1.

The controls, instrumentation, and transfer switches are those required for:

- Core Reactivity Control (initial and long term),
- RCS Pressure Control,
- Decay Heat Removal via the EFW System and the SG safety valves or SG atmospheric dump valves;
- RCS Inventory Control via charging flow, and
- Safety support systems for the above Functions, including service water, component cooling water, and onsite power, including the diesel generators.

A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the Function are OPERABLE. In some cases, Table B 3.3.18-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as [one channel of any of] the alternate information or control sources are OPERABLE.

The Remote Shutdown System instruments and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the Remote Shutdown System instruments and control circuits will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

APPLICABILITY

The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3. This is required so that the unit can be placed and maintained in MODE 3 for an extended period of time from a location other than the control room.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the unit is already subcritical and is in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument and control Functions if control room instruments become unavailable.

All changes are 1 unless otherwise noted

Monitoring Instrumentation

Remote Shutdown ~~System~~
B 3.3.18

BASES

monitoring instrumentation

monitoring instrumentation

ACTIONS

~~A~~Remote Shutdown ~~System division~~ is inoperable when each Function is not accomplished by at least one designated Remote Shutdown ~~System~~ channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases.

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. The Conditions of the Specification may be entered independently for each Function. The Completion Time(s) of the inoperable channel(s)~~/train(s)~~ of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

monitoring instrumentation

Condition A addresses the situation where one or more required Functions of the Remote Shutdown ~~System~~ are inoperable. This includes the control and transfer switches for any required Function.

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and takes into account the remaining OPERABLE ~~division~~ channel and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

the Required Action and associated Completion Time of Condition A is not met,

If Required Action A.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. 5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.18.1 6

Performance of the CHANNEL CHECK once every 31 days for each required instrumentation channel that is normally energized ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a 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. CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If the channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. As specified in the Surveillance, a CHANNEL CHECK is only required for those channels that are normally energized. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

The Frequency is based on unit operating experience, which demonstrates that channel failure is rare. 6

~~SR 3.3.18.2~~

~~SR 3.3.18.2 verifies each required Remote Shutdown System transfer switch and control circuit performs their intended function. This verification is performed from the remote shutdown panel and locally, as appropriate. Operation of the equipment from the remote shutdown panel is not necessary. The Surveillance can be satisfied by performance of a continuity check. This will ensure that if the control room becomes~~

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

inaccessible, the unit can be placed and maintained in MODE 3 from the remote shutdown panel and the local control stations. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience demonstrates that remote shutdown control channels seldom fail to pass the Surveillance when performed at the [18] month Frequency.

SR 3.3.18.3 2

CHANNEL CALIBRATION is a complete check of the instrument loop and sensor. The test verifies that the channel responds to measured parameters within the necessary range and accuracy.

A Note clarifies that the neutron detectors are not required to be tested as part of the CHANNEL CALIBRATION. There is no adjustment that can be made to the detectors. Furthermore, adjustment of the detectors is unnecessary because they are passive devices, with minimal drift. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration and the monthly axial channel calibration.

resistance temperature detector (RTD)

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD) sensor is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

24 6

The Frequency is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of a [18] month calibration interval in the determination of the magnitude of equipment drift.

REFERENCES 1. 10 CFR 50, Appendix A, GDC 19 UFSAR, Appendix 3D.1.15 6

Monitoring Table B 3.3.18-1 (page 1 of 1) (1)
Remote Shutdown ~~System~~ Instrumentation ~~and Controls~~

NOTE
This Table is for illustration purposes only. It does not attempt to encompass every Function used at every unit, but does contain the types of Functions commonly found. (7)

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF FUNCTIONS
1. Reactivity Control	
a. Log Power Neutron Flux	[1]
b. Source Range Neutron Flux	[1]
c. Reactor Trip Circuit Breaker Position	[1 per trip breaker]
d. Manual Reactor Trip	[1]
2. Reactor Coolant System (RCS) Pressure Control	
a. Pressurizer Pressure or RCS Wide Range Pressure	[1]
b. Pressurizer Power Operated Relief Valve (PORV) Control and Block Valve Control	[1]
3. Decay Heat Removal via Steam Generators (SGs)	
a. Reactor Coolant Hot Leg Temperature	[1 per loop]
b. Reactor Coolant Cold Leg Temperature	[1 per loop]
c. Condensate Storage Tank Level	[1]
d. SG Pressure	[1 per SG]
e. SG Level or Emergency Feedwater (EFW) Flow	[1 per SG]
f. EFW Controls	[1]
4. RCS Inventory Control	
a. Pressurizer Level	[1]
b. Reactor Coolant Injection Pump Controls	[1]

(2) INSERT 1

REVIEWER'S NOTE
For channels that fulfill GDC 19 requirements, the number of OPERABLE channels required depends on the unit licensing basis as described in the NRC unit specific Safety Evaluation Report (SER). Generally, two divisions are required OPERABLE. However, only one channel is required if the unit has justified such a design and the NRC's SER accepted the justification. (7)

(2) **INSERT 1**

FUNCTION	READOUT LOCATION	MEASUREMENT RANGE	REQUIRED NUMBER OF CHANNELS
1. Reactor Trip Breaker Indication	Room 428, Low Voltage Switchgear Room - F Bus	Open – Close	1 (Trip Breaker A)
	Room 429, Low Voltage Switchgear Room - E Bus		1 (Trip Breaker B)
	Room 428, Low Voltage Switchgear Room - F Bus		1 (Trip Breaker C)
	Room 402, Electrical Penetration Room 1		1 (Trip Breaker D)
2. Reactor Coolant Temperature – Hot Leg	Aux. Shutdown Panel	520°F – 620°F	1
3. Reactor Coolant System Pressure	Aux. Shutdown Panel	0 psig – 3000 psig	1
4. Pressurizer Level	Aux. Shutdown Panel	0 inches – 320 inches	1
5. Steam Generator Outlet Steam Pressure	Aux. Shutdown Panel	0 psig – 1200 psig	1/steam generator
6. Steam Generator Level Startup Range	Aux. Shutdown Panel	0 inches – 250 inches	1/steam generator
7. Control Rod Position Switches	Control Rod Drive Control Cabinets, System Logic Cabinet #4	0%, 25%, 50%, 75%, and 100%	1/control rod

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.18 BASES, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

1. Changes are made to reflect changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. Editorial change with no change in intent.

5. Change made to reflect the Specification.

6. The brackets have been removed and the proper plant specific information/value has been provided.

7. The ISTS Reviewer's Notes have been deleted since they are not intended to be included in the ITS.

8. Davis-Besse was designed and under construction prior to the promulgation of 10 CFR 50, Appendix A. The design of Davis-Besse meets the intent of 10 CFR 50, Appendix A published in the Federal Register on February 20, 1971, and as amended in Federal Register on July 7, 1971. Bases references to the 10 CFR 50, Appendix A criteria have been replaced with references to the appropriate section of the UFSAR.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.18, REMOTE SHUTDOWN MONITORING INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 19

RELOCATED CURRENT TECHNICAL SPECIFICATIONS

CTS 3/4.3.2.3, ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

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

INSTRUMENTATION

ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2.3 The Anticipatory Reactor Trip System instrumentation channels of Table 3.3-17 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-17

ACTION: As shown in Table 3.3-17

R01

SURVEILLANCE REQUIREMENTS

4.3.2.3 The Anticipatory Reactor Trip System shall 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 4.3-17.

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TABLE 3.3-17

ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Turbine Trip	4	2[a]	3	1[b]	18
2. Trip of Both Main Feed Pump Turbines	4	2	3	1	19
3. Output Logic	4	2	3	1	20

(a) Trip automatically bypassed below 45 percent of RATED THERMAL POWER
(b) Applicable only above 45 percent of RATED THERMAL POWER

R01

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TABLE 3.3-17 (Continued)

ACTION STATEMENTS

ACTION 18 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirements, restore the inoperable channel to OPERABLE status within 72 hours or reduce reactor power to less than 45 percent of RATED THERMAL POWER within the next 6 hours.

ACTION 19 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirements, restore the inoperable channel to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided both of the following conditions are satisfied:

a) The control rod drive trip breaker associated with the inoperable channel is placed in the tripped condition within one hour.

b) The Minimum Channels OPERABLE requirement is met; however, one additional control rod drive trip breaker associated with another channel may be tripped for up to 2 hours for surveillance testing per Specification 4.3.2.3, after reclosing the control rod drive trip breaker opened in a) above.

R01

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TABLE 4.3-17

ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Turbine Trip[a]	S	Not Applicable	SA[c]	1[b]
2. Main Feed Pump Turbine Trip	S	Not Applicable	SA[c]	1
3. Output Logic	Not Applicable	Not Applicable	Q[c]	1

R01

(a) Trip automatically bypassed below 45 percent of RATED THERMAL POWER
(b) Applicable only above 45 percent of RATED THERMAL POWER
(c) Perform on a STAGGERED TEST BASIS

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DISCUSSION OF CHANGES
CTS 3/4.3.2.3, ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R01 CTS 3/4.3.2.3, including Table 3.3-17 and Table 4.3-17, provide requirements on the Anticipatory Reactor Trip System (ARTS) Instrumentation. The purpose of the ARTS is to initiate a reactor trip when a sensed parameter exceeds its setpoint value, indicating the approach to an unsafe condition thereby reducing the magnitude of pressure and temperature transients on the Reactor Coolant System caused by loss of feedwater events or turbine generator trips.

ARTS was installed to reduce challenges to the PORV which could occur following a reactor trip on a high reactor coolant pressure signal. ARTS is not taken credit for to mitigate any accident analyses in the UFSAR. However, the main steam line break analyses assume a reactor trip on ARTS as a conservative assumption, since overcooling is more severe the sooner the reactor trips. If ARTS does not trip the reactor following a main steam line break, the plant response would be improved (the accident would not be as severe). Therefore, the ITS does not include this Specification. This changes the CTS by relocating this Specification to the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.3.2.3 does not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The Anticipatory Reactor Trip System Instrumentation is not used for, nor are capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a DBA.

2. The Anticipatory Reactor Trip System Instrumentation is not used to indicate status of, or monitor a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient.

3. The Anticipatory Reactor Trip System Instrumentation is not part of a primary success path in the mitigation of a DBA or transient.

4. The Anticipatory Reactor Trip System Instrumentation was found to be non-significant risk contributor to core damage frequency and offsite releases. The plant specific PRA has been utilized to ensure that the ARTS Instrumentation requirements proposed for relocation do not contain constraints of prime importance in limiting the likelihood or

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DISCUSSION OF CHANGES
CTS 3/4.3.2.3, ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

severity of the accident sequences that are commonly found to be important to public health and safety.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Anticipatory Reactor Trip System Instrumentation LCO and Surveillances may be relocated out of the Technical Specifications. The Anticipatory Reactor Trip System Instrumentation Specification will be relocated to the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures the changes are properly evaluated. This change is designated as relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.3.2.3, ANTICIPATORY REACTOR TRIP SYSTEM INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 20

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) NOT ADOPTED IN THE DAVIS-BESSE ITS

ISTS 3.3.14, EMERGENCY FEEDWATER INITIATION AND CONTROL (EFIC) – EMERGENCY FEEDWATER (EFW) – VECTOR VALVE LOGIC

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

3.3 INSTRUMENTATION

3.3.14 Emergency Feedwater Initiation and Control (EFIC) - Emergency Feedwater (EFW) - Vector Valve Logic

LCO 3.3.14 Four channels of the vector valve logic shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One vector valve logic channel inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.14.1	Perform a CHANNEL FUNCTIONAL TEST.	31 days

JUSTIFICATION FOR DEVIATIONS
ISTS 3.3.14, EMERGENCY FEEDWATER INITIATION AND CONTROL (EFIC) – EMERGENCY FEEDWATER (EFW) – VECTOR VALVE LOGIC

1. ISTS 3.3.14, "Emergency Feedwater Initiation and Control (EFIC) – Emergency Feedwater (EFW) – Vector Valve Logic" is not being adopted because the Steam and Feedwater Rupture Control (SFRCS) Instrumentation does not have Vector Valve Logic as a separate logic circuit.

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

B 3.3 INSTRUMENTATION

B 3.3.14 Emergency Feedwater Initiation and Control (EFIC) - Emergency Feedwater (EFW) - Vector Valve Logic

BASES

BACKGROUND

The function of the EFW vector valve logic is to determine whether EFW should not be fed to one or the other steam generator. This is to preclude the continued addition of EFW to a depressurized once through steam generator (SG) and, thus, minimize the overcooling effects of a steam leak. Each vector logic may isolate EFW to one SG or the other, never both.

There are four sets of vector valve logic; one in each channel of EFIC. Each set of vector valve logic receives SG pressure information from bistables located in the input logic of the same EFIC channel. The pressure information received is:

a. SG "A" pressure less than 600 psig,

b. SG "B" pressure less than 600 psig,

c. SG "A" pressure 125 psid greater than SG "B" pressure, and 1

d. SG "B" pressure 125 psid greater than SG "A" pressure.

Each vector valve logic also receives a vector/control enable signal from both EFIC channel A and channel B when EFW is actuated.

The vector valve logic develops signals for open and close control of SG "A" and "B" EFW valves.

The vector valve logic outputs are in a neutral state with the valves fully open until enabled by the control/vector enable from the channel A or B trip logics. When enabled, the vector valve logic can issue close commands to the EFW control valves and open or close commands to the EFW isolation valves per the selected channel assignments.

The valve open/close commands are determined by the relative values of steam generator pressures as follows:

BASES

BACKGROUND (continued)

PRESSURE STATUS	SG VALVES "A"	SG VALVES "B"
If SG "A" & SG "B" > 600 psig	Open	Open
If SG "A" > 600 psig & SG "B" < 600 psig	Open	Close
If SG "A" < 600 psig & SG "B" > 600 psig	Close	Open
If SG "A" & SG "B" < 600 psig		
AND	Open	Open
SG "A" & SG "B" within 125 psid		
SG "A" 125 psid > SG "B"	Open	Close
SG "A" 125 psid > SG "A"	Close	Open

1

APPLICABLE SAFETY ANALYSES

Automatic isolation of main feedwater (MFW) and main steam line was assumed in the safety analyses to mitigate the consequences of main steam line or MFW line ruptures. The FSAR analysis for steam line breaks (SLBs) was generated before the development and installation of the safety grade EFIC System, which currently performs these automatic safety functions. The FSAR analysis, for example, assumes main steam line isolation through turbine stop valve closure based on an integrated control system signal. This same function is provided by the EFIC System by a safety grade signal that closes the main steam line isolation valves. The analyses are bounding, and the use of the EFIC System is consistent with the licensing position to take credit for safety grade systems to mitigate the consequences of an accident.

Similarly, vector logic valve control was not credited in the FSAR SLB analysis. Operator action was credited with isolating EFW to the affected SG within the first 60 seconds. This function would be automatically performed by EFIC. Therefore, the FSAR analysis remains conservative relative to the inclusion of the vector valve logic.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

EFW vector valve logic response time is included in the required response time for each EFW actuation initiation function instrumentation and is not specified separately.

The EFIC - EFW - vector valve logic satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Four channels of the EFIC - EFW - vector valve logic module are required to be OPERABLE. The necessity for four channels is discussed in the BASES for ACTIONS. The 600 psig and 125 psid setpoints were chosen as discussed in Specification B 3.3.11, "EFIC System Instrumentation." The feed only good generator verification study assumed a differential pressure vector value of 150 psid. The 125 psid setpoint conservatively assumes a 25 psi margin for instrument error. Failure to meet this LCO results in not being able to meet the single-failure criterion.

APPLICABILITY

EFIC - EFW - vector valve logic is required in MODES 1, 2, and 3 because the SGs are relied on in these MODES for required RCS heat removal. In MODES 4, 5, and 6, heat removal requirements are reduced and may be provided by the Decay Heat Removal System. Therefore, vector valve logic is not required to be OPERABLE in these MODES. 1

ACTIONS

A.1

The function of the EFIC-EFW control/isolation valves and the vector valve logic is to meet the single-failure criterion while maintaining the capability to:

a. Provide EFW on demand and

b. Isolate an SG when required.

These conflicting requirements result in the necessity for two valves in series, in parallel with two valves in series, and a four channel valve command system.

With one channel inoperable, the system cannot meet the single-failure criterion and still meet the dual functional criteria previously described. Therefore, when one vector valve logic channel is inoperable, the channel must be restored to OPERABLE status within 72 hours. This is analogous to having one EFW train inoperable; wherein a 72 hour Completion Time is provided by the Required Actions of LCO 3.7.4, "EFW System." As such, the Completion Time of 72 hours is based on engineering judgement.

BASES

ACTIONS (continued)

B.1 and B.2

If Required Action A.1 cannot be met within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.14.1

SR 3.3.14.1 is the performance of a CHANNEL FUNCTIONAL TEST every 31 days. This test demonstrates that the EFIC - EFW - vector valve logic performs its function as desired. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency is based on operating experience that demonstrates the rarity of more than one channel failing within the same 31 day interval. 1

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.3.14, EMERGENCY FEEDWATER INITIATION AND CONTROL (EFIC) – EMERGENCY FEEDWATER (EFW) – VECTOR VALVE LOGIC

1. Changes are made to be consistent with changes made to the Specification.

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