ATTACHMENT 1

VOLUME 6

SAN ONOFRE NUCLEAR GENERATING STATION

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.3 INSTRUMENTATION

LIST OF ATTACHMENTS

Note: ITS 3.3.10 is not used.

ATTACHMENT 1

ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

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

ITS

A01

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation — Operating

LCO 3.3.1

LCO 3.3.1 Four RPS trip and operating bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

ACTIONS

ACTIONS Note

NOTES

1. Separate Condition entry is allowed for each RPS Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee.~~

LA01

ACTION A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic RPS trip channel inoperable.	A.1 Place Channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION B	B. One or more Functions with two automatic RPS trip channels inoperable.	B.1 ~~--------NOTE---------- LCO 3.0.4 is not applicable. ---------------------~~ channel Place one ~~Functional Unit~~ in bypass and the other in trip.	1 hour	M01 A02
ACTION C	C. One or more Functions with one operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR C.2.1 Place affected automatic trip channel in bypass or trip. AND C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour 1 hour Prior to entering MODE 2 following next MODE 5 entry	

(continued)

ITS

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION D	D. One or more Functions with two operating bypass removal channels inoperable.	~~-------------NOTE-------------~~ ~~LCO 3.0.4 is not applicable.~~ ~~------------------------------~~		
		D.1	Disable bypass channels.	1 hour
		OR		
		D.2	Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
ACTION E	E. One or more core protection calculator (CPC) channels with a cabinet high temperature alarm.	E.1	Perform CHANNEL FUNCTIONAL TEST on affected CPC.	12 hours
ACTION F	F. One or more CPC channels with three or more autorestarts during a 12 hour period.	F.1	Perform CHANNEL FUNCTIONAL TEST on affected CPC.	24 hours
ACTION G	G. Required Action and associated Completion Time not met.	G.1	Be in MODE 3.	6 hours

M01

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SURVEILLANCE REQUIREMENTS

Surveillance Requirements Note

------------------------------------NOTE------------------------------------
Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

		SURVEILLANCE	FREQUENCY	
SR 3.3.1.1	SR 3.3.1.1	Perform a CHANNEL CHECK of each RPS instrument channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.2	SR 3.3.1.2	-------------------NOTE------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 85% RTP. -- Verify total Reactor Coolant System (RCS) flow rate as indicated by each CPC is less than or equal to the RCS total flow rate. If necessary, adjust the CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to the RCS flow rate.	~~12 hours~~	LA02
SR 3.3.1.3	SR 3.3.1.3	Check the CPC autorestart count.	~~12 hours~~	LA02

(continued)

ITS

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.4	SR 3.3.1.4 --------------------NOTES-------------------- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. 2. The daily calibration may be suspended during PHYSICS TESTS, provided the calibration is performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau. --- Perform calibration (heat balance only) and compare the indicated linear power level, the CPC ΔT power, and CPC nuclear power with the calorimetric calculation and if any are less than the calorimetric calculation by more than 1.0% or any greater than 5.0% RTP, adjust the indication to be within these limits (-1.0% to +5.0%).	~~24 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.5	SR 3.3.1.5 --------------------NOTE-------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 85% RTP. --- Verify total RCS flow rate indicated by each CPC is less than or equal to the RCS flow determined by calorimetric calculations.	~~31 days~~	LA02

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.6	SR 3.3.1.6 --------------------NOTE-------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. -- Verify linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the CPCs.	~~120 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.7	SR 3.3.1.7 -------------------NOTES------------------- 1. The CPC CHANNEL FUNCTIONAL TEST shall include verification that the correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for logarithmic power level channels until 2 hours after reducing logarithmic power ~~THERMAL POWER~~ below 1E-4% ~~RTP~~ and only if reactor trip circuit breakers (RTCBs) are closed. -- Perform CHANNEL FUNCTIONAL TEST on each channel.	~~30 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	A04 LA02
SR 3.3.1.8	SR 3.3.1.8 --------------------NOTE-------------------- Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION of the power range neutron flux channels.	~~120 days~~	LA02

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.1.9	SR 3.3.1.9	--------------------NOTE-------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION on each channel, including bypass removal functions.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.10	SR 3.3.1.10	Perform a CHANNEL FUNCTIONAL TEST on each CPC channel.	~~24 months~~	LA02
SR 3.3.1.11	SR 3.3.1.11	Using the incore detectors, verify the shape annealing matrix elements to be used by the CPCs.	Once after each refueling prior to exceeding 85% RTP	
SR 3.3.1.12	SR 3.3.1.12	Perform a CHANNEL FUNCTIONAL TEST on each operating bypass removal function.	Once within 120 days prior to each reactor startup	
SR 3.3.1.13	SR 3.3.1.13	--------------------NOTE-------------------- Neutron detectors are excluded. -- Verify RPS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program ~~24 months on a STAGGERED TEST BASIS~~	LA02

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RPS Instrumentation — Operating
3.3.1

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 1	1. Linear Power Level — High	1,2	SR 3.3.1.1 SR 3.3.1.4 (a)(b) SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9 SR 3.3.1.13	≤ 111.0% RTP	M02
Table 3.3.1-1 Function 2	2. Logarithmic Power Level — High ~~(a)~~ (c)	2 ~~(b)~~	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	≤ .93% ~~RTP~~	A03 M02
Table 3.3.1-1 Function 3	3. Pressurizer Pressure — High	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	≤ 2385 psia	M02
Table 3.3.1-1 Function 4	4. Pressurizer Pressure — Low ~~(c)~~ (d)	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.13	≥ 1700 psia	M02
Table 3.3.1-1 Function 5	5. Containment Pressure — High	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	≤ 3.4 psig	M02
Table 3.3.1-1 Function 6	6. Steam Generator 1 Pressure-Low	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	≥ 729 psia	M02
Table 3.3.1-1 Function 7	7. Steam Generator 2 Pressure-Low	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.13	≥ 729 psia	M02

INSERT 1

M02

(continued)

Table 3.3.1-1 Note (c)

~~(a)~~ (c) Trip must be enabled when logarithmic power is < 4E-5% ~~RTP~~. Trip may be manually bypassed during physics testing pursuant to LCO 3.1.12~~.~~ , "Special Test Exceptions (STE) - Low Power Physics Testing." A06

~~(b) When any RTCB is closed.~~ A03

Table 3.3.1-1 Note (d)

~~(c)~~ (d) The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia. ~~Trips~~ Bypass may be ~~bypassed~~ enabled when pressurizer pressure is < 400 psia, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia. Bypass shall be ~~automatically~~ removed ~~before~~ when pressurizer pressure ~~exceeds~~ is ≥ 500 psia ~~(the corresponding bistable allowable value is ≤ 472 psia)~~. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased. A05 LA03

M02

INSERT 1

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

(b) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided the as-found and as-left tolerance apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

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RPS Instrumentation — Operating
3.3.1

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 8	8. Steam Generator 1 Level — Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 20%	M02
Table 3.3.1-1 Function 9	9. Steam Generator 2 Level — Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 20%	M02
Table 3.3.1-1 Functions 10 and 11	10. Reactor Coolant Flow — Low ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.12 SR 3.3.1.13	Ramp: ≤ 0.231 psid/sec. Floor: ≥ 12.1 psid Step: ≤ 7.25 psid	M02
Table 3.3.1-1 Function 12	11. Local Power Density — High ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.10 (a)(b) SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13	≤ 21.0 kW/ft	M02
Table 3.3.1-1 Function 13	12. Departure From Nucleate Boiling Ratio (DNBR) — Low ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.10 (a)(b) SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13	≥ 1.31	M02

Table 3.3.1-1 Note (e)

INSERT 2

M02

~~(d)~~ (e) Trip must be enabled when logarithmic power is > 1.5E-4% ~~RTP~~. During testing pursuant to LCO 3.1.12, trip may be bypassed below 5% RTP. Bypass shall be removed when ~~logarithmic power~~ THERMAL POWER is ≥ 5% RTP.

A06

M02

INSERT 2

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

(b) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided the as-found and as-left tolerance apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation — Operating

LCO 3.3.1

LCO 3.3.1 Four RPS trip and operating bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

ACTIONS

ACTIONS Note

-----------------------------------NOTES-----------------------------------

1. Separate Condition entry is allowed for each RPS Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee.~~ LA01

ACTION A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic RPS trip channel inoperable.	A.1 Place Channel in bypass or trip.	1 hour
	AND	
	A.2 Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION B	B. One or more Functions with two automatic RPS trip channels inoperable.	B.1	~~--------NOTE----------~~ ~~LCO 3.0.4 is not applicable.~~ ~~-----------------------~~ channel Place one ~~Functional Unit~~ in bypass and the other in trip.	1 hour	M01 A02
ACTION C	C. One or more Functions with one operating bypass removal channel inoperable.	C.1	Disable bypass channel.	1 hour	
		OR			
		C.2.1	Place affected automatic trip channel in bypass or trip.	1 hour	
		AND			
		C.2.2	Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry	

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION D	D. One or more Functions with two operating bypass removal channels inoperable.	~~-------------NOTE-------------~~ ~~LCO 3.0.4 is not applicable.~~ ~~------------------------------~~ D.1 Disable bypass channels. OR D.2 Place one affected automatic trip channel in bypass and place the other in trip.	 1 hour 1 hour
ACTION E	E. One or more core protection calculator (CPC) channels with a cabinet high temperature alarm.	E.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	12 hours
ACTION F	F. One or more CPC channels with three or more autorestarts during a 12 hour period.	F.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	24 hours
ACTION G	G. Required Action and associated Completion Time not met.	G.1 Be in MODE 3.	6 hours

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SURVEILLANCE REQUIREMENTS

Surveillance Requirements Note

-----------------------------------NOTE-----------------------------------
Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.1	SR 3.3.1.1 Perform a CHANNEL CHECK of each RPS instrument channel.	~~12 hours~~	LA02
SR 3.3.1.2	SR 3.3.1.2 -------------------NOTE------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 85% RTP. -- Verify total Reactor Coolant System (RCS) flow rate as indicated by each CPC is less than or equal to the RCS total flow rate. If necessary, adjust the CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to the RCS flow rate.	In accordance with the Surveillance Frequency Control Program ~~12 hours~~	LA02
SR 3.3.1.3	SR 3.3.1.3 Check the CPC autorestart count.	~~12 hours~~	LA02

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.4	SR 3.3.1.4 --------------------NOTES-------------------- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. 2. The daily calibration may be suspended during PHYSICS TESTS, provided the calibration is performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau. --- Perform calibration (heat balance only) and compare the indicated linear power level, the CPC ΔT power, and CPC nuclear power with the calorimetric calculation and if any are less than the calorimetric calculation by more than 1.0% or any greater than 5.0% RTP, adjust the indication to be within these limits (-1.0% to +5.0%).	~~24 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.5	SR 3.3.1.5 --------------------NOTE-------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 85% RTP. --- Verify total RCS flow rate indicated by each CPC is less than or equal to the RCS flow determined by calorimetric calculations.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	LA02

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.6	SR 3.3.1.6 --------------------NOTE-------------------- Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. -- Verify linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the CPCs.	~~120 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.7	SR 3.3.1.7 -------------------NOTES------------------- 1. The CPC CHANNEL FUNCTIONAL TEST shall include verification that the correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for logarithmic power level channels until 2 hours after reducing ~~THERMAL POWER~~ logarithmic power below 1E-4% ~~RTP~~ and only if reactor trip circuit breakers (RTCBs) are closed. -- Perform CHANNEL FUNCTIONAL TEST on each channel.	~~30 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	A04 LA02
SR 3.3.1.8	SR 3.3.1.8 --------------------NOTE-------------------- Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION of the power range neutron flux channels.	~~120 days~~ In accordance with the Surveillance Frequency Control Program	LA02

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.1.9	SR 3.3.1.9	-------------------NOTE-------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION on each channel, including bypass removal functions.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.1.10	SR 3.3.1.10	Perform a CHANNEL FUNCTIONAL TEST on each CPC channel.	~~24 months~~	LA02
SR 3.3.1.11	SR 3.3.1.11	Using the incore detectors, verify the shape annealing matrix elements to be used by the CPCs.	Once after each refueling prior to exceeding 85% RTP	
SR 3.3.1.12	SR 3.3.1.12	Perform a CHANNEL FUNCTIONAL TEST on each operating bypass removal function.	Once within 120 days prior to each reactor startup	
SR 3.3.1.13	SR 3.3.1.13	-------------------NOTE-------------------- Neutron detectors are excluded. --- Verify RPS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program ~~24 months on a STAGGERED TEST BASIS~~	LA02

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

ITS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 1	1. Linear Power Level — High	1,2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 (a)(b) SR 3.3.1.8 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≤ 111.0% RTP	M02
Table 3.3.1-1 Function 2	2. Logarithmic Power Level — High ~~(a)~~ (c)	2 ~~(b)~~	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.12 SR 3.3.1.13	≤ .93% ~~RTP~~	A03 M02
Table 3.3.1-1 Function 3	3. Pressurizer Pressure — High	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≤ 2385 psia	M02
Table 3.3.1-1 Function 4	4. Pressurizer Pressure — Low ~~(c)~~ (d)	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.12 SR 3.3.1.13	≥ 1700 psia	M02
Table 3.3.1-1 Function 5	5. Containment Pressure — High	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≤ 3.4 psig	M02
Table 3.3.1-1 Function 6	6. Steam Generator 1 Pressure-Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 729 psia	M02
Table 3.3.1-1 Function 7	7. Steam Generator 2 Pressure-Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 729 psia	M02

INSERT 1

(continued)

M02

Table 3.3.1-1 Note (c) (c) ~~(a)~~ Trip must be enabled when logarithmic power is ~~*~~< 4E-5% ~~RTP~~. Trip may be manually bypassed during physics testing pursuant to LCO 3.1.12~~.~~ , "Special Test Exceptions (STE) - Low Power Physics Testing." A06

~~(b) When any RTCB is closed.~~ A03

Table 3.3.1-1 Note (d) (d) ~~(c)~~ The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psi~~a~~. ~~Trips~~ Bypass may be ~~bypassed~~ enabled when pressurizer pressure is < 400 psia, provided the bypass is capable of automatic removal when pressurizer pressure is < 400 psia. Bypass shall be ~~automatically~~ removed ~~before~~ when pressurizer pressure ~~exceeds~~ is ≥ 500 psia ~~(the corresponding bistable allowable value is ≤ 472 psia)~~. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased. ~~*PCN500~~ A05 A06 LA03

M02

INSERT 1

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

(b) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided the as-found and as-left tolerance apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

ITS

A01

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 8	8. Steam Generator 1 Level — Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 20%	M02
Table 3.3.1-1 Function 9	9. Steam Generator 2 Level — Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.13	≥ 20%	M02
Table 3.3.1-1 Functions 10 and 11	10. Reactor Coolant Flow — Low ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.12 SR 3.3.1.13	Ramp: ≤ 0.231 psid/sec. Floor: ≥ 12.1 psid Step: ≤ 7.25 psid	M02
Table 3.3.1-1 Function 12	11. Local Power Density — High ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.10 (a)(b) SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13	≤ 21.0 kW/ft	M02
Table 3.3.1-1 Function 13	12. Departure From Nucleate Boiling Ratio (DNBR) — Low ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 (a)(b) SR 3.3.1.9 (a)(b) SR 3.3.1.10 (a)(b) SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13	≥ 1.31	M02

Table 3.3.1-1 Note (e)

INSERT 2

M02

~~(d)~~ (e) Trip must be enabled when logarithmic power is ~~*~~> 1.5E-4% ~~RTP~~. During testing pursuant to LCO 3.1.12, trip may be bypassed below 5% RTP. Bypass shall be removed when ~~logarithmic power~~ THERMAL POWER is ≥ 5% RTP.

A06

~~*PCN500~~

M02

INSERT 2

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

(b) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided the as-found and as-left tolerance apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.1 Required Action B.1 requires placing one "Functional Unit" in bypass and the other in trip with 1 hour. ITS Required Action B.1 requires placing one "channel" in bypass and the other in trip within 1 hour. This changes the CTS by replacing the term Functional Unit with channel.

The purpose of CTS 3.3.1 Required Action B.1 is to provide compensatory measures when two RPS trip channels are inoperable. The Required Action requires placing one inoperable channel in bypass and the other channel in trip. This places the protective system in a one-out-of-two logic, which is adequate to ensure that no random single failure will prevent protective system operation. The change in the term "Functional Unit" to "channel" is a change in the name only. The term Functional Unit came from the Standard Technical Specification in use prior to the introduction of the Improved Standard Technical Specifications (NUREG–1432) to the industry. NUREG–1432 uses the term channel to describe this function, as shown in the LCO statement and the Condition. Therefore, this change is a change in name only. This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

A03 CTS Table 3.3.1-1 Function 2, Logarithmic Power Level – High is applicable in MODE 2 when any RTCB is closed. ITS Table 3.3.1-1 Function 2, Logarithmic Power Level – High is applicable in MODE 2. This changes the CTS by requiring the Logarithmic Power Level – High function to be OPERABLE at all times when in MODE 2, not just when any RTCB is closed.

The purpose of requiring the Logarithmic Power Level – High Function to be OPERABLE in MODE 2 when any RTCB is closed is to prevent entry into MODE 2 with an RTCB open. The Note is not necessary since CTS LCOs 3.1.1 and 3.1.2 (ITS LCO 3.1.1) require shutdown margin to be maintained. These Specifications will prevent entry into MODE 2 with the CEAs inserted. Since CTS LCOs 3.1.1 and 3.1.2 (ITS LCO 3.1.1) will not allow entry into MODE 2 ($k_{eff} \geq 0.99$) with the RTCBs open, then the statement with an RTCB open is not needed. Therefore, this change is acceptable because the Logarithmic Power Level – High will still be required in MODE 2 with the RTCBs open. This change is considered administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

A04 CTS SR 3.3.1.7 Note 2 states that the SR is not required to be performed for logarithmic power level channels until 2 hours after reducing THERMAL POWER below 1E-4% RTP and only if reactor trip circuit breakers (RTCBs) are closed. ITS SR 3.3.1.7 includes a similar Note, but in lieu of specifying the power level as THERMAL POWER and in % RTP, it specifies it as logarithmic power. This changes the CTS by using the term logarithmic power in lieu of THERMAL POWER.

The change to the units for power level is acceptable since it is now referencing the actual power level for the instrument being tested; the logarithmic power level channels. This is more accurate an indication of power level for this function, since THERMAL POWER, which is based on the heat transfer rate, cannot easily be measured in this low of range. This change is designated as administrative since this is the actual intent of the power level requirement.

A05 CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low contains a Note (Note c) which states "The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia. Trips may be bypassed when pressurizer pressure is < 400 psia. Bypass shall be automatically removed before pressurizer pressure exceeds 500 psia (the corresponding bistable allowable value is ≤ 472 psia)." ITS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low contains a Note (Note d) which states "The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psi. Bypass may be enabled when pressurizer pressure is < 400 psia, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia. Bypass shall be removed when pressurizer pressure is ≥ 500 psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased." This changes the CTS by changing the Pressurizer Pressure – Low Note c to more accurately reflect how the bypass works and to delete extraneous information. The deletion of the parenthetical statement is discussed on DOC LA03.

The purpose of CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low Note c is to delineate when the bypass is enabled and when it is disabled. The proposed changes correct wording that has resulted in confusion by discussing when the trip is required to be enabled versus when the bypass is enabled. The automatic nature of the system is based on when the bypass is enabled and automatically removed instead of the trip. The existing wording is not human factored as it requires a change in thought process. The proposed wording presents a more consistent approach by discussing this feature in the terms of the bypass status only and not in terms of the trip being enabled. This change is considered administrative because no technical changes are being made to the trips or bypasses, but only how they are presented in the Note.

A06 CTS Table 3.3.1-1 Function 2, Logarithmic Power Level – High, contains a Note (Note a) which states, "Trip must be enabled when logarithmic power is < 4E-5% RTP. Trip may be manually bypassed during physics testing pursuant to LCO 3.1.12." In addition, the Unit 3 Note contains an asterisk that references

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PCN500. ITS Table 3.3.1-1 Function 2, Logarithmic Power Level – High, contains a similar Note (Note c), but the acronym, "RTP" (RATED THERMAL POWER), will not be included after, "< 4E-5%," and the title of LCO 3.1.12, "Special Test Exceptions (STE) – Low Power Physics Testing," will be added. In addition, the ITS Table 3.3.1-1 Note will not contain the Unit 3 CTS asterisk Note that references PCN500. CTS Table 3.3.1-1 Function 10, Reactor Coolant Flow – Low, Function 11, Low Power Density – High, and Function 12, Departure From Nucleate Boiling Ratio (DNBR) – Low contain a Note (Note d) which states, "Trip must be enabled when logarithmic power is > 1.5E-4% RTP. During testing pursuant to LCO 3.1.12, trip may be bypassed below 5% RTP. Bypass shall be removed when logarithmic power is ≥ 5% RTP." In addition, the Unit 3 Note contains an asterisk that references PCN500. ITS Table 3.3.1-1 Function 10, Reactor Coolant Flow, Steam Generator # 1 – Low, Function 11, Reactor Coolant Flow, Steam Generator #2 – Low, Function 12, Local Power Density – High, and Function 13, Departure From Nucleate Boiling Ratio (DNBR) – Low contain a similar Note (Note e), but the acronym, "RTP," will not be included after "> 1.5E-4%," and "logarithmic power" in the third sentence, when discussing 5% RTP will be changed to "THERMAL POWER." In addition, the ITS Table 3.3.1-1 Note will not contain the Unit 3 CTS asterisk Note that references PCN500. This changes the CTS by eliminating the term RTP when referencing logarithmic power and changing Logarithmic Power to THERMAL POWER when referencing RTP. Also, the title of LCO 3.1.12 will be added and the asterisk Note referencing PCN500 is being deleted.

The purpose of CTS Table 3.3.1-1 Notes a, c and d is to delineate when the associated trip is enabled and when it may be bypassed. The proposed changes eliminate the term RTP when referencing logarithmic power and changes Logarithmic Power to THERMAL POWER when referencing RTP. These changes are acceptable because the nuclear instrumentation measures the logarithmic power as a percent and therefore, it is more appropriate to replace "% RTP" with the term "%" in these Notes. Also, it is more appropriate to discuss bypassing the trip and removing the bypass, when utilizing CTS and ITS LCO 3.1.12, in terms of "THERMAL POWER," because the applicability of CTS and ITS LCO 3.1.12 is MODES 2 and 3 during PHYSICS TESTING, and part of the definition of MODE 2 is ≤ 5% RTP. Therefore, it is appropriate to replace the term, "logarithmic power," with the term, "THERMAL POWER." The proposed change also adds the title for LCO 3.1.12 and deletes the asterisk note referencing PCN500. These changes are acceptable because adding the title is a clarification, and the reference to PCN500 is historical and is not applicable to today's CTS or ITS. This change is considered administrative because no technical changes are being made to the footnotes.

<u>MORE RESTRICTIVE CHANGES</u>

M01 CTS 3.3.1 ACTIONS B and D Required Actions are modified by a Note which states LCO 3.0.4 is not applicable. ITS 3.3.1 ACTIONS B and D Required Actions do not include this Note. This changes the CTS by deleting the exception to LCO 3.0.4 from ACTIONS B and D Required Actions.

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ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

The purpose of the Note to CTS 3.3.1 ACTIONS B AND D Required Actions is to allow the unit to continue MODE changes during a startup with one or more Functions with two automatic RPS trip channels inoperable or with one or more Functions with two operating bypass removal channels inoperable. The proposed change to CTS 3.3.1 deletes the Note. Thus, if one or more Functions have two inoperable RPS trip channels inoperable or two operating bypasses removal channels inoperable, ITS 3.3.1 will only allow MODE changes during startup using the allowances of LCO 3.0.4.b, which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is more restrictive because additional requirements are being added to the ITS than are required by the CTS.

M02 ITS 3.3.1 adds two Notes to Table 3.3.1-1. Note (a) states that "if the as-found channel setpoint is outside of its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service." Note (b) states: "the instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided the as-found and as-left tolerance apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR." The CTS does not contain these Notes. The Notes have been added to CTS SR 3.3.1.7 (CHANNEL FUNCTIONAL TEST) and the CTS SR 3.3.1.9 (CHANNEL CALIBRATION) for CTS Table 3.3.1-1 Function 1, Linear Power Level – High; Function 2, Logarithmic Power Level – High; Function 3, Pressurizer Pressure – High; Function 4, Pressurizer Pressure – Low; Function 5, Containment Pressure – High; Function 6, Steam Generator 1 Pressure – Low; Function 7, Steam Generator 2 Pressure – Low; Function 8, Steam Generator 1 Level – Low; Function 9, Steam Generator 2 Level – Low; Function 10, Reactor Coolant Flow – Low; Function 11, Local Power Density – High; and Function 12, Departure From Nucleate Boiling Ratio (DNBR) – Low. Furthermore, the Notes have been added to CTS SR 3.3.1.8 (CHANNEL CALIBRATION) for CTS Table 3.3.1-1 Function 1 and CTS SR 3.3.1.10 (CHANNEL FUNCTIONAL TEST) for CTS Table 3.3.1-1 Function 11. This changes the CTS by adding two specific Notes to the specific Functions in CTS Table 3.3.1-1. In addition, as a result of adding the two new Notes, CTS Table 3.3.1-1 Notes (a), (c), and (d) were renumbered to Notes (c), (d), and (e), respectively.

The purpose of the two Notes is address a concern that the Technical Specification requirements for Limiting Safety System Settings (LSSS) may not be fully in compliance with the intent of 10 CFR 50.36. Specifically, to address that the existing Surveillance Requirements do not provide adequate assurance that instruments will always actuate safety functions at the point assumed in the applicable safety analysis. 10 CFR 50.36(c)(1)(ii)(A) states, "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting

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safety system setting is specified for a variable on which a safety limit has been placed, the settings must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor." The proposed change clarifies the Technical Specification requirements to ensure that the automatic protective action will correct the abnormal situation before a safety limit is exceeded. The values for the limiting safety system settings may be relocated to licensee control. However, the methodology for determining the settings and the process for determining and maintaining the settings will be in accordance with a Technical Specification required program. This change is consistent with TSTF-493 Option A. This change is considered a more restrictive change because additional requirements have been added to Surveillance Requirements.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS 3.3.1 contains an ACTIONS Note (Note 2) which states if a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee. ITS 3.3.1 ACTIONS do not contain this Note. This changes the CTS by moving the requirements of ACTIONS Note 2 to the Quality Assurance Program (QAP).

The purpose of ACTION Note 2 is to ensure a review is performed by the onsite review committee to discuss the desirability of maintaining the channel in the bypassed condition. The removal of the Note from the Technical Specification 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. ITS 3.3.1 still contains the requirements to place the channel in bypass or trip and to restore the channel to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. Also, this change is acceptable because these types of details will be adequately controlled in the QAP. Any changes to the QAP are made under 10 CFR 50.54(a), 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 Specifications.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.1.1 requires performance of a CHANNEL CHECK of each RPS instrument channel every 12 hours. CTS SR

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ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

3.3.1.2 requires, in part, verification that the total Reactor Coolant System (RCS) flow rate is less than or equal to the RCS total flow rate every 12 hours. CTS SR 3.3.1.3 checks the CPC autorestart count every 12 hours. CTS SR 3.3.1.4 requires performance of a heat balance every 24 hours. CTS SR 3.3.1.5 requires verifying the total RCS flow rate indicated by each CPC is less than or equal to the RCS flow determined by calorimetric calculations every 31 days. CTS SR 3.3.1.6 requires verifying linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the CPCs every 120 days. CTS SR 3.3.1.7 requires performance of CHANNEL FUNCTIONAL TEST on each channel every 30 days on a STAGGERED TEST BASIS. CTS SR 3.3.1.8 requires performance of a CHANNEL CALIBRATION of the power range neutron flux channels every 120 days. CTS SR 3.3.1.9 requires performance of a CHANNEL CALIBRATION on each channel, including bypass removal functions every 24 months. CTS SR 3.3.1.10 requires performance of a CHANNEL FUNCTIONAL TEST on each CPC channel every 24 months. CTS SR 3.3.1.13 requires verifying RPS RESPONSE TIME is within limits every 24 months on a STAGGERED TEST BASIS. ITS SR 3.3.1.1, SR 3.3.1.2, SR 3.3.1.3, SR 3.3.1.4, SR 3.3.1.5, SR 3.3.1.6, SR 3.3.1.7, SR 3.3.1.8, SR 3.3.1.9, SR 3.3.1.10, and SR 3.3.1.13 require similar Surveillances, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times.

DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:
   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);

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ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

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DISCUSSION OF CHANGES
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low, contains a Note (Note c) which states in part, "Bypass shall be automatically removed when pressurizer pressure exceeds 500 psia (the corresponding bistable allowable value is ≤ 472 psia)." ITS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low, contains a similar Note (Note d) but does not contain the parenthetical statement, "(the corresponding bistable allowable value is ≤ 472 psia)." This changes the CTS by moving the CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low, Note c parenthetical statement from the Technical Specifications to the Licensee Controlled Specifications (LCS).

The purpose of the CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low, Note c parenthetical statement is to describe that the ≤ 472 psia value represents an allowable value which includes margin to account for instrument loop uncertainties and ensures the 500 psia analytical limit will not be exceeded. This proposed change, to relocate this parenthetical statement to the Licensee Controlled 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 CTS and ITS Note is providing a clarification as to when the Function is required to be Applicable. As such, the manner in which the Applicability is automatically ensured (by the bistable) is more appropriate for plant controlled documents. This specific requirement will be relocated to the Licensee Controlled Specifications which controls the requirements for the as-left and as-found values associated with the setpoints and bypass removal functions. This change is acceptable because these types of procedural details will be adequately controlled in the Licensee Controlled Specifications via the 10 CFR 50.59 program. This program provides for the evaluation of changes to ensure the changes are adequately controlled. This change is designated as a less restrictive removal of detail change because procedural details are being moved from the Technical Specifications to the Licensee Controlled Specifications.

LESS RESTRICTIVE CHANGES

None

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

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation - Operating (Digital) 1

LCO 3.3.1

LCO 3.3.1 Four RPS trip and bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

--NOTE--

ACTIONS Note 1

Separate Condition entry is allowed for each RPS Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One or more Functions with one automatic RPS trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
ACTION B	B. One or more Functions with two automatic RPS trip channels inoperable.	B.1 Place one channel in bypass and the other in trip.	1 hour
ACTION C	C. One or more Functions with one ~~automatic~~ operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR	1 hour 2

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION C		C.2.1 Place affected automatic trip channel in bypass or trip. AND C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
ACTION D	D. One or more Functions with two ~~automatic~~ operating bypass removal channels inoperable.	D.1 Disable bypass channels. OR D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour 1 hour
ACTION E	E. One or more core protection calculator (CPC) channels with a cabinet high temperature alarm.	E.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	12 hours
ACTION F	F. One or more CPC channels with three or more autorestarts during a 12 hour period.	F.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	24 hours
ACTION G	G. Required Action and associated Completion Time not met.	G.1 Be in MODE 3.	6 hours

2

SURVEILLANCE REQUIREMENTS

Surveillance Requirements Note

-----NOTE-----
Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	SR 3.3.1.1 Perform a CHANNEL CHECK of each RPS instrument channel except Loss of Load. 3	12 hours In accordance with the Surveillance Frequency Control Program TSTF-425-A
SR 3.3.1.2	SR 3.3.1.2 -----NOTE----- Not required to be performed until 12 hours after THERMAL POWER ≥ 70 85 % RTP. ----- 4 Verify total Reactor Coolant System (RCS) flow rate as indicated by each CPC is less than or equal to the RCS total flow rate. If necessary, adjust the CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to the RCS flow rate.	12 hours In accordance with the Surveillance Frequency Control Program TSTF-425-A
SR 3.3.1.3	SR 3.3.1.3 Check the CPC auto restart count.	12 hours In accordance with the Surveillance Frequency Control Program TSTF-425-A
SR 3.3.1.4	SR 3.3.1.4 -----NOTES----- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. 2. The daily calibration may be suspended during PHYSICS TESTS, provided the calibration is performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau. ----- Perform calibration (heat balance only) and adjust compare the indicated linear power level signals and the CPC addressable constant multipliers to make , the CPC ΔT power and CPC nuclear power calculations agree with the calorimetric calculation and if any are less than the calorimetric calculation by more than 1.0% or any greater than 5.0% RTP, adjust the indication to be within these limits (- 1.0% to + 5.0%), if the absolute difference is ≥ [2]%.	24 hours In accordance with the Surveillance Frequency Control Program TSTF-425-A 5

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.5 SR 3.3.1.5	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after THERMAL POWER ≥ ~~70~~ 85% RTP. --- Verify total RCS flow rate indicated by each CPC is less than or equal to the RCS flow determined by calorimetric calculations. 4	~~31 days~~ In accordance with the Surveillance Frequency Control Program TSTF-425-A
SR 3.3.1.6 SR 3.3.1.6	------------------------------NOTE------------------------------ Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. --- Verify linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the CPCs.	~~31 days~~ In accordance with the Surveillance Frequency Control Program TSTF-425-A
SR 3.3.1.7 SR 3.3.1.7	----------------------------NOTES---------------------------- 1. The CPC CHANNEL FUNCTIONAL TEST shall include verification that the correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for logarithmic power level channels until 2 hours after reducing logarithmic power below 1E-4% and only if reactor trip circuit breakers (RTCBs) are closed. --- Perform CHANNEL FUNCTIONAL TEST on each channel ~~except Loss of Load and power range neutron flux~~. 3	~~92 days~~ In accordance with the Surveillance Frequency Control Program TSTF-425-A

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.1.8	SR 3.3.1.8	------------------------------NOTE------------------------------ Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION of the power range neutron flux channels.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
	~~SR 3.3.1.9~~	~~------------------------------NOTE------------------------------ [Not required to be performed until 2 hours after THERMAL POWER ≥ 55% RTP. -- Perform CHANNEL FUNCTIONAL TEST for Loss of Load Function.~~	~~92 days]~~	3
SR 3.3.1.9	SR 3.3.1.~~10~~ 9	------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION on each channel, including bypass removal functions.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	3 TSTF-425-A
SR 3.3.1.10	SR 3.3.1.~~11~~ 10	Perform a CHANNEL FUNCTIONAL TEST on each CPC channel.	~~[18] months~~	3 TSTF-425-A
SR 3.3.1.11	SR 3.3.1.~~12~~ 11	Using the incore detectors, verify the shape annealing matrix elements to be used by the CPCs.	Once after each refueling prior to exceeding ~~70~~ 85% RTP	3 4
SR 3.3.1.12	SR 3.3.1.~~13~~ 12	Perform a CHANNEL FUNCTIONAL TEST on each ~~automatic~~ operating bypass removal function.	Once within ~~92~~ 120 days prior to each reactor startup	3 2 8

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.1.13	SR 3.3.1.~~14~~ 13	------------------------------NOTE------------------------------ Neutron detectors are excluded. --- Verify RPS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program ~~[18] months on a STAGGERED TEST BASIS~~	3 TSTF-425-A

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 1	1. Linear Power Level - High	1,2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 (a)(b) SR 3.3.1.8 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~14~~ 13	≤ ~~[111.3]~~ 111.0 % RTP	6 TSTF-493 3
Table 3.3.1-1 Function 2	2. Logarithmic Power Level - High ~~(a)~~ (c)	2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~13~~ 12 SR 3.3.1.~~14~~ 13	≤ ~~[.96]~~ .93 %	6 TSTF-493 3
Table 3.3.1-1 Function 3	3. Pressurizer Pressure - High	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~14~~ 13	≤ ~~[2389]~~ 2385 psia	6 TSTF-493 3
Table 3.3.1-1 Function 4	4. Pressurizer Pressure - Low ~~(c)~~ (d)	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~13~~ 12 SR 3.3.1.~~14~~ 13	≥ ~~[1763] psig~~ 1700 psia	6 TSTF-493 3
Table 3.3.1-1 Function 5	5. Containment Pressure - High	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~14~~ 13	≤ ~~[3.14]~~ 3.4 psig	6 TSTF-493 3
Table 3.3.1-1 Function 6	6. Steam Generator #1 Pressure - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 (a)(b) SR 3.3.1.~~10~~ 9 (a)(b) SR 3.3.1.~~14~~ 13	≥ ~~[711]~~ 729 psia	6 TSTF-493 3

INSERT 1

(c) ~~(a)~~ ~~Bypass may~~ Trip must be enabled when logarithmic power is ~~> [1E-4]%~~ < 4E-5% ~~and shall be capable of automatic removal whenever logarithmic power is > [1E-4]%. Bypass shall be removed prior to reducing logarithmic power to a value ≤ [1E-4]%.~~ Trip may be manually bypassed during physics testing pursuant to LCO ~~3.4.17, "RCS Loops - Test Exceptions.~~ 3.1.12, "Special Test Exceptions (STE) – Low Power Physics Testing." TSTF-493 10 7

~~(b) Not used.~~

(d) ~~(c)~~ The setpoint may be decreased to a minimum value of ~~[~~300~~]~~ psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ ~~[~~400~~]~~ psi. Bypass may be enabled when pressurizer pressure is < ~~[500]~~ 400 psia ~~and shall be~~ provided the bypass is capable of automatic removal whenever pressurizer pressure is < ~~[500]~~ 400 psia. Bypass shall be removed ~~prior to raising~~ when pressurizer pressure ~~to a value~~ is ≥ ~~[~~500~~]~~ psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased. TSTF-493 6 12

3.3.1

TSTF-493-A

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

N

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

Nominal

NTSP

the UFSAR.

actual trip setting

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Table 3.3.1-1 (page 2 of 3)
Reactor Protective System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 7	7. Steam Generator #2 Pressure - Low	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 9 SR 3.3.1.10 13 SR 3.3.1.14	≥ [711] psia 729	6 3 TSTF-493
Table 3.3.1-1 Function 8	8. Steam Generator #1 Level - Low	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 9 SR 3.3.1.10 13 SR 3.3.1.14	≥ [24.23]% 20	6 3 TSTF-493
Table 3.3.1-1 Function 9	9. Steam Generator #2 Level - Low	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 9 SR 3.3.1.10 13 SR 3.3.1.14	≥ [24.23]% 20	6 3 TSTF-493
Table 3.3.1-1 Function 10	[10. Reactor Coolant Flow, Steam Generator #1 - Low(d) (e)	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 9 SR 3.3.1.10 12 [SR 3.3.1.13] 13 SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid] 7.25	6 3 TSTF-493
Table 3.3.1-1 Function 10	[11. Reactor Coolant Flow, Steam Generator #2 - Low(d) (e)	1,2	(a)(b) SR 3.3.1.1 SR 3.3.1.7 9 SR 3.3.1.10 12 [SR 3.3.1.13] 13 SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid] 7.25	6 3 TSTF-493
	~~[12. Loss of Load (turbine stop valve control oil pressure)(e)~~	~~1~~	~~SR 3.3.1.9 SR 3.3.1.10 [SR 3.3.1.13]~~	~~≥ [100] psig]~~	3

INSERT 2 TSTF-493

e (d) ~~Bypass may~~ Trip must be enabled when logarithmic power is ~~< [1E-04]% and shall be capable of automatic removal whenever logarithmic power is < [1E-4]%. Bypass shall be removed prior to raising logarithmic power to a value ≥ [1E-4]%.~~ > 1.5E-4%. During testing pursuant to LCO ~~3.4.17, bypass may be enabled when THERMAL POWER is < [5]% RTP and shall be capable of automatic removal whenever THERMAL POWER is <~~ 3.1.12, trip may be bypassed below [5]% RTP. Bypass shall be removed ~~above~~ when THERMAL POWER is ≥ 5% RTP. 10 7

~~(e) Bypass may be enabled when THERMAL POWER is < [55]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [55]% RTP. Bypass shall be removed prior to raising THERMAL POWER to a value ≥ [55]% RTP.~~ 3

3.3.1

TSTF-493-A

INSERT 2

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

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

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U2/U3 CTS

RPS Instrumentation - Operating ~~(Digital)~~ 1
3.3.1

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
Table 3.3.1-1 Function 11	~~13~~ 12. Local Power Density - High ~~(d)~~ (e)	1,2	SR 3.3.1.1 ~~SR 3.3.1.2~~ SR 3.3.1.3 SR 3.3.1.4 ~~SR 3.3.1.5~~ (a)(b) SR 3.3.1.7 SR 3.3.1.~~10~~ 9 SR 3.3.1.~~11~~ 10 SR 3.3.1.~~12~~ 11 SR 3.3.1.~~13~~ 12 SR 3.3.1.~~14~~ 13	≤ ~~[~~21.0~~]~~ kW/ft	TSTF-493 TSTF-493
Table 3.3.1-1 Function 12	~~14~~ 13. Departure From Nucleate Boiling Ratio (DNBR) - Low ~~(d)~~ (e)	1,2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 (a)(b) SR 3.3.1.7 SR 3.3.1.~~10~~ 9 SR 3.3.1.~~11~~ 10 SR 3.3.1.~~12~~ 11 SR 3.3.1.~~13~~ 12 SR 3.3.1.~~14~~ 13	≥ ~~[~~1.31~~]~~	TSTF-493

INSERT 3 TSTF-493

(e) ~~(d)~~ Trip must ~~Bypass may~~ be enabled when logarithmic power is > 1.5E-4. ~~< [1E-04]% and shall be capable of automatic removal whenever logarithmic power is < [1E-4]%. Bypass shall be removed prior to raising logarithmic power to a value ≥ [1E-4]%.~~ During testing pursuant to LCO ~~3.4.17, bypass may be enabled when THERMAL POWER is <~~ 3.1.12, trip may be bypassed below ~~[~~5~~]~~% RTP ~~and shall be capable of automatic removal whenever THERMAL POWER is < [5]% RTP~~. Bypass shall be removed ~~above~~ when THERMAL POWER is ≥ 5% RTP. 10 7

3.3.1

TSTF-493-A

INSERT 3

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

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

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Insert Page 3.3.1-9

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

1. The heading for ISTS 3.3.1 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. SONGS Units 2 and 3 are digital plants; therefore, analog requirements and specific labels that identify a requirement is digital are not required.

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

3. The ISTS contains bracketed information for the Loss of Load (turbine stop valve control oil pressure) that is generic to most Combustion Engineering vintage plants. The loss of load requirements have not been incorporated for SONGS. This is acceptable since SONGS does not require the Loss of Load Function (it was deleted from Technical Specifications as part of License Amendments 127 and 116). Therefore, this is acceptable since the information/value is changed to reflect the current licensing basis. Additionally, subsequent Surveillance Requirements have been renumbered due to the deletion of ISTS SR 3.3.1.9.

4. ISTS SR 3.3.1.2 and ISTS SR 3.3.1.5 Notes have been revised to indicate that the Surveillances are not required to be performed until 12 hours after THERMAL POWER is greater than or equal to 85% RTP. ITS SR 3.3.1.11 (ISTS SR 3.3.1.12) Frequency has been revised to indicate that the Surveillance is required to be performed once after each refueling prior to exceeding 85% RTP. These changes are acceptable since they reflect the SONGS current licensing requirements.

5. ISTS SR 3.3.1.4 requires performance of calibration (heat balance only) and adjustment of the linear power level signals and the CPC addressable constant multipliers to make the CPC ΔT power and CPC nuclear power calculations agree with the calorimetric, if the absolute difference is ≥ [2]%. ITS SR 3.3.1.4 requires performance of calibration (heat balance only) and comparing of the linear power level, the CPC ΔT power, and CPC nuclear power with the calorimetric calculation and if any are less than the calorimetric calculation by more than 1.0% or any greater than 5.0% RTP, adjust the indication to be within these limits (- 1.0% to + 5.0%). This change is acceptable since it reflects the SONGS current licensing requirements.

6. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

7. ISTS Table 3.3.1-1 Note c states, in part, that the trip may be bypassed during physics testing pursuant to LCO 3.4.17, "RCS Loops – Test Exceptions. ITS Table 3.3.1-1 Note c states, in part, that the trip may be bypassed during physics testing pursuant to LCO 3.1.12, "Special Test Exceptions (STE) – Low Power Physics Testing." This change is acceptable because SONGS' physics testing is performed in LCO 3.1.12 consistent with current licensing requirements.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

8. ISTS SR 3.3.1.13 (ITS SR 3.3.1.12) Frequency has been revised to indicate that the Surveillance is required to be performed once within 120 days prior to each reactor startup. This change is acceptable since it reflects the SONGS Units 2 and 3 current licensing requirements. This change was approved by the NRC as documented in the NRC Safety Evaluation for Amendments 133 and 122, dated November 18, 1996 (ADAMS Accession No. ML022000208).

9. These changes are grammatical corrections, correcting punctuation, or other changes that are consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

10. ISTS Table 3.3.1-1 Notes a and d (ITS Table 3.3.1-1 Notes c and e) were revised consistent with SONGS Units 2 and 3 License Amendments 150 and 142, respectively, dated February 12, 1999 (ADAMS Accession No. ML022000195).

11. The acronym for Nominal Trip Setpoint, "NTSP," was used in the SONGS ITS instead of spelling out Nominal Trip Setpoint (as it is in TSTF-493), because the acronym is defined in the first sentence of the Insert.

12 ISTS Table 3.3.1-1 Note c (ITS Table 3.3.1-1 Note d) was revised to more accurately and clearly reflect how the Bypass is enabled, automatically removed, and when it is actually required to be removed. The proposed change corrects wording that has resulted in confusion. The automatic nature of the system is based on when the bypass is enabled and automatically removed. The proposed wording presents a more consistent approach by discussing the setpoint in terms of ≥ rather than using the terms above and prior to raising. Also, instead of stating "the bypass shall be capable of automatic removal," the statement "provided the bypass is capable of automatic removal," is being used. Using this statement ensures that the bypass is capable of being automatically removed before the bypass can be enabled and reflects the bypass cannot be automatically removed if the bypass is not enabled.

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

TSTF-493

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Protective System (RPS) Instrumentation - Operating ~~(Digital)~~ 1

BASES

BACKGROUND

Reactor Protective System ( )

The RPS initiates a reactor trip to protect against violating the core specified acceptable fuel design limits and breaching the reactor coolant pressure boundary (RCPB) during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Features (ESF) systems in mitigating accidents.

The protection and monitoring systems have been designed to ensure 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 LCOs on other reactor system parameters and equipment performance.

for variables that have significant safety functions. LSSS are

include

INSERT 1

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~~ Analytical 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 Analytical ~~Analytic~~ Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic ~~protective devices~~ protection channels must be chosen to be more conservative than the ~~Analytic~~ Analytical Limit to account for channel ~~instrument loop~~ uncertainties related to the setting at which the automatic protective action would actually occur.

INSERT 3

INSERT 2

channel

The ~~trip setpoint~~ is a predetermined setting for a protective ~~device~~ chosen to ensure automatic actuation prior to the process variable reaching the Analytical ~~Analytic~~ Limit and thus ensuring that the SL would not be exceeded. As such, the N LTSP ~~trip setpoint~~ accounts for uncertainties in setting the ~~device~~ channel (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 N LTSP ensures ~~trip setpoint plays an important role in ensuring~~ that SLs are not exceeded. As such, the N LTSP ~~trip setpoint~~ meets the definition of a~~n~~ LSSS (Ref. ~~1~~ 2) ~~and could be used to meet the requirement that they be contained in the Technical Specifications.~~ 2

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"Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen

TSTF-493

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

~~"Nominal Trip Setpoint [NTSP]" is the suggested terminology for the actual setpoint implemented in the plant surveillance procedures where margin has been added to the calculated [LTSP]. The as-found and as-left tolerances will apply to the [NTSP] implemented in the Surveillance procedures to confirm channel performance.~~

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

~~Where the [LTSP] is not included in Table 3.3.1-1, the plant-specific location for the [LTSP] or NTSP must be cited in Note b of Table 3.3.1-1. The brackets indicate plant-specific terms may apply, as reviewed and approved by the NRC.~~
~~--~~ 4

TSTF-493

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Nominal Trip Setpoint (NTSP)

UFSAR Section 7.2 (Ref. 1)

The ~~[Limiting Trip Setpoint (LTSP]~~ specified in ~~the Table 3.3.1-1~~ 2

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RPS Instrumentation - Operating ~~(Digital)~~ 1
B 3.3.1

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. 9 2 2 2

Relying solely on

specified

N → NTSP

protection channel

-

protection channel

N → NTSP

because

N → NTSP

protection channel

-

channel

because

INSERT 4

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

~~The Allowable Valuable 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. As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a SL is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the~~

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INSERT 4

N

channel within the established as-left tolerance around the ~~L~~TSP 2

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BASES

BACKGROUND (continued)

~~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~~ must be left adjusted to a value within the as-left ~~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 (as-found criteria). TSTF-493

INSERT 5

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

- The departure from nucleate boiling ratio (DNBR) shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling (DNB)~~,~~; 3
- Fuel centerline melting shall not occur~~,~~; and 3
- The Reactor Coolant System (RCS) pressure SL of 2750 psia shall not be exceeded.

Maintaining the parameters within the above values ensures that the offsite dose will be within the ~~10 CFR 50 (Ref. 2) and~~ 10 CFR ~~100~~ 50.67 (Ref. 3) criteria during AOOs. 8 2

Accidents are events that are analyzed even though they are not expected to occur during the plant life. The acceptable limit during accidents is that the offsite dose shall be maintained within an acceptable fraction of 10 CFR ~~100~~ 50.67 (Ref. 3) limits. Different accident categories allow a different fraction of these limits based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event. 2

The RPS is segmented into four interconnected modules. These modules are:

- Measurement channels~~,~~; 3

TSTF-493

INSERT 5

However, there is also some point beyond which the channel may not be able to perform its function due to, for example, greater than expected drift. This value needs to be specified in the Technical Specifications in order to define OPERABILITY of the channels and is designated as the Allowable Value.

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

BASES

BACKGROUND (continued)

- Bistable trip units; 3
- RPS Logic: - Matrix Logic; - Initiation Logic (trip paths); and 2
- Reactor trip circuit breakers (RTCBs).

This LCO addresses measurement channels and bistable trip units. It also addresses the automatic bypass removal feature for those trips with operating bypasses. The RPS Logic and RTCBs are addressed in LCO 3.3.4, "Reactor Protective System (RPS) Logic and Trip Initiation." The CEACs are addressed in LCO 3.3.3, "Control Element Assembly Calculators (CEACs)."

Measurement Channels

Measurement channels, consisting of field transmitters or process sensors and associated instrumentation, provide a measurable electronic signal based upon the physical characteristics of the parameter being measured.

The excore nuclear instrumentation, the core protection calculators (CPCs), and the CEACs, though complex, are considered components in the measurement channels of the Linear Power Level - High, Logarithmic Power Level - High, DNBR - Low, and Local Power Density (LPD) - High trips.

Four identical measurement channels, designated channels A through D, with electrical and physical separation, are provided for each parameter used in the generation of trip signals, with the exception of the control element assembly (CEA) position indication used in the CPCs. Each measurement channel provides input to one or more RPS bistables within the same RPS channel. In addition, some measurement channels may also be used as inputs to Engineered Safety Features Actuation System (ESFAS) bistables, and most provide indication in the control room. Measurement channels used as an input to the RPS are not used for control functions. There are some measurement channels that provide an input to a common RPS/ESFAS bistable within the same RPS channel. 2

When a channel monitoring a parameter exceeds a predetermined setpoint, indicating an unsafe condition, the bistable monitoring the parameter in that channel will trip. Tripping bistables monitoring the same parameter in two or more channels will de-energize Matrix Logic, which in turn de-energizes the Initiation Logic. This causes all eight RTCBs to open, interrupting power to the CEAs, allowing them to fall into the core.

BASES

BACKGROUND (continued)

Three of the four measurement and bistable channels are necessary to meet the redundancy and testability of 10 CFR 50, Appendix A, GDC 21 (Ref. 4 ~~2~~). The fourth channel provides additional flexibility by allowing one channel to be removed from service (trip channel bypass) for maintenance or testing while still maintaining a minimum two-out-of-three logic. Thus, even with a channel inoperable, no single additional failure in the RPS can either cause an inadvertent trip or prevent a required trip from occurring. 2

~~-----REVIEWER'S NOTE-----~~
~~In order to take full advantage of the four channel design, adequate channel to channel independence must be demonstrated and approved by the NRC staff. Plants not currently licensed so as to credit four channel independence and that desire this capability must have approval of the NRC staff documented by an NRC Safety Evaluation Report (SER) (Ref. 4).~~ 4
~~----------~~

Adequate channel to channel independence includes physical and electrical independence of each channel from the others. This allows operation in two-out-of-three logic with one channel removed from service until following the next MODE 5 entry. Since no single failure will either cause or prevent a protective system actuation, and no ~~protective~~ protection channel feeds a control, this arrangement meets the requirements of IEEE Standard 279-1971 (Ref. 5). TSTF-493

The CPCs perform the calculations required to derive the DNBR and LPD parameters and their associated RPS trips. Four separate CPCs perform the calculations independently, one for each of the four RPS channels. The CPCs provide outputs to drive display indications (DNBR margin, LPD margin, and calibrated neutron flux power levels) and provide DNBR - Low and LPD - High pretrip and trip signals. The CPC channel outputs for the DNBR - Low and LPD - High trips operate contacts in the Matrix Logic in a manner identical to the other RPS trips.

Each CPC receives the following inputs:

- Hot leg and cold leg temperatures ~~,~~ ; 3
- Pressurizer pressure ~~,~~ ; 3
- Reactor coolant pump speed ~~,~~ ; 3

BASES

BACKGROUND (continued)

- Excore neutron flux levels; 3
- Target CEA positions; and 3
- CEAC penalty factors.

Each CPC is programmed with "addressable constants." These are various alignment values, correction factors, etc., that are required for the CPC computations. They can be accessed for display or for the purpose of changing them as necessary.

The CPCs use this constant and variable information to perform a number of calculations. These include the calculation of CEA group and subgroup deviations (and the assignment of conservative penalty factors), correction and calculation of average axial power distribution (APD) (based on excore flux levels and CEA positions), calculation of coolant flow (based on pump speed), and calculation of calibrated average power level (based on excore flux levels and ΔT power).

The DNBR calculation considers primary pressure, inlet temperature, coolant flow, average power, APD, radial peaking factors, and CEA deviation penalty factors from the CEACs to calculate the state of the limiting (hot) coolant channel in the core. A DNBR - Low trip occurs when the calculated value reaches the minimum DNBR trip setpoint.

The LPD calculation considers APD, average power, radial peaking factors (based upon target CEA position), and CEAC penalty factors to calculate the current value of compensated peak power density. An LPD - High trip occurs when the calculated value reaches the trip setpoint. The four CPC channels provide input to the four DNBR - Low and four LPD - High RPS trip channels. They effectively act as the sensor (using many inputs) for these trips.

The CEACs perform the calculations required to determine the position of CEAs within their subgroups for the CPCs. Two independent CEACs compare the position of each CEA to its subgroup position. If a deviation is detected by either CEAC, an annunciator sounds and appropriate "penalty factors" are transmitted to all CPCs. These penalty factors conservatively adjust the effective operating margins to the DNBR - Low and LPD - High trips. Each CEAC also drives a single cathode ray tube (CRT), which is switchable between CEACs. The CRT displays individual CEA positions and current values of the penalty factors from the selected CEAC.

BASES

BACKGROUND (continued)

Each CEA has two separate reed switch assemblies mounted outside the RCPB. Each of the two CEACs receives CEA position input from one of the two reed switch position transmitters on each CEA, so that the position of all CEAs is independently monitored by both CEACs.

CEACs are addressed in LCO 3.3.3.

Bistable Trip Units

Bistable trip units, mounted in the Plant Protection System (PPS) cabinet, receive an analog input from the measurement channels. They compare the analog input to trip setpoints and provide contact output to the Matrix Logic. They also provide local trip indication and remote annunciation.

There are four channels of bistables, designated A, B, C, and D, for each RPS parameter, one for each measurement channel. Bistables de-energize when a trip occurs, in turn de-energizing bistable relays mounted in the PPS relay card racks.

The contacts from these bistable relays are arranged into six coincidence matrices, comprising the Matrix Logic. If bistables monitoring the same parameter in at least two channels trip, the Matrix Logic will generate a reactor trip (two-out-of-four logic).

Some measurement channels provide contact outputs to the PPS. In these cases, there is no bistable card, and opening the contact input directly de-energizes the associated bistable relays. These include the Loss of Load trip and the CPC generated DNBR - Low and LPD - High trips.

calculation INSERT 6 TSTF-493

The trip setpoints used in the bistables are based on the analytical limits derived from the accident analysis (Ref. 6). The ~~selection~~ of ~~these trip setpoints~~ is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RPS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 7), Allowable Values specified in Table 3.3.1-1, in the accompanying LCO, are

TSTF-493

INSERT 6

NTSP UFSAR Section 7.2 (Ref. 1)

the ~~Limiting Trip Setpoint~~ specified in ~~Table 3.3.1-1~~ 11 2

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BASES

BACKGROUND (continued)

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 ~~"Plant Protection System Selection of Trip Setpoint Values"~~ PPS Setpoint Calculation CE-NPSD-570 (Ref. 8). The ~~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 interval between surveillances. ~~A channel is inoperable if its actual setpoint is not within its Allowable Value.~~ 2

INSERT 7

Nominal ~~Limiting~~ Trip Setpoints in ~~accordance~~ conjunction with the INSERT 8 Allowable Value will ensure that SLs of Chapter 2.0, "SAFETY LIMITS (SLs)," are not violated during AOOs, and the consequences of DBAs will be acceptable, providing the plant is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed. 2

Note that in LCO 3.3.1, the Allowable Values of Table 3.3.1-1 are the INSERT 9 ~~LSSS~~.

Functional testing of the entire RPS, from bistable input through the opening of individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis. Nuclear instrumentation, the CPCs, and the CEACs can be similarly tested. UFSAR, Section ~~[~~7.2~~]~~ (Ref. ~~9~~ 1), provides more detail on RPS testing. Processing transmitter calibration is normally performed on a refueling basis. 2 5

<u>RPS Logic</u>

The RPS Logic, addressed in LCO 3.3.4, consists of both Matrix and Initiation Logic and employs a scheme that provides a reactor trip when bistables in any two of the four channels sense the same input parameter trip. This is called a two-out-of-four trip logic.

Bistable relay contact outputs from the four channels are configured into six logic matrices. Each logic matrix checks for a coincident trip in the same parameter in two bistable channels. The matrices are designated the AB, AC, AD, BC, BD, and CD matrices to reflect the bistable channels being monitored. Each logic matrix contains four normally energized matrix relays. When a coincidence is detected, consisting of a trip in the same Function in the two channels being monitored by the logic matrix, all four matrix relays de-energize.

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INSERT 7

N

The LTSP is the value at which the bistable is set and is the expected value to be achieved during calibration. The LTSP value is the LSSS and ensures the safety analysis limits are met for the surveillance interval selected when a channel is adjusted based on stated channel uncertainties. 2

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INSERT 8

use of as-found and as-left tolerances, consistent with the requirements of the

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INSERT 9

least conservative value of the as-found setpoint that a channel can have during a periodic CHANNEL CALIBRATION or CHANNEL FUNCTIONAL TEST

BASES

BACKGROUND (continued)

The matrix relay s ~~contacts~~ are arranged into trip paths ~~, with one of the~~ . The four matrix relays have ~~in each matrix opening~~ contacts in each ~~one~~ of the four trip paths. 2 Each of the six logic relays have contacts that open in each of the four trip paths. Each trip path provides power to one of the four normally energized RTCB control relays (K1, K2, K3, and K4). The trip paths thus each have six contacts in series, one from each matrix, and perform a logical OR function, opening the RTCBs if any one or more of the six logic matrices indicate a coincidence condition.

Each trip path is responsible for opening one set of two of the eight RTCBs. The RTCB control relays (K-relays), when de-energized, interrupt power to the breaker undervoltage trip attachments and simultaneously apply power to the shunt trip attachments on each of the two breakers. Actuation of either the undervoltage or shunt trip attachment is sufficient to open the RTCB and interrupt power from the motor generator (MG) sets to the control element drive mechanisms (CEDMs).

When a coincidence occurs in two RPS channels, all four matrix relays in the affected matrix de-energize. This in turn de-energizes all four breaker control relays, which simultaneously de-energize the undervoltage and energize the shunt trip attachments in all eight RTCBs, tripping them open.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition, since they are addressed as part of the measurement channel.

The Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and solid state (auxiliary) relays through the K-relay contacts in the RTCB control circuitry.

It is possible to change the two-out-of-four RPS Logic to a two-out-of-three logic for a given input parameter in one channel at a time by trip channel bypassing select portions of the Matrix Logic. Trip channel bypassing a bistable effectively shorts the bistable relay contacts in the three matrices associated with that channel. Thus, the bistables will

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BASES

BACKGROUND (continued)

function normally, producing normal trip indication and annunciation, but a reactor trip will not occur unless two additional channels indicate a trip condition. Trip channel bypassing can be simultaneously performed on any number of parameters in any number of channels, providing each parameter is bypassed in only one channel at a time. An interlock prevents simultaneous trip channel bypassing of the same parameter in more than one channel. Trip channel bypassing is normally employed during maintenance or testing.

Two-out-of-three logic also prevents inadvertent trips caused by any single channel failure in a trip condition.

In addition to the trip channel bypasses, there are also operating bypasses on select RPS trips. These bypasses are enabled manually in all four RPS channels when plant conditions do not warrant the specific trip protection. All operating bypasses are automatically removed when enabling bypass conditions are no longer satisfied. Operating bypasses are normally implemented in the bistable, so that normal trip indication is also disabled. Trips with operating bypasses include Pressurizer Pressure - Low, Logarithmic Power Level - High, Reactor Coolant Flow - Low, and CPC (DNBR - Low and LPD - High).

~~The Loss of Load trip bypass is automatically enabled and disabled.~~ 2

<u>Reactor Trip Circuit Breakers (RTCBs)</u>

The reactor trip switchgear, addressed in LCO 3.3.4, consists of eight RTCBs, which are operated in four sets of two breakers (four channels). Power input to the reactor trip switchgear comes from two full capacity MG sets operated in parallel, such that the loss of either MG set does not de-energize the CEDMs. There are two separate CEDM power supply buses, each bus powering half of the CEDMs. Power is supplied from the MG sets to each bus via two redundant paths (trip legs). Trip legs 1A and 1B supply power to CEDM bus 1. Trip legs 2A and 2B supply power to CEDM bus 2. This ensures that a fault or the opening of a breaker in one trip leg (i.e., for testing purposes) will not interrupt power to the CEDM buses.

Each of the four trip legs consists of two RTCBs in series. The two RTCBs within a trip leg are actuated by separate initiation circuits.

BASES

BACKGROUND (continued)

The eight RTCBs are operated as four sets of two breakers (four channels). For example, if a breaker receives an open signal in trip leg A (for CEDM bus 1), an identical breaker in trip leg B (for CEDM bus 2) will also receive an open signal. This arrangement ensures that power is interrupted to both CEDM buses, thus preventing trip of only half of the CEAs (a half trip). Any one inoperable breaker in a channel will make the entire channel inoperable.

Each set of RTCBs is operated by either a manual reactor trip push button or an RPS actuated K-relay. There are four Manual Trip push buttons, arranged in two sets of two. Depressing both push buttons in either set will result in a reactor trip.

When a Manual Trip is initiated using the control room push buttons, the RPS trip paths and K-relays are bypassed, and the RTCB undervoltage and shunt trip attachments are actuated independent of the RPS.

Manual Trip circuitry includes the push button and interconnecting wiring to both RTCBs necessary to actuate both the undervoltage and shunt trip attachments but excludes the K-relay contacts and their interconnecting wiring to the RTCBs, which are considered part of the Initiation Logic.

Functional testing of the entire RPS, from bistable input through the opening of individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis. FSAR, U Section ~~[~~7.2~~]~~ (Ref. ~~9~~ 1), explains RPS testing in more detail. 5 2

APPLICABLE SAFETY ANALYSES

Design Basis Definition

The RPS is designed to ensure that the following operational criteria are met:

- The associated actuation will occur when the parameter monitored by each channel reaches its setpoint and the specific coincidence logic is satisfied~~,~~ ; and 3
- Separation and redundancy are maintained to permit a channel to be out of service for testing or maintenance while still maintaining redundancy within the RPS instrumentation network.

Each of the analyzed accidents and transients can be detected by one or more RPS Functions. The accident analysis takes credit for most of the RPS trip Functions. Those functions for which no credit is taken, termed equipment protective functions, are not needed from a safety perspective.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Each RPS setpoint is chosen to be consistent with the function of the respective trip. The basis for each trip setpoint falls into one of three general categories:

Category 1: To ensure that the SLs are not exceeded during AOOs~~,~~ ; 3

Category 2: To assist the ESFAS during accidents~~,~~ ; and 3

Category 3: To prevent material damage to major plant components (equipment protective).

The RPS maintains the SLs during AOOs and mitigates the consequences of DBAs in all MODES in which the RTCBs are closed.

Each of the analyzed transients and accidents can be detected by one or more RPS Functions. ~~Functions not specifically credited in the accident analysis are part of the NRC staff approved licensing basis for the plant. Noncredited Functions include the Loss of Load. This trip is purely equipment protective, and its use minimizes the potential for equipment damage.~~ 13

INSERT 10

The specific safety analysis applicable to each protective function ~~are~~ is identified below: TSTF-493

1. Linear Power Level - High

   The Linear Power Level - High trip provides protection against core damage during the following events:

   - Uncontrolled CEA Withdrawal From Low Power (AOO)~~,~~ ; 3
   - Uncontrolled CEA Withdrawal at Power (AOO)~~,~~ ; and 3
   - CEA Ejection (Accident).

2. Logarithmic Power Level - High

   The Logarithmic Power Level - High trip protects the integrity of the fuel cladding and helps protect the RCPB in the event of an unplanned criticality from a shutdown condition.

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493

INSERT 10

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

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BASES

APPLICABLE SAFETY ANALYSES (continued)

In MODES 2, 3, 4, and 5, with the RTCBs closed and the CEA Drive System capable of CEA withdrawal, protection is required for CEA withdrawal events originating when logarithmic power is < 1E-4%. For events originating above this power level, other trips provide adequate protection. 4E-5 6 2

The indication and alarm portions must be OPERABLE to ensure proper indication of neutron population and to indicate a boron dilution event.

MODES 3, 4, and 5, with the RTCBs closed, are addressed in LCO 3.3.2, "Reactor Protective System (RPS) Instrumentation - Shutdown."

In MODES 3, 4, or 5, with the RTCBs open or the CEAs not capable of withdrawal, the Logarithmic Power Level - High trip does not have to be OPERABLE. However, the indication and alarm portion of two logarithmic channels must be OPERABLE to ensure proper indication of neutron population and to indicate a boron dilution event. The indication and alarm functions are addressed in LCO 3.3.13, "[Logarithmic] Power Monitoring Channels." 6

Boron Dilution

3. Pressurizer Pressure - High

The Pressurizer Pressure - High trip provides protection for the high RCS pressure SL. In conjunction with the pressurizer safety valves and the main steam safety valves (MSSVs), it provides protection against overpressurization of the RCPB during the following events:

- Loss of Electrical Load Without a Reactor Trip Being Generated by the Turbine Trip (AOO), ; 3
- Loss of Condenser Vacuum (AOO), ; 3
- CEA Withdrawal From Low Power Conditions (AOO), ; and 3
- Chemical and Volume Control System Malfunction (AOO), and . 2
- Main Feedwater System Pipe Break (Accident). 2

4. Pressurizer Pressure - Low

The Pressurizer Pressure - Low trip is provided to trip the reactor to assist the ESF System in the event of loss of coolant accidents (LOCAs). During a LOCA, the SLs may be exceeded; however, the consequences of the accident will be acceptable. A Safety Injection Actuation Signal (SIAS) and a Containment Isolation Actuation Signal (CIAS) are initiated simultaneously. 2

Containment Cooling Actuation Signal (CCAS)

BASES

APPLICABLE SAFETY ANALYSES (continued)

5. Containment Pressure - High

The Containment Pressure - High trip prevents exceeding the containment design pressure psig during a design basis LOCA or main steam line break (MSLB) accident. During a LOCA or MSLB the SLs may be exceeded; however, the consequences of the accident will be acceptable. An SIAS , CCAS, and ~~CIAS~~ Containment Isolation Actuation Signal (CIAS) are initiated simultaneously. 2

6, 7. Steam Generator Pressure - Low

The Steam Generator #1 Pressure - Low and Steam Generator #2 Pressure - Low trips provide protection against an excessive rate of heat extraction from the steam generators and resulting rapid, uncontrolled cooldown of the RCS. This trip is needed to shut down the reactor and assist the ESF System in the event of an MSLB or main feedwater line break accident. A main steam isolation signal (MSIS) is initiated simultaneously.

8, 9. Steam Generator Level – Low

The Steam Generator #1 Level - Low and Steam Generator #2 Level - Low trips ensure that a reactor trip signal is generated for the following events to help prevent exceeding the design pressure of the RCS due to the loss of the heat sink:

- Inadvertent Opening of a Steam Generator Atmospheric Dump Valve (AOO)~~,~~ ; 3
- Loss of Normal Feedwater Event (AOO)~~,~~ ; and 3
- Feedwater System Pipe Break (Accident).

10, 11. Reactor Coolant Flow – Low

The Reactor Coolant Flow, Steam Generator #1 - Low and Reactor Coolant Flow, Steam Generator #2 - Low trips provide~~s~~ protection against an RCP Sheared Shaft Event. The DNBR limit may be exceeded during this event; however, the trip ensures the consequences are acceptable. 3

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~12. Loss of Load~~

~~The Loss of Load (turbine stop valve control oil pressure) is anticipatory for the loss of heat removal capabilities for the secondary system following a turbine trip. The Loss of Load trip prevents lifting the pressurizer safety valves and the main steam line safety valves in the event of a turbine generator trip. Thus, the trip minimizes the pressure or temperature transient on the reactor by initiating a trip well before the Pressurizer Pressure - High and safety valve setpoints are reached.~~ 6

~~The RPS Loss of Load reactor trip channels receive their input from sensors mounted on high pressure turbine stop valve (TSV) actuators. Since there are four TSVs, one actuator per TSV and one sensor per actuator, each sensor sends its signal to a different RPS channel. When the control oil pressure drops to the appropriate setpoint, a reactor trip signal is generated.~~

~~13~~ 12. Local Power Density – High 6

The CPCs perform the calculations required to derive the DNBR and LPD parameters and their associated RPS trips. The DNBR - Low and LPD - High trips provide plant protection during the following AOOs and assist the ESF systems in the mitigation of the following accidents.

The LPD - High trip provides protection against fuel centerline melting due to the occurrence of excessive local power density peaks during the following AOOs:

- Decrease in Feedwater Temperature; 3
- Increase in Feedwater Flow; 3
- Increased Main Steam Flow (not due to the steam line rupture) Without Turbine Trip; 3
- Uncontrolled CEA Withdrawal From Low Power; 3
- Uncontrolled CEA Withdrawal at Power; and 3
- CEA Misoperation; Single Part Length CEA Drop.

BASES

APPLICABLE SAFETY ANALYSES (continued)

For the events listed above (except CEA Misoperation; Single Part Length CEA Drop), DNBR - Low will trip the reactor first, since DNB would occur before fuel centerline melting would occur.

~~14~~ 13. Departure from Nucleate Boiling Ratio (DNBR) - Low 6

The CPCs perform the calculations required to derive the DNBR and LPD parameters and their associated RPS trips. The DNBR - Low and LPD - High trips provide plant protection during the following AOOs and assist the ESF systems in the mitigation of the following accidents.

The DNBR - Low trip provides protection against core damage due to the occurrence of locally saturated conditions in the limiting (hot) channel during the following events and is the primary reactor trip (trips the reactor first) for these events:

- Decrease in Feedwater Temperature~~,~~; 3
- Increase in Feedwater Flow~~,~~; 3
- Increased Main Steam Flow (not due to steam line rupture) Without Turbine Trip~~,~~; 3
- Increased Main Steam Flow (not due to steam line rupture) With a Concurrent Single Failure of an Active Component~~,~~; 3
- Steam Line Break With Concurrent Loss of Offsite AC Power~~,~~; 3
- Loss of Normal AC Power~~,~~; 3
- Partial Loss of Forced Reactor Coolant Flow~~,~~; 3
- Total Loss of Forced Reactor Coolant Flow~~,~~; 3
- Single Reactor Coolant Pump (RCP) Shaft Seizure~~,~~; 3
- Uncontrolled CEA Withdrawal From Low Power~~,~~; 3
- Uncontrolled CEA Withdrawal at Power~~,~~; 3
- CEA Misoperation; Full Length CEA Drop~~,~~; 3

BASES

APPLICABLE SAFETY ANALYSES (continued)

- CEA Misoperation; Part Length CEA Subgroup Drop, ; and 3
- Primary Sample or Instrument Line Break, ~~and~~ . 3
- ~~Steam Generator Tube Rupture.~~ 2

In the above list, only the ~~steam generator tube rupture, the RCP shaft seizure, and the~~ sample or instrument line break are accidents. The rest are AOOs. 2

Operating ~~Interlocks/~~Bypasses 6

The bypasses and their Allowable Values are addressed in footnotes to Table 3.3.1-1. They are not otherwise addressed as specific Table entries.

The automatic bypass removal features must function as a backup to manual actions for all safety related trips to ensure the trip Functions are not operationally bypassed when the safety analysis assumes the Functions are not bypassed. The basis for each of the operating bypasses is discussed under individual trips in the LCO section:

~~a. Loss of Load,~~ 6

a ~~b~~. Logarithmic Power Level - High; 2 3

b ~~c~~. Reactor Coolant Flow - Low; 2 3

c ~~d~~. DNBR - Low and LPD - High; and 2 3

d ~~e~~. Pressurizer Pressure - Low. 2

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

BASES

LCO

The LCO requires all instrumentation performing an RPS Function to be OPERABLE. Failure of any required portion of the instrument channel renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

Actions allow maintenance (trip channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel in the same Function bypassed. With one channel in each Function trip channel bypassed, this effectively places the plant in a two-out-of-three logic configuration in those Functions.

for RPS Instrumentation Functions

INSERT 11

~~Only the~~ Allowable Values are specified ~~for each RPS trip Function~~ in ~~the~~ ~~LCO. Nominal trip setpoints are specified in the plant 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 plant specific setpoint calculations. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. 8).~~

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The Bases for the individual Function requirements are as follows:

1. <u>Linear Power Level - High</u>

   This LCO requires all four channels of Linear Power Level - High to be OPERABLE in MODES 1 and 2.

   The Allowable Value is high enough to provide an operating envelope that prevents unnecessary Linear Power Level - High reactor trips during normal plant operations. The Allowable Value is low enough for the system to maintain a margin to unacceptable fuel cladding damage should a CEA ejection accident occur.

2. <u>Logarithmic Power Level - High</u>

   This LCO requires all four channels of Logarithmic Power Level - High to be OPERABLE in MODE 2~~, and in MODE 3, 4, or 5~~ when the RTCBs are shut and the CEA Drive System is capable of CEA withdrawal.

   . , 3 10 3 ,

Move to page B 3.3.1.19

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INSERT 11

NTSP

Table 3.3.1-1. ~~Limiting Trip Setpoints~~ and the methodologies for calculation of the as-left and as-found tolerances are described in ~~[insert name of the document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated into the facility FSAR]~~. The ~~L~~TSPs are selected to ensure that the actual setpoints remain conservative with respect to the as-found tolerance band between successive CHANNEL CALIBRATIONS. After each calibration the trip setpoint shall be left within the as-left band around the ~~L~~TSP. 11 2 5 2 2

N

UFSAR Section 7.2 (Ref. 1)

BASES

LCO (continued)

Insert from page B 3.3.1.18

The MODES 3, 4, and 5 Condition is addressed in LCO 3.3.2. 10

The Allowable Value is high enough to provide an operating envelope that prevents unnecessary Logarithmic Power Level - High reactor trips during normal plant operations. The Allowable Value is low enough for the system to maintain a margin to unacceptable fuel cladding damage should a CEA withdrawal event occur.

4E-5

The trip must be enabled

is < 4E-5%. At ≥ 4E-5%, the CPC LPD/DNBR trip,

The Logarithmic Power Level - High trip may be bypassed when logarithmic power is above ~~1E-4~~% to allow the reactor to be brought to power during a reactor startup. ~~This bypass is automatically removed~~ when logarithmic power ~~decreases below 1E-4%. Above 1E-4%,~~ the Linear Power Level - High and Pressurizer Pressure - High trips provide protection for reactivity transients. 6

3.1.12, "Special Test Exceptions – Low Power Physics Testing

The trip may be manually bypassed during physics testing pursuant to LCO ~~3.4.17, "RCS Loops - Test Exceptions~~." During this testing, the Linear Power Level - High trip and administrative controls provide the required protection. 6

3. Pressurizer Pressure - High

This LCO requires four channels of Pressurizer Pressure - High to be OPERABLE in MODES 1 and 2.

The Allowable Value is set below the nominal lift setting of the pressurizer code safety valves, and its operation avoids the undesirable operation of these valves during normal plant operation. In the event of a complete loss of electrical load from 100% power, this setpoint ensures the reactor trip will take place, thereby limiting further heat input to the RCS and consequent pressure rise. The pressurizer safety valves may lift to prevent overpressurization of the RCS.

4. Pressurizer Pressure - Low

This LCO requires four channels of Pressurizer Pressure - Low to be OPERABLE in MODES 1 and 2.

The Allowable Value is set low enough to prevent a reactor trip during normal plant operation and pressurizer pressure transients. However, the setpoint is high enough that with a LOCA, the reactor trip will occur soon enough to allow the ESF systems to perform as expected in the analyses and mitigate the consequences of the accident.

BASES

LCO (continued)

The trip setpoint may be manually decreased to a minimum value of 300 psia as pressurizer pressure is reduced during controlled plant shutdowns, provided the margin between the pressurizer pressure and the setpoint is maintained < 400 psi~~a~~. This allows for controlled depressurization of the RCS while still maintaining an active trip setpoint until the time is reached when the trip is no longer needed to protect the plant. Since the same Pressurizer Pressure - Low bistable is also shared with the SIAS, an inadvertent SIAS actuation is also prevented. The setpoint increases automatically as pressurizer pressure increases, until the trip setpoint is reached. 2

The Pressurizer Pressure - Low trip and the SIAS Function may be simultaneously bypassed when pressurizer ~~RCS~~ pressure is < 400 ~~below 500~~ psia, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia, when neither the reactor trip nor an inadvertent SIAS actuation are desirable and these Functions are no longer needed to protect the plant. The bypass shall be ~~is automatically~~ removed when pressurirzer ~~as RCS~~ pressure is ≥ ~~increases above~~ 500 psia. 6

5. Containment Pressure - High

The LCO requires four channels of Containment Pressure - High to be OPERABLE in MODES 1 and 2.

The Allowable Value is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. It is set low enough to initiate a reactor trip when an abnormal condition is indicated.

6, 7. Steam Generator Pressure - Low

This LCO requires four channels of Steam Generator #1 Pressure - Low and Steam Generator #2 Pressure - Low to be OPERABLE in MODES 1 and 2.

This Allowable Value is sufficiently below the full load operating value for steam pressure so as not to interfere with normal plant operation, but still high enough to provide the required protection in the event of excessive steam demand. Since excessive steam demand causes the RCS to cool down, resulting in positive reactivity addition to the core, a reactor trip is required to offset that effect.

BASES

LCO (continued)

The trip setpoint may be manually decreased as steam generator pressure is reduced during controlled plant cooldown, provided the margin between steam generator pressure and the setpoint is maintained < 200 psia. This allows for controlled depressurization of the secondary system while still maintaining an active reactor trip setpoint and MSIS setpoint, until the time is reached when the setpoints are no longer needed to protect the plant. The setpoint increases automatically as steam generator pressure increases until the specified trip setpoint is reached.

8, 9. Steam Generator Level – Low

This LCO requires four channels of Steam Generator #1 Level - Low and Steam Generator #2 Level - Low for each steam generator to be OPERABLE in MODES 1 and 2.

The Allowable Value is sufficiently below the normal operating level for the steam generators so as not to cause a reactor trip during normal plant operations. The same bistable providing the reactor trip also initiates emergency feedwater to the affected generator via the Emergency Feedwater Actuation Signals (EFAS). The minimum setpoint is governed by EFAS requirements. The reactor trip will remove the heat source (except decay heat), thereby conserving the reactor heat sink.

~~This trip may be manually bypassed when cold leg temperature is below the specified limit to allow for CEA withdrawal during testing. The bypass is automatically removed when cold leg temperature reaches 200°F.~~ 2

10, 11. Reactor Coolant Flow – Low

This LCO requires four channels of Reactor Coolant Flow, Steam Generator #1 - Low and Reactor Coolant Flow, Steam Generator #2 - Low to be OPERABLE in MODES 1 and 2. The Allowable Value is set low enough to allow for slight variations in reactor coolant flow during normal plant operations while providing the required protection. Tripping the reactor ensures that the resultant power to flow ratio provides adequate core cooling to maintain DNBR under the expected pressure conditions for this event.

BASES

LCO (continued)

1.5

The Reactor Coolant Flow - Low trip may be manually bypassed when logarithmic power is less than ~~1~~E-4%. This allows for de-energization of one or more RCPs (e.g., for plant cooldown), while maintaining the ability to keep the shutdown CEA banks withdrawn from the core if desired.

6

The trip must be enabled

is > 1.5

LCO 3.4.5, "RCS Loops - MODE 3," LCO 3.4.6, "RCS Loops - MODE 4," and LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," ensure adequate RCS flow rate is maintained. ~~The bypass is automatically removed~~ when logarithmic power ~~increases above~~ ~~1~~E-4%, as sensed by the wide range (logarithmic) nuclear instrumentation. When below the power range, the Reactor Coolant Flow - Low is not required for plant protection.

~~12. Loss of Load~~

~~This LCO requires four channels of Loss of Load trip to be OPERABLE in MODES 1 and 2.~~

~~The Steam Bypass Control System is capable of passing 45% of the full power main steam flow (45% RTP bypass capability) directly to the condenser without causing the MSSVs to lift. The Nuclear Steam Supply System is capable of absorbing a 10% step change in power when a primary to secondary system energy mismatch occurs, without causing the pressurizer safety valves to lift. This means that the plant can sustain a turbine trip without causing the pressurizer safety valves or the MSSV to lift, provided power is ≤ 55% RTP. Therefore, the Loss of Load trip may be bypassed when reactor power is ≤ 55% RTP, as sensed by the power range nuclear instrumentation. Both the bypass and bypass removal, when above 55% power, are automatically performed.~~

~~Loss of Load trip is equipment protective and not credited in the accident analysis. As such, the 55% bypass power permissive is a nominal value and does not include any instrument uncertainties.~~

6

BASES

LCO (continued)

12 ~~13~~. Local Power Density – High 6

This LCO requires four channels of LPD - High to be OPERABLE.

The LCO on the CPCs ensures that the SLs are maintained during all AOOs and the consequences of accidents are acceptable.

A CPC is not considered inoperable if CEAC inputs to the CPC are inoperable. The Required Actions required in the event of CEAC channel failures ensure the CPCs are capable of performing their safety Function.

1.5E-4%,

The CPC channels may be manually bypassed below ~~1E-4%,~~ as sensed by the logarithmic nuclear instrumentation. This bypass is enabled manually in all four CPC channels when plant conditions do not warrant the trip protection. The bypass effectively removes the DNBR - Low and LPD - High trips from the RPS Logic circuitry. The operating bypass is ~~automatically~~ removed when enabling bypass conditions are no longer satisfied. 6 6

This operating bypass is required to perform a plant startup, since both CPC generated trips will be in effect whenever shutdown CEAs are inserted. It also allows system tests at low power with Pressurizer Pressure - Low or RCPs off.

3.1.12

During special testing pursuant to LCO ~~3.4.17~~, the CPC channels may be manually bypassed when THERMAL POWER is below 5% RTP to allow special testing without generating a reactor trip. ~~The Linear Power Level - High trip setpoint is reduced, so as to provide protection during testing.~~ 6 2

13 ~~14~~. Departure from Nucleate Boiling Ratio (DNBR) – Low 6

This LCO requires four channels of DNBR - Low to be OPERABLE.

The LCO on the CPCs ensures that the SLs are maintained during all AOOs and the consequences of accidents are acceptable.
A CPC is not considered inoperable if CEAC inputs to the CPC are inoperable. The Required Actions required in the event of CEAC channel failures ensure the CPCs are capable of performing their safety Function.

BASES

LCO (continued)

The CPC channels may be manually bypassed below 1.5E-4%, ~~1E-4%,~~ as sensed by the logarithmic nuclear instrumentation. This bypass is enabled manually in all four CPC channels when plant conditions do not warrant the trip protection. The bypass effectively removes the DNBR - Low and LPD - High trips from the RPS logic circuitry. The operating bypass is ~~automatically~~ removed when enabling bypass conditions are no longer satisfied. 6 6

This operating bypass is required to perform a plant startup, since both CPC generated trips will be in effect whenever shutdown CEAs are inserted. It also allows system tests at low power with Pressurizer Pressure - Low or RCPs off.

During special testing pursuant to LCO 3.1.12 ~~3.4.17~~, the CPC channels may be manually bypassed when THERMAL POWER is below 5% RTP to allow special testing without generating a reactor trip. ~~The Linear Power Level - High trip setpoint is reduced, so as to provide protection during testing.~~ 6 2

Operating ~~Interlocks/~~Bypasses 2

The LCO on bypass permissive removal channels requires that the automatic bypass removal feature of all four operating bypass channels be OPERABLE for each RPS Function with an operating bypass in the MODES addressed in the specific LCO for each Function. All four bypass removal channels must be OPERABLE to ensure that none of the four RPS channels are inadvertently bypassed.

This LCO applies to the bypass removal feature only. If the bypass enable Function is failed so as to prevent entering a bypass condition, operation may continue. In the case of the Logarithmic Power Level - High trip (Function 2), the absence of a bypass will limit maximum power to below the trip setpoint.

The interlock function Allowable Values are based upon analysis of functional requirements for the bypassed Functions. These are discussed above as part of the LCO discussion for the affected Functions.

BASES

APPLICABILITY

Most RPS trips are required to be OPERABLE in MODES 1 and 2 because the reactor is critical in these MODES. The reactor trips are designed to take the reactor subcritical, which maintains the SLs during AOOs and assists the ESFAS in providing acceptable consequences during accidents. Most trips are not required to be OPERABLE in MODES 3, 4, and 5. In MODES 3, 4, and 5, the emphasis is placed on return to power events. The reactor is protected in these MODES by ensuring adequate SDM. Exceptions to this are:

- The Logarithmic Power Level - High trip, RPS Logic RTCBs, and Manual Trip are required in MODES 3, 4, and 5, with the RTCBs closed, to provide protection for boron dilution and CEA withdrawal events.

The Logarithmic Power Level - High trip in these lower MODES is addressed in LCO 3.3.2. The Logarithmic Power Level - High trip is bypassed prior to MODE 1 entry and is not required in MODE 1. The RPS Logic in MODES 1, 2, 3, 4, and 5 is addressed in LCO 3.3.4.

ACTIONS

The most common causes of channel inoperability are outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it to within specification. If the trip setpoint is ~~less~~ non-conservative ~~than~~ with respect to the Allowable Value in Table 3.3.1-1, the channel is declared inoperable immediately, and the appropriate Condition(s) must be entered immediately. TSTF-493

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is not functioning as required, or the transmitter, instrument loop, signal processing electronics, or RPS bistable trip unit is found inoperable, then all affected functions provided by that channel must be declared inoperable, and the unit must enter the Condition for the particular protection Function affected.

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered if applicable in the current MODE of operation.

BASES

ACTIONS (continued)

A Note has been added to the ACTIONS. The Note has been added to clarify the application of the Completion Time rules. The Conditions of this Specification may be entered independently for each Function. The Completion Times of each inoperable Function will be tracked separately for each Function, starting from the time the Condition was entered for that Function.

A.1 and A.2

Condition A applies to the failure of a single trip channel or associated instrument channel inoperable in any RPS automatic trip Function. RPS coincidence logic is two-out-of-four.

If one RPS channel is inoperable, startup or power operation is allowed to continue, providing the inoperable channel is placed in bypass or trip in 1 hour (Required Action A.1). The 1 hour allotted to bypass or trip the channel is sufficient to allow the operator to take all appropriate actions for the failed channel and still ensures that the risk involved in operating with the failed channel is acceptable. The failed channel must be restored to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. With a channel in bypass, the coincidence logic is now in a two-out-of-three configuration.

The Completion Time of prior to entering MODE 2 following the next MODE 5 entry is based on adequate channel to channel independence, which allows a two-out-of-three channel operation since no single failure will cause or prevent a reactor trip.

B.1

Condition B applies to the failure of two channels in any RPS automatic trip Function.

Required Action B.1 provides for placing one inoperable channel in bypass and the other channel in trip within the Completion Time of 1 hour. This Completion Time is sufficient to allow the operator to take all appropriate actions for the failed channels while ensuring the risk involved in operating with the failed channels is acceptable. With one channel of protective instrumentation bypassed, the RPS is in a two-out-of-three logic; but with another channel failed, the RPS may be operating in a two-out-of-two logic. This is outside the assumptions made in the analyses and should be corrected. To correct the problem, the second channel is placed in trip. This places the RPS in a one-out-of-two logic. If any of the other OPERABLE channels receives a trip signal, the reactor will trip.

BASES

ACTIONS (continued)

One of the two inoperable channels will need to be restored to OPERABLE ~~operable~~ status prior to the next required CHANNEL FUNCTIONAL TEST, because channel surveillance testing on an OPERABLE channel requires that the OPERABLE channel be placed in bypass. However, it is not possible to bypass more than one RPS channel, and placing a second channel in trip will result in a reactor trip. Therefore, if one RPS channel is in trip and a second channel is in bypass, a third inoperable channel would place the unit in LCO 3.0.3. TSTF-493

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

Condition C applies to one automatic bypass removal channel inoperable. If the inoperable bypass removal channel for any bypass channel cannot be restored to OPERABLE status within 1 hour, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channel must be declared inoperable, as in

Condition A, and the affected automatic trip channel placed in bypass or trip. The bypass removal channel and the automatic trip channel must be repaired prior to entering MODE 2 following the next MODE 5 entry. The Bases for the Required Actions and required Completion Times are consistent with Condition A.

D.1 and D.2

Condition D applies to two inoperable automatic bypass removal channels. If the bypass removal channels for two operating bypasses cannot be restored to OPERABLE status within 1 hour, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channels must be declared inoperable, as in Condition B, and the bypass either removed or one automatic trip channel placed in bypass and the other in trip within 1 hour. The restoration of one affected bypassed automatic trip channel must be completed prior to the next CHANNEL FUNCTIONAL TEST, or the plant must shut down per LCO 3.0.3 as explained in Condition B.

BASES

ACTIONS (continued)

E.1

Condition E applies if any CPC cabinet receives a high temperature alarm. There is one temperature sensor in each of the four CPC bays. Since CPC bays B and C also house CEAC calculators 1 and 2, respectively, a high temperature in either of these bays may also indicate a problem with the associated CEAC. CEAC OPERABILITY is addressed in LCO 3.3.3.

If a CPC cabinet high temperature alarm is received, it is possible for the CPC to be affected and not be completely reliable. Therefore, a CHANNEL FUNCTIONAL TEST must be performed within 12 hours. The Completion Time of 12 hours is adequate considering the low probability of undetected failure, the consequences of a single channel failure, and the time required to perform a CHANNEL FUNCTIONAL TEST.

F.1

Condition F applies if an OPERABLE CPC has three or more autorestarts in a 12 hour period.

CPCs and CEACs will attempt to autorestart if they detect a fault condition, such as a calculator malfunction or loss of power. A successful autorestart restores the calculator to operation; however, excessive autorestarts might be indicative of a calculator problem.

If a nonbypassed CPC has three or more autorestarts, it may not be completely reliable. Therefore, a CHANNEL FUNCTIONAL TEST must be performed on the CPC to ensure it is functioning properly. Based on plant operating experience, the Completion Time of 24 hours is adequate and reasonable to perform the test while still keeping the risk of operating in this condition at an acceptable level, since overt channel failure will most likely be indicated and annunciated in the control room by CPC online diagnostics.

G.1

Condition G is entered when the Required Action and associated Completion Time of Condition A, B, C, D, E, or F are not met.

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BASES

ACTIONS (continued)

If the Required Actions associated with these Conditions cannot be completed within the required Completion Time, the reactor must be brought to a MODE where the Required Actions do not apply. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

The SRs for any particular RPS Function are found in the SR column of Table 3.3.1-1 for that Function. Most Functions are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, CHANNEL CALIBRATION, and response time testing.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~In order for a plant to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff SER that establishes the acceptability of each topical report for that unit.~~
~~--~~ 4

INSERT 12 TSTF-493

SR 3.3.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. TSTF-425-A

Agreement criteria are determined by the plant 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 transmitter or the signal processing equipment has drifted outside its limits.

INSERT 13

~~The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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.~~ TSTF-425-A

TSTF-493-A

INSERT 12

-- REVIEWER'S NOTE --

Notes a and b are applied to the setpoint verification Surveillances for each RPS Instrumentation – Operating (Digital) Function in Table 3.3.1-1 unless one or more of the following exclusions apply:

1. Manual actuation circuits, automatic actuation logic circuits or instrument functions that derive input from contacts which have no associated sensor or adjustable device, e.g., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc. are excluded. In addition, those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function are excluded. 4

2. Settings associated with safety relief valves are excluded. The performance of these components is already controlled (i.e., trended with as-left and as-found limits) under the ASME Code for Operation and Maintenance of Nuclear Power Plants testing program.

3. Functions and Surveillance Requirements which test only digital components are normally excluded. There is no expected change in result between SR performances for these components. Where separate as-left and as-found tolerance is established for digital component SRs, the requirements would apply.

TSTF-493

INSERT 13

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --

Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

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BASES

SURVEILLANCE REQUIREMENTS (continued)

In the case of RPS trips with multiple inputs, such as the DNBR and LPD inputs to the CPCs, a CHANNEL CHECK must be performed on all inputs.

SR 3.3.1.2

INSERT 14 ~~The RCS flow rate indicated by each CPC is verified, as required by a Note, to be less than or equal to the actual RCS total flow rate every 12 hours when THERMAL POWER is ≥ 70% RTP.~~ The 12 hours after reaching 70% RTP is for plant stabilization, data taking, and flow verification. This check (and if necessary, the adjustment of the CPC addressable constant flow coefficients) ensures that the DNBR setpoint is conservatively adjusted with respect to actual flow indications, as determined by the Core Operating Limits Supervisory System (COLSS). TSTF-425-A

SR 3.3.1.3

The CPC autorestart count is checked ~~every 12 hours~~ to monitor the CPC and CEAC for normal operation. If three or more autorestarts of a nonbypassed CPC occur within a 12 hour period, the CPC may not be completely reliable. Therefore, the Required Action of Condition F must be performed. ~~The Frequency~~ of 12 hours ~~is based on operating experience that demonstrates the rarity of more than one channel failing within the same 12 hour interval.~~ INSERT 15 TSTF-425-A

SR 3.3.1.4

A daily calibration (heat balance) is performed when THERMAL POWER is ≥ 20%. The indicated Linear Power Level ~~signal and the CPC addressable constant multipliers are adjusted to make~~ is compared with the CPC ΔT power , ~~and~~ nuclear power calculations , and ~~agree with~~ the calorimetric calculation ~~if the absolute difference is ≥ 2%. The value of 2% is adequate because this value is assumed in the safety analysis.~~ and if any are less than the calorimetric calculation by more than 1.0% or any greater than 5.0 % RTP, the indication is adjusted to within these limits one channel at a time. These checks (and, if necessary, the adjustment of the Linear Power Level signal and the CPC addressable constant coefficients) are adequate to ensure that the accuracy of these CPC calculations is maintained within the analyzed error margins. The power level must be > 20% RTP to obtain accurate data. At lower power levels, the accuracy of calorimetric data is questionable. 6

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TSTF-425-A

INSERT 14

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

TSTF-425-A

INSERT 15

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT 16 ~~The Frequency of 24 hours is based on plant operating experience and takes into account indications and alarms located in the control room to detect deviations in channel outputs.~~ The Frequency is modified by a Note indicating this Surveillance need only be performed within 12 hours after reaching 20% RTP. The 12 hours after reaching 20% RTP is required for plant stabilization, data taking, and flow verification. The secondary calorimetric is inaccurate at lower power levels. A second Note in the SR indicates the SR may be suspended during PHYSICS TESTS. The conditional suspension of the daily calibrations under strict administrative control is necessary to allow special testing to occur. TSTF-425-A

SR 3.3.1.5

The RCS flow rate indicated by each CPC is verified to be less than or equal to the RCS total flow rate ~~every 31 days~~. The Note indicates the Surveillance is performed within 12 hours after THERMAL POWER is ≥ 85 ~~70~~% RTP. This check (and, if necessary, the adjustment of the CPC addressable flow constant coefficients) ensures that the DNBR setpoint is conservatively adjusted with respect to actual flow indications as determined by a calorimetric calculation. INSERT 17 ~~Operating experience has shown the specified Frequency of 31 days is adequate, as instrument drift is minimal and changes in actual flow rate are minimal over core life.~~ 6 TSTF-425-A

SR 3.3.1.6

The three vertically mounted excore nuclear instrumentation detectors in each channel are used to determine APD for use in the DNBR and LPD calculations. Because the detectors are mounted outside the reactor vessel, a portion of the signal from each detector is from core sections not adjacent to the detector. This is termed shape annealing and is compensated for after every refueling by performing SR 3.3.1.12, which adjusts the gains of the three detector amplifiers for shape annealing. SR 3.3.1.6 ensures that the preassigned gains are still proper. Power must be > 15% because the CPCs do not use the excore generated signals for axial flux shape information at low power levels. The Note allowing 12 hours after reaching 15% RTP is required for plant stabilization and testing.

INSERT 18 ~~The 31 day Frequency is adequate because the demonstrated long term drift of the instrument channels is minimal.~~ TSTF-425-A

TSTF-425-A

INSERT 16

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

TSTF-425-A

INSERT 17

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

TSTF-425-A

INSERT 18

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.7

A CHANNEL FUNCTIONAL TEST on each channel except Loss of Load, power range neutron flux, and logarithmic power level channels is performed ~~every 92 days~~ to ensure the entire channel will perform its intended function when needed. The SR is modified by two Notes. Note 1 is a requirement to verify the correct CPC addressable constant values are installed in the CPCs when the CPC CHANNEL FUNCTIONAL TEST is performed. Note 2 allows the CHANNEL FUNCTIONAL TEST for the Logarithmic Power Level - High channels to be performed 2 hours after logarithmic power drops below 1E-4% and is required to be performed only if the RTCBs are closed. 6 TSTF-425-A

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference ~~9~~ 1. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. They include: 2

Bistable Tests

A test signal is superimposed on the input in one channel at a time to verify that the bistable trips within the specified tolerance around the setpoint. This is done with the affected RPS channel trip channel bypassed. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the interval between surveillance interval extension analysis. The requirements for this review are outlined in Reference 9 ~~[10]~~. 2

Matrix Logic Tests

Matrix Logic tests are addressed in LCO 3.3.4. This test is performed one matrix at a time. It verifies that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. This test will detect any short circuits around the bistable contacts in the coincidence logic, such as may be caused by faulty bistable relay or trip channel bypass contacts.

INSERT 19 TSTF-493

TSTF-493

INSERT 19

SR 3.3.1.7 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value.

Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~L~~TSP. Where a setpoint more conservative than the ~~L~~TSP is used in the plant surveillance procedures (NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~L~~TSP, then the channel shall be declared inoperable.

N

2

The second Note also requires that ~~L~~TSP and the methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~.

5

UFSAR Section 7.2 (Ref. 1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Trip Path Tests

Trip path (Initiation Logic) tests are addressed in LCO 3.3.4. These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, thereby opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

INSERT 20 ~~The Frequency of 92 days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 10).~~ TSTF-425-A

The CPC and CEAC channels and excore nuclear instrumentation channels are tested separately.

The excore channels use preassigned test signals to verify proper channel alignment. The excore logarithmic channel test signal is inserted into the preamplifier input, so as to test the first active element downstream of the detector.

The power range excore test signal is inserted at the drawer input, since there is no preamplifier.

The ~~quarterly~~ CPC CHANNEL FUNCTIONAL TEST is performed using software. This software includes preassigned addressable constant values that may differ from the current values. Provisions are made to store the addressable constant values on a computer disk prior to testing and to reload them after testing. A Note is added to the Surveillance Requirements to verify that the CPC CHANNEL FUNCTIONAL TEST includes the correct values of addressable constants. 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. 6

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TSTF-425-A

INSERT 20

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.8

INSERT 21

A Note indicates that neutron detectors are excluded from CHANNEL CALIBRATION. ~~A CHANNEL CALIBRATION of the power range neutron flux channels every 92 days ensures that the channels are reading accurately and within tolerance (Ref. 10).~~ The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis. TSTF-425-A

The as-found and as-left values must also be recorded and reviewed for consistency with the assumptions of the interval between surveillance interval extension analysis. The requirements for this review are outlined in Reference 10. ~~Operating experience has shown this Frequency to be satisfactory.~~ The detectors are excluded from CHANNEL CALIBRATION because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the ~~daily~~ calorimetric calibration (SR 3.3.1.4) and the ~~monthly~~ linear subchannel gain check (SR 3.3.1.6). In addition, the associated control room indications are monitored by the operators. TSTF-493 12 TSTF-425-A

INSERT 22

~~[SR 3.3.1.9~~

~~The characteristics and Bases for this Surveillance are as described for SR 3.3.1.7. This Surveillance differs from SR 3.3.1.7 only in that the CHANNEL FUNCTIONAL TEST on the Loss of Load functional unit is only required above 55% RTP. When above 55% and the trip is in effect, the CHANNEL FUNCTIONAL TEST will ensure the channel will perform its equipment protective function if needed. 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 Note allowing 2 hours after reaching 55% RTP is necessary for Surveillance performance. This Surveillance cannot be performed below 55% RTP, since the trip is bypassed.]~~ 6

INSERT 23 TSTF-493

B 3.3.1

TSTF-425-A

INSERT 21

The Frequency is controlled under the Surveillance Frequency Control Program. 7

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ 4

TSTF-493

INSERT 22

SR 3.3.1.8 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~L~~TSP. Where a setpoint more conservative than the ~~L~~TSP is used in the plant surveillance procedures (NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~L~~TSP, then the channel shall be declared inoperable.

N

2

The second Note also requires that ~~L~~TSP and the methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. 7

UFSAR Section 7.2 (Ref. 1)

Insert Page B 3.3.1-34a

TSTF-493

INSERT 23

SR 3.3.1.9 is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the [LTSP]. Where a setpoint more conservative than the [LTSP] is used in the plant surveillance procedures (NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the [LTSP], then the channel shall be declared inoperable. 6

The second Note also requires that [LTSP] and the methodologies for calculating the as-left and the as-found tolerances be in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

BASES

SURVEILLANCE REQUIREMENTS (continued)

<u>SR 3.3.1.~~10~~</u> 9 6 TSTF-425-A

SR 3.3.1.~~10~~ 9 is the performance of a CHANNEL CALIBRATION ~~every [18] months~~.

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as-found and as-left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference ~~[10]~~ 9. TSTF-493 3

INSERT 24 ~~The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis as well as operating experience and consistency with the typical [18] month fuel cycle.~~ TSTF-425-A

The Surveillance is modified by a Note to indicate that the neutron detectors are excluded from CHANNEL CALIBRATION because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration (SR 3.3.1.4) and the monthly linear subchannel gain check (SR 3.3.1.6).

INSERT 25 TSTF-493

<u>SR 3.3.1.~~11~~</u> 10 6 TSTF-425-A

~~Every [18] months,~~ a CHANNEL FUNCTIONAL TEST is performed on the CPCs. The CHANNEL FUNCTIONAL TEST shall include the injection of a signal as close to the sensors as practicable to verify OPERABILITY including alarm and trip Functions. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable 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.

TSTF-425-A

INSERT 24

The Frequency is controlled under the Surveillance Frequency Control Program. 7

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~--~~

TSTF-493

INSERT 25

9

SR 3.3.1.~~10~~ is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~L~~TSP. Where a setpoint more conservative than the ~~L~~TSP is used in the plant surveillance procedures (NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~L~~TSP, then the channel shall be declared inoperable. 2

N

The second Note also requires that ~~L~~TSP and the methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. 2 7

UFSAR Section 7.2 (Ref. 1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT 26 → The basis for the [18] month Frequency is that the CPCs perform a continuous self monitoring function that eliminates the need for frequent CHANNEL FUNCTIONAL TESTS. This CHANNEL FUNCTIONAL TEST essentially validates the self monitoring function and checks for a small set of failure modes that are undetectable by the self monitoring function. Operating experience has shown that undetected CPC or CEAC failures do not occur in any given [18] month interval. TSTF-425-A

INSERT 27 → TSTF-493-A

SR 3.3.1.~~12~~ 11 6

The three excore detectors used by each CPC channel for axial flux distribution information are far enough from the core to be exposed to flux from all heights in the core, although it is desired that they only read their particular level. The CPCs adjust for this flux overlap by using the predetermined shape annealing matrix elements in the CPC software.

After refueling, it is necessary to re-establish or verify the shape annealing matrix elements for the excore detectors based on more accurate incore detector readings. This is necessary because refueling could possibly produce a significant change in the shape annealing matrix coefficients.

Incore detectors are inaccurate at low power levels. THERMAL POWER should be significant but < ~~70~~ 85% to perform an accurate axial shape calculation used to derive the shape annealing matrix elements. 6

By restricting power to ≤ ~~70~~ 85% until shape annealing matrix elements are verified, excessive local power peaks within the fuel are avoided. Operating experience has shown this Frequency to be acceptable. 6

SR 3.3.1.~~13~~ 12

SR 3.3.1.~~13~~ 12 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.1.7, except SR 3.3.1.~~13~~ 12 is applicable only to bypass functions and is performed once within ~~92~~ 120 days prior to each startup. 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 6

TSTF-425-A

INSERT 26

The Frequency is controlled under the Surveillance Frequency Control Program. 7

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ 4

TSTF-493

INSERT 27

10

SR 3.3.1.~~11~~ is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~L~~TSP. Where a setpoint more conservative than the ~~L~~TSP is used in the plant surveillance procedures (NTSP), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~L~~TSP, then the channel shall be declared inoperable. 2

N

The second Note also requires that ~~L~~TSP and the methodologies for calculating the as-left and the as-found tolerances be in ~~[insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]~~. 7

UFSAR Section 7.2 (Ref. 1)

Insert Page B 3.3.1-36

BASES

SURVEILLANCE REQUIREMENTS (continued)

Specifications tests at least once per refueling interval with applicable extensions. Proper operation of bypass permissives is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. Consequently, the appropriate time to verify bypass removal function OPERABILITY is just prior to startup. The allowance to conduct this Surveillance within ~~92~~ 120 days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 10). Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip Function gets inadvertently bypassed. This feature is verified by the trip Function CHANNEL FUNCTIONAL TEST, SR 3.3.1.7 ~~or SR 3.3.1.9~~. Therefore, further testing of the bypass function after startup is unnecessary. 6

SR 3.3.1.~~14~~ 13 6

This SR ensures that the RPS RESPONSE TIMES are verified to be less than or equal to the maximum values assumed in the safety 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 trip setpoint value at the sensor to the point at which the RTCBs open. ~~Response times are conducted on an [18] month STAGGERED TEST BASIS. This results in the interval between successive surveillances of a given channel of n x 18 months, where n is the number of channels in the function. The Frequency of [18] months is based upon operating experience, which has shown that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Also, response times cannot be determined at power, since equipment operation is required. Testing may be performed in one measurement or in overlapping segments, with verification that all components are tested.~~ INSERT 28 TSTF-425-A

~~-----REVIEWER'S NOTE-----~~
~~Applicable portions of the following TS Bases are applicable to plants adopting CEOG Topical Report CE NPSD-1167-1, "Elimination of Pressure Sensor Response Time Testing Requirements."~~
~~----------~~ 4

TSTF-425-A

INSERT 28

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

BASES

SURVEILLANCE REQUIREMENTS (continued)

Response time may be verified by any series of sequential, overlapping or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Topical Report CE NPSD-1167-A, "Elimination of Pressure Sensor Response Time Testing Requirements," (Ref. ~~11~~ 10) provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the Topical Report. Response time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time. 2

A Note is added to indicate that the neutron detectors are excluded from RPS RESPONSE TIME testing because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration (SR 3.3.1.4).

REFERENCES

~~1~~ 2. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation." 2

~~2~~ 4. 10 CFR 50, Appendix A, GDC 21. 2

3. 10 CFR ~~100~~ 50.67. 2

~~4. NRC Safety Evaluation Report.~~ 2

5. IEEE Standard 279-1971, April 5, 1972.

6. U FSAR, Chapter ~~[14]~~ 15. 2 5

7. 10 CFR 50.49.

8. ~~"Plant Protection System Selection of Trip Setpoint Values."~~ PPS Setpoint Calculation CE NPSD-570-P (SONGS Document Number SO23-944-C50) 2

~~9~~ 1. U FSAR, Section ~~[~~7.2~~]~~. 2 5

~~10~~ 9. CEN-327, June 2, 1986, including Supplement 1, ~~March 3~~ January, 1989. 2

~~11~~ 10. CEOG Topical Report CE NPSD-1167-A, "Elimination of Pressure Sensor Response Time Testing Requirements." 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1 BASES, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

1. The heading for ISTS 3.3.1 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

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. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01. Also, grammatical errors are corrected.

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

5. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

6. Changes have been made to the Bases to reflect changes made to the Specifications.

7. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

8. "10 CFR 50 (Ref. 2)" is being deleted from the Background Section of ITS 3.3.1 Bases when referring to offsite doses during accidents. The reference to "10 CFR 50 (Ref. 2)" in the References Section references CFR 50 Appendix A GDC 21 which is the GDC for redundancy and testability and not the reference for offsite doses during accidents. The remaining reference to 10 CFR 50.67 covers offsite doses during accidents.

9. The first paragraph, second sentence, on page B 3.3.1-2 in the ISTS Bases is being changed to add "specified" in front of "safety function(s)." This change is being made to be consistent with the definition of OPERABLE in the Section 1.1, Definitions, of the ISTS and SONGS ITS.

10. The ISTS 3.3.1 Bases, LCO Section Function 2, Logarithmic Power Level – High, contains the statement, "This LCO requires all four channels of Logarithmic Power Level – High to be OPERABLE in MODE 2 and in MODE 3, 4, or 5 when the RTCBs are shut and the CEA Drive System in capable of CEA withdrawal." This statement is not correct because LCO 3.3.1 does not contain the requirement for Logarithmic Power Level – High to be OPERABLE in MODE 3, 4, and 5. Therefore, the portion

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1 BASES, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

of the statement, "when the RTCBs are shut and the CEA Drive System is capable of CEA withdrawal," was combined with the next sentence in the section and the new wording now states, "The MODES 3, 4, and 5 Condition, when the RTCBs are shut and the CEA Drive System is capable of CEA withdrawal, is addressed in LCO 3.3.2."

11. The Acronym for Nominal Trip Setpoint, "NTSP," was used in the SONGS ITS Bases instead of spelling out Nominal Trip Setpoint (as it is in TSTF-493), because the acronym is defined earlier in the Bases.

12. The statement, "Operating experience has shown this Frequency to be satisfactory," is being deleted from the ISTS SR 3.3.1.8 Bases Section. This statement discusses justification for the Frequency for the Surveillance. This type of information is being removed from the Technical Specification as part of TSTF-425; however, in this case TSTF-425 did not remove this text. This change is acceptable because TSTF-425 removes Surveillance Frequencies from most TS Surveillances along with information which justifies the current Frequencies.

13. The discussion, in the ISTS 3.3.1 Bases in the ASA Section, about noncredited Functions is being deleted. SONGS does not contain any Functions in ITS Table 3.3.1-1 that are noncredited.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.1, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – OPERATING

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

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

ITS

A01

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation — Shutdown

LCO 3.3.2

LCO 3.3.2 Four RPS Logarithmic Power Level — High trip channels and associated instrument and operating bypass removal channels shall be OPERABLE. Trip channels shall have an Allowable Value of ≤ .93% RTP.

SR 3.3.2.4

Applicability

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

ACTIONS

~~NOTE~~
~~If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee.~~

LA01

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One RPS logarithmic power level trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION B	B. Two RPS logarithmic power level trip channels inoperable.	B.1	~~-----NOTE----- LCO 3.0.4 is not applicable. ---------~~ Place one channel in bypass and place the other in trip.	1 hour	M01
ACTION C	C. One operating bypass removal channel inoperable.	C.1	Disable bypass channel.	1 hour	
		<u>OR</u>			
		C.2.1	Place affected automatic trip channel in bypass or trip.	1 hour	
		<u>AND</u>			
		C.2.2	Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry	
ACTION D	D. Two operating bypass removal channels inoperable.	~~-----NOTE----- LCO 3.0.4 is not applicable. ---------~~			M01
		D.1	Disable bypass channels.	1 hour	
		<u>OR</u>			
				(continued)	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION D	D. (continued)	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
ACTION E	E. Required Action and associated Completion Time not met.	E.1 Open all RTCBs.	1 hour

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.2.1	SR 3.3.2.1	Perform a CHANNEL CHECK of each logarithmic power channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.2.2	SR 3.3.2.2	Perform a CHANNEL FUNCTIONAL TEST on each logarithmic power channel.	~~30 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.2.3	SR 3.3.2.3	Perform a CHANNEL FUNCTIONAL TEST on each operating bypass removal function.	Once within 120 days prior to each reactor startup	

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.2.4	SR 3.3.2.4 --------------------NOTE-------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.2.5	SR 3.3.2.5 --------------------NOTE-------------------- Neutron detectors are excluded. -- Verify RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~	LA02

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation — Shutdown

LCO 3.3.2

LCO 3.3.2 Four RPS Logarithmic Power Level — High trip channels and associated instrument and operating bypass removal channels shall be OPERABLE. Trip channels shall have an Allowable Value of ≤ .93% RTP.

SR 3.3.2.4

Applicability

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

ACTIONS

~~NOTE~~
~~If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee.~~

LA01

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RPS logarithmic power level trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

ACTION A

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION B	B. Two RPS logarithmic power level trip channels inoperable.	B.1 ~~-----NOTE----- LCO 3.0.4 is not applicable. ---------------~~ Place one channel in bypass and place the other in trip.	 1 hour	M01
ACTION C	C. One operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR C.2.1 Place affected automatic trip channel in bypass or trip. AND C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour 1 hour Prior to entering MODE 2 following next MODE 5 entry	
ACTION D	D. Two operating bypass removal channels inoperable.	~~-----NOTE----- LCO 3.0.4 is not applicable. ---------------~~ D.1 Disable bypass channels. OR	 1 hour (continued)	M01

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION D	D. (continued)	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
ACTION E	E. Required Action and associated Completion Time not met.	E.1 Open all RTCBs.	1 hour

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.2.1	SR 3.3.2.1 Perform a CHANNEL CHECK of each logarithmic power channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.2.2	SR 3.3.2.2 Perform a CHANNEL FUNCTIONAL TEST on each logarithmic power channel.	~~30 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.2.3	SR 3.3.2.3 Perform a CHANNEL FUNCTIONAL TEST on each operating bypass removal function.	Once within 120 days prior to each reactor startup	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.4	SR 3.3.2.4 -------------------NOTE------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. -- Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function.	~~24 months~~ In accordance with the Surveillance Frequency Control Program LA02
SR 3.3.2.5	SR 3.3.2.5 -------------------NOTE------------------- Neutron detectors are excluded. -- Verify RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ LA02

DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.2 ACTIONS B and D Required Actions are modified by a Note which states LCO 3.0.4 is not applicable. ITS 3.3.2 ACTIONS B and D Required Actions do not include this Note. This changes the CTS by deleting the exception to LCO 3.0.4 from ACTIONS B and D Required Actions.

The purpose of the Note to CTS 3.3.2 ACTIONS B and D Required Actions is to allow the unit to continue MODE changes during a startup with one or more Functions with two automatic RPS trip channels inoperable or with one or more Functions with two operating bypass removal channels inoperable. The proposed change to CTS 3.3.2 deletes the Note. Thus, if one or more Functions have two inoperable RPS trip channels inoperable or two operating bypass removal channels inoperable, ITS 3.3.2 will only allow MODE changes during startup using the allowances of LCO 3.0.4.b , which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is more restrictive because additional requirements are being added to the ITS than are required by the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS 3.3.2 contains an ACTIONS Note which states, "if a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 or C.2.2 shall be reviewed by the Onsite Review Committee." ITS 3.3.2

DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

ACTIONS do not contain this Note. This changes the CTS by moving the requirements of the ACTIONS Note to the Quality Assurance Program (QAP).

The purpose of the ACTION Note is to ensure a review is performed by the onsite review committee to discuss the desirability of maintaining the channel in the bypassed condition. The removal of the Note from the Technical Specification 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. ITS 3.3.2 still contains the requirements to place the channel in bypass or trip and to restore the channel to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. Also, this change is acceptable because these types of details will be adequately controlled in the QAP. Any changes to the QAP are made under 10 CFR 50.54(a), which ensure 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 Specifications.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.2.1 requires performance of a CHANNEL CHECK of each logarithmic power channel every 12 hours. CTS SR 3.3.2.2 requires performance of CHANNEL FUNCTIONAL TEST on each logarithmic power channel every 30 days on a STAGGERED TEST BASIS. CTS SR 3.3.2.4 requires performance of a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal functions every 24 months. CTS SR 3.3.2.5 requires verifying RPS RESPONSE TIME is within limits every 24 months on a STAGGERED TEST BASIS. ITS SR 3.3.2.1, SR 3.3.2.2, SR 3.3.2.4, and SR 3.3.2.5 require similar Surveillances, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

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DISCUSSION OF CHANGES
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

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

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation - Shutdown ~~(Digital)~~ 1

LCO 3.3.2

LCO 3.3.2 Four RPS Logarithmic Power Level - High trip channels and associated instrument and operating bypass removal channels shall be OPERABLE. 2

Applicability

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

DOC L01

~~-----NOTE-----~~
~~Bypass may be enabled when logarithmic power is > [1E-4]% and shall be capable of automatic removal whenever logarithmic power is > [1E-4]%. Bypass shall be removed prior to reducing logarithmic power to a value ≤ [1E-4]%.~~
~~----------~~ 6

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One RPS logarithmic power level trip channel inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
ACTION B	B. Two RPS logarithmic power level trip channels inoperable.	B.1 Place one channel in bypass and place the other in trip.	1 hour

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION	
ACTION C	C. One ~~automatic~~ operating bypass removal channel inoperable.	C.1 Disable bypass channel. OR C.2.1 Place affected automatic trip channel in bypass or trip. AND C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour 1 hour Prior to entering MODE 2 following next MODE 5 entry	2
ACTION D	D. Two ~~automatic~~ operating bypass removal channels inoperable.	D.1 Disable bypass channels. OR D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour 1 hour	2
ACTION E	E. Required Action and associated Completion Time not met.	E.1 Open all RTCBs.	1 hour	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.2.1	SR 3.3.2.1 Perform a CHANNEL CHECK of each logarithmic power channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.2.2	SR 3.3.2.2	Perform a CHANNEL FUNCTIONAL TEST on each logarithmic power channel.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.2.3	SR 3.3.2.3	Perform a CHANNEL FUNCTIONAL TEST on each ~~automatic~~ operating bypass removal function.	Once within ~~92~~ 120 days prior to each reactor startup	2 4
SR 3.3.2.4	SR 3.3.2.4	------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function with Allowable Value for trip channels ≤ [.93]%.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A 3
SR 3.3.2.5	SR 3.3.2.5	INSERT 1 Verify RPS RESPONSE TIME is within limits.	~~[18] months on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	5 TSTF-425-A

5 **INSERT 1**

------------------------------NOTE-----------------------------
Neutron detectors are excluded.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

1. The heading for ISTS 3.3.2 includes the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. SONGS Units 2 and 3 are digital plants; therefore, analog requirements and specific labels that identify a requirement is digital are not required.

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

3. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

4. ISTS SR 3.3.2.3 Frequency has been revised to indicate that the Surveillance is required to be performed once within 120 days prior to each reactor startup. This change is acceptable since it reflect the SONGS current licensing requirement. This change was approved by the NRC as documented in the NRC Safety Evaluation for Amendments 133 and 122, dated November 18. 1996 (ADAMS Accession No, ML022000208).

5. ISTS 3.3.2.5 has been revised to include a Note which state "Neutron detectors are excluded." This change is acceptable since it reflect the SONGS current licensing requirement. This is also consistent with the same Surveillance Requirement in ITS 3.3.1, "RPS Instrumentation – Operating" (see ITS SR 3.3.1.14).

6. The ISTS 3.3.2 Applicability Note is being deleted. The Note is not required for the SONGS ITS. The Applicability of SONGS ITS 3.3.2 is MODES 3, 4, 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn. The Note discusses the bypass being enabled and removed around a setpont of 1E-4% logarithmic power. Thus, the requirement for the trip being capable of being removed and bypassed is applicable in MODE 2. The trip is required to be enabled in MODE 3 and cannot be bypassed. Therefore, the Note is not required for ITS 3.3.2. This change is consistent with the SONGS CTS which does not contain a similar Note.

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

B 3.3 INSTRUMENTATION

B 3.3.2 Reactor Protective System (RPS) Instrumentation - Shutdown ~~(Digital)~~ 1

BASES

BACKGROUND

The RPS initiates a reactor trip to protect against violating the core fuel design limits and reactor coolant pressure boundary (RCPB) integrity during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Features systems in mitigating accidents.

The protection and monitoring systems have been designed to ensure 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 LCOs on other reactor system parameters and equipment performance.

The LSSS, defined in this Specification as the Allowable Value, in conjunction with the LCOs, establish the threshold for protective system action to prevent exceeding acceptable limits during Design Basis Accidents (DBAs).

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

- The departure from nucleate boiling ratio shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling~~,~~ ; 2
- Fuel centerline melting shall not occur~~,~~ ; and 2
- The Reactor Coolant System pressure SL of 2750 psia shall not be exceeded.

Maintaining the parameters within the above values ensures that the offsite dose will be within the ~~10 CFR 50 (Ref. 1) and~~ 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) criteria during AOOs. 10 3

Accidents are events that are analyzed even though they are not expected to occur during the plant life. The acceptable limit during accidents is that the offsite dose shall be maintained within an acceptable fraction of 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) limits. Different accident categories allow a different fraction of these limits based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event. 3

BASES

BACKGROUND (continued)

The RPS is segmented into four interconnected modules. These modules are:

- Measurement channels ~~,~~ ; 2
- Bistable trip units ~~,~~ ; 2
- RPS Logic ~~,~~ and 3

  : - Matrix Logic; - Initiation Logic (trip paths);
- Reactor trip circuit breakers (RTCBs).

This LCO applies only to the Logarithmic Power Level - High trip in MODES 3, 4, and 5 with the RTCBs closed. In MODES 1 and 2, this trip Function is addressed in LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating." LCO 3.3.13, "~~[Logarithmic] Power~~ Boron Dilution Monitoring Channels," applies when the RTCBs are open. In the case of LCO 3.3.13, the ~~logarithmic~~ boron dilution monitoring channels are required for monitoring neutron flux, although the trip Function is not required. 3 3

Measurement Channels and Bistable Trip Units

The measurement channels providing input to the Logarithmic Power Level - High trip consist of the four logarithmic nuclear instrumentation channels detecting neutron flux leakage from the reactor vessel. Other aspects of the Logarithmic Power Level - High trip are similar to the other measurement channels and bistables. These are addressed in the Background section of LCO 3.3.1.

Functional testing of the entire RPS, from bistable input through the opening of individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis. Nuclear instrumentation can be similarly tested. U FSAR, Section ~~[~~7.2~~]~~ (Ref. ~~3~~ 2), provides more detail on RPS testing. 3 4

APPLICABLE SAFETY ANALYSES

The RPS functions to maintain the SLs during AOOs and mitigates the consequence of DBAs in all MODES in which the RTCBs are closed.

Each of the analyzed transients and accidents can be detected by one or more RPS 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 plant. Noncredited Functions include the ~~Loss of Load~~ Steam Generator Water Level – High. The ~~Loss of Load~~ Steam Generator Water Level – High trip is purely equipment protective, and its use minimizes the potential for equipment damage. 3

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BASES

APPLICABLE SAFETY ANALYSES (continued)

The Logarithmic Power Level - High trip protects the integrity of the fuel cladding and helps protect the RCPB in the event of an unplanned criticality from a shutdown condition.

In MODES 2, 3, 4, and 5, with the RTCBs closed, and the Control Element Assembly (CEA) Drive System capable of CEA withdrawal, protection is required for CEA withdrawal events originating when logarithmic power is < 1E-4%. For events originating above this power level, other trips provide adequate protection.

MODES 3, 4, and 5, with the RTCBs closed, are addressed in this LCO. MODE 2 is addressed in LCO 3.3.1.

In MODES 3, 4, or 5, with the RTCBs open or the CEAs not capable of withdrawal, the Logarithmic Power Level - High trip does not have to be OPERABLE. ~~However, the indication and alarm portion of two logarithmic channels must be OPERABLE to ensure proper indication of neutron population and to indicate a boron dilution event. The indication and alarm functions are addressed in LCO 3.3.13.~~ 3

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

LCO

The LCO requires the Logarithmic Power Level - High RPS Function to be OPERABLE. Failure of any required portion of the instrument channel renders the affected channel(s) inoperable and reduces the reliability of the affected Function.

Actions allow maintenance (trip channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel in the same Function bypassed. With one channel in each Function trip channel bypassed, this effectively places the plant in a two-out-of-three logic configuration in those Functions. ~~Plants are restricted to 48 hours in a trip channel bypass condition before either restoring the function to four channel operation (two-out-of-four logic) or placing the channel in trip (one-out-of-three logic).~~ 6

This LCO requires all four channels of the Logarithmic Power Level - High to be OPERABLE in MODE 2, and in MODE 3, 4, or 5 when the RTCBs are closed and the CEA Drive System is capable of CEA withdrawal.

BASES

LCO (continued)

The Allowable Value specified in SR 3.3.2.4 is high enough to provide an operating envelope that prevents unnecessary Logarithmic Power Level - High reactor trips during normal plant operations. The Allowable Value is low enough for the system to maintain a safety margin for unacceptable fuel cladding damage should a CEA withdrawal event occur.

~~The Logarithmic Power Level - High trip may be bypassed when logarithmic power is above 1E-4% to allow the reactor to be brought to power during a reactor startup. This bypass is automatically removed when logarithmic power decreases below 1E-4%. Above 1E-4%, the Linear Power Level - High and Pressurizer Pressure - High trips provide protection for reactivity transients.~~ 5

3.1.12, "Special Test Exceptions (STE) – Low Power Physics Testing

The trip may be manually bypassed during physics testing pursuant to LCO ~~3.4.17, "RCS Loops - Test Exceptions~~." During this testing, the Linear Power Level - High trip and administrative controls provide the required protection. 3

APPLICABILITY

Most RPS trips are required to be OPERABLE in MODES 1 and 2 because the reactor is critical in these MODES. The trips are designed to take the reactor subcritical, which maintains the SLs during AOOs and assists the Engineered Safety Features Actuation System (ESFAS) in providing acceptable consequences during accidents. Most trips are not required to be OPERABLE in MODES 3, 4, and 5. In MODES 3, 4, and 5, the emphasis is placed on return to power events. The reactor is protected in these MODES by ensuring adequate SDM. Exceptions to this are:

- The Logarithmic Power Level - High trip, RPS Logic RTCBs, and Manual Trip are required in MODES 3, 4, and 5, with the RTCBs closed, to provide protection for boron dilution and CEA withdrawal events. The Logarithmic Power Level - High trip in these lower MODES is addressed in this LCO. The RPS Logic in MODES 1, 2, 3, 4, and 5 is addressed in LCO 3.3.4, "Reactor Protective System (RPS) Logic and Trip Initiation."

~~The Applicability is modified by a Note that allows the trip to be bypassed when logarithmic power is > 1E-4%, and the bypass is automatically removed when logarithmic power is ≤ 1E-4%.~~ 5

BASES

ACTIONS

The most common causes of channel inoperability are outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it to within specification. If the trip setpoint is less conservative than the Allowable Value stated in the LCO, the channel is declared inoperable immediately, and the appropriate Condition(s) must be entered immediately.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the excore logarithmic power channel or RPS bistable trip unit is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the unit must enter the Condition for the particular protection Function affected.

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered, if applicable in the current MODE of operation.

A.1, and A.2

Condition A applies to the failure of a single Logarithmic Power Level - High trip channel or associated instrument channel.

The Logarithmic Power Level - High coincidence logic is two-out-of-four. If one channel is inoperable, operation in MODES 3, 4, and 5 is allowed to continue, providing the inoperable channel is placed in bypass or trip in 1 hour (Required Action A.1).

The 1 hour allotted to bypass or trip the channel is sufficient to allow the operator to take all appropriate actions for the failed channel while ensuring that the risk involved in operating with the failed channel is acceptable.

The failed channel must be restored to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. With a channel bypassed, the coincidence logic is now in a two-out-of-three configuration. The Completion Time is based on adequate channel to channel independence, which allows a two-out-of-three channel operation since no single failure will cause or prevent a reactor trip.

BASES

ACTIONS (continued)

B.1

Condition B applies to the failure of two Logarithmic Power Level - High trip channels or associated instrument channels. Required Action B.1 provides for placing one inoperable channel in bypass and the other channel in trip within the Completion Time of 1 hour. This Completion Time is sufficient to allow the operator to take all appropriate actions for the failed channels and still ensures the risk involved in operating with the failed channels is acceptable. With one channel of protective instrumentation bypassed, the RPS is in a two-out-of-three logic; but with another channel failed, the RPS may be operating in a two-out-of-two logic. This is outside the assumptions made in the analyses and should be corrected. To correct the problem, the second channel is placed in trip. This places the RPS in a one-out-of-two logic. If any of the other OPERABLE channels receives a trip signal, the reactor will trip.

One of the two inoperable channels will need to be restored to OPERABLE status prior to the next required CHANNEL FUNCTIONAL TEST because channel surveillance testing on an OPERABLE channel requires that the OPERABLE channel be placed in bypass. However, it is not possible to bypass more than one RPS channel, and placing a second channel in trip will result in a reactor trip. Therefore, if one RPS channel is in trip and a second channel is in bypass, a third inoperable channel would place the unit in LCO 3.0.3.

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

operating

Condition C applies to one ~~automatic~~ bypass removal channel inoperable. 5
If the bypass removal channel for the high logarithmic power level operating bypass cannot be restored to OPERABLE status within 1 hour, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channel must be declared inoperable, as in Condition A, and the bypass either removed or the affected automatic channel placed in trip or bypass. Both the bypass removal channel and the associated automatic trip channel must be repaired prior to entering MODE 2 following the next MODE 5 entry. The Bases for the Required Actions and required Completion Times are consistent with Condition A.

BASES

ACTIONS (continued)

D.1 and D.2

Condition D applies to two inoperable ~~automatic~~ operating bypass removal channels. If the bypass removal channels for two operating bypasses cannot be restored to OPERABLE status within 1 hour, the associated RPS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected RPS channels must be declared inoperable, as in Condition B, and the bypass either removed or one automatic trip channel placed in bypass and the other in trip within 1 hour. The restoration of one affected bypassed automatic trip channel must be completed prior to the next CHANNEL FUNCTIONAL TEST or the plant must shut down per LCO 3.0.3, as explained in Condition B. Completion Times are consistent with Condition B. 5

E.1

Condition E is entered when the Required Actions and associated Completion Times of Condition A, B, C, or D are not met.

If Required Actions associated with these Conditions cannot be completed within the required Completion Time, all RTCBs must be opened, placing the plant in a condition where the logarithmic power trip channels are not required to be OPERABLE. A Completion Time of 1 hour is a reasonable time to perform the Required Action, which maintains the risk at an acceptable level while having one or two channels inoperable.

SURVEILLANCE REQUIREMENTS

The SRs for the Logarithmic Power Level - High trip are an extension of those listed in LCO 3.3.1, listed here because of their Applicability in these MODES.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~In order for a unit to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 5).~~ 7
~~--~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.1

SR 3.3.2.1 is the performance of a CHANNEL CHECK of each logarithmic power channel. This SR is identical to SR 3.3.1.1. Only the Applicability differs.

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on another channel. 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; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. 8

Agreement criteria are determined by the plant 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 limits.

INSERT 1

~~The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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.~~ TSTF-425-A

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 9

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 7

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.2

A CHANNEL FUNCTIONAL TEST on each channel, except Loss of Load and power range neutron flux, is performed ~~every 92 days~~ to ensure the entire channel will perform its intended function when needed. This SR is identical to SR 3.3.1.7. Only the Applicability differs. 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. 5 TSTF-425-A

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in the U FSAR, Section [7.2] (Ref. 3). These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. They include: 3 4 2

Bistable Tests

A test signal is superimposed on the input in one channel at a time to verify that the bistable trips within the specified tolerance around the setpoint. This is done with the affected RPS channel trip channel bypassed. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [6]. 4
3

Matrix Logic Tests

Matrix Logic Tests are addressed in LCO 3.3.4. This test is performed one matrix at a time. It verifies that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. This test will detect any short circuits around the bistable contacts in the coincidence logic, such as may be caused by faulty bistable relay or trip channel bypass contacts.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Trip Path Test

Trip path (Initiation Logic) tests are addressed in LCO 3.3.4. These tests are similar to the Matrix Logic tests except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

INSERT 2

~~The Frequency of 92 days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 6). The excore channels use preassigned test signals to verify proper channel alignment. The excore logarithmic channel test signal is inserted into the preamplifier input, so as to test the first active element downstream of the detector.~~ TSTF-425-A

SR 3.3.2.3

SR 3.3.2.3 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.2.2, except SR 3.3.2.3 is applicable only to bypass functions and is performed once within 120 ~~92~~ days prior to each startup. This SR is identical to SR 3.3.1.12 ~~13~~. Only the Applicability differs. 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. 5

Proper operation of bypass permissives is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. Consequently, the appropriate time to verify bypass removal function OPERABILITY is just prior to startup. The allowance to conduct this Surveillance within 120 ~~92~~ days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 4 ~~6~~). Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip Function gets inadvertently bypassed. This feature is verified by the trip Function CHANNEL FUNCTIONAL TEST, SR 3.3.2.2. Therefore, further testing of the bypass function after startup is unnecessary. 5 3

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 9

--- Reviewers Note ---

Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 7

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.4

~~SR 3.3.2.4 is the performance of a CHANNEL CALIBRATION every 18 months.~~ This SR is identical to SR 3.3.1.~~10~~ 9. Only the Applicability differs. 5 TSTF-425-A

CHANNEL CALIBRATION is a complete check of the instrument channel excluding the sensor. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

Only the Allowable Values are specified for this RPS trip Function. Nominal trip setpoints are specified in the plant specific setpoint calculations. The nominal setpoint is 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 plant specific setpoint calculations. Each Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. ~~4~~ 3). A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. 3

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference ~~[3]~~ 4. 3

INSERT 3

~~The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis and includes operating experience and consistency with the typical [18] month fuel cycle.~~ TSTF-425-A

The Surveillance is modified by a Note to indicate that the neutron detectors are excluded from CHANNEL CALIBRATION because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration (SR 3.3.1.4).

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 9

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 7

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.5

This SR ensures that the RPS RESPONSE TIMES are verified to be less than or equal to the maximum values assumed in the safety 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 trip setpoint value at the sensor to the point at which the RTCBs open. ~~Response times are conducted on an [18] month STAGGERED TEST BASIS. This results in the interval between successive tests of a given channel of n x 18 months, where n is the number of channels in the Function. The [18] month Frequency is based upon operating experience, which has shown that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Also, response times cannot be determined at power, since equipment operation is required. Testing may be performed in one measurement or in overlapping segments, with verification that all components are tested.~~

INSERT 4

INSERT 5

TSTF-425-A

5

REFERENCES

~~1. 10 CFR 50~~. 10

1 ~~2~~. 10 CFR ~~100~~ 50.67. 3

2 ~~3~~. U FSAR, Section ~~[~~7.2~~]~~. 3 4

3 ~~4~~. ~~"Plant Protection System Selection of Trip Setpoint Values."~~ PPS Setpoint Calculation CE-NPSD-570. 3

~~5. NRC Safety Evaluation Report.~~ 7

4 ~~6~~. CEN-327, June 2, 1986, including Supplement 1, ~~March 3~~ January, 1989. 3

TSTF-425-A

INSERT 4

The Frequency is controlled under the Surveillance Frequency Control Program. 9

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 7

5

INSERT 5

The Surveillance is modified by a Note to indicate that the neutron detectors are excluded from RPS RESPONSE TIME testing because they are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration (SR 3.3.1.4).

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2 BASES, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

1. The heading for ISTS 3.3.2 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

5. Changes have been made to the Bases to reflect changes made to the Specifications.

6. ISTS 3.3.2 Bases, LCO Section, contains the following statement, "Plants are restricted to 48 hours in a trip channel bypass condition before either restoring the function to four channel operation (two-out-of-four logic) or placing the channel in trip (one-out-of-three logic)." This statement does not match what is currently allowed in the ISTS ACTIONS. Additionally, there are no ACTIONS in LCO 3.3.2 which would require the restoration within 48 hours. The LCO 3.3.2 ACTIONS allow an unlimited time for restoration once the channel is placed in bypass. Furthermore, the Bases cannot contain ACTIONS that are not described in the Specification. Therefore, this statement is being deleted.

7. The Reviewers Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal. Additionally, since the SR Reviewers Note is being deleted, Reference 5 is being deleted, which results in the renumbering of subsequent References.

8. ITS 3.3.2.1 Bases has been corrected to delete the reference to once every 12 hours to allow it to be consistent with changes made by TSTF-425.

9. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

10. The Reference to "10 CFR 50 (Ref. 1)" is being deleted from the Background Section of ITS 3.3.2 Bases when referring to offsite doses during accidents. The current reference to 10 CFR 100 is being change to reference 10 CFR 50.67. Thus,

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.2 BASES, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

referencing 10 CFR 50 is not necessary due to the specific reference to 10 CFR 50.67 which is for offsite doses during accidents.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.2, REACTOR PROTECTIVE SYSTEM (RPS) INSTRUMENTATION – SHUTDOWN

There are no specific NSHC discussions for this Specification.

ATTACHMENT 3

ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

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

ITS

A01

3.3 INSTRUMENTATION

3.3.3 Control Element Assembly Calculators (CEACs)

LCO 3.3.3

LCO 3.3.3 Two CEACs shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One CEAC inoperable.	A.1 Perform SR 3.1.5.1. AND A.2 Restore CEAC to OPERABLE status.	Once per 4 hours 7 days
ACTION B	B. Required Action and associated Completion Time of Condition A not met. OR Both CEACs inoperable.	B.1 Verify the departure from nucleate boiling ratio requirement of LCO 3.2.4, "Departure from Nucleate Boiling Ratio (DNBR)," is met. AND	4 hours (continued)

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ITS

A01

CEACs
3.3.3

ACTIONS (continued)

ACTION B

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Verify all full length and part length control element assembly (CEA) groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.5.3 ~~and SR 3.1.5.4~~ or for control, when CEA group #6 may be inserted to a maximum of 127.5 inches.	4 hours
	AND		
	B.3	Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that the applicable CEAC(s) is (are) inoperable.	4 hours
	AND		
	B.4	Verify the Control Element Drive Mechanism Control System is placed in "OFF" and maintained in "OFF," except during CEA motion permitted by Required Action B.2.	4 hours
	AND		
	B.5	Perform SR 3.1.5.1.	Once per 4 hours

M01

(continued)

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ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C	C. Receipt of a CPC channel B or C cabinet high temperature alarm.	C.1 Perform SR 3.3.3.3 ~~CHANNEL FUNCTIONAL TEST~~ on affected CEAC(s).	~~12 hours~~ ~~AND~~ Once per 12 hours ~~until high temperature alarm is cleared~~	A03 A02 A02
ACTION D	D. One or two CEACs with three or more autorestarts during a 12 hour period.	D.1 Perform SR 3.3.3.3 ~~CHANNEL FUNCTIONAL TEST~~ on affected CEAC.	24 hours	A03
ACTION E	E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.3.1	SR 3.3.3.1 Perform a CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program ~~12 hours~~	LA01
SR 3.3.3.2	SR 3.3.3.2 Check the CEAC autorestart count.	In accordance with the Surveillance Frequency Control Program ~~12 hours~~	LA01
SR 3.3.3.3	SR 3.3.3.3 Perform a CHANNEL FUNCTIONAL TEST using test software.	In accordance with the Surveillance Frequency Control Program ~~60 days on a STAGGERED TEST BASIS~~	A04 LA01

(continued)

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A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.3.4	SR 3.3.3.4 Perform a CHANNEL CALIBRATION.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.3.5	SR 3.3.3.5 Perform a CHANNEL FUNCTIONAL TEST.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.3.6	SR 3.3.3.6 Verify the isolation characteristics of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01

3.3 INSTRUMENTATION

3.3.3 Control Element Assembly Calculators (CEACs)

LCO 3.3.3

LCO 3.3.3 Two CEACs shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One CEAC inoperable.	A.1 Perform SR 3.1.5.1. AND A.2 Restore CEAC to OPERABLE status.	Once per 4 hours 7 days
ACTION B	B. Required Action and associated Completion Time of Condition A not met. OR Both CEACs inoperable.	B.1 Verify the departure from nucleate boiling ratio requirement of LCO 3.2.4, "Departure from Nucleate Boiling Ratio (DNBR)," is met. AND	4 hours (continued)

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ITS

A01

ACTIONS (continued)

ACTION B

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2	Verify all full length and part length control element assembly (CEA) groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.5.3 ~~and SR 3.1.5.4~~ or for control, when CEA group #6 may be inserted to a maximum of 127.5 inches.	4 hours
	AND		
	B.3	Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that the applicable CEAC(s) is (are) inoperable.	4 hours
	AND		
	B.4	Verify the Control Element Drive Mechanism Control System is placed in "OFF" and maintained in "OFF," except during CEA motion permitted by Required Action B.2.	4 hours
	AND		
	B.5	Perform SR 3.1.5.1.	Once per 4 hours

M01

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C	C. Receipt of a CPC channel B or C cabinet high temperature alarm.	C.1 Perform ~~CHANNEL FUNCTIONAL TEST~~ SR 3.3.3.3 on affected CEAC(s).	~~12 hours~~ ~~AND~~ Once per 12 hours ~~until high temperature alarm is cleared~~	A02 A03 A02
ACTION D	D. One or two CEACs with three or more autorestarts during a 12 hour period.	D.1 Perform ~~CHANNEL FUNCTIONAL TEST~~ SR 3.3.3.3 on affected CEAC.	24 hours	A03
ACTION E	E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.3.1	SR 3.3.3.1 Perform a CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.3.2	SR 3.3.3.2 Check the CEAC autorestart count.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.3.3	SR 3.3.3.3 Perform a CHANNEL FUNCTIONAL TEST using test software.	~~60 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	A04 LA01

(continued)

ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.3.4	SR 3.3.3.4 Perform a CHANNEL CALIBRATION.	~~24 months~~	LA01
SR 3.3.3.5	SR 3.3.3.5 Perform a CHANNEL FUNCTIONAL TEST.	~~24 months~~	LA01
SR 3.3.3.6	SR 3.3.3.6 Verify the isolation characteristics of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01

DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.3 ACTION C requires that when a CPC channel B or C cabinet high temperature alarm is received, that a CHANNEL FUNCTIONAL TEST on the affected CEACs be performed in 12 hours and once per 12 hours until high temperature alarm is cleared. ITS 3.3.3 ACTON C requires the same CHANNEL FUNCTIONAL TEST when a CPC channel B or C cabinet high temperature alarm is received but changes the Completion Time to once per 12 hours. This changes the CTS by editorially changing the Completion Time of ACTION C.

This change is acceptable since the Completion Time in the CTS and the ITS are the same. In the CTS, when the Condition is entered, the performance of the CHANNEL FUNCTIONAL TEST would be performed in 12 hours, and then it would be performed every 12 hours afterwards (with a 25% grace period for each performance as allowed by SR 3.0.2), until the cabinet high temperature alarm has cleared. At that point, the condition would be exited and the performance of the CHANNEL FUNCTIONAL TEST would cease. In the ITS, the CHANNEL FUNCTIONAL TEST would be performed during the same periodicity. As specified in CTS and ITS SR 3.0.2, the first performance of a Required Action with a "once per" Completion Time must be performed within the time specified, while all other performances get a 25% extension. Thus use of the Completion Time, "Once per 12 hours," in lieu of, "12 hours AND Once per 12 hours," are identical Completion Times. Furthermore, the term "until high temperature alarm is cleared" is not needed since CTS and ITS LCO 3.0.2 states that once a Condition is exited, continuation of the Required Actions is not required. Therefore, this change is considered administrative since it does not result in a technical change to the CTS.

A03 CTS 3.3.3 Required Actions C.1 and D.1 require performance of a CHANNEL FUNCTIONAL TEST on the affected CEAC(s). ITS 3.3.3 Required Actions C.1 and D.1 will require performance of SR 3.3.3.3. This changes the CTS by replacing the requirement for performance of a CHANNEL FUNCTIONAL TEST with the requirement for performance of the specific Surveillance Requirement (SR 3.3.3.3).

The change to CTS 3.3.3 Required Actions C.1 and D.1 will state the specific Surveillance Requirement (SR 3.3.3.3) required when Condition C or D is entered versus just requiring a CHANNEL FUNCTIONAL TEST. CTS 3.3.3 actually lists two CHANNEL FUNCTIONAL TEST Surveillances, SR 3.3.3.3 and SR 3.3.3.5. SR 3.3.3.5 is the Surveillance performed at a refueling outage cycle,

DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

while SR 3.3.3.3 is the SR performed while on line (every 60 days on a STAGGERED TEST BASIS). Thus, when CTS 3.3.3 Conditions C and D are entered, SONGS currently performs SR 3.3.3.3. This change is acceptable because the CTS 3.3.3 SRs contain two CHANNEL FUNCTIONAL TESTs and specifying which one is required in the Required Actions eliminates confusion as to which CHANNEL FUNCTIONAL TEST is required to be performed. This change is designated as administrative because it clarifies which CHANNEL FUNCTIONAL TEST is required to be performed without technically changing the CTS.

A04 CTS SR 3.3.3.3 requires the performance of a CHANNEL FUNCTIONAL TEST. ITS SR 3.3.3.3 requires the performance of a CHANNEL FUNCTIONAL TEST using test software. This changes the CTS by adding descriptive information, "using test software," to the requirement to perform a CHANNEL FUNCTIONAL TEST.

The purpose of CTS SR 3.3.3.3 is to ensure the CEAC channels will perform their intended function when needed. The proposed change, which adds descriptive information, does not affect the performance of the test. This change is acceptable because it clarifies that the test is performed using test software. This requirement is clearly stated in the CTS Bases, and the clarification is needed since CTS SR 3.3.3.5 is also a CHANNEL FUNCTIONAL TEST. This change is designated as administrative because it adds clarifying information without technically affecting the Surveillance.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.3 Required Action B.2 requires verification that all full length and part length control element assembly (CEA) groups are fully withdrawn, except during Surveillance testing pursuant to SR 3.1.5.3 and SR 3.1.5.4 or for control when CEA group #6 may be inserted to a maximum of 127.5 inches. ITS 3.3.3 Required Action B.2 requires the same verification but does not include the exception during Surveillance testing pursuant to SR 3.1.5.4. This changes the CTS by not including the exception for SR 3.1.5.4.

The purpose of CTS 3.3.3 Required Action B.2 is to ensure that undesired perturbations in local fuel burnup are prevented. This is accomplished by requiring all CEAs to be fully withdrawn. An exception to this requirement is made for two SRs. One of the Surveillances excluded is SR 3.1.5.3, which requires verifying full length CEA freedom of movement (trippability) by moving each individual full length CEA that is not fully inserted in the core at least 5 inches. The other Surveillance that is excluded is SR 3.1.5.4 which required the performance of a CHANNEL FUNCTIONAL TEST on each reed switch position transmitter channel. This change is acceptable because SR 3.1.5.4 (CHANNEL FUNCTIONAL TEST) is a 24 month Surveillance that, as described in the CTS Bases, is performed with the reactor shutdown since full travel of the CEA is required. Therefore, the SR exception for SR 3.1.5.4 is not needed to be included in ITS 3.3.3 Required Action B.2, since LCO 3.3.3 is only applicable in MODES 1 and 2. The SR exception for SR 3.1.5.3 is maintained. This change is

DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

designated as more restrictive because a Surveillance Requirement exception for SR 3.1.5.4 is not included.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.3.1 requires performance of a CHANNEL CHECK every 12 hours. CTS SR 3.3.3.2 requires a check of the CEAC autorestart count every 12 hours. CTS SR 3.3.3.3 requires performance of a CHANNEL FUNCTIONAL TEST every 60 days on a STAGGERED TEST BASIS. CTS SR 3.3.3.4 requires performance of a CHANNEL CALIBRATION every 24 months. CTS SR 3.3.3.5 requires performance of a CHANNEL FUNCTIONAL TEST every 24 months. CTS SR 3.3.3.6 requires verification of the isolation characteristics every 24 hours of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer. ITS SR 3.3.3.1, SR 3.3.3.2, SR 3.3.3.3, SR 3.3.3.4, SR 3.3.3.5, and SR 3.3.3.6 require similar Surveillances, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

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DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.
Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

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DISCUSSION OF CHANGES
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

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

3.3 INSTRUMENTATION

3.3.3 Control Element Assembly Calculators (CEACs) (Digital) 1

LCO 3.3.3 LCO 3.3.3 Two CEACs shall be OPERABLE.

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A	A. One CEAC inoperable.	A.1 Perform SR 3.1.4.1. 5 AND A.2 Restore CEAC to OPERABLE status.	Once per 4 hours 7 days	6
ACTION B	B. Required Action and associated Completion Time of Condition A not met. OR Both CEACs inoperable.	B.1 Verify the departure from nucleate boiling ratio requirement of LCO 3.2.4, "Departure from Nucleate Boiling Ratio (DNBR)," is met [and the Reactor Power Cutback System is disabled]. AND	4 hours	3

U2/U3 CTS

CEACs (Digital) 1
3.3.3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION B		B.2	Verify all full length and part length control element assembly (CEA) groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.4.3 [5] [or for control, when CEA group #6 may be inserted to a maximum of 127.5 inches].	4 hours	6 3 3
		AND			
		B.3	Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that both [the applicable] CEACs [(s)] are inoperable.	4 hours	4
		AND			
		B.4	Verify the Control Element Drive Mechanism Control System is placed in "OFF" and maintained in "OFF," except during CEA motion permitted by Required Action B.2.	4 hours	
		AND			
		B.5	Perform SR 3.1.4.1. [5]	Once per 4 hours	6
ACTION C	C. Receipt of a CPC channel B or C cabinet high temperature alarm.	C.1	Perform CHANNEL FUNCTIONAL TEST [SR 3.3.3.3] on affected CEAC(s).	[Once per] 12 hours	5 7

U2/U3 CTS

CEACs ~~(Digital)~~ 1
3.3.3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION D	D. One or two CEACs with three or more auto restarts during a 12 hour period.	D.1	Perform ~~CHANNEL FUNCTIONAL TEST~~ SR 3.3.3.3 on affected CEAC.	24 hours	7
ACTION E	E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1	Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.3.1	SR 3.3.3.1	Perform a CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.3.2	SR 3.3.3.2	Check the CEAC auto restart count.	~~12 hours~~	TSTF-425-A
SR 3.3.3.3	SR 3.3.3.3	Perform a CHANNEL FUNCTIONAL TEST using test software.	~~92 days~~	TSTF-425-A 7
SR 3.3.3.4	SR 3.3.3.4	Perform a CHANNEL CALIBRATION.	~~[18] months~~	TSTF-425-A
SR 3.3.3.5	SR 3.3.3.5	Perform a CHANNEL FUNCTIONAL TEST.	~~[18] months~~	TSTF-425-A
SR 3.3.3.6	SR 3.3.3.6	Verify the isolation characteristics of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

1. The heading for ISTS 3.3.3 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. SONGS Units 2 and 3 are digital plants; therefore, analog requirements and specific labels that identify a requirement is digital are not required.

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

3. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

4. ISTS 3.3.3 Required Action B.3 requires verifying the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that both CEACs are inoperable. ITS 3.3.3 Required Action B.3 requires the same verification but requires the addressable constant in each CPC to be set to indicate that "the applicable" CEAC(s) are inoperable. This is acceptable since Condition B is entered when Required Action and associated Completion Time of Condition A is not met or when both CEACs inoperable. Therefore, it is possible to enter Condition B because the Required Actions and associated Completion Times of Condition A is not met which would only require the addressable constant in each core protection calculator (CPC) is set to indicate that only one CEAC is inoperable. Additionally, this proposed change is consistent with the current licensing basis for SONGS.

5. The Completion Time for ISTS 3.3.3 Required Action C.1 has been changed to once per 12 hours. This change is acceptable since Condition C is entered upon receipt of a CPC channel B or C cabinet high temperature alarm. Since the high temperature could damage the electronics, it would be better to continue to perform the CHANNEL FUNCTIONAL TEST of the affected CEAC(s) every 12 hours when a high temperature alarm condition exists instead of just once when the alarm first comes in to verify that they will still meet their safety function. This change is also consistent with the CTS requirements.

6. The SR number has been changed to be consistent with the number used in the SONGS CTS. SCE has decided not to renumber the CTS to be consistent with the ISTS because by doing so would result in unnecessary administrative burden of changing TS numbers in plant procedures.

7. ISTS 3.3.3 Required Actions C.1 and D.1 require performance of a CHANNEL FUNCTIONAL TEST when Conditions C and D are entered. ITS 3.3.3 Required Actions C.1 and D.1 will require performance of SR 3.3.3.3 versus stating to perform a CHANNEL FUNCTIONAL TEST. This change is acceptable because the ISTS 3.3.3 SRs contain two CHANNEL FUNCTIONAL TESTs and specifying which one is required in the Required Actions eliminates confusion as to which CHANNEL FUNCTIONAL TEST is required. The required CHANNEL FUNCTIONAL TEST is

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

the one which can be performed on line, which is SR 3.3.3.3. The other CHANNEL FUNCTIONAL TEST (SR 3.3.3.5) has a refueling cycle Frequency. This is also consistent with the SONGS method of meeting these current requirements. For additional clarification, "using test software," is being added to SR 3.3.3.3. This change adds clarifying information to the SONGS ITS to differentiate between the ITS SR 3.3.3.3 CHANNEL FUNCTIONAL TEST and the CHANNEL FUNCTIONAL TEST required by ITS SR 3.3.3.5. These clarifying words are consistent with the actual ISTS SR Bases words, which states that the SR 3.3.3.3 CHANNEL FUNCTIONAL TEST is performed using test software.

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

B 3.3 INSTRUMENTATION

B 3.3.3 Control Element Assembly Calculators (CEACs) ~~(Digital)~~ 1

BASES

BACKGROUND

The Reactor Protective System (RPS) initiates a reactor trip to protect against violating the core specified acceptable fuel design limits (SAFDLs) and breaching the reactor coolant pressure boundary (RCPB) during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Features systems in mitigating accidents.

The protection and monitoring systems have been designed to ensure 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 LCOs on other reactor system parameters and equipment performance.

The LSSS (defined in this Specification as the Allowable Value), in conjunction with the LCOs, establish the thresholds for protective system action to prevent exceeding acceptable limits during Design Basis Accidents.

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

- The departure from nucleate boiling ratio (DNBR) shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling~~,~~ ; 2
- Fuel centerline melting shall not occur~~,~~ ; and 2
- The Reactor Coolant System pressure SL of 2750 psia shall not be exceeded.

Maintaining the parameters within the above values ensures that the offsite dose will be within the ~~10 CFR 50 (Ref. 1) and~~ 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) criteria during AOOs. 9 3

Accidents are events that are analyzed even though they are not expected to occur during the plant life. The acceptable limit during accidents is that the offsite dose shall be maintained within an acceptable fraction of 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) limits. Different accident categories allow a different fraction of these limits based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event. 3

BASES

BACKGROUND (continued)

The RPS is segmented into four interconnected modules. These modules are:

- Measurement channels, ; 2
- Bistable trip units, ; 2
- RPS Logic, and 3

:
- Matrix Logic;
- Initiation Logic (trip paths);

- Reactor trip circuit breakers (RTCBs).

This LCO addresses the CEACs. LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating," provides a description of this equipment in the RPS.

The excore nuclear instrumentation, the core protection calculators (CPCs), and the CEACs are considered components in the measurement channels of the Linear Power Level - High, Logarithmic Power Level - High, DNBR - Low, and Local Power Density (LPD) - High trips. The CEACs are addressed by this Specification.

All four CPCs receive control element assembly (CEA) deviation penalty factors from each CEAC and use the larger of the power factors from the two CEACs in the calculation of DNBR and LPD. CPCs are further described in the Background section of LCO 3.3.1.

The CEACs perform the calculations required to determine the position of CEAs within their subgroups for the CPCs. Two independent CEACs compare the position of each CEA to its subgroup position. If a deviation is detected by either CEAC, an annunciator sounds and appropriate "penalty factors" are transmitted to all CPCs. These penalty factors conservatively adjust the effective operating margins to the DNBR - Low and LPD - High trips. Each CEAC also drives a single cathode ray tube (CRT), which is switchable between CEACs. The CRT displays individual CEA positions and current values of the penalty factors from the selected CEAC.

Each CEA has two separate reed switch assemblies mounted outside the RCPB. Each of the two CEACs receives CEA position input from one of the two reed switch position transmitters on each CEA, so that the position of all CEAs is independently monitored by both CEACs.

BASES

BACKGROUND (continued)

Functional testing of the entire RPS, from bistable input through the opening of individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis. Nuclear instrumentation, the CPCs, and the CEACs can be similarly tested. U FSAR, Section [7.2] (Ref. 3), provides more detail on RPS testing. 3 4
2 Process transmitter calibration is normally performed on a refueling basis.

APPLICABLE SAFETY ANALYSES

Each of the analyzed transients and accidents can be detected by one or more RPS Functions.

The effect of any misoperated CEA within a subgroup on the core power distribution is assessed by the CEACs, and an appropriately augmented power distribution penalty factor will be supplied as input to the CPCs. As the reactor core responds to the reactivity changes caused by the misoperated CEA and the ensuing reactor coolant and doppler feedback effects, the CPCs will initiate a DNBR - Low or LPD - High trip signal if SAFDLs are approached. Each CPC also directly monitors one "target CEA" from each subgroup and uses this information to account for excessive radial peaking factors for events involving CEA groups out of sequence and subgroup deviations within a group, without the need for CEACs.

Therefore, although the CEACs do not provide a direct reactor trip Function, their input to the CPCs is taken credit for in the CEA misoperation analysis.

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

LCO

This LCO on the CEACs ensures that the CPCs are either informed of individual CEA position within each subgroup, using one or both CEACs, or that appropriate conservatism is included in the CPC calculations to account for anticipated CEA deviations. Each CEAC provides an identical input into all four CPC channels. Each CPC uses the higher of the two CEAC transmitted CEA deviation penalty factors. Thus, only one OPERABLE CEAC is required to provide CEA deviation protection. This LCO requires both CEACs to be OPERABLE so that no single CEAC failure can prevent a required reactor trip from occurring.

BASES

APPLICABILITY

Most RPS trips are required to be OPERABLE in MODES 1 and 2 because the reactor is critical in these MODES. The trips are designed to take the reactor subcritical, which maintains the SLs during AOOs and assists the Engineered Safety Features Actuation System in providing acceptable consequences during accidents. Most trips are not required to be OPERABLE in MODES 3, 4, and 5. In MODES 3, 4, and 5, the emphasis is placed on return to power events. The reactor is protected in these MODES by ensuring adequate SDM.

Because CEACs provide the inputs to the DNBR - Low and LPD - High trips, they are required to be OPERABLE in the same MODES as those trips for the same reasons.

ACTIONS

A.1 and A.2

Condition A applies to the failure of a single CEAC channel. There are only two CEACs, each providing CEA deviation input into all four CPC channels. The CEACs include complex diagnostic software, making it unlikely that a CEAC will fail without informing the CPCs of its failed status. With one failed CEAC, the CPC will receive CEA deviation penalty factors from the remaining OPERABLE CEAC. If the second CEAC should fail (Condition B), the CPC will use large preassigned penalty factors. The specific Required Actions allowed are as follows:

With one CEAC inoperable, the second CEAC still provides a comprehensive set of comparison checks on individual CEAs within subgroups, as well as outputs to all CPCs, CEA deviation alarms, and position indication for display. Verification every 4 hours that each CEA is within 7 inches of the other CEAs in its group provides a check on the position of all CEAs and provides verification of the proper operation of the remaining CEAC. An OPERABLE CEAC will not generate penalty factors until deviations of ~~> 7~~ ≥ 9.7 inches within a subgroup are encountered. 3

The Completion Time of once per 4 hours is adequate based on operating experience, considering the low probability of an undetected CEA deviation coincident with an undetected failure in the remaining CEAC within this limited time frame.

As long as Required Action A.1 is accomplished as specified, the inoperable CEAC can be restored to OPERABLE status within 7 days. The Completion Time of 7 days is adequate for most repairs, while minimizing risk, considering that dropped CEAs are detectable by the redundant CEAC, and other LCOs specify Required Actions necessary to maintain DNBR and LPD margin.

BASES

ACTIONS (continued)

B.1, B.2, B.3, B.4, and B.5

Condition B applies if the Required Action and associated Completion Time of Required Action A are not met, or if both CEACs are inoperable. Actions associated with this Condition involve disabling the Control Element Drive Mechanism Control System (CEDMCS), while providing increased assurance that CEA deviations are not occurring and informing all OPERABLE CPC channels, via a software flag, that the applicable CEAC(s) ~~both CEACs~~ are failed. This will ensure that the large penalty factor associated with two CEAC failures will be applied to CPC calculations. The penalty factor for two failed CEACs is sufficiently large that power must be maintained significantly < 100% RTP if CPC generated reactor trips are to be avoided. The Completion Time of 4 hours is adequate to accomplish these actions while minimizing risks. 5

The Required Actions are as follows:

B.1

Meeting the DNBR margin requirements of LCO 3.2.4, "Departure from Nucleate Boiling Ratio (DNBR ~~5, "AXIAL SHAPE INDEX (ASI~~)," ensures that power level ~~and ASI~~ is ~~are~~ within a conservative region of operation based on actual core conditions. ~~In addition to the above actions, the Reactor Power Cutback (RPCB) System must be disabled. This ensures that CEA position will not be affected by RPCB operation.~~ 2 3

B.2

The "full out" CEA reed switches provide acceptable indication of CEA position. Therefore, the CEAs will remain fully withdrawn, except as required for specified testing or flux control via group #6. This verification ensures that undesired perturbations in local fuel burnup are prevented.

B.3

The "RSPT/CEAC Inoperable" addressable constant in each of the CPCs is set to indicate that the applicable CEAC(s) ~~both CEACs~~ are inoperable. This provides a conservative penalty factor to ensure that a conservative effective margin is maintained by the CPCs in the computation of DNBR and LPD trips. 5

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BASES

ACTIONS (continued)

B.4

The CEDMCS is placed and maintained in "OFF," except during CEA motion permitted by Required Action B.2, to prevent inadvertent motion and possible misalignment of the CEAs.

B.5

A comprehensive set of comparison checks on individual CEAs within groups must be made within 4 hours. Verification that each CEA is within 7 inches of other CEAs in its group provides a check that no CEA has deviated from its proper position within the group.

C.1

Condition C applies if the CPC channel B or C cabinet receives a high temperature alarm. There is one temperature sensor in each of the four CPC bays. Since CPC bays B and C also house CEAC calculators 1 and 2, respectively, a high temperature in either of these bays may also indicate a problem with the associated CEAC.

,

once per

SR 3.3.3.3,

once per

If a CPC channel B or C cabinet high temperature alarm is received, it is possible for the CEAC to be affected and not be completely reliable. Therefore, a CHANNEL FUNCTIONAL TEST must be performed within 12 hours. The Completion Time of 12 hours is adequate, considering the low probability of undetected failure, the consequences of failure, and the time required to perform a CHANNEL FUNCTIONAL TEST. 5

this

D.1

Condition D applies if an OPERABLE CEAC has three or more autorestarts in a 12 hour period.

CPCs and CEACs will attempt to autorestart if they detect a fault condition such as a calculator malfunction or loss of power. A successful autorestart restores the calculator to operation; however, excessive autorestarts might be indicative of a calculator problem.

1

BASES

ACTIONS (continued)

SR 3.3.3.3, ,

If a nonbypassed CEAC has three or more autorestarts, it may not be completely reliable. Therefore, a CHANNEL FUNCTIONAL TEST must be performed on the CEAC to ensure it is functioning properly. Based on plant operating experience, the Completion Time of 24 hours is adequate and reasonable to perform the test while still keeping the risk of operating in this condition at an acceptable level, since overt channel failure will most likely be indicated and annunciated by CPC online diagnostics. 5

E.1

Condition E is entered when the Required Action and associated Completion Time of Condition B, C, or D are not met.

If the Required Actions associated with these Conditions cannot be completed within the required Completion Time, the reactor must be brought to a MODE where the Required Actions do not apply. The Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

~~-----REVIEWER'S NOTE-----~~
~~In order for a plant to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that plant (Ref. 4).~~
~~-----~~ 6

SR 3.3.3.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on another channel. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. TSTF-425-A

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; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the plant 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 limits.

INSERT 1

~~The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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.~~ TSTF-425-A

SR 3.3.3.2

The CEAC autorestart count is checked ~~every 12 hours~~ to monitor the CPC and CEAC for normal operation. If three or more autorestarts of a nonbypassed CPC occur ~~within a 12 hour period~~, the CPC may not be completely reliable. Therefore, the Required Action of Condition D must be performed. ~~The Frequency is based on operating experience that demonstrates the rarity of more than one channel failing within the same 12 hour interval.~~ TSTF-425-A

INSERT 1

SR 3.3.3.3

A CHANNEL FUNCTIONAL TEST on each CEAC channel is performed ~~every 92 days~~ to ensure the entire channel will perform its intended function when needed. The ~~quarterly~~ CHANNEL FUNCTIONAL TEST is performed using test software. ~~The Frequency of 92 days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).~~ 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. 10 TSTF-425-A

INSERT 1

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 8

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ 6

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.4

SR 3.3.3.4 is the performance of a CHANNEL CALIBRATION ~~every [18] months~~. TSTF-425-A

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance 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 between successive calibrations to ensure that the plant remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference ~~[5]~~ 3. 7

INSERT 2

~~The Frequency is based upon the assumption of an [18] month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis and includes operating experience and consistency with the typical [18] month fuel cycle.~~ TSTF-425-A

SR 3.3.3.5

~~Every [18] months, a~~ A CHANNEL FUNCTIONAL TEST is performed on the CEACs. The CHANNEL FUNCTIONAL TEST shall include the injection of a signal as close to the sensors as practicable to verify OPERABILITY, including alarm and trip Functions. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable 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. TSTF-425-A

INSERT 2

~~The basis for the [18] month Frequency is that the CEACs perform a continuous self monitoring function that eliminates the need for frequent CHANNEL FUNCTIONAL TESTS. This CHANNEL FUNCTIONAL TEST essentially validates the self monitoring function and checks for a small set of failure modes that are undetectable by the self monitoring function. Operating experience has shown that undetected CPC or CEAC failures do not occur in any given [18] month interval.~~ TSTF-425-A

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 8

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 6

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.6

The isolation characteristics of each CEAC CEA position isolation amplifier and each optical isolator for CEAC to CPC data transfer are verified ~~once per refueling~~ to ensure that a fault in a CEAC or a CPC channel will not render another CEAC or CPC channel inoperable. The CEAC CEA position isolation amplifiers, mounted in CPC cabinets A and D, prevent a CEAC fault from propagating back to CPC A or D. The optical isolators for CPC to CEAC data transfer prevent a fault originating in any CPC channel from propagating back to any CEAC through this data link. TSTF-425-A

INSERT 3

~~The Frequency is based on plant operating experience with regard to channel OPERABILITY, which demonstrates the failure of a channel in any [18] month interval is rare.~~ TSTF-425-A

of 18 months

REFERENCES

~~1. 10 CFR 50~~. 9

1 → ~~2~~. 10 CFR ~~100~~ 50.67. 3

U

2 → ~~3~~. FSAR, Section ~~[~~7.2~~]~~. 3 4

~~4. NRC Safety Evaluation Report, [Date].~~ 7

3 → ~~5~~. CEN-327, June 2, 1986, including Supplement 1, ~~March 3~~ January, 1989. 7 3

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 8

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 6

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.3 BASES, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

1. The heading for ISTS 3.3.3 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

5. Changes have been made to the Bases to reflect changes made to the Specifications.

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

7. ISTS 3.3.3 Reference 4 is for the NRC Safety Evaluation Report addressed in the Reviewer's Note for Surveillance Requirements. Since no topical reports are being used to justify Frequencies in ITS 3.3.3, Reference 4 has been deleted and subsequent References have been renumbered.

8. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

9. The Reference to "10 CFR 50 (Ref. 1)" is being deleted from the Background Section of ITS 3.3.3 Bases when referring to offsite doses during accidents. The current reference to 10 CFR 100 is being change to reference 10 CFR 50.67. Thus, referencing 10 CFR 50 is not necessary due to the specific reference to 10 CFR 50.67 which is for offsite doses during accidents.

10. The portion of the ISTS SR 3.3.3.3 Bases which states, "The CHANNEL FUNCTIONAL TEST is performed using test software," is being retained in the ITS. This information will be deleted from the ISTS as part of the changes made in TSTF-425. However, it is pertinent explanatory information that should be retained. Therefore, it is being retained in the ITS SR 3.3.3 Bases because it is important descriptive information that explains the SR is performed using test software. Also, this change provides the Bases description for the addition of "using test software" in ITS SR 3.3.3.3.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.3, CONTROL ELEMENT ASSEMBLY CALCULATORS (CEACs)

There are no specific NSHC discussions for this Specification.

ATTACHMENT 4

ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

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

ITS

A01

3.3 INSTRUMENTATION

3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation

LCO 3.3.4

LCO 3.3.4 Six channels of RPS Matrix Logic, four channels of RPS Initiation Logic, four channels of reactor trip circuit breakers (RTCBs), and four channels of Manual Trip shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTCBs closed and any control element assemblies capable of being withdrawn.

ACTIONS

ACTION A

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ~~----------NOTE----------~~ ~~This action also applies when~~ three Matrix Logic channels ~~are~~ inoperable due to a common power source failure de-energizing three matrix power supplies. ~~-------------------------~~ One Matrix Logic channel inoperable. OR	A.1	Restore channel to OPERABLE status.	48 hours

A02

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION B	B. ~~-----------NOTE----------- RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------------------------~~ One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	B.1 Open the affected RTCBs.	1 hour	A03
ACTION C	C. ~~-----------NOTE----------- RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------------------------~~ One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	C.1 Open ~~all~~ the affected RTCBs.	48 hours	L01 A03
ACTION D	D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	D.1 Open the affected RTCBs.	Immediately	L02

(continued)

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION E	E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.4.1	SR 3.3.4.1 Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.4.2	SR 3.3.4.2 Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic Channel.	~~120 days~~	LA01
SR 3.3.4.3	SR 3.3.4.3 Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	~~18 months~~	LA01

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.4.4	SR 3.3.4.4 Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup

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ITS

A01

3.3 INSTRUMENTATION

3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation

LCO 3.3.4

LCO 3.3.4 Six channels of RPS Matrix Logic, four channels of RPS Initiation Logic, four channels of reactor trip circuit breakers (RTCBs), and four channels of Manual Trip shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTCBs closed and any control element assemblies capable of being withdrawn.

ACTIONS

ACTION A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~----------NOTE----------~~ ~~This action also applies when~~ three Matrix Logic channels ~~are~~ inoperable due to a common power source failure de-energizing three matrix power supplies. ~~------------------------~~ One Matrix Logic channel inoperable. OR	A.1 Restore channel to OPERABLE status.	48 hours

A02

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION B	B. ~~-----------NOTE----------- RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ------------------------~~ One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	B.1 Open the affected RTCBs.	1 hour	A03
ACTION C	C. ~~-----------NOTE----------- RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ------------------------~~ One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	C.1 Open ~~all~~ the affected RTCBs.	48 hours	L01 A03
ACTION D	D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	D.1 Open the affected RTCBs.	Immediately	L02

(continued)

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION E	E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.4.1	SR 3.3.4.1 Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.4.2	SR 3.3.4.2 Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic Channel.	~~120 days~~	LA01
SR 3.3.4.3	SR 3.3.4.3 Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	~~18 months~~	LA01

(continued)

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ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
SR 3.3.4.4	SR 3.3.4.4	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup

DISCUSSION OF CHANGES
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.4 Condition A is entered when one Matrix Logic channel is inoperable. Additionally, it contains a Note which states, "This action also applies when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies." ITS 3.3.4 Condition A is entered when one Matrix Logic channel is inoperable or when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies. This changes the CTS by making the Note a second part of Condition A.

This change is acceptable because in CTS 3.3.4 a Note allows this Condition to be entered when three Matrix Logic channels are inoperable due to a common power source failure. Therefore, the Note is incorporated into ITS 3.3.4 Condition A with an "OR." This allows ITS 3.3.4 Condition A to match the convention of the ISTS. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.3.4 ACTION B and ACTION C contain Notes in the Conditions which state "RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST." ITS 3.3.4 ACTION B and ACTION C do not contain these Notes. This changes the CTS by removing the Notes from CTS 3.3.4 ACTION B and ACTION C.

The Condition Note for ACTION B and ACTION C are not needed since the allowance is duplicative of that already provided in LCO 3.0.5. ITS LCO 3.0.5 allows equipment removed from service or declared inoperable to comply with ACTIONS to be returned to service under administrative controls solely to perform testing to demonstrate its OPERABILITY or the OPERABILITY of other equipment. Thus, since the Condition Note for ACTIONS B and C are stating the same thing, there is no need to have these specific Notes. Furthermore, the allowance given in the Notes is confusing, in addition to being duplicative, since LCO 3.0.5 allows as much time as is required to perform the required testing compared to the 1 hour allowed in the Notes. Furthermore, since LCO 3.0.5 governs how all LCOs work, it is considered to supersede the 1 hour allowance of these specific Notes. Basically, these Notes provide 1 hour, while LCO 3.0.5 provides as much time as necessary to perform the test. Since these Notes do not state that LCO 3.0.5 is not applicable, the time provided by LCO 3.0.5 can be used at any time, even after the 1 hour allowed by these specific Notes expires.

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DISCUSSION OF CHANGES
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

Therefore, this change is considered administrative since CTS and ITS LCO 3.0.5 provides as much time as necessary to perform the testing in the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.4.1 requires performance of a CHANNEL FUNCTIONAL TEST on each RTCB channel every 31 days. CTS SR 3.3.4.2 requires performance of a CHANNEL FUNCTIONAL TEST on each RPS Logic Channel every 120 days. CTS SR 3.3.4.3 requires performance of a CHANNEL FUNCTIONAL TEST including separate verification of the undervoltage and shunt trips, on each RTCB every 18 months. ITS SR 3.3.4.1, SR 3.3.4.2, and SR 3.3.4.3 require similar Surveillances, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

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DISCUSSION OF CHANGES
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

DISCUSSION OF CHANGES
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

DISCUSSION OF CHANGES
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.3.4 ACTION C requires opening all RTCBs within 48 hours when one channel of Manual Trip, RTCBs, or Initiation Logic is in inoperable in MODE 3, 4, or 5. ITS 3.3.4 ACTION C requires opening the affected RTCBs within 48 hours when one channel of Manual Trip, RTCBs, or Initiation Logic is in inoperable in MODE 3, 4, or 5. This changes the CTS by only requiring the affected RTCBs to be opened.

The purpose of CTS 3.3.4 Condition C is to restore the inoperable channel to OPERABLE status within 48 hours. If this is not accomplished then all of the RTCBs are opened placing the plant in a MODE in which the LCO does not apply, thus ensure ensuring no CEA withdrawal can occur. In ITS 3.3.4 Condition C, only the affected RTCBs must be opened. This removes the need for the affected channel by performing its associated safety function. With the RTCBs open, the affected functions are in a one-out-of-two logic, which meets redundancy requirements. Therefore, this change is acceptable since the redundancy requirements are still being met. This change is designated as less restrictive because a less stringent Required Action is being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.3.4 does not provide any actions for when two Manual Trip channels affecting the same trip leg are inoperable, thus entry into CTS LCO 3.0.3 is required. CTS LCO 3.0.3 allows 1 hour to initiate action to place the unit in MODE 3 within 7 hours, in MODE 4 within 13 hours and in MODE 5 within 37 hours. ITS 3.3.4 ACTION D requires immediately opening of the affected RTCBs when two channels of Manual Trip affecting the same trip leg are inoperable. This changes the CTS by adding the Manual Trip requirements to CTS 3.3.4 ACTION D.

This change is acceptable because when two Manual Trip channels are inoperable and are affecting the same trip leg, opening the associated RTCBs will ensure that the Manual Trip capability will be maintained. With the affected RTCBs open, any one of two Manual Trip push buttons being depressed will result in a reactor trip. Therefore, entering LCO 3.0.3 and shutting down the unit is excessive and 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.

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

3.3 INSTRUMENTATION

3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation ~~(Digital)~~ 1

LCO 3.3.4

LCO 3.3.4 Six channels of RPS Matrix Logic, four channels of RP S Initiation Logic, ~~[~~four channels of reactor trip circuit breakers (RTCBs),~~]~~ and four channels of Manual Trip shall be OPERABLE. 2

Applicability

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTCBs closed and any control element assemblies capable of being withdrawn.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One Matrix Logic channel inoperable. OR Three Matrix Logic channels inoperable due to a common power source failure de-energizing three matrix power supplies.	A.1 Restore channel(s) to OPERABLE status.	48 hours
ACTION B	B. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	B.1 Open the affected RTCBs.	1 hour
ACTION C	C. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	C.1 Open the affected RTCBs.	48 hours
ACTION D	D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	D.1 Open the affected RTCBs.	Immediately

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION E	E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.4.1	SR 3.3.4.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel.	~~[31] days~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.4.2	SR 3.3.4.2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel.	~~[92] days~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.4.3	SR 3.3.4.3	Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.4.4	SR 3.3.4.4	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup	

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

1. The heading for ISTS 3.3.4 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. SONGS Units 2 and 3 are digital plants; therefore, analog requirements and specific labels that identify a requirement is digital are not required.

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

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

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

B 3.3 INSTRUMENTATION

B 3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation (Digital) 1

BASES

BACKGROUND

The RPS initiates a reactor trip to protect against violating the core fuel design limits and reactor coolant pressure boundary integrity during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Features (ESF) systems in mitigating accidents.

The protection and monitoring systems have been designed to ensure 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 LCOs on other reactor system parameters and equipment performance.

The LSSS, defined in this Specification as the Allowable Value, in conjunction with the LCOs, establish the threshold for protective system action to prevent exceeding acceptable limits during Design Basis Accidents.

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

- The departure from nucleate boiling ratio shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling~~,~~ ; 2
- Fuel centerline melting shall not occur~~,~~ ; and 2
- The Reactor Coolant System pressure SL of 2750 psia shall not be exceeded.

Maintaining the parameters within the above values ensures that the offsite dose will be within the ~~10 CFR 50 (Ref. 1) and~~ 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) criteria during AOOs. 9 3

Accidents are events that are analyzed even though they are not expected to occur during the plant life. The acceptable limit during accidents is that the offsite dose shall be maintained within an acceptable fraction of 10 CFR ~~100~~ 50.67 (Ref. ~~2~~ 1) limits. Different accident categories allow a different fraction of these limits based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event. 3

BASES

BACKGROUND (continued)

The RPS is segmented into four interconnected modules. These modules are:

- Measurement channels; 2
- Bistable trip units; 2
- RPS Logic: and 3
  - Matrix Logic;
  - Initiation Logic (trip paths);
- Reactor trip circuit breakers (RTCBs).

This LCO addresses the RPS Logic and RTCBs, including Manual Trip capability. LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating," provides a description of the role of this equipment in the RPS. This is summarized below:

<u>RPS Logic</u>

The RPS Logic, consisting of Matrix and Initiation Logic, employs a scheme that provides a reactor trip when bistables in any two of the four channels sense the same input parameter trip. This is called a two-out-of-four trip logic.

Bistable relay contact outputs from the four channels are configured into six logic matrices. Each logic matrix checks for a coincident trip in the same parameter in two bistable channels. The matrices are designated the AB, AC, AD, BC, BD, and CD matrices to reflect the bistable channels being monitored. Each logic matrix contains four normally energized matrix relays. When a coincidence is detected, consisting of a trip in the same Function in the two channels being monitored by the logic matrix, all four matrix relays de-energize.

The matrix relay contacts are arranged into trip paths, with one of the four matrix relays in each matrix opening contacts in one of the four trip paths. Each trip path provides power to one of the four normally energized RTCB control relays (K1, K2, K3, and K4). The trip paths thus each have six contacts in series, one from each matrix, and perform a logical <u>OR</u> function, opening the RTCBs if any one or more of the six logic matrices indicate a coincidence condition.

BASES

BACKGROUND (continued)

Each trip path is responsible for opening one set of two of the eight RTCBs. The RTCB control relays (K-relays), when de-energized, interrupt power to the breaker undervoltage trip attachments and simultaneously apply power to the shunt trip attachments on each of the two breakers. Actuation of either the undervoltage or shunt trip attachment is sufficient to open the RTCB and interrupt power from the motor generator (MG) sets to the control element drive mechanisms (CEDMs).

When a coincidence occurs in two RPS channels, all four matrix relays in the affected matrix de-energize. This in turn de-energizes all four breaker control relays, which simultaneously de-energize the undervoltage and energize the shunt trip attachments in all eight RTCBs, tripping them open.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition, since they are addressed as part of the measurement channel.

The Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and solid state (auxiliary) relays through the K-relay contacts in the RTCB control circuitry.

It is possible to change the two-out-of-four RPS Logic to a two-out-of-three logic for a given input parameter in one channel at a time by trip channel bypassing select portions of the Matrix Logic. Trip channel bypassing a bistable effectively shorts the bistable relay contacts in the three matrices associated with that channel. Thus, the bistables will function normally, producing normal trip indication and annunciation, but a reactor trip will not occur unless two additional channels indicate a trip condition. Trip channel bypassing can be simultaneously performed on any number of parameters in any number of channels, providing each parameter is bypassed in only one channel at a time. An interlock prevents simultaneous trip channel bypassing of the same parameter in more than one channel. Trip channel bypassing is normally employed during maintenance or testing.

BASES

BACKGROUND (continued)

Reactor Trip Circuit Breakers (RTCBs)

The reactor trip switchgear consists of eight RTCBs, which are operated in four sets of two breakers (four channels). Power input to the reactor trip switchgear comes from two full capacity MG sets operated in parallel such that the loss of either MG set does not de-energize the CEDMs. There are two separate CEDM power supply buses, each bus powering half of the CEDMs. Power is supplied from the MG sets to each bus via two redundant paths (trip legs). Trip legs 1A and 1B supply power to CEDM bus 1. Trip legs 2A and 2B supply power to CEDM bus 2. This ensures that a fault or the opening of a breaker in one trip leg (i.e., for testing purposes) will not interrupt power to the CEDM buses.

Each of the four trip legs consists of two RTCBs in series. The two RTCBs within a trip leg are actuated by separate initiation circuits.

The eight RTCBs are operated as four sets of two breakers (four channels). For example, if a breaker receives an open signal in trip leg A (for CEDM bus 1), an identical breaker in trip leg B (for CEDM bus 2) will also receive an open signal. This arrangement ensures that power is interrupted to both CEDM buses, thus preventing trip of only half of the control element assemblies (CEAs) (a half trip). Any one inoperable breaker in a channel will make the entire channel inoperable.

Each set of RTCBs is operated by either a Manual Trip push button or an RPS actuated K-relay. There are four Manual Trip push buttons, arranged in two sets of two. Depressing both push buttons in either set will result in a reactor trip.

When a Manual Trip is initiated using the control room push buttons, the RPS trip paths and K-relays are bypassed, and the RTCB undervoltage and shunt trip attachments are actuated independent of the RPS.

Manual Trip circuitry includes the push button and interconnecting wiring to both RTCBs necessary to actuate both the undervoltage and shunt trip attachments, but excludes the K-relay contacts and their interconnecting wiring to the RTCBs, which are considered part of the Initiation Logic.

Functional testing of the entire RPS, from bistable input through the opening of the individual sets of RTCBs, can be performed either at power or shutdown and is normally performed on a quarterly basis.
U FSAR, Section [7.2] (Ref. 3), explains RPS testing in more detail. 3 4
2

BASES

APPLICABLE SAFETY ANALYSES

Reactor Protective System (RPS) Logic

The RPS Logic provides for automatic trip initiation to maintain the SLs during AOOs and assist the ESF systems in ensuring acceptable consequences during accidents. All transients and accidents that call for a reactor trip assume the RPS Logic is functioning as designed.

Reactor Trip Circuit Breakers (RTCBs)

All of the transient and accident analyses that call for a reactor trip assume that the RTCBs operate and interrupt power to the CEDMs.

Manual Trip

There are no accident analyses that take credit for the Manual Trip; however, the Manual Trip is part of the RPS circuitry. It is used by the operator to shut down the reactor whenever any parameter is rapidly trending toward its trip setpoint. A Manual Trip accomplishes the same results as any one of the automatic trip Functions.

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

LCO

Reactor Protective System (RPS) Logic

The LCO on the RPS Logic channels ensures that each of the following requirements are met:

- A reactor trip will be initiated when necessary~~.~~ ; 2
- The required protection system coincidence logic is maintained (minimum two-out-of-three, normal two-out-of-four)~~,~~ ; and 2
- Sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance.

Failures of individual bistable relays and their contacts are addressed in LCO 3.3.1. This Specification addresses failures of the Matrix Logic not addressed in the above, such as the failure of matrix relay power supplies or the failure of the trip channel bypass contact in the bypass condition.

BASES

LCO (continued)

Loss of a single vital bus will de-energize one of the two power supplies in each of three matrices. This will result in four RTCBs opening; however, the remaining four closed RTCBs will prevent a reactor trip. For the purposes of this LCO, de-energizing up to three matrix power supplies due to a single failure is to be treated as a single channel failure, providing the affected matrix relays de-energize as designed, opening the affected RTCBs.

Each of the four Initiation Logic channels opens one set of RTCBs if any of the six coincidence matrices de-energize their associated matrix relays. They thus perform a logical OR function. Each Initiation Logic channel has its own power supply and is independent of the others. An Initiation Logic channel includes the matrix relay through to the K-relay contacts, which open the RTCB.

It is possible for two Initiation Logic channels affecting the same trip leg to de-energize if a matrix power supply or vital instrument bus fails. This will result in opening the two affected sets of RTCBs.

~~If one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case, the redundant set of RTCBs will provide protection if a trip should be required. It is unlikely that a trip will be required during the Surveillance, coincident with a failure of the remaining series RTCB channel. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip.~~ 5

1. Matrix Logic

This LCO requires six channels of Matrix Logic to be OPERABLE in MODES 1 and 2, and in MODES 3, 4, and 5 when any RTCBs are closed and any CEA is capable of being withdrawn.

2. Initiation Logic

This LCO requires four channels of Initiation Logic to be OPERABLE in MODES 1 and 2, and in MODES 3, 4, and 5 when the RTCBs are closed and any CEA is capable of being withdrawn.

BASES

LCO (continued)

3. Reactor Trip Circuit Breakers

The LCO requires four RTCB channels to be OPERABLE in MODES 1 and 2, as well as in MODES 3, 4, and 5 when the RTCBs are closed and any CEA is capable of being withdrawn.

Each channel consists of two breakers operated in a single set by the Initiation Logic or Manual Trip circuitry. This ensures that power is interrupted at identical locations in the trip legs for both CEDM buses, thus preventing power removal to only one CEDM bus (a half trip).

Failure of a single breaker affects the entire channel, and both breakers in the set must be opened. Without reliable RTCBs and associated support circuitry, a reactor trip cannot occur whether initiated automatically or manually.

Each channel of RTCBs starts at the contacts that are actuated by the K-relay and the Manual Trip for each set of breakers. The K-relay actuated contacts and the upstream circuitry are considered to be RPS Logic. Manual Trip contacts and upstream circuitry are considered to be Manual Trip circuitry.

~~A Note associated with the ACTIONS states that if one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case the redundant set of RTCBs will provide protection. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip.~~ 5

4. Manual Trip

The LCO requires all four Manual Trip channels to be OPERABLE in MODES 1 and 2, and MODES 3, 4, and 5 when the RTCBs are closed and any CEA is capable of being withdrawn.

Two independent sets of two adjacent push buttons are provided at separate locations. Each push button is considered a channel and operates two of the eight RTCBs. Depressing both push buttons in either channel will cause an interruption of power to the CEDMs, allowing the CEAs to fall into the core. This design ensures that no single failure in any push button circuit can either cause or prevent a reactor trip.

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BASES

LCO (continued)

Manual Trip push buttons are also provided at the reactor trip switchgear (locally) in case the control room push buttons become inoperable or the control room becomes uninhabitable. These are not part of the RPS and cannot be credited in fulfilling the LCO OPERABILITY requirements. Furthermore, LCO ACTIONS need not be entered due to failure of a local Manual Trip.

APPLICABILITY

The RPS Logic, RTCBs, and Manual Trip are required to be OPERABLE in any MODE when the CEAs are capable of being withdrawn off the bottom of the core (i.e., RTCBs closed and power available to the CEDMs). This ensures that the reactor can be tripped when necessary, but allows for maintenance and testing when the reactor trip is not needed.

In MODES 3, 4, and 5 with the RTCBs open, the CEAs are not capable of withdrawal and these Functions do not have to be OPERABLE. However, two boron dilution monitoring ~~logarithmic power level~~ channels must be OPERABLE to ensure proper indication of neutron population and to indicate a boron dilution event. This is addressed in LCO 3.3.13, "Boron Dilution ~~[Logarithmic] Power~~ Monitoring Channels." 3 3

ACTIONS

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered if applicable in the current MODE of operation.

A.1

Condition A applies if one Matrix Logic channel is inoperable or three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies in any applicable MODE. Loss of a single vital instrument bus will de-energize one of the two matrix power supplies in up to three matrices. This is considered a single matrix failure, providing the matrix relays associated with the failed power supplies de-energize as required.

The channel(s) must be restored to OPERABLE status within 48 hours. The Completion Time of 48 hours provides the operator time to take appropriate actions and still ensures that any risk involved in operating with a failed channel is acceptable. Operating experience has demonstrated that the probability of a random failure of a second Matrix Logic channel is low during any given 48 hour interval. If the channel cannot be restored to OPERABLE status within 48 hours, Condition E is entered. 10

BASES

ACTIONS (continued)

B.1

Condition B applies to one Initiation Logic channel, RTCB channel, or Manual Trip channel in MODES 1 and 2, since they have the same actions. MODES 3, 4, and 5, with the RTCBs shut, are addressed in Condition C. These Required Actions require opening the affected RTCBs. This removes the need for the affected channel by performing its associated safety function. With an RTCB open, the affected Functions are in one-out-of-two logic, which meets redundancy requirements, but testing on the OPERABLE channels cannot be performed without causing a reactor trip unless the RTCBs in the inoperable channels are closed to permit testing.

Required Action B.1 provides for opening the RTCBs associated with the inoperable channel within a Completion Time of 1 hour. This Required Action is conservative, since depressing the Manual Trip push button associated with either set of breakers in the other trip leg will cause a reactor trip. With this configuration, a single channel failure will not prevent a reactor trip. The allotted Completion Time is adequate for opening the affected RTCBs while maintaining the risk of having them closed at an acceptable level.

C.1

Condition C applies to the failure of one Initiation Logic channel, RTCB channel, or Manual Trip channel affecting the same trip leg in MODE 3, 4, or 5 with the RTCBs closed. The channel must be restored to OPERABLE status within 48 hours. If the inoperable channel cannot be restored to OPERABLE status within 48 hours, the affected RTCBs must be opened. In some cases, this condition may ~~effect~~ affect all of the RTCBs. 2
This removes the need for the affected channel by performing its associated safety function. With the RTCBs open, the affected functions are in a one-out-of-two logic, which meets redundancy requirements.

The Completion Time of 48 hours is consistent with that of other RPS instrumentation and should be adequate to repair most failures.

Testing on the OPERABLE channels cannot be performed without causing a reactor trip unless the RTCBs in the inoperable channels are closed to permit testing.

BASES

ACTIONS (continued)

D.1

Condition D applies to the failure of both Manual Trip , RTCB, or Initiation Logic channels affecting the same trip leg. Since this will open two channels of RTCBs, this Condition is also applicable to channels in the same trip leg. This will open both sets of RTCBs in the affected trip leg, satisfying the Required Action of opening the affected RTCBs. 10

Of greater concern is the failure of the initiation circuit in a nontrip condition (e.g., due to two initiation K-relay failures). With only one Initiation Logic channel failed in a nontrip condition, there is still the redundant set of RTCBs in the trip leg. With both failed in a nontrip condition, the reactor will not trip automatically when required. In either case, the affected RTCBs must be opened immediately by using the appropriate Manual Trip push buttons, since each of the four push buttons opens one set of RTCBs, independent of the initiation circuitry. Caution must be exercised, since depressing the wrong push buttons may result in a reactor trip.

If two Manual Trip channels are inoperable and affecting the same trip leg, the associated RTCBs must be opened immediately to ensure Manual Trip capability is maintained. With the affected RTCBs open, any one of two Manual Trip push buttons being depressed will result in a reactor trip.

If the affected RTCB cannot be opened, Required Action E is entered. This would only occur if there is a failure in the Manual Trip circuitry or the RTCB(s).

E.1 and E.2

Condition E is entered if Required Actions associated with Condition A, B, or D are not met within the required Completion Time or, if for one or more Functions, more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel is inoperable for reasons other than Condition A or D.

If the RTCBs associated with the inoperable channel cannot be opened, the reactor must be shut down within 6 hours and all the RTCBs opened. A Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems and for opening RTCBs. All RTCBs should then be opened, placing the plant in a MODE where the LCO does not apply and ensuring no CEA withdrawal occurs.

BASES

SURVEILLANCE REQUIREMENTS

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~In order for a unit to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 4).~~
~~---~~ 6

SR 3.3.4.1

A CHANNEL FUNCTIONAL TEST is performed on each RTCB channel ~~every 31 days~~. This verifies proper operation of each RTCB. The RTCB must then be closed prior to testing the other RTCBs, or a reactor trip may result. ~~The Frequency of 31 days is based on the reliability analysis presented in Topical Report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," (Ref. 4).~~ TSTF-425-A

INSERT 1

SR 3.3.4.2

A CHANNEL FUNCTIONAL TEST on each RPS Logic channel is performed ~~every [92] days~~ to ensure the entire channel will perform its intended function when needed. 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. TSTF-425-A

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference ~~3~~ 2. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. The first test, the bistable test, is addressed by SR 3.3.1.7 in LCO 3.3.1. 3

This SR addresses the two tests associated with the RPS Logic: Matrix Logic and Trip Path.

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 8

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6

BASES

SURVEILLANCE REQUIREMENTS (continued)

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip channel bypass contacts.

Trip Path Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

INSERT 2 ~~The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).~~ TSTF-425-A

Move to Page 3.4-13 after SR 3.3.4.4

Additionally, operating experience has shown that these components usually pass the Surveillance when performed at a Frequency of once every 7 days prior to each reactor startup. 7

SR 3.3.4.3

Each RTCB is actuated by an undervoltage coil and a shunt trip coil. The system is designed so that either de-energizing the undervoltage coil or energizing the shunt trip coil will cause the circuit breaker to open. When an RTCB is opened, either during an automatic reactor trip or by using the manual push buttons in the control room, the undervoltage coil is de-energized and the shunt trip coil is energized. This makes it impossible to determine if one of the coils or associated circuitry is defective.

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 8

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 6

BASES

SURVEILLANCE REQUIREMENTS (continued)

Therefore, ~~once every [18] months,~~ a CHANNEL FUNCTIONAL TEST is performed that individually tests all four sets of undervoltage coils and all four sets of shunt trip coils. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable 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. During undervoltage coil testing, the shunt trip coils must remain de-energized, preventing their operation. Conversely, during shunt trip coil testing, the undervoltage coils must remain energized, preventing their operation. This Surveillance ensures that every undervoltage coil and every shunt trip coil is capable of performing its intended function and that no single active failure of any RTCB component will prevent a reactor trip. ~~The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the Frequency of once every [18] months.~~ TSTF-425-A

INSERT 3

SR 3.3.4.4

A CHANNEL FUNCTIONAL TEST on the Manual Trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. 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 Manual Trip Function can only be tested at shutdown. However, the simplicity of this circuitry and the absence of drift concern make this Frequency adequate. 7

Move the paragraph from Page 3.4-12 to here

REFERENCES

~~1. 10 CFR 50, Appendix A.~~ 9

1 ~~2~~. 10 CFR ~~100~~ 50.67. 3

2 ~~3~~. U FSAR, Section ~~[~~7.2~~]~~. 3 4

~~4. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.~~ 3

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 8

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ 6

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.4 BASES, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

1. The heading for ISTS 3.3.4 includes the parenthetical expression (Digital). This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

5. The ISTS 3.3.4 LCO section of the Bases contains two statements. One of the statements is "If one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case, the redundant set of RTCBs will provide protection if a trip should be required. It is unlikely that a trip will be required during the Surveillance, coincident with a failure of the remaining series RTCB channel. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip." The other statement is "A Note associated with the ACTIONS states that if one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case the redundant set of RTCBs will provide protection. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip." The Notes that these statements refer to were removed in TSTF-181. Since the Notes are no longer part of ISTS 3.3.4 the information in the LCO section of the Bases discussing them has been deleted.

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

7. Information for SR 3.3.4.4 pertaining to the Surveillance Frequency is listed under SR 3.3.4.2 in the ISTS. This is the wrong location for this information. Therefore, the information has been moved to the proper location at the end on SR 3.3.4.4.

8. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.4 BASES, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

9. The Reference to "10 CFR 50 (Ref. 1)" is being deleted from the Background Section of ITS 3.3.3 Bases when referring to offsite doses during accidents. The Reference Section lists 10CFR 50 Appendix A for Reference 1. 10 CFR 50 Appendix A lists the General Design Criteria (GDC). The GDC do not specifically address the offsite doses during accidents. The current reference to 10 CFR 100 is being change to reference 10 CFR 50.67 which is for offsite doses during accidents. Thus, referencing 10 CFR 50 is not necessary due to the specific reference to 10 CFR 50.67 which is for offsite doses during accidents.

10. Changes have been made to the Bases to reflect the actual Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.4, REACTOR PROTECTIVE SYSTEM (RPS) LOGIC AND TRIP INITIATION

There are no specific NSHC discussions for this Specification.

ATTACHMENT 5

ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) INSTRUMENTATION

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

ITS

A01

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation

LCO 3.3.5

LCO 3.3.5 Four ESFAS trip and bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

ACTIONS Note

-----------------------------------NOTE~~S~~-----------------------------------

~~1.~~ Separate Condition entry is allowed for each ESFAS Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2, B.2, or E.2.2 shall be reviewed by the Onsite Review Committee.~~

LA01

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic ESFAS trip channel inoperable (other than RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function).	A.1 Place channel ~~Functional Unit~~ in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with One automatic trip channel inoperable for RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function.	B.1 Place channel ~~Functional Unit~~ in bypass. AND B.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

ACTION A — A02
Condition A Note — A05
ACTION B — A02
Condition B Note — A05

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C Condition C Note	C. One or more Functions with two automatic ESFAS trip channels inoperable (other than RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS Function).	C.1 ~~-----NOTE-----~~ ~~LCO 3.0.4 is not applicable.~~ ~~-----------------~~ Place one channel ~~Functional Unit~~ in bypass and the other in trip.	1 hour	M01 A02 A05
ACTION D Condition D Note	D. Two automatic ESFAS trip channels inoperable for RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function. One or more Functions with	D.1 ~~-----NOTE-----~~ ~~LCO 3.0.4 is not applicable.~~ ~~-----------------~~ Place one channel ~~Functional Unit~~ in bypass and the other in trip. AND D.2 Restore one affected automatic trip channel to OPERABLE status.	1 hour 7 days	A02 M01 A02 A05
ACTION E	E. One or more Functions with one automatic bypass removal channel inoperable.	E.1 Disable bypass channel. OR E.2.1 Place affected automatic trip channel in bypass or trip. AND E.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour 1 hour Prior to entering MODE 2 following next MODE 5 entry (continued)	

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION F	F. One or more Functions with two automatic bypass removal channels inoperable.	~~NOTE~~ ~~LCO 3.0.4 is not applicable.~~ F.1 Disable bypass channels. OR F.2 Place one affected automatic trip channel in bypass and place the other in trip.	 1 hour 1 hour	M01
ACTION G	G. Required Action and associated Completion Time ~~for Safety Injection Actuation Signal, Containment Spray Actuation Signal, Containment Isolation Actuation Signal, Main Steam Isolation Signal, or Emergency Feedwater Actuation Signal~~ not met.	G.1 Be in MODE 3. AND G.2 Be in MODE 4. -------------------Note------------------- LCO 3.0.4.a is not Applicable when entering MODE 4 for RAS. --	6 hours 12 hours	L01
ACTION G	~~H. Required Action and associated Completion Time for Recirculation Actuation Signal not met.~~	~~H.1 Be in MODE 3.~~ ~~AND~~ ~~H.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~	L01

ITS

A01

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.5.1	SR 3.3.5.1 Perform a CHANNEL CHECK of each ESFAS channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.5.2	SR 3.3.5.2 INSERT 1 Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel.	~~30 days on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	M02 LA02
SR 3.3.5.3	SR 3.3.5.3 Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel bypass removal function.	~~120 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.5.4	SR 3.3.5.4 INSERT 1 Perform a CHANNEL CALIBRATION of Function 5, Recirculation Actuation Signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	M02 LA02
SR 3.3.5.5	SR 3.3.5.5 INSERT 1 Perform a CHANNEL CALIBRATION of each ESFAS channel, with the exception of Function 5, including bypass removal functions.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	M02 LA02
SR 3.3.5.6	SR 3.3.5.6 Verify ESF RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.5.7	SR 3.3.5.7 Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal channel.	Once within 120 days prior to each reactor startup	

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M02

INSERT 1

-----------------------------NOTES----------------------------

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

2. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

ITS

Table 3.3.5-1

A01

ESFAS Instrumentation
3.3.5

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

ITS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE	
	1. Safety Injection Actuation Signal (a)			
1.a	a. Containment Pressure – High	1,2,3	≤ 3.7 psig	
1.b	b. Pressurizer Pressure – Low (b)		≥ 1700 psia	A03
	2. Containment Spray Actuation Signal ~~(e)~~			
2.a	a. Containment Pressure – High-High	1,2,3	≤ 15.0 psig	A03
2.b	b. Automatic SIAS		NA	
	3. Containment Isolation Actuation Signal			
3.a	a. Containment Pressure – High	1,2,3	≤ 3.7 psig	
	4. Main Steam Isolation Signal			
4.a	a. Steam Generator Pressure – Low (c)	1,2 (d),3 (d)	≥ 729 psia	
	5. Recirculation Actuation Signal			
5.a	a. Refueling Water Storage Tank Level – Low	1,2,3,4	19.27% ≥ ~~tap span~~ ≥ 17.73%	LA04
	6. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)			
6.a	a. Steam Generator Level – Low	1,2,3	≥ 20%	
6.b	b. SG Pressure Difference – High		≤ 140 psid	
6.c	c. Steam Generator Pressure – Low (c)		≥ 729 psia	
	7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)			
7.a	a. Steam Generator Level – Low	1,2,3	≥ 20%	
7.b	b. SG Pressure Difference – High		≤ 140 psid	
7.c	c. Steam Generator Pressure – Low (c)		≥ 729 psia	

, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia

(a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).

(b) The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia~~. Trips may be bypassed~~ when pressurizer pressure is < 400 psia ~~decreasing~~. Bypass shall be ~~automatically~~ removed ~~before~~ pressurizer pressure ~~exceeds~~ 500 psia ~~(the corresponding bistable allowable value is ≤ 472 psia)~~.

Bypass may be enabled

when

is ≥

LA03 A06

(c) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psi. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.

(d) The Main Steam Isolation Signal Function (Steam Generator Pressure – Low) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed and de-activated.

2.b ~~(e) Automatic SIAS is required for Containment Spray Actuation Signal (CSAS).~~ A03

The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased. M03

ITS

A01

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation

LCO 3.3.5

LCO 3.3.5 Four ESFAS trip and bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

ACTIONS Note

------------------------------------NOTE~~S~~------------------------------------

~~1.~~ Separate Condition entry is allowed for each ESFAS Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2, B.2, or E.2.2 shall be reviewed by the Onsite Review Committee.~~

LA01

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one automatic ESFAS trip channel inoperable (other than RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function).	A.1 Place channel ~~Functional Unit~~ in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with One automatic trip channel inoperable for RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function.	B.1 Place channel ~~Functional Unit~~ in bypass. AND B.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

ACTION A, Conditon A Note, A02, A05

ACTION B, Condition B Note, A02, A05

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION C Condition C Note	C. One or more Functions with two automatic ESFAS trip channels inoperable (other than RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS Function).	C.1 ~~-----NOTE----- LCO 3.0.4 is not applicable. ----------~~ Place one channel ~~Functional Unit~~ in bypass and the other in trip.	1 hour M01 A02 A05
ACTION D Condition D Note	D. One or more Functions with Two automatic ESFAS trip channels inoperable for RWST Level-Low for the RAS function or SG Pressure-Low or SG Pressure Difference-High for the EFAS function.	D.1 ~~-----NOTE----- LCO 3.0.4 is not applicable. ----------~~ Place one channel ~~Functional Unit~~ in bypass and the other in trip. AND D.2 Restore one affected automatic trip channel to OPERABLE status.	A02 M01 1 hour A02 A05 7 days
ACTION E	E. One or more Functions with one automatic bypass removal channel inoperable.	E.1 Disable bypass channel. OR E.2.1 Place affected automatic trip channel in bypass or trip. AND E.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour 1 hour Prior to entering MODE 2 following next MODE 5 entry

(continued)

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ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION F	F. One or more Functions with two automatic bypass removal channels inoperable.	~~-------------NOTE-------------~~ ~~LCO 3.0.4 is not applicable.~~ ~~------------------------------~~ F.1 Disable bypass channels. <u>OR</u> F.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour 1 hour	M01
ACTION G	G. Required Action and associated Completion Time ~~for Safety Injection Actuation Signal, Containment Spray Actuation Signal, Containment Isolation Actuation Signal, Main Steam Isolation Signal, or Emergency Feedwater Actuation Signal~~ not met.	G.1 Be in MODE 3. <u>AND</u> G.2 Be in MODE 4. -------------------NOTE----------------- LCO 3.0.4.a is not Applicable when entering MODE 4 for RAS. ---	6 hours 12 hours	L01
ACTION G	~~H. Required Action and associated Completion Time for Recirculation Actuation Signal not met.~~	~~H.1 Be in MODE 3.~~ ~~AND~~ ~~H.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~	L01

ITS

A01

SURVEILLANCE REQUIREMENTS

ITS	SURVEILLANCE		FREQUENCY	
SR 3.3.5.1	SR 3.3.5.1	Perform a CHANNEL CHECK of each ESFAS channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.5.2	SR 3.3.5.2 INSERT 1	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel.	~~30 days on a STAGGERED TEST BASIS~~	M02 LA02
SR 3.3.5.3	SR 3.3.5.3	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel bypass removal function.	~~120 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.5.4	SR 3.3.5.4 INSERT 1	Perform a CHANNEL CALIBRATION of Function 5, Recirculation Actuation Signal.	~~18 months~~	M02 LA02
SR 3.3.5.5	SR 3.3.5.5 INSERT 1	Perform a CHANNEL CALIBRATION of each ESFAS channel, with the exception of Function 5, including bypass removal functions.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	M02 LA02
SR 3.3.5.6	SR 3.3.5.6	Verify ESF RESPONSE TIME is within limits.~~*~~	~~24 months on a STAGGERED TEST BASIS~~	LA02
SR 3.3.5.7	SR 3.3.5.7	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal channel.	Once within 120 days prior to each reactor startup	

~~*Verification of the RESPONSE TIME of 30 subgroup relays identified in the February 18, 1997 Edison letter is not applicable until return to Mode 4 from the Unit 3 Cycle 9 refueling outage, with the additional commitments made in the February 18, 1997 letter. The safety justification for not performing this testing is also included in the February 18, 1997 letter.~~ A04

M02

INSERT 1

------------------------------NOTES------------------------------

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

2. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

ITS

A01

ESFAS Instrumentation
3.3.5

Table 3.3.5-1

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

ITS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE	
	1. Safety Injection Actuation Signal (a)			
1.a	a. Containment Pressure – High	1,2,3	≤ 3.7 psig	
1.b	b. Pressurizer Pressure – Low (b)		≥ 1700 psia	A03
	2. Containment Spray Actuation Signal ~~(e)~~			
2.a	a. Containment Pressure – High-High	1,2,3	≤ 15.0 psig	A03
2.b	b. Automatic SIAS		NA	
	3. Containment Isolation Actuation Signal			
3.a	a. Containment Pressure – High	1,2,3	≤ 3.7 psig	
	4. Main Steam Isolation Signal			
4.a	a. Steam Generator Pressure – Low (c)	1,2 (d),3 (d)	≥ 729 psia	
	5. Recirculation Actuation Signal			
5.a	a. Refueling Water Storage Tank Level – Low	1,2,3,4	19.27% ≥ ~~tap span~~ ≥ 17.73%	LA04
	6. Emergency Feedwater Actuation signal SG #1 (EFAS-1)			
6.a	a. Steam Generator Level – Low	1,2,3	≥ 20%	
6.b	b. SG Pressure Difference – High		≤ 140 psid	
6.c	c. Steam Generator Pressure – Low (c)		≥ 729 psia	
	7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)			
7.a	a. Steam Generator Level – Low	1,2,3	≥ 20%	
7.b	b. SG Pressure Difference – High		≤ 140 psid	
7.c	c. Steam Generator Pressure – Low (c)		≥ 729 psia	

(a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).

A06

(b) The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psi~~a~~. ~~Trips may be bypassed~~ Bypass may be enabled when pressurizer pressure is < 400 psia , provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia ~~decreasing~~. Bypass shall be ~~automatically~~ removed ~~before~~ when pressurizer pressure ~~exceeds~~ is ≥ 500 psia ~~(the corresponding bistable allowable value is ≤ 472 psia)~~. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.

LA03

(c) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ 200 psi. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.

(d) The Main Steam Isolation Signal Function (Steam Generator Pressure – Low) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed and de-activated.

2.b ~~(e) Automatic SIAS is required for Containment Spray Actuation Signal (CSAS).~~

A03

M03

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.5 Required Actions A.1, B.1, C.1, and D.1 require placing the inoperable "Functional Unit" in bypass and/or trip depending if there is one or two channels inoperable. ITS 3.3.5 Required Actions A.1, B.1, C.1 and D.1 requires the same actions, except they refer to "channel" instead of "functional unit." Additionally, ITS 3.3.5 Conditions B and D add, "One or more functions with." This changes the CTS by replacing the term Functional Unit with Channel and adding that Conditions B and D apply to one or more functions.

The purpose of CTS 3.3.5 and ITS 3.3.5 Required Actions A.1, B.1, C.1, and D.1 is to provide compensatory measures when one or two ESFAS channels are inoperable. The CTS and ITS Required Actions require inoperable functional Unit(s)/channel(s) to be placed in bypass and/or trip to ensure the unit remains in a condition that no random failure will prevent ESFAS operation. The proposed change is acceptable because it is editorial and only revises the name of the component being placed in bypass or trip. Additionally, this change adds clarifying words to ACTIONS B and D that the ACTIONS apply to one or more Functions. This is editorial in that the ACTIONS apply to one or more Functions, it makes the CTS wording consistent with ACTIONS Note, and is consistent with the wording of the other ACTIONS that apply to more than one Function. Neither of these changes technically affects the intent of the Required Actions. The inoperable component is still required to be placed in bypass or trip. This change is considered administrative because it does not result in technical changes to the CTS.

A03 CTS Table 3.3.5-1 Function 2, Containment Spray Actuation Signal (CSAS), contains a Footnote (Footnote e) which states an automatic SIAS is required for CSAS. ITS Table 3.3.5-1 Function 2, Containment Spray Actuation (CSAS) does not contain the Footnote, but lists the Automatic SIAS as one of the inputs (ITS Table 3.3.5.1 Function 2.b) required to initiate a CSAS. This changes the CTS by moving the requirement for a SIAS Actuation from a footnote in the Table to a specific Function listed in the Table.

The purpose of the CTS Table 3.3.5-1 Footnote (e) is to reference that a SIAS Actuation is required along with a Containment Pressure High-High signal to initiate a CSAS. The proposed change moves the Footnote to a specific Function listing (Function 2.b) along with the Containment Pressure High-High

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DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

signal (Function 2.a). This change is acceptable because it is strictly editorial in that it relocates the requirement for an automatic SIAS Actuation as part of the CSAS Function within the ESFAS Instrumentation Table. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 SONGS Unit 3 CTS SR 3.3.5.6 requires verifying that ESF RESPONSE TIME is within limits and is modified by a footnote that applies to the Unit 3 Cycle 9 refueling outage. ITS SR 3.3.5.6 will not contain this footnote. This changes the Unit 3 CTS by eliminating a footnote that was applicable to SONGS Unit 3 following the Cycle 9 refueling outage.

Deleting the one time Cycle 9 refueling outage footnote from the SONGS Unit 3 CTS is acceptable because the Cycle 9 refueling outage has already occurred and the Note is no longer applicable. This change is designated as administrative because deleting a note that no longer applies does not technically affect the CTS.

A05 CTS 3.3.5 Conditions A, B, C, and D contain reference to specific ESFAS Functions for which the Conditions are applicable. ITS 3.3.5 Conditions A, B, C, and D refers to the same Functions as the CTS; however, these references appear as Notes to the Conditions. This changes the CTS by moving reference to the applicable Functions from the Condition body to a Note to the Condition.

The purpose of listing specific Functions that apply to each Condition ensures the appropriate ACTIONS are entered for each ESFAS Function. Moving reference to the Functions from the Condition body to a Note in the Condition is strictly a reformatting change and is acceptable. This change is designated as administrative because the CTS are not being technically altered.

A06 CTS Table 3.3.5-1 Function 1.b, Pressurizer Pressure – Low contains a Note (Note b) which states "The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psia. Trips may be bypassed when pressurizer pressure is < 400 psia. Bypass shall be automatically removed before pressurizer pressure exceeds 500 psia (the corresponding bistable allowable value is ≤ 472 psia)." ITS Table 3.3.5-1 Function 1.b, Pressurizer Pressure – Low contains a Note (Note b) which states "The setpoint may be decreased to a minimum value of 300 psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 400 psi. Bypass may be enabled when pressurizer pressure is < 400 psia, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia. Bypass shall be removed when pressurizer pressure is ≥ 500 psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased." This changes the CTS by changing the Pressurizer Pressure – Low Note b to more accurately reflect how the bypass works and to delete extraneous information. The deletion of the parenthetical statement is discussed on DOC LA03.

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The purpose of CTS Table 3.3.5-1 Function 1.b, Pressurizer Pressure – Low Note b is to delineate when the bypass is enabled and when it is disabled. The proposed changes correct wording that has resulted in confusion by discussing when the trip is required to be enabled versus when the bypass is enabled. The automatic nature of the system is based on when the bypass is enabled and automatically removed instead of the trip. The existing wording is not human factored as it requires a change in thought process. The proposed wording presents a more consistent approach by discussing this feature in the terms of the bypass status only and not in terms of the trip being enabled. This change is considered administrative because no technical changes are being made to the trips or bypasses, but only how they are presented in the Note.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.5 ACTIONS C, D, and F Required Actions are modified by a Note which states LCO 3.0.4 is not applicable. ITS 3.3.5 ACTIONS C, D, and F Required Actions do not include this Note. This changes the CTS by deleting the exception to LCO 3.0.4 from the ACTIONS C, D, and F Required Actions.

The purpose of the Note to CTS 3.3.5 ACTIONS C, D, and F Required Actions is to allow the unit to continue MODE changes during startup with two ESFAS channels or two bypass removal channels inoperable. The proposed change to CTS 3.3.5 deletes the Notes. Thus if one or more Functions have two inoperable ESFAS trip channels inoperable or two operating bypass removal channels inoperable, ITS 3.3.5 will only allow MODE changes using the allowances of ITS LCO 3.0.4.b, which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is designated as more restrictive because additional requirements are being added to the ITS than are required by the CTS.

M02 CTS SR 3.3.5.2 requires the performance of a CHANNEL FUNCTIONAL TEST (CFT) on each ESFAS channel, CTS SR 3.3.5.4 requires the performance of a CHANNEL CALIBRATION (CC) of Function 5, Recirculation Actuation Signal, and CTS SR 3.3.5.5 requires the performance of a CC on each ESFAS CHANNEL, with the exception of Function 5, including the bypass removal functions. ITS SR 3.3.5.2, SR 3.3.5.4, and SR 3.3.5.5 require similar Surveillances; however, the SRs are modified by two Notes.

- Note 1 requires that if the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

- Note 2 requires that the instrument channel shall be reset to a value that is that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be

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DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (actual trip setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

This changes the CTS by adding two notes to the CFT and CC Surveillance Requirements.

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

M03 CTS Table 3.3.5-1 Function 1.b, Safety Injection Actuation Signal (SIAS) Pressurizer Pressure – Low contains a footnote (Footnote b) which discusses the decreasing the trip setpoint as the pressure is decreased and the trip bypass function. ITS Table 3.3.5-1 Function 1.b, Safety Injection Actuation Signal (SIAS) Pressurizer Pressure – Low requires a similar footnote but also adds the requirement that the setpoint shall be automatically increased to the nominal setpoint as pressurizer pressure is increased. This changes the CTS by adding an additional requirement to the footnote for the SIAS Pressurizer Pressure – Low footnote.

The purpose of the ITS Table 3.3.5-1 Function 1.b, Safety Injection Actuation Signal (SIAS) Pressurizer Pressure – Low footnote (Footnote b) requirement that the setpoint shall be automatically increased to the nominal setpoint as pressurizer pressure is increased ensures the trip will occur as required in case an event occurs during heatup while also ensuring an inadvertent trip does not occur. The proposed change adds this requirement to the CTS SIAS Pressurizer Pressure – Low Function footnote. This requirement currently exists in the CTS

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

3.3.5 Bases (LCO Section). This change is designated as more restrictive because an additional requirement is added to the ITS that does not currently exist in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS 3.3.5 contains an ACTIONS Note (Note 2) that states if a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2, B.2, or E.2.2 shall be reviewed by the Onsite Review Committee. ITS 3.3.5 does not contain this Note. This changes the CTS by moving the requirements of ACTIONS Note 2 to the Quality Assurance Program (QAP).

The purpose of the CTS 3.3.5 ACTIONS Note 2 is to ensure review by the Onsite Review Committee is performed to discuss the desirability of maintaining the inoperable ESFAS channel in the bypassed or tripped condition. The removal of the Note from 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. ITS 3.3.5 still contains the requirements to place the channel in bypass or trip and to restore the channel to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. Also, this change is acceptable because these types of procedural details will be adequately controlled in the QAP. Any changes to the QAP are made under 10 CFR 50.54(a), which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because procedural details for meeting the Technical Specifications requirements are being removed from the Specifications.

LA02 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.5.1 requires that a CHANNEL CHECK be performed on each ESFAS channel every 12 hours. CTS SR 3.3.5.2 requires that a CHANNEL FUNCTIONAL TEST be performed on each ESFAS channel every 30 days on a STAGGERED TEST BASIS. CTS SR 3.3.5.3 requires that a CHANNEL FUNCTIONAL TEST be performed on each ESFAS channel bypass removal function every 120 days. CTS SR 3.3.5.4 requires that a CHANNEL CALIBRATION be performed on Function 5, Recirculation Actuation Signal every 18 months. CTS SR 3.3.5.5 requires that a CHANNEL CALIBRATION be performed on each ESFAS channel (except Function 5) including bypass removal functions every 24 months. CTS SR 3.3.5.6 requires verifying ESF RESPONSE TIME is within limits every 24 months on a STAGGERED TEST

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

BASIS. ITS SRs 3.3.5.1, 3.3.5.2, 3.3.5.3, 3.3.5.4, 3.3.5.5 and 3.3.5.6 requires similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

"(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation

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ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3.5-1 Function 1.b, Pressurizer Pressure – Low, contains a Note (Note b) which states in part, "Bypass shall be automatically removed when pressurizer pressure exceeds 500 psia (the corresponding bistable allowable value is ≤ 472 psia)." ITS Table 3.3.5-1 Function 1.b, Pressurizer Pressure – Low, contains a similar Note (Note b) but does not contain the parenthetical statement, "(the corresponding bistable allowable value is ≤ 472 psia)." This changes the CTS by moving the CTS Table 3.3.5-1

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

Function 1.b, Pressurizer Pressure – Low, Note b parenthetical statement from the Technical Specifications to the Licensee Controlled Specifications (LCS).

The purpose of the CTS Table 3.3.1-1 Function 4, Pressurizer Pressure – Low, Note b parenthetical statement is to describe that the ≤ 472 psia value represents an allowable value which includes margin to account for instrument loop uncertainties and ensures the 500 psia analytical limit will not be exceeded. This proposed change, to relocate this parenthetical statement to the Licensee Controlled 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 CTS and ITS Note is providing a clarification as to when the Function is required to be Applicable. As such, the manner in which the Applicability is automatically ensured (by the bistable) is more appropriate for plant controlled documents. This specific requirement will be relocated to the Licensee Controlled Specifications which controls the requirements for the as-left and as-found values associated with the setpoints and bypass removal functions. This change is acceptable because these types of procedural details will be adequately controlled in the LCS via the 10 CFR 50.59 program. This program provides for the evaluation of changes to ensure the changes are adequately controlled. This change is designated as a less restrictive removal of detail change because procedural details are being moved from the Technical Specifications to the Licensee Controlled Specifications.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3.5-1 Function 5.a, Refueling Water Storage Tank Level – Low Allowable Value is 19.27% ≥ tap span ≥ 17.73%. ITS Table 3.3.5-1 Function 5.a, Refueling Water Storage Tank Level – Low Allowable Value provides the same values; however, it does not include "tap span." This changes the CTS by moving the reference to "tap span" from the Specifications to the UFSAR.

This proposed change 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. This specific requirement which references the refueling water storage tank low level relative to the tap span will be relocated to the UFSAR. This change is acceptable because these types of procedural details will be adequately controlled in the UFSAR via the 10 CFR 50.59 program. This program provides for the evaluation of changes to ensure the changes are adequately controlled. This change is designated as a less restrictive removal of detail change because procedural details are being moved from the Specifications to the UFSAR.

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.3.5 ACTION G requires a plant shutdown to MODE 3 in 6 hours and MODE 4 in 12 hours when the Required Action and associated Completion Time for Safety Injection Actuation Signal, Containment Spray Actuation Signal, Containment Isolation Actuation

DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

Signal, Main Steam Isolation Signal or Emergency Feedwater Actuation Signal is not met and ACTION H requires a plant shutdown to MODE 3 in 6 hours and MODE 5 in 36 hours when the Required Action and associated Completion Time for Recirculation Actuation Signal (RAS) is not met. ITS 3.3.5 ACTION G requires a plant shutdown to MODE 3 in 6 hours and MODE 4 in 12 hours when the Required Action and associated Completion Time for the above signals is not met. Unlike the CTS, ITS 3.3.5 does not contain a specific ACTION for RAS only; ITS 3.3.5 ACTION G covers the RAS as well as all the other signals. In addition, ITS 3.3.5 ACTION G (Required Action G.2) contains a Note which modifies the Required Action stating LCO 3.0.4.a is not applicable when entering MODE 4 for RAS. This changes the CTS by changing the end state from MODE 5 to MODE 4 for the RAS, which eliminates the need for a separate ACTION for RAS and allows combining of CTS 3.3.5 ACTION H with CTS 3.3.5 ACTION G, and adding a modifying Note to Required Action G.2 which states LCO 3.0.4.a is not applicable when entering MODE 4 for RAS. Additionally, due to ITS 3.3.5 ACTION G now being applicable to all the ESFAS Functions, including RAS, the listing of the applicable Functions in the Condition are no longer required and will be deleted.

The purpose of CTS 3.3.5 ACTION G and CTS 3.3.5 ACTION H is to place the unit in a condition where the LCO is not applicable. Currently CTS 3.3.5 ACTION G is applicable to all the Functions except for RAS because currently when the Required Action and associated Completion Time is not met for RAS, an end state of MODE 5 within 36 hours is required. The proposed change allows the plant end state for RAS to conclude at MODE 4 within 12 hours versus MODE 5 within 36 hours. Thus, CTS 3.3.5 ACTION H is no longer needed and is combined with CTS 3.3.5 ACTION G since ITS 3.3.5 ACTION G is applicable to all the Functions, including RAS. Additionally a Note is being added to ITS Required Action G.2 which states LCO 3.0.4.a is not Applicable when entering MODE 4 for RAS. This change is based on a topical report, CE-NPSD-1186 (approved by NRC on July 17, 2001). The topical report demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states. Preventing plant challenges during shutdown conditions has been, and continues to be, an important aspect of ensuring safe operation of the plant. Past events demonstrate that risk of core damage associated with entry into and operation in shutdown cooling is not negligible and should be considered when a plant is required to shutdown. Therefore, the Technical Specifications should encourage plant operation in the steam generator heat removal mode whenever practical, and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions. TSTF-422 does not specifically address this change because the ISTS 3.3.5 end state is MODE 4; however, as stated in CEN-NPSD-1186, the topical report is applicable to RAS for SONGS CTS 3.3.5.

The Note which modifies CTS 3.3.5 Required Action G.2 prohibits entry into the end state Mode of Applicability during startup using the provisions of LCO 3.0.4.a for RAS. The purpose of this Note is to provide assurance that entry into the end state Mode of Applicability during startup is not made without the appropriate risk assessment. Entry into the end state Mode of Applicability during startup will still

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DISCUSSION OF CHANGES
ITS 3.3.5, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

be allowed under the provisions of LCO 3.0.4.b. This is acceptable because LCO 3.0.4.b allows entry only 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. Details of the risk assessment are provided in the Bases for LCO 3.0.4.b. SONGS will adopt the end states proposed in CE-NPSD-1186, and will perform a risk assessment in accordance with 10 CFR 50.65(a)(4) when using the end states regardless of whether maintenance is being performed. The risk assessment will follow Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants,” which endorses NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Section 11 guidance for implementation of 10 CFR 50.65(a)(4). SONGS will also follow the industry-developed implementation guidance, WCAP-16364-NP, Revision 0, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," November 2004.

This change is considered less restrictive because it relaxes the end state for the Required Action for RAS.

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

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation ~~(Digital)~~ 3

LCO 3.3.5

LCO 3.3.5 Four ESFAS trip and bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.

Applicability

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

-----NOTE-----

ACTIONS Note

Separate Condition entry is allowed for each ESFAS Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One or more Functions with one automatic ESFAS trip channel inoperable. -----NOTE----- Not applicable for Functions 5.a, 6.b, 6.c, 7.b, and 7.c. ---------- INSERT 1	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
ACTION C ~~B~~ C. One or more Functions with two automatic ESFAS trip channels inoperable. INSERT 2	~~B~~ C.1 Place one channel in bypass and the other in trip.	1 hour
ACTION E ~~C~~ E. One or more Functions with one automatic bypass removal channel inoperable.	~~C~~ E.1 Disable bypass channel. OR	1 hour

4

4 **INSERT 1**

ACTION B	B. -------------NOTE------------- Only applicable for Functions 5.a, 6.b, 6.c, 7.b, and 7.c. ----------------------------------- One or more Functions with one automatic ESFAS trip channel inoperable.	B.1 Place channel in bypass. AND B.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

4 **INSERT 2**

ACTION D	D. -------------NOTE------------- Only applicable for Functions 5.a, 6.b, 6.c, 7.b, and 7.c. ----------------------------------- One or more Functions with two automatic ESFAS trip channel inoperable.	D.1 Place one channel in bypass and the other in trip. AND D.2 Restore one channel to OPERABLE status.	1 hour 7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	~~C~~.2.1	Place affected automatic trip channel in bypass or trip.	1 hour
	AND		
	~~C~~.2.2	Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
ACTION F ~~D~~. One or more Functions with two automatic bypass removal channels inoperable.	~~D~~.1	Disable bypass channels.	1 hour
	OR		
	~~D~~.2	Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
ACTION G, ACTION H ~~E~~. Required Action and associated Completion Time not met.	~~E~~.1	Be in MODE 3.	6 hours
	AND		
	~~E~~.2	Be in MODE 4.	~~[~~12~~]~~ hours

4 5 2

--------------------NOTE------------------
LCO 3.0.4.a is not applicable when entering MODE 4 for RAS.

8

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.5.1	SR 3.3.5.1	Perform a CHANNEL CHECK of each ESFAS channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.5.2 INSERT 4	SR 3.3.5.2 INSERT 3	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel.	~~92 days~~	TSTF-493 TSTF-425-A 7
SR 3.3.5.4, SR 3.3.5.5	SR 3.3.5.~~3~~ 5	Perform a CHANNEL CALIBRATION of each ESFAS channel, with the exception of Function 5, including bypass removal functions.	~~[18] months~~ 7 In accordance with the Surveillance Frequency Control Program	TSTF-493 TSTF-425-A 7
SR 3.3.5.6	SR 3.3.5.~~4~~ 6	Verify ESF RESPONSE TIME is within limits.	~~[18] months on a STAGGERED TEST BASIS~~	7 TSTF-425-A
SR 3.3.5.7	SR 3.3.5.~~5~~ 7	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal channel.	Once within ~~92~~ 120 days prior to each reactor startup	7 6

TSTF-493

INSERT 3

------------------------------NOTES-----------------------------

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

Nominal

N

actual trip setting

UFSAR

1

2. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the ~~Limiting~~ Trip Setpoint (~~L~~TSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the ~~L~~TSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (~~Nominal Trip Setpoint~~) to confirm channel performance. The ~~L~~TSP and the methodologies used to determine the as-found and the as-left tolerances are specified in ~~[~~the ~~LCS~~].

2

3.3.5

7

INSERT 4

SR 3.3.5.3	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel bypass removal function.	~~120 days~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.5.4	-------------------------------NOTES----------------------------- 1. If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. 2. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the ~~Limiting~~ Nominal Trip Setpoint (~~L~~TSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the ~~L~~ NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (~~Nominal Trip Setpoint~~ actual trip setting) to confirm channel performance. The ~~L~~ NTSP and the methodologies used to determine the as-found and the as-left tolerances are specified in ~~[~~the ~~LCS]~~ UFSAR. -- Perform a CHANNEL CALIBRATION of Function 5, Recirculation Actuation Signal.	~~18 months~~ In accordance with the Surveillance Frequency Control Program

TSTF-425-A

TSTF-493

1

2

TSTF-425-A

Insert Page 3.3.5-3b

Table 3.3.5-1

Table 3.3.5-1 (page 1 of 2)
Engineered Safety Features Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE	
	1. Safety Injection Actuation Signal[a]			
1.a	a. Containment Pressure - High	1,2,3	≤ 3.7 ~~[3.14]~~ psig	2
1.b	b. Pressurizer Pressure - Low[b]	1,2,3	≥ 1700 ~~[1763]~~ psia	2
	2. Containment Spray Actuation Signal			
2.a	a. Containment Pressure - High High	1,2,3	≤ 15.0 ~~[16.83]~~ psia	2
footnote (e)	b. Automatic SIAS	1,2,3	NA	2
	3. Containment Isolation Actuation Signal			
3.a	a. Containment Pressure - High	1,2,3	≤ 3.7 ~~[3.14]~~ psig	2
3.b	~~b. Pressurizer Pressure - Low[b]~~	~~1,2,3~~	~~≥ [1763] psia~~	1
	4. Main Steam Isolation Signal			
4.a	a. Steam Generator Pressure - Low[c]	1,2[d],3[d]	≥ 729 psia ~~[711] psig~~	2
4.b	~~b. Containment Pressure - High~~	~~1,2[d],3[d]~~	~~≤ [3.14] psig~~	1
	5. Recirculation Actuation Signal			
5.a	a. Refueling Water Storage Tank Level – Low	1,2,3, 4	~~[~~≥ 17.73 and ≤ 19.27~~]~~%	5 2

(a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).

(b) The setpoint may be decreased to a minimum value of ~~[~~300~~]~~ psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ ~~[~~400~~]~~ psi~~a~~. ~~Trips may be bypassed~~ Bypass may be enabled when pressurizer pressure is < ~~[~~400~~]~~ psia, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia. Bypass shall be ~~automatically~~ removed when pressurizer pressure is ≥ ~~[~~500~~]~~ psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased. 1 9 2 1

(c) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ ~~[~~200~~]~~ psi~~g~~. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.

(d) The Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure - Low ~~and Containment Pressure - High~~ signal~~s~~) is not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed and ~~[~~de-activated~~]~~. 1 2

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Table 3.3.5-1

Table 3.3.5-1 (page 2 of 2)
Engineered Safety Features Actuation System Instrumentation

CTS	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE
	6. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)		
6.a	a. Steam Generator Level - Low	1,2,3	≥ ~~[24.23]~~ 20.0 %
6.b	b. SG Pressure Difference - High	1,2,3	≤ ~~[66.25]~~ 140 psid
6.c	~~[~~ c. Steam Generator Pressure - Low	1,2,3	≥ ~~[711] psig]~~ 729 psia
	7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)		
7.a	a. Steam Generator Level - Low	1,2,3	≥ ~~[24.23]~~ 20.0 %
7.b	b. SG Pressure Difference - High	1,2,3	≤ ~~[66.25]~~ 140 psid
7.c	~~[~~ c. Steam Generator Pressure – Low	1,2,3	≥ ~~[711] psig]~~ 729 psia

2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5, ESFAS INSTRUMENTATION

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.5 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. The CTS 3.3.5 ACTIONS (ACTIONS B and D) for the RWST Level-Low for the Recirculation Actuation Signal (RAS) Function, and SG Pressure-Low and SG Pressure Difference-High for Emergency Feedwater Actuation Signal (EFAS) Function are being added to the ISTS 3.3.5 ACTIONS (ACTIONS B and D). ACTION B (Required Action B.1) requires the inoperable RAS and EFAS channels to be placed in bypass versus in bypass or trip as required for the other ESFAS channels via ACTION A (Required Action A.1) when one channel is inoperable. ACTION D, when two channels of RAS or EFAS Function channels are inoperable, requires one channel to be placed in bypass and one channel to be placed in trip (Required Action D.1), and also requires one channel to be restored to OPERABLE status within 7 days (Required Action D.1). For the other ESFAS Channels via ACTION C, one channel is required to be placed in bypass and the other in trip; with no specific ACTION to restore one channel to OPERABLE status (by the nature of the logic the Completion Time is prior to the performance of the next CFT which would limit time in this condition to a maximum of 30 days plus any extension allowed by SR 3.0.2). In conjunction with the addition of ACTIONS B and D for the specified Functions, a Note is being added to Conditions A and C excluding the specified Functions that are applicable to ACTIONS B and D. These changes are consistent with SONGS Units 2 and 3 CTS and were approved by the NRC as documented in the NRC Safety Evaluation for Amendments 157 and 148, dated September 9, 1999 (ADAMS Accession No. ML022000417)

5. The ISTS 3.3.5 Table 3.3.5-1 MODES of Applicability for the Recirculation Actuation Signal (RAS), RWST Level – Low Function, are being changed from MODES 1, 2, and 3 to MODES 1, 2, 3, and 4. SONGS Units 2 and 3 credit the automatic actuation of RAS in MODE 4 because there are no manual actuation pushbuttons in the control room for RAS. All the other ESFAS Functions have manual pushbuttons in the control room.

6. ISTS SR 3.3.5.5 requires a CFT on each automatic bypass removal channel "once within 92 days prior to each reactor startup." The proposed change to ISTS SR 3.3.5.5 (ITS SR 3.3.5.7) will change the Frequency to "once within 120 days prior to each reactor startup." This change is acceptable since it reflects the SONGS

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5, ESFAS INSTRUMENTATION

Units 2 and 3 current licensing requirements. This change was approved by the NRC as documented in the NRC Safety Evaluation for Amendments 133 and 122, dated November 18, 1996 (ADAMS Accession No. ML022000208).

7. Two SRs (ITS SR 3.3.5.3 and SR 3.3.5.4) are being added to ISTS 3.3.5 Surveillance Requirements. ITS SR 3.3.5.3 requires performance of a CHANNEL FUNCTIONAL TEST of each ESFAS channel bypass removal function and ITS SR 3.3.5.4 requires performance of a CHANNEL CALIBRATION of Function 5, Recirculation Actuation Signal (RAS). The performance of ITS SR 3.3.5.3 is required to ensure the ESFAS Channel bypass removal function operates as required. The performance of ITS SR 3.3.5.4 is required to ensure the Recirculation Actuation Signal channels responds to a measured parameter within the necessary range and accuracy. These SRs are currently being performed at SONGS, consistent with SONGS Units 2 and 3 CTS. To prevent a large number of procedure changes, the San Onofre ITS submittal will retain the SONGS SR numbers for the SRs. In addition, due to the addition of SR 3.3.5.4, ISTS SR 3.3.5.3 (ITS SR 3.3.5.5) includes an exception for the RAS channels.

8. A Note, consistent with TSTF-422 (CE NPSD-1186-A), which states LCO 3.0.4.a is not applicable when entering MODE 4 for RAS, is being added to ISTS 3.3.5 ACTION G. TSTF-422 does not specifically contain the marked up pages for this change because the ISTS 3.3.5 ACTIONs only require an end state to MODE 4. The SONGS CTS contains ACTIONS for two end states; MODE 4 for all the Functions except RAS and MODE 5 for RAS. CE NPSD-1186-A, however, contains justification for the RAS Function end state to end at MODE 4. This change is consistent with TSTF-422 for the change and is justified in CE NPSD-1186 which TSTF-422 was based on.

9. The ISTS Table 3.3.5-1 Note b was revised to more accurately and clearly reflect how the Pressurizer Pressure – Low Function trip bypass is enabled, automatically removed, and when it is actually required to be removed. The proposed change adds wording for clarity. The automatic nature of the system is based on when the bypass is enabled and automatically removed. The added wording ensures that the bypass is capable of being automatically removed before the bypass can be enabled and reflects the bypass cannot be automatically removed if the bypass is not enabled.

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

B 3.3 INSTRUMENTATION

B 3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation ~~(Digital)~~ 3

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based upon the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs) and ensures acceptable consequences during accidents. INSERT 1 TSTF-493

The ESFAS contains devices and circuitry that generate the following signals when monitored variables reach levels that are indicative of conditions requiring protective action:

1. Safety Injection Actuation Signal (SIAS), Containment Cooling Actuation Signal (CCAS) (actuated by an automatic SIAS)~~,~~ ;
2. Containment Spray Actuation Signal (CSAS)~~,~~ ;
3. Containment Isolation Actuation Signal (CIAS)~~,~~ ; 7
4. Main Steam Isolation Signal (MSIS)~~,~~ ;
5. Recirculation Actuation Signal (RAS)~~,~~ ; and

6, 7. Emergency Feedwater Actuation Signal (EFAS).

Equipment actuated by each of the above signals is identified in the U FSAR (Ref. 1). 1

Each of the above ESFAS instrumentation systems is segmented into three interconnected modules. These modules are:

- Measurement channels~~,~~ ;
- Bistable trip units~~,~~ ; and 7
- ESFAS Logic:
  - Matrix Logic~~,~~ ;
  - Initiation Logic (trip paths)~~,~~ ; and
  - Actuation Logic.

TSTF-493

INSERT 1

This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the ESFAS, as well as LCOs on other reactor system parameters and equipment performance.

Technical Specifications are required by 10 CFR 50.36 to include LSSSs for variables that have significant safety functions. LSSS are defined by the regulation as “Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a Safety Limit (SL) is not exceeded. Any automatic protection action that occurs on reaching the Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for channel uncertainties related to the setting at which the automatic protective action would actually occur.

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

~~“Nominal Trip Setpoint [NTSP]” is the suggested terminology for the actual setpoint implemented in the plant surveillance procedures where margin has been added to the calculated [LTSP]. The as-found and as-left tolerances will apply to the [NTSP] implemented in the Surveillance procedures to confirm channel performance.~~ 5

~~Licensees are to insert the name of the document(s) controlled under 10 CFR 50.59 that contain the methodology for calculating the as-left and as-found tolerances in Note c of Table 3.3.5-1 for the phrase "[insert the name of a document controlled under 10 CFR 50.59 such as the Technical Requirements Manual or any document incorporated in to the facility FSAR]" throughout these Bases.~~

~~Where the [LTSP] is not included in Table 3.3.5-1, the plant specific location for the [LTSP] or NTSP must be cited in Note c of Table 3.3.5-1. The brackets indicate plant-specific terms may apply, as reviewed and approved by the NRC.~~
~~---~~

The ~~[Limiting~~ Nominal Trip Setpoint (N~~[L~~TSP~~]~~) specified in ~~Table 3.3.5-1~~ UFSAR Section 7.3 (Ref. 1) is a predetermined setting for a protection channel chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded. As such, the N~~[L~~TSP~~]~~ accounts for uncertainties in setting the channel (e.g., calibration), uncertainties in how the channel might actually perform (e.g., repeatability), changes in the point of action of the channel over time (e.g., drift during surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the N~~[L~~TSP~~]~~ ensures that SLs are not exceeded. As such, the N~~[L~~TSP~~]~~ meets the definition of an LSSS (Ref. ~~1~~ 2). 1 2 1

B 3.3.5

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INSERT 1 (cont'd)

specified

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)." Relying solely on the [LTSP] to define OPERABILITY in Technical Specifications would be an overly restrictive requirement if it were applied as an OPERABILITY limit for the "as-found" value of a protection channel setting during a Surveillance. This would result in Technical Specification compliance problems, as well as reports and corrective actions required by the rule which are not necessary to ensure safety. For example, an automatic protection channel with a setting that has been found to be different from the [LTSP] due to some drift of the setting may still be OPERABLE because drift is to be expected. This expected drift would have been specifically accounted for in the setpoint methodology for calculating the [LTSP] and thus the automatic protective action would still have ensured that the SL would not be exceeded with the "as-found" setting of the protection channel. Therefore, the channel would still be OPERABLE because it would have performed its safety function and the only corrective action required would be to reset the channel within the established as-left tolerance around the [LTSP] to account for further drift during the next surveillance interval. Note that, although the channel is OPERABLE under these circumstances, the trip setpoint must be left adjusted to a value within the as-left tolerance, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned (as-found criteria).

N

12

2

However, there is also some point beyond which the channel may not be able to perform its function due to, for example, greater than expected drift. This value needs to be specified in the Technical Specifications in order to define OPERABILITY of the channels and is designated as the Allowable Value.

If the actual setting (as-found setpoint) of the channel is found to be conservative with respect to the Allowable Value but is beyond the as-found tolerance band, the channel is OPERABLE, but degraded. The degraded condition will be further evaluated during performance of the SR. This evaluation will consist of resetting the channel setpoint to the [NTSP] (within the allowed tolerance), and evaluating the channel response. If the channel is functioning as required and is expected to pass the next surveillance, then the channel is OPERABLE and can be restored to service at the completion of the surveillance. After the surveillance is completed, the channel as-found condition will be entered into the Corrective Action Program for further evaluation. 2

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

- The departure from nucleate boiling ratio (DNBR) shall be maintained above the Safety Limit (SL) value to prevent departure from nucleate boiling, 7
- Fuel centerline melting shall not occur, and 7
- The Reactor Coolant System (RCS) pressure SL of 2750 psia shall not be exceeded.

;

B 3.3.5

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INSERT 1 (cont'd)

Maintaining the parameters within the above values ensures that the offsite dose will be within the ~~10 CFR 50 (Ref. 2) and~~ 10 CFR ~~100~~ (Ref. 3) criteria during AOOs.

50.67

Accidents are events that are analyzed even though they are not expected to occur during the plant life. The acceptable limit during accidents is that the offsite dose shall be maintained within an acceptable fraction of 10 CFR ~~100~~ (Ref. 3) limits. Different accident categories allow a different fraction of these limits based on probability of occurrence. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event.

1

BASES

BACKGROUND (continued)

This LCO addresses measurement channels and bistables. Logic is addressed in LCO 3.3.6, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip."

The role of each of these modules in the ESFAS, including the logic of LCO 3.3.6, is discussed below.

Measurement Channels

Measurement channels, consisting of field transmitters or process sensors and associated instrumentation, provide a measurable electronic signal based upon the physical characteristics of the parameter being measured.

Four identical measurement channels (designated A through D) with electrical and physical separation are provided for each parameter used in the generation of trip signals. ~~These channels are designated A through D.~~ Measurement channels provide input to ESFAS bistables within the same ESFAS channel. In addition, some measurement channels are used as inputs to Reactor Protective System (RPS) bistables, and most provide indication in the control room. Measurement channels used as an input to the RPS or ESFAS are not used for control Functions. TSTF-493 TSTF-493

When a channel monitoring a parameter indicates an unsafe condition, the bistable monitoring the parameter in that channel will trip. Tripping two or more channels of bistables monitoring the same parameter will de-energize Matrix Logic, which in turn de-energizes the Initiation Logic. This causes both channels of Actuation Logic to de-energize. Each channel of Actuation Logic controls one train of the associated Engineered Safety Features (ESF) equipment.

Three of the four measurement and bistable channels are necessary to meet the redundancy and testability of GDC 21 in Appendix A to 10 CFR 50 (Ref. 2). The fourth channel provides additional flexibility by allowing one channel to be removed from service (trip channel bypass) for maintenance or testing while still maintaining a minimum two-out-of-three logic.

BASES

BACKGROUND (continued)

~~-----REVIEWER'S NOTE-----~~
~~In order to take full advantage of the four channel design, adequate channel to channel independence must be demonstrated and approved by the NRC staff. Plants not currently licensed to credit four channel independence that may desire this capability must have approval of the NRC staff, documented by an NRC Safety Evaluation Report (Ref. 3). Adequate channel to channel independence includes physical and electrical independence of each channel from the others. Furthermore, each channel must be energized from separate inverters and station batteries. Plants that have demonstrated adequate channel to channel independence may operate in two-out-of-three logic configuration, with one channel removed from service, until following the next MODE 5 entry. Plants not demonstrating four channel independence can only operate for 48 hours with one channel inoperable (Ref. 3).~~ 5

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Since no single failure will either cause or prevent a protective system actuation, and no protective channel feeds a control channel, this arrangement meets the requirements of IEEE Standard 279-1971 (Ref. ~~4~~). 5 TSTF-493

Bistable Trip Units

Bistable trip units, mounted in the Plant Protection System (PPS) cabinet, receive an analog input from the measurement channels, compare the analog input to trip setpoints, and provide contact output to the Matrix Logic for each ESFAS Function. They also provide local trip indication and remote annunciation.

There are four channels of bistables, designated A through D, for each ESFAS Function, one for each measurement channel. In cases where two ESF Functions share the same input and trip setpoint (e.g., containment pressure input to CIAS and SIAS), the same bistable may be used to satisfy both Functions. Similarly, bistables may be shared between the RPS and ESFAS (e.g., Pressurizer Pressure - Low input to the RPS and SIAS). Bistable output relays de-energize when a trip occurs, in turn de-energizing bistable relays mounted in the PPS relay card racks.

The contacts from these bistable relays are arranged into six coincidence matrices, comprising the Matrix Logic. If bistables monitoring the same parameter in at least two channels trip, the Matrix Logic will generate an ESF actuation (two-out-of-four logic).

BASES

BACKGROUND (continued)

derived from

The trip setpoints and Allowable Values used in the bistables are ~~based on~~ the analytical limits stated in Reference ~~5~~ 6. The selection of these trip setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment effects, for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. ~~6~~ 7), 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 ~~"Plant Protection System Selection of Trip Setpoint Values"~~ "PPS Setpoint Calculation," CE-NPSD-570-P (Ref. ~~7~~ 8). 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. ~~A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.~~ INSERT 2

1 TSTF-493

INSERT 3

Nominal ~~[Limiting]~~ Trip Setpoints ~~in accordance~~ ~~[~~ in conjunction with the Allowable Value will ensure that Safety Limits of LCO Section 2.0, "Safety Limits," are not violated during AOOs and the consequences of Design Basis Accidents (DBAs) will be acceptable, providing the plant is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed. 2

INSERT 4

Functional testing of the ESFAS, from the bistable input through the opening of initiation relay contacts in the ESFAS Actuation Logic, can be ~~performed either at power or at shutdown and is normally performed on a quarterly basis.~~ 9 U FSAR, Section ~~[~~7.2~~]~~ (Ref. ~~8~~ 9), provides more detail on ESFAS testing. Process transmitter calibration is normally performed on a refueling basis. SRs for the channels are specified in the Surveillance Requirements section. 1 2

<u>ESFAS Logic</u>

The ESFAS Logic, consisting of Matrix, Initiation and Actuation Logic, employs a scheme that provides an ESF actuation of both trains when bistables in any two of the four channels sense the same input parameter trip. This is called a two-out-of-four trip logic.

TSTF-493

INSERT 2

One example of such a change in measurement error is drift during the interval between surveillances.

N The ~~[L~~TSP~~]~~ is the value at which the bistable is set and is the expected value to be achieved during calibration. The ~~[L~~TSP~~]~~ value is the LSSS and ensures the safety analysis limits are met for the surveillance interval selected when a channel is adjusted based on stated channel uncertainties. 2

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INSERT 3

use of as-found and as-left tolerances, consistent with the requirements of the

TSTF-493

INSERT 4

Note that in the accompanying LCO 3.3.5, the Allowable Values of Table 3.3.5-1 are the least conservative value of the as-found setpoint that a channel can have during a periodic CHANNEL CALIBRATION or CHANNEL FUNCTIONAL TEST.

BASES

BACKGROUND (continued)

Bistable relay contact outputs from the four channels are configured into six logic matrices. Each logic matrix checks for a coincident trip in the same parameter in two bistable channels. The matrices are designated the AB, AC, AD, BC, BD, and CD matrices to reflect the bistable channels being monitored. Each logic matrix contains four normally energized matrix relays. When a coincidence is detected in the two channels being monitored by the logic matrix, all four matrix relays de-energize.

The matrix relay contacts are arranged into trip paths, with one relay contact from each matrix relay in each of the four trip paths. Each trip path controls two initiation relays. Each of the two initiation relays in each trip path controls contacts in the Actuation Logic for one train of ESF.

Each of the two channels of Actuation Logic, mounted in the Auxiliary Relay Cabinet (ARCs), is responsible for actuating one train of ESF equipment. Each ESF Function has separate Actuation Logic in each ARC.

The contacts from the Initiation Logic are configured in a selective two-out-of-four logic in the Actuation Logic, similar to the configuration employed by the RPS in the RTCBs. This logic controls ARC mounted subgroup relays, which are normally energized. Contacts from these relays, when de-energized, actuate specific ESF equipment.

When a coincidence occurs in two ESFAS channels, all four matrix relays in the affected matrix will de-energize. This in turn will de-energize all eight initiation relays, four used in each Actuation Logic.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition, since they are addressed as part of the measurement channel.

Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and the initiation relays.

Actuation Logic consists of all circuitry housed within the ARCs used to actuate the ESF Function, excluding the subgroup relays, and interconnecting wiring to the initiation relay contacts mounted in the PPS cabinet.

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BASES

BACKGROUND (continued)

The subgroup relays are actuated by the ESFAS logic. Each ESFAS Function typically employs several subgroup relays, with each subgroup relay responsible for actuating one or more components in the ESFAS Function. Subgroup relays and their contacts are considered part of the actuated equipment and are addressed under the applicable LCO for this equipment. Initiation and Actuation Logic up to the subgroup relays is addressed in LCO 3.3.6.

It is possible to change the two-out-of-four ESFAS logic to a two-out-of-three logic for a given input parameter in one channel at a time by trip channel bypassing select portions of the Matrix Logic. Trip channel bypassing a bistable effectively shorts the bistable relay contacts in the three matrices associated with that channel. Thus, the bistables will function normally, producing normal trip indication and annunciation, but ESFAS actuation will not occur since the bypassed channel is effectively removed from the coincidence logic. Trip channel bypassing can be simultaneously performed on any number of parameters in any number of channels, providing each parameter is bypassed in only one channel at a time. An interlock prevents simultaneous trip channel bypassing of the same parameter in more than one channel. Trip channel bypassing is normally employed during maintenance or testing.

~~-----REVIEWER'S NOTE-----~~
~~For plants that have demonstrated sufficient channel to channel independence, two-out-of-three logic is the minimum that is required to provide adequate plant protection, since a failure of one channel still ensures ESFAS actuation would be generated by the two remaining OPERABLE channels. Two-out-of-three logic also prevents inadvertent actuations caused by any single channel failure in a trip condition.~~
~~----------~~ 5

In addition to the trip channel bypasses, there are also operating bypasses on select ESFAS actuation trips. These bypasses are enabled manually in all four channels when plant conditions do not warrant the specific trip protection. All operating bypasses are automatically removed when enabling bypass conditions are no longer satisfied. Operating bypasses normally are implemented in the bistable, so that normal trip indication is also disabled. The Pressurizer Pressure - Low input to the SIAS shares an operating bypass with the Pressurizer Pressure - Low reactor trip.

BASES

BACKGROUND (continued)

for all Functions except RAS

Manual ESFAS initiation capability is provided to permit the operator to manually actuate an ESF System when necessary. 1

Two sets of two push buttons (located in the control room) for each ESF Function are provided, and each set actuates both trains. Each Manual Trip push button opens one trip path, de-energizing one set of two initiation relays, one affecting each train of ESF. Initiation relay contacts are arranged in a selective two-out-of-four configuration in the Actuation Logic. By arranging the push buttons in two sets of two, such that both push buttons in a set must be depressed, it is possible to ensure that Manual Trip will not be prevented in the event of a single random failure. Each set of two push buttons is designated a single channel in LCO 3.3.6.

APPLICABLE SAFETY ANALYSES

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be the secondary, or backup, actuation signal for one or more other accidents.

INSERT 5 TSTF-493

ESFAS protective Functions are as follows:

1. <u>Safety Injection Actuation Signal</u>

SIAS ensures acceptable consequences during large break loss of coolant accidents (LOCAs), small break LOCAs, control element assembly ejection accidents, and main steam line breaks (MSLBs) inside containment. To provide the required protection, either a high containment pressure or a low pressurizer pressure signal will initiate SIAS. SIAS initiates the Emergency Core Cooling Systems (ECCS) and performs several other functions such as initiating a containment cooling actuation, initiating control room isolation, and starting the diesel generators.

CCAS mitigates containment overpressurization when required by either a manual CCAS actuation or an automatic SIAS Function. ~~This Function is not employed by all plants.~~ 1

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INSERT 5

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

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BASES

APPLICABLE SAFETY ANALYSES (continued)

2. Containment Spray Actuation Signal

CSAS actuates containment spray, preventing containment overpressurization during large break LOCAs, small break LOCAs, and MSLBs or feedwater line breaks (FWLBs) inside containment. CSAS is initiated by high high containment pressure and an SIAS. This configuration reduces the likelihood of inadvertent containment spray. 1

3. Containment Isolation Actuation Signal

CIAS ensures acceptable mitigating actions during large and small break LOCAs, and MSLBs or FWLBs ~~either~~ inside ~~or outside~~ containment. CIAS is initiated by ~~low pressurizer pressure or~~ high containment pressure. 1

4. Main Steam Isolation Signal

MSIS ensures acceptable consequences during an MSLB or FWLB (between the steam generator and the main feedwater check valve), either inside or outside containment. MSIS isolates both steam generators if either generator indicates a low steam generator pressure condition ~~or if a high containment pressure condition exists~~. This prevents an excessive rate of heat extraction and subsequent cooldown of the RCS during these events. 1

5. Recirculation Actuation Signal

At the end of the injection phase of a LOCA, the refueling water storage tank (RWST) will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is automatically switched to the containment recirculation sump. Switchover from RWST to containment sump must occur before the RWST empties to prevent damage to the ECCS pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support pump suction. Furthermore, early switchover must not occur to ensure sufficient borated water is injected from the RWST to ensure the reactor remains shut down in the recirculation mode. An RWST Level - Low signal initiates the RAS.

BASES

APPLICABLE SAFETY ANALYSES (continued)

6, 7. Emergency Feedwater Actuation Signal

EFAS consists of two steam generator (SG) specific signals (EFAS-1 and EFAS-2). EFAS-1 initiates emergency feed to SG #1, and EFAS-2 initiates emergency feed to SG #2.

EFAS maintains a steam generator heat sink during a steam generator tube rupture event and an MSLB or FWLB event either inside or outside containment.

Low steam generator water level initiates emergency feed to the affected steam generator, providing the generator is not identified (by the circuitry) as faulted (~~a~~ MSLB ~~steam~~ or FWLB). 1

EFAS logic includes steam generator specific inputs from the Steam Generator Pressure - Low bistable comparator (also used in MSIS) and the SG Pressure Difference - High (SG #1 > SG #2 or SG #2 > SG #1, bistable comparators) to determine if a rupture in either generator has occurred.

Rupture is assumed if the affected generator has a low pressure condition, unless that generator is significantly higher in pressure than the other generator.

This latter feature allows feeding the intact steam generator, even if both are below the MSIS setpoint, while preventing the ruptured generator from being fed. Not feeding a ruptured generator prevents containment overpressurization during the analyzed events.

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

LCO

The LCO requires all channel components necessary to provide an ESFAS actuation to be OPERABLE.

INSERT 6 TSTF-493

~~Plants are restricted to 48 hours in a trip channel bypass condition before restoring the Function to four channel operation (two-out-of-four logic) or placing the channel in trip (two-out-of-three logic).~~ 8

The Bases for the LCOs on ESFAS Functions are:

B 3.3.5

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INSERT 6

Failure of any required portion of the instrument channel renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

Actions allow maintenance (trip channel) bypass of individual channels, but the bypass activates interlocks that prevent operation with a second channel in the same Function bypassed. With one channel in each Function trip channel bypassed, this effectively places the plant in a two-out-of-three logic configuration in those Functions.

Allowable Values for ESFAS Instrumentation ~~(Digital)~~ Functions are specified in Table 3.3.5-1. 3
Nominal ~~[Limiting~~ Trip Setpoints~~]~~ and the methodologies for calculation of the as-left and as-found tolerances are described in the UFSAR Section 7.3 (Ref. 1) ~~[LCS]~~. The N ~~[L~~TSPs~~]~~ are selected to ensure that the actual setpoints remain conservative with respect to the as-found tolerance band between successive CHANNEL CALIBRATIONS. After each calibration the trip setpoint shall be left within the as-left band around the N ~~[L~~TSP~~]~~. 2

BASES

LCO (continued)

1. Safety Injection Actuation Signal

a. Containment Pressure - High

This LCO requires four channels of Containment Pressure - High to be OPERABLE in MODES 1, 2, and 3.

The Containment Pressure - High signal is shared among the SIAS (Function 1)~~,~~ and CIAS (Function 3)~~, and MSIS (Function 4)~~. 4

The Allowable Value for this trip is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. The setting is low enough to initiate the ESF Functions when an abnormal condition is indicated. This allows the ESF systems to perform as expected in the accident analyses to mitigate the consequences of the analyzed accidents.

b. Pressurizer Pressure - Low

This LCO requires four channels of Pressurizer Pressure - Low to be OPERABLE in MODES 1, 2, and ~~2~~ 3. 9

The Allowable Value for this trip is set low enough to prevent actuating the ESF Function~~s~~ (SIAS ~~and CIAS~~) during normal plant operation and pressurizer pressure transients. The setting is high enough that, with the specified accidents, the ESF systems will actuate to perform as expected, mitigating the consequences of the accident. 4

The Pressurizer Pressure - Low trip setpoint, which provides SIAS~~, CIAS,~~ and RPS trip, may be manually decreased to a floor value of 300 psia to allow for a controlled cooldown and depressurization of the RCS without causing a reactor trip~~, CIAS,~~ or SIAS. The margin between actual pressurizer pressure and the trip setpoint must be maintained less than or equal to the specified value (400 psi~~a~~) to ensure a reactor trip~~, CIAS,~~ and SIAS will occur if required during RCS cooldown and depressurization. 4 4 4

From this reduced setting, the trip setpoint will increase automatically as pressurizer pressure increases, tracking actual RCS pressure until the trip setpoint is reached.

BASES

LCO (continued)

is enabled <

, provided the bypass is capable of automatic removal whenever pressurizer pressure is < 400 psia, when these Functions are no longer needed to protect the plant.

when pressurizer pressure is ≥ 500 psia

When the trip setpoint has been lowered below the bypass permissive setpoint of 400 psia, the Pressurizer Pressure - Low reactor trip, CIAS, and SIAS actuation may be manually bypassed in preparation for shutdown cooling. When RCS pressure rises above the bypass removal setpoint, the bypass is removed. 1 4

shall be

Bypass Removal

This LCO requires four channels of bypass removal for Pressurizer Pressure - Low to be OPERABLE in MODES 1, 2, and 3.

Each of the four channels enables and disables the bypass capability for a single channel. Therefore, this LCO applies to the bypass removal feature only. If the bypass enable function is failed so as to prevent entering a bypass condition, operation may continue. Because the trip setpoint has a floor value of 300 psia, a channel trip will result if pressure is decreased below this setpoint without bypassing.

The bypass removal Allowable Value was chosen because MSLB events originating from below this setpoint add less positive reactivity than that which can be compensated for by required SDM.

2. Containment Spray Actuation Signal

CSAS is initiated either manually or automatically. For an automatic actuation, it is necessary to have a Containment Pressure - High High signal, coincident with an SIAS. The SIAS requirement should always be satisfied on a legitimate CSAS, since the Containment Pressure - High signal used in the SIAS will initiate before the Containment Pressure - High High. This ensures that a CSAS will not initiate unless required. 10

a. Containment Pressure - High High

This LCO requires four channels of Containment Pressure - High High to be OPERABLE in MODES 1, 2, and 3.

BASES

LCO (continued)

The Allowable Value for this trip is set high enough to allow for first response ESF systems (containment cooling systems) to attempt to mitigate the consequences of an accident before resorting to spraying borated water onto containment equipment. The setting is low enough to initiate CSAS in time to prevent containment pressure from exceeding design.

3. Containment Isolation Actuation Signal

Since ~~For plants where the~~ SIAS and CIAS are actuated on ~~Pressurizer Pressure - Low or~~ Containment Pressure - High, the SIAS and CIAS share the same input channels, bistables, and matrices and matrix relays. The remainder of the initiation channels, the manual channels, and the Actuation Logic are separate and are addressed in LCO 3.3.6. Since their Applicability is also the same, they have identical Required Actions. 1 4

a. Containment Pressure - High

This LCO requires four channels of Containment Pressure - High to be OPERABLE in MODES 1, 2, and 3.

The Containment Pressure - High signal is shared among the SIAS (Function 1) and ~~,~~ CIAS (Function 3)~~, and MSIS (Function 4)~~. 4

The Allowable Value for this trip is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. The setting is low enough to initiate the ESF Functions when an abnormal condition is indicated. This allows the ESF systems to perform as expected in the accident analyses to mitigate the consequences of the analyzed accidents.

~~b. Pressurizer Pressure - Low~~

~~This LCO requires four channels of Pressurizer Pressure - Low to be OPERABLE in MODES 1, 2, and 3.~~

~~The Allowable Value for this trip is set low enough to prevent actuating the ESF Functions (SIAS and CIAS) during normal plant operation and pressurizer pressure transients. The setting is high enough that, with the specified accident, the ESF systems will actuate to perform as expected, mitigating the consequences of the accidents.~~ 4

BASES

LCO (continued)

The Pressurizer Pressure - Low trip setpoint, which provides an SIAS, CIAS, and RPS trip, may be manually decreased to a floor Allowable Value of 300 psia to allow for a controlled cooldown and depressurization of the RCS without causing a reactor trip, CIAS or SIAS. The safety margin between actual pressurizer pressure and the trip setpoint must be maintained less than or equal to the specified value (400 psi) to ensure a reactor trip, CIAS, and SIAS will occur if required during RCS cooldown and depressurization.

From this reduced setting, the trip setpoint will increase automatically as pressurizer pressure increases, tracking actual RCS pressure until the trip setpoint is reached.

When the trip setpoint has been lowered below the bypass removal setpoint of 400 psia, the Pressurizer Pressure - Low reactor trip, CIAS, and SIAS actuation may be manually bypassed in preparation for shutdown cooling. When RCS pressure rises above the bypass removal, the bypass is removed. 4

Bypass Removal

This LCO requires four channels of bypass removal for Pressurizer Pressure - Low to be OPERABLE in MODES 1, 2, and 3.

Each of the four channels enables and disables the bypass capability for a single channel. Therefore all four bypass removal channels must be OPERABLE to ensure that none of the four channels are inadvertently bypassed.

This LCO applies to the bypass removal feature only. If the bypass enable function is failed so as to prevent entering a bypass condition, operation may continue. Because the trip setpoint has a floor value of 300 psia, a channel trip will result if pressure is decreased below this setpoint without bypassing.

The bypass removal Allowable Value was chosen because MSLB events originating from below this setpoint add less positive reactivity than that which can be compensated for by required SDM.

BASES

LCO (continued)

4. Main Steam Isolation Signal

The LCO is applicable to the MSIS in MODES 1, 2, and 3 except when all associated valves are closed and de-activated.

a. Steam Generator Pressure - Low

This LCO requires four channels of Steam Generator Pressure - Low to be OPERABLE in MODES 1, 2, and 3.

The Allowable Value for this trip is set below the full load operating value for steam pressure so as not to interfere with normal plant operation. However, the setting is high enough to provide an MSIS (Function 4) during an excessive steam demand event. An excessive steam demand event causes the RCS to cool down, resulting in a positive reactivity addition to the core.

MSIS limits this cooldown by isolating both steam generators if the pressure in either drops below the trip setpoint. An RPS trip on Steam Generator Pressure - Low is initiated simultaneously, using the same bistable. The Steam Generator Pressure - Low bistable output is also used in the EFAS logic (Function 7) to aid in determining if a steam generator is intact.

The Steam Generator Pressure - Low trip setpoint may be manually decreased as steam generator pressure is reduced. This prevents an RPS trip or MSIS actuation during controlled plant cooldown. The margin between actual ~~pressurizer~~ steam generator pressure and the trip setpoint must be maintained less than or equal to the specified value of 200 psi~~a~~ to ensure a reactor trip and MSIS will occur when required. The setpoint will increase automatically to maintain the margin ≤ 200 psi as steam generator pressure is increased until the trip setpoint is reached. 11 4 1

~~b. Containment Pressure - High~~

~~This LCO requires four channels of Containment Pressure - High to be OPERABLE in MODES 1, 2, and 3. The Containment Pressure - High signal is shared among the SIAS (Function 1), CIAS (Function 3), and MSIS (Function 4).~~ 4

BASES

LCO (continued)

~~The Allowable Value for this trip is set high enough to allow for small pressure increases in containment expected during normal operation (i.e., plant heatup) and is not indicative of an abnormal condition. The setting is low enough to initiate the ESF Functions when an abnormal condition is indicated. This allows the ESF systems to perform as expected in the accident analyses to mitigate the consequences of the analyzed accidents.~~ 4

5. Recirculation Actuation Signal

a. Refueling Water Storage Tank Level - Low

This LCO requires four channels of RWST Level - Low to be OPERABLE in MODES 1, 2, and ~~3~~. 4

3, 4

The upper limit on the Allowable Value for this trip is set low enough to ensure RAS does not initiate before sufficient water is transferred to the containment sump. Premature recirculation could impair the reactivity control function of safety injection by limiting the amount of boron injection. Premature recirculation could also damage or disable the recirculation system if recirculation begins before the sump has enough water to prevent air entrainment in the suction. The lower limit on the RWST Level - Low trip Allowable Value is high enough to transfer suction to the containment sump prior to emptying the RWST.

6, 7 Emergency Feedwater Actuation Signal SG #1 and SG #2 (EFAS-1 and EFAS-2)

EFAS-1 is initiated to SG #1 by either a low steam generator level coincident with no low pressure trip present on SG #1 or by a low steam generator level coincident with a differential pressure between the two generators with the higher pressure in SG #1. EFAS-2 is similarly configured to feed SG #2.

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BASES

LCO (continued)

The steam generator secondary differential pressure is used, in conjunction with a Steam Generator Pressure - Low input from each steam generator, as an input of the EFAS logic where it is used to determine if a generator is intact. The EFAS logic inhibits feeding a steam generator if a Steam Generator Pressure - Low condition exists in that generator and the pressure in that steam generator is less than the pressure in the other steam generator by the Steam Generator Pressure Difference (SGPD) - High setpoint.

The SGPD logic thus enables the feeding of a steam generator in the event that a plant cooldown causes a Steam Generator Pressure - Low condition, while inhibiting feeding the other (lower pressure) steam generator, which may be ruptured. The setpoint is high enough to allow for small pressure differences and normal instrumentation errors between the steam generator channels during normal operation.

The following LCO description applies to both EFAS signals.

a. Steam Generator Level - Low

This LCO requires four channels of Steam Generator Level - Low to be OPERABLE for each EFAS in MODES 1, 2, and 3.

The Steam Generator Level - Low EFAS input is derived from the Steam Generator Level - Low RPS bistable output. EFAS is thus initiated simultaneously with a reactor trip. The setpoint ensures a sufficient ~~at least a 20 minute~~ inventory of water remains in the affected steam generator at reactor trip. Thus, EFAS is initiated well before steam generator inventory is challenged. 13

b. SG Pressure Difference - High (SG #1 > SG #2) or (SG #2 > SG #1)

This LCO requires four channels of SG Pressure Difference - High to be OPERABLE for each EFAS in MODES 1, 2, and 3.

The Allowable Value for this trip is high enough to allow for small pressure differences and normal instrumentation errors between the steam generator channels during normal operation without an actuation. The setting is low enough to detect and inhibit feeding of a ruptured steam generator in the event of an MSLB or FWLB, while permitting the feeding of the intact steam generator.

BASES

LCO (continued)

c. Steam Generator Pressure - Low

This LCO requires four channels of Steam Generator Pressure - Low to be OPERABLE for each EFAS in MODES 1, 2, and 3.

The Steam Generator Pressure - Low input is derived from the Steam Generator Pressure - Low RPS bistable output. This output is also used as an MSIS input.

The Allowable Value for this trip is set below the full load operating value for steam pressure so as not to interfere with normal plant operation. However, the setting is high enough to provide an MSIS (Function 4) during an excessive steam demand event. An excessive steam demand is one indicator of a potentially ruptured steam generator; thus, this EFAS input, in conjunction with the SGPD Function, prevents the feeding of a potentially ruptured steam generator.

The setpoint will increase automatically to maintain the margin ≤ 200 psi as steam generator pressure is increased until the trip setpoint is reached.

The Steam Generator Pressure - Low trip setpoint may be manually decreased as steam generator pressure is reduced. This prevents an RPS trip or MSIS actuation during controlled plant cooldown. The margin between actual pressurizer pressure and the trip setpoint must be maintained less than or equal to the specified value of 200 psi to ensure that a reactor trip and MSIS will occur when required. 1

TSTF-493 changes not shown 14

APPLICABILITY

In MODES 1, 2 and 3 there is sufficient energy in the primary and secondary systems to warrant automatic ESF System responses to:

- Close the main steam isolation valves to preclude a positive reactivity addition~~.~~ ; 7
- Actuate emergency feedwater to preclude the loss of the steam generators as a heat sink (in the event the normal feedwater system is not available)~~.~~ ; 7
- Actuate ESF systems to prevent or limit the release of fission product radioactivity to the environment by isolating containment and limiting the containment pressure from exceeding the containment design pressure during a design basis LOCA or MSLB~~.~~ ; and 7
- Actuate ESF systems to ensure sufficient borated inventory to permit adequate core cooling and reactivity control during a design basis LOCA or MSLB accident.

BASES

APPLICABILITY (continued)

In MODES 4, 5, and 6, automatic actuation of these Functions is not required because adequate time is available to evaluate plant conditions and respond by manually operating the ESF components if required, as addressed by LCO 3.3.6.

Several trips have operating bypasses, discussed in the preceding LCO section. The interlocks that allow these bypasses shall be OPERABLE whenever the RPS Function they support is OPERABLE.

ACTIONS

The most common causes of channel inoperability are outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. Determination of setpoint drift is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it to within specification. If the actual trip setpoint is non-conservative with respect to the Allowable Value in Table 3.3.5-1, the channel is inoperable and the appropriate Condition(s) are entered.

TSTF-493

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is not functioning as required, or the transmitter, instrument loop, signal processing electronics, or ESFAS bistable is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition entered for the particular protection Function affected.

When the number of inoperable channels in a trip Function exceeds those specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 should be entered immediately, if applicable in the current MODE of operation.

A Note has been added to the ACTIONS. The Note has been added to clarify the application of the Completion Time rules. The Conditions of this Specification may be entered independently for each Function. The Completion Time for the inoperable channel of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1 and A.2

Condition A applies to the failure of a single channel of one or more input parameters in the following ESFAS Functions:

1. Safety Injection Actuation Signal Pressurizer Pressure - Low Containment Pressure - High 11

BASES

ACTIONS (continued)

2. Containment Spray Actuation Signal Containment Pressure - High 11
High Automatic SIAS

3. Containment Isolation Actuation Signal Containment Pressure - High 4 11
~~Pressurizer Pressure - Low~~

4. Main Steam Isolation Signal Steam Generator Pressure - Low 4 11
~~Containment Pressure - High~~

~~5. Recirculation Actuation Signal Refueling Water Storage Tank Level - Low~~ 4

5 ~~6~~. Emergency Feedwater Actuation Signal SG #1 (EFAS-1) Steam Generator Level - Low ~~SG Pressure Difference - High Steam Generator Pressure - Low~~ 4 11 4

6 ~~7~~. Emergency Feedwater Actuation Signal SG #2 (EFAS-2) Steam Generator Level - Low ~~SG Pressure Difference - High Steam Generator Pressure - Low~~ 4 11 4 4

This Condition is not applicable for RWST Level-Low (Function 5.a in Table 3.3.5-1) for the RAS Function, and SG Pressure Difference-High (Functions 6.b and 7.b) and SG Pressure-Low (Function 6.c and 7.c) for the EFAS Function, as specified in a Note.

ESFAS coincidence logic is normally two-out-of-four.

If one ESFAS channel is inoperable, startup or power operation is allowed to continue, providing the inoperable channel is placed in bypass or trip within 1 hour (Required Action A.1).

The Completion Time of 1 hour allotted to restore, bypass, or trip the channel is sufficient to allow the operator to take all appropriate actions for the failed channel and still ensures that the risk involved in operating with the failed channel is acceptable.

The failed channel must be restored to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. With a channel bypassed, the coincidence logic is now in a two-out-of-three configuration. In this configuration, common cause failure of dependent channels cannot prevent trip. The Completion Time of prior to entering MODE 2 following the next MODE 5 entry is based on adequate channel to channel independence, which allows a two-out-of-three channel operation, since no single failure will cause or prevent ~~a reactor trip~~ an ESFAS actuation. 1

INSERT 7 4

U2/U3 CTS Bases

4

INSERT 7

ACTION B

B.1 and B.2

Condition B applies to the failure of a single channel of one or more input parameters in the following ESFAS functions as specified in the Note:

1. Recirculation Actuation Signal
   Refueling Water Storage Tank Level — Low

2. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)
   SG Pressure Difference — High
   SG Pressure — Low

3. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)
   SG Pressure Difference — High
   SG Pressure — Low

If one channel of RWST Level-Low for the RAS function, or SG Pressure Difference-High or SG Pressure-Low for the EFAS function is inoperable, startup or power operation is allowed to continue, providing the inoperable channel is placed in bypass within 1 hour (Required Action B.1). For these functions, operation with one channel in trip is undesirable due to the consequences of a spurious trip. With one channel in trip, the function is in a one-out-of-three configuration, and a single failure can lead to a spurious trip.

The Completion Time of 1 hour allotted to bypass or restore the channel is sufficient to allow the operator to take all appropriate actions for the failed channel and still ensures that the risk involved in operating with the failed channel is acceptable.

The failed channel must be restored to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. With a channel bypassed, the coincidence logic is now in a two-out-of-three configuration. In this configuration, common cause failure of dependent channels cannot prevent an ESFAS actuation. The Completion Time of prior to entering MODE 2 following the next MODE 5 entry is based on adequate channel to channel independence, which allows a two-out-of-three channel operation, since no single failure will cause or prevent an ESFAS actuation.

BASES

ACTIONS (continued)

C

~~B~~.1 4

Condition ~~B~~ applies to the failure of two channels of one or more input parameters in the following ESFAS automatic trip Functions: 4

1. Safety Injection Actuation Signal Containment Pressure - High
Pressurizer Pressure - Low 11

2. Containment Spray Actuation Signal Containment Pressure - High
High Automatic SIAS 11

3. Containment Isolation Actuation Signal Containment Pressure - High
~~Pressurizer Pressure - Low~~ 4 11

4. Main Steam Isolation Signal Steam Generator Pressure - Low
~~Containment Pressure - High~~ 4 11

~~5. Recirculation Actuation Signal Refueling Water Storage Tank Level - Low~~ 4

5 ~~6~~. Emergency Feedwater Actuation Signal SG #1 (EFAS-1) Steam Generator Level - Low ~~SG Pressure Difference - High Steam Generator Pressure - Low~~ 4 11 4

6 ~~7~~. Emergency Feedwater Actuation Signal SG #2 (EFAS-2) Steam Generator Level - Low ~~SG Pressure Difference - High Steam Generator Pressure - Low~~ 4 11 4 4

This Condition is not applicable for RWST Level-Low (Function 5.a in Table 3,3,5-1) for the RAS Function, and SG Pressure Difference-High (Functions 6.b and 7.b) and SG Pressure-Low (Functions 6.c and 7.c) for the EFAS Function, as specified in a Note.

With two inoperable channels, power operation may continue, provided one inoperable channel is placed in bypass and the other channel is placed in trip within 1 hour. With one channel of protective instrumentation bypassed, the ESFAS Function is in two-out-of-three logic in the bypassed input parameter, but with another channel failed, the ESFAS may be operating with a two-out-of-two logic. This is outside the assumptions made in the analyses and should be corrected. To correct the problem, the second channel is placed in trip. This places the ESFAS Function in a one-out-of-two logic. If any of the other OPERABLE channels receives a trip signal, ESFAS actuation will occur.

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3

BASES

ACTIONS (continued)

One of the two inoperable channels will need to be restored to OPERABLE status prior to the next required CHANNEL FUNCTIONAL TEST because channel surveillance testing on an OPERABLE channel requires that the OPERABLE channel be placed in bypass. However, it is not possible to bypass more than one ESFAS channel, and placing a second channel in trip will result in an ESFAS actuation. Therefore, if one ESFAS channel is in trip and a second channel is in bypass, a third inoperable channel would place the unit in LCO 3.0.3.

INSERT 7A

E

~~C~~.1, ~~C~~.2.1, and ~~C~~.2.2 4

E 4

Condition ~~C~~ applies to one automatic bypass removal channel inoperable. 4
The only automatic bypass removal on an ESFAS is on the Pressurizer Pressure - Low signal. This bypass removal is shared with the RPS Pressurizer Pressure - Low bypass removal.

If the bypass removal channel for any operating bypass cannot be restored to OPERABLE status, the associated ESFAS channel may be considered OPERABLE only if the bypass is not in effect. Otherwise, the affected ESFAS channel must be declared inoperable, as in Condition A, and the bypass either removed or the bypass removal channel repaired. The Bases for the Required Actions and required Completion Times are consistent with Condition A. 4

and B

F s 4

~~D~~.1 and ~~D~~.2

Otherwise, the affected ESFAS channels must be declared inoperable, as in Condition ~~B~~, and either the bypass removed or the bypass removal channel repaired. The restoration of one affected bypassed automatic trip channel must be completed prior to the next CHANNEL FUNCTIONAL TEST or the plant must shut down per LCO 3.0.3, as explained in Condition ~~B~~. Completion Times are consistent with ~~Condition B~~. 1 4 4 4

s C and D

C

Required Actions C.1 and D.1

Condition F applies to two inoperable automatic bypass removal channels. If the bypass removal channels for two operating bypasses cannot be restored to OPERABLE status, the associated ESFAS channel may be considered OPERABLE only if the bypass is not in effect.

4

INSERT 7A

ACTION D

D.1 and D2

Condition D applies to the failure of two channels of one or more input parameters in the following ESFAS automatic trip Functions as specified in the Note:

1. Recirculation Actuation Signal
   Refueling Water Storage Tank Level — Low

2. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)
   SG Pressure Difference — High
   SG Pressure — Low

3. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)
   SG Pressure Difference — High
   SG Pressure — Low

With two inoperable channels, power operation may continue, provided one inoperable channel is placed in bypass and the other channel is placed in trip within 1 hour. With one channel of protective instrumentation bypassed, the ESFAS Function is in two-out-of-three logic in the bypassed input parameter, but with another channel failed, the ESFAS may be operating with a two-out-of-two logic. This is outside the assumptions made in the analyses and should be corrected. To correct the problem, the second channel is placed in trip. This places the ESFAS Function in a one-out-of-two logic. If any of the other OPERABLE channels receives a trip signal, ESFAS actuation will occur.

Action D.2 provides a limit of 7 days for operation with 2 inoperable channels. In the one-out-of-two configuration, a single channel failure can cause a spurious trip. For RAS and EFAS functions, a spurious trip can lead to undesirable consequences during certain Design Basis Events.

The 7 day time limit provides operational flexibility to perform a required CHANNEL FUNCTIONAL TEST on one channel (which is bypassed) while a second channel is inoperable (and is tripped).

The 7 day time limit also maintains acceptable core damage frequency as discussed in NSG 98-007, Time Limit for RAS or EFAS Channel in Trip (Reference 10).

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BASES

ACTIONS (continued) G

~~E~~.1 and ~~E~~.2 4

, E, or F

overall plant risk is minimized

INSERT 8

If the Required Actions and associated Completion Times of Condition A, B, C, ~~or~~ D cannot be met, the plant must be brought to a MODE in which the ~~LCO does not apply~~. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems. 2 4

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1

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 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; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. TSTF-425-A

Agreement criteria are determined by the plant 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.

INSERT 8A

~~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 displays associated with the LCO required channels.~~ TSTF-425-A

INSERT 8

Remaining within the Applicability of the LCO for RAS is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 11). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. 4

Required Action G.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4 for RAS. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

TSTF-425-A

INSERT 8A

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.2 and SR 3.3.5.3 4

A CHANNEL FUNCTIONAL TEST is performed ~~every 92 days~~ to ensure the entire channel will perform its intended function when needed. 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. TSTF-425-A

The CHANNEL FUNCTIONAL TEST is part of an overlapping test sequence similar to that employed in the RPS. This sequence, consisting of SR 3.3.5.2, SR 3.3.5.3, SR 3.3.6.1, and SR 3.3.6.2, tests the entire ESFAS from the bistable input through the actuation of the individual subgroup relays (including the bypass removal function). 4 9 These overlapping tests are described in Reference 1. ~~SR 3.3.5.2 and SR 3.3.6.1 are normally performed together and in conjunction with ESFAS testing.~~ INSERT 9 TSTF-425-A SR 3.3.6.2 verifies that the subgroup relays are capable of actuating their respective ESF components when de-energized.

These tests verify that the ESFAS is capable of performing its intended function, from bistable input through the actuated components. SRs 3.3.6.1 and 3.3.6.2 are addressed in LCO 3.3.6. SR 3.3.5.2 includes bistable tests.

A test signal is superimposed on the input in one channel at a time to verify that the bistable trips within the specified tolerance around the setpoint. This is done with the affected RPS trip channel bypassed. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as-found and as-left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference ~~[9]~~ 12. TSTF-493 1

INSERT 10 TSTF-493

B 3.3.5

TSTF-425-A

INSERT 9

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ 5

TSTF-493

INSERT 10

SR 3.3.5.2 functions are modified by two Notes as identified in Table 3.3.5-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[L~~TSP~~]~~. Where a setpoint more conservative than the ~~[L~~TSP~~]~~ is used in the plant surveillance procedures (~~NTSP~~), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[L~~TSP~~]~~, then the channel shall be declared inoperable. 2

N

actual trip setting

The second Note also requires that ~~[L~~TSP~~]~~ and the methodologies for calculating the as-left and the as-found tolerances be in ~~[the LCS]~~.

UFSAR Section 7.3 (Ref. 1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.4 and SR 3.3.5.~~3~~ 5 4

CHANNEL CALIBRATION is a complete check of the instrument channel including the detector and the bypass removal functions, if applicable. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis. 4

~~The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [9].~~ TSTF-493

INSERT 11

~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~ TSTF-425-A

INSERT 12

SR 3.3.5.~~4~~ 6 4

This Surveillance ensures that the train actuation response times are within the maximum values assumed in the safety analyses.

Response time testing acceptance criteria are included in Reference ~~10~~ 13. TSTF-493

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Applicable portions of the following TS Bases are applicable to plants adopting CEOG Topical Report CE NPSD-1167-1, "Elimination of Pressure Sensor Response Time Testing Requirements."~~
~~--~~ 5

Response time may be verified by any series of sequential, overlapping or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Topical Report CE NPSD-1167-A,

B 3.3.5

TSTF-425-A

INSERT 11

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---~~ 5

TSTF-493

INSERT 12

SR 3.3.5.4 and 5

SR 3.3.5.~~3~~ functions are modified by two Notes as identified in Table 3.3.5-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be OPERABLE but degraded, after returning the channel to service the performance of these channels will be evaluated under the plant Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the ~~[L~~TSP~~]~~. Where a setpoint more conservative than the ~~[L~~TSP~~]~~ is used in the plant surveillance procedures (~~NTSP~~), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the ~~[L~~TSP~~]~~, then the channel shall be declared inoperable. 4

N

actual trip setting

The second Note also requires that ~~[L~~TSP~~]~~ and the methodologies for calculating the as-left and the as-found tolerances be in ~~[the LCS]~~. 2

UFSAR Section 7.3 (Ref. 1)

Insert Page 3.3.5-24

BASES

SURVEILLANCE REQUIREMENTS (continued)

"Elimination of Pressure Sensor Response Time Testing Requirements," (Ref. 14 ~~11~~) provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the Topical Report. Response time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time. TSTF-493

INSERT 13

~~ESF RESPONSE TIME tests are conducted on a STAGGERED TEST BASIS of once every [18] months. The [18] month Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.~~ TSTF-425-A

SR 3.3.5.~~5~~ 7 4

SR 3.3.5.~~5~~ 7 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.5.2, except SR 3.3.5.~~5~~ 7 is performed within ~~92~~ 120 days prior to startup and is only applicable to bypass functions. Since the Pressurizer Pressure - Low bypass is identical for both the RPS and ESFAS, this is the same Surveillance performed for the RPS in SR 3.3.1.13. 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. 4 4

The CHANNEL FUNCTIONAL TEST for proper operation of the bypass permissives is critical during plant heatups because the bypasses may be in place prior to entering MODE 3 but must be removed at the appropriate points during plant startup to enable the ESFAS Function. Consequently, just prior to startup is the appropriate time to verify bypass function OPERABILITY. Once the bypasses are removed, the bypasses must not fail in such a way that the associated ESFAS Function is inappropriately bypassed. This feature is verified by SR 3.3.5.2.

The allowance to conduct this test ~~with 92~~ within 120 days of startup is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" and Calculation Number 09/010-AS83-C-002, "RPS/ESFAS Extended Test Interval Evaluation for 120 days Staggered Testing at SONGS 2 and 3" (Refs. 12 ~~9~~ and 15). 4 TSTF-493 1

TSTF-425-A

INSERT 13

The Frequency is controlled under the Surveillance Frequency Control Program. 6

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 5

BASES

REFERENCES
1. U FSAR, Section ~~[~~7.3~~]~~. 1 2

2. Regulatory Guide 1.105, "Setpoints for Safety-Related Instrumentation," Revision 3.

3. 10 CFR 50.67.

4 ~~2~~. 10 CFR 50, Appendix A. 1

5 ~~3. NRC Safety Evaluation Report.~~ 1

5 ~~4~~. IEEE Standard 279-1971.

6 ~~5~~. U FSAR, Chapter ~~[~~15~~]~~. 1 2

7 ~~6~~. 10 CFR 50.49. TSTF-493

8 ~~7. "Plant Protection System Selection of Trip Setpoint Values."~~ PPS Setpoint Calculation CE NPSD-570-P (SONGS document number SO23-944-C50) 1

9 ~~8~~. U FSAR, Section ~~[~~7.2~~]~~. 1 2

10. Report NSG 98-007, Time Limit for RAS or EFAS Channel in Trip," April 17, 1998

12 ~~9~~. CEN-327, May 1986, including Supplement 1, ~~March~~ January 1989. 1

13 ~~10. Response Time Testing Acceptance Criteria.~~ Licensee Controlled Specification 3.3.100, "RPS/ESFAS Response Times." 1

14 ~~11~~. CEOG Topical Report CE NPSD-1167-A, "Elimination of Pressure Sensor Response Time Testing Requirements." 1

15. RPS/ESFAS Extended Test Interval Evaluation for 120 Days Staggered Testing at SONGS 2 and 3, Calculation Number 09/010-AS83-C-002, November 1993.

11. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. TSTF-422A

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5 BASES, EGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.5 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. Changes are made to be consistent with changes made to the Specification.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies

7. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

8. ISTS 3.3.5 Bases, LCO Section, contains the following statement, "Plants are restricted to 48 hours in a trip channel bypass condition before restoring the Function to four channel operation (two-out-of-four logic) or placing the channel in trip (two-out-of-three logic)." This statement is being deleted. This statement does not match what is currently allowed in the ISTS ACTIONS. With one channel inoperable and placed in bypass, the ISTS allows operation in this condition until prior to MODE 2 following the next MODE 5 entry.

9. Changes are made to be consistent with the actual Specifications.

10. ISTS LCO 3.3.5 Bases for Containment Spray contains the statement, "CSAS is either actuated automatically or manually." This statement is being deleted. All the ESFAS Functions can be initiated automatically or manually from the control room (except for RAS which requires manual actuation from the ESFAS cabinet). Manual actuation of the ESFAS Function is discussed in the Background Section of the Bases. This change is acceptable, because making this statement for one

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5 BASES, EGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

ESFAS Function and not the other ESFAS Functions when it is applicable to all ESFAS functions is not necessary and redundant.

11. Changes are made to correct errors in the ISTS Bases.
    - LCO 4.a, MSIS SG Pressure – Low Section discusses the margin between actual "pressurizer" pressure and the trip setpoint. Pressurizer is being changed to Steam Generator since the section discusses the Steam Generator Pressure – Low trip setpoint.
    - ACTIONS A.1 and A.2 Section lists the trip function and input parameters; however, the input parameters are not separated which can be confusing. This is being corrected to list the parameters under the trip function so there is clear separation between the input parameters.
    - ACTIONS A.1 and A.2 Section discusses the trip logic when an ESFAS channel is in the bypassed condition and discuses that a single failure will not cause or prevent a "reactor trip." Reactor Trip is being changed to "ESFAS actuation" because this section discusses the ESFAS Functions.
    - ACTION B.1 Section lists the trip function and input parameters; however, the input parameters are not separated which can be confusing. This is being corrected to list the parameters under the trip function so there is clear separation between the input parameters.

12. The ISTS 3.3.5 Bases Background Section Insert (per TSTF-425) is being changed to add "specified" in front of "safety function(s)." This change is being made to be consistent with the definition of OPERABLE in the Section 1.1, Definitions, of the ISTS and SONGS ITS.

13. The ISTS 3.3.5 Bases, Function 6,7 a., "Steam Generator Level – Low" of the LCO Section states in part, "The setpoint ensures at least a 20 minute inventory of water remains in the affected steam generator at reactor trip." The proposed change will replace "at least a 20 minute" with "a sufficient." This change is specific to SONGS analysis which ensures an ESFAS is initiated well before the steam generator inventory is challenged.

14 TSTF-493 includes a statement that "The ESFAS channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii)." This statement has not been added since it is already included in the Applicable Safety Analyses section of the Bases and this is where this type of statement is always included.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.5, EGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 6

ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) LOGIC AND MANUAL TRIP

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

ITS

A01

3.3 INSTRUMENTATION

3.3.6 3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip

LCO 3.3.6 LCO 3.3.6 Six channels of ESFAS Matrix Logic, four channels of ESFAS Initiation Logic, two channels of Actuation Logic, and two channels of Manual Trip shall be OPERABLE for each Function according to Table 3.3.6-1.

Applicability APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

ACTIONS Note

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. ---------NOTE--------- This action also applies when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies. ---------------------- One or more Functions with one Matrix Logic channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
ACTION B	B. One or more Functions with one Manual Trip or Initiation Logic channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C	C. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	C.1 ~~Initiate action to~~ open at least one contact in the affected trip leg of both ESFAS Actuation Logic. AND C.2 Restore channels to OPERABLE status.	Immediately 48 hours	A02
ACTION D	D. One or more Functions with one Actuation Logic channel inoperable.	D.1 --------NOTE--------- One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. --------------------- Restore inoperable channel to OPERABLE status.	 48 hours	
ACTION E	E. One or more Functions with two Actuation Logic channels inoperable. OR Required Action and associated Completion Time ~~of Conditions for Main Steam Isolation Signal, Containment Spray Actuation Signal, or Emergency Feedwater Actuation Signal~~ not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4. -------------------Note------------------- LCO 3.0.4.a is not Applicable when entering MODE 4. --	6 hours 12 hours	M01 L01

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION E	F. ~~Required Action and associated Completion Time of Conditions for Safety Injection Actuation Signal, Containment Isolation Actuation Signal, Recirculation Actuation Signal, or Containment Cooling Actuation Signal not met.~~	~~F.1 Be in MODE 3.~~ ~~AND~~ ~~F.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~	L01

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.6.1	SR 3.3.6.1 -------------------NOTE-------------------- Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. -- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	In accordance with the Surveillance Frequency Control Program ~~120 days~~	LA01

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.6.2	SR 3.3.6.2 --------------------NOTE-------------------- Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. --- Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	~~184 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.6.3	SR 3.3.6.3 Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	~~24 months~~	LA01

Table 3.3.6-1

Table 3.3.6-1 (page 1 of 1)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES	
1. Safety Injection Actuation Signal		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3,4~~(c)~~	LA02
c. Actuation Logic	1,2,3,4	
d. Manual Trip	1,2,3,4	
2. Containment Isolation Actuation Signal		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3,4~~(c)~~	LA02
c. Actuation Logic	1,2,3,4	
d. Manual Trip	1,2,3,4	
3. Containment Cooling Actuation Signal[a]		
a. Initiation Logic	1,2,3,4~~(c)~~	LA02
b. Actuation Logic	1,2,3,4	
c. Manual Trip	1,2,3,4	
4. Recirculation Actuation Signal		
a. Matrix Logic	1,2,3,4	
b. Initiation Logic	1,2,3,4	
c. Actuation Logic	1,2,3,4	
5. Containment Spray Actuation Signal[b]		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
6. Main Steam Isolation Signal		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	

(a) Automatic SIAS also initiates CCAS.

(b) Automatic SIAS also required for automatic CSAS initiation.

~~(c) Only the portions of initiation Logic necessary for manual trip are required in MODE 4.~~ LA02

ITS

A01

3.3 INSTRUMENTATION

3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip

3.3.6

LCO 3.3.6

LCO 3.3.6 Six channels of ESFAS Matrix Logic, four channels of ESFAS Initiation Logic, two channels of Actuation Logic, and two channels of Manual Trip shall be OPERABLE for each Function according to Table 3.3.6-1.

Applicability

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

ACTIONS Note

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. ---------NOTE--------- This action also applies when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies. ---------------------- One or more Functions with one Matrix Logic channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
ACTION B B. One or more Functions with one Manual Trip or Initiation Logic channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours

(continued)

ITS

A01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION C C. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	C.1 ~~Initiate action to~~ open at least one contact in the affected trip leg of both ESFAS Actuation Logic. AND C.2 Restore channels to OPERABLE status.	Immediately (A02) 48 hours
ACTION D D. One or more Functions with one Actuation Logic channel inoperable.	D.1 --------NOTE--------- One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. --------------------- Restore inoperable channel to OPERABLE status.	 48 hours
ACTION E E. One or more Functions with two Actuation Logic channels inoperable. OR Required Action and associated Completion Time ~~of Conditions for Main Steam Isolation Signal, Containment Spray Actuation Signal, or Emergency Feedwater Actuation Signal~~ not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4. ------------------Note----------------- LCO 3.0.4.a is not Applicable when entering MODE 4. --	6 hours (M01) 12 hours (L01)

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION E	~~F. Required Action and associated Completion Time of Conditions for Safety Injection Actuation Signal, Containment Isolation Actuation Signal, Recirculation Actuation Signal, or Containment Cooling Actuation Signal not met.~~	~~F.1 Be in MODE 3.~~ ~~AND~~ ~~F.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~	L01

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.6.1	SR 3.3.6.1 --------------------NOTE-------------------- Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. --- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	In accordance with the Surveillance Frequency Control Program ~~120 days~~	LA01

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.6.2 SR 3.3.6.2	--------------------NOTE-------------------- Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. --- Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	~~184 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.6.3 SR 3.3.6.3	Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	~~24 months~~	LA01

Table 3.3.6-1

Table 3.3.6-1 (page 1 of 1)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES	
1. Safety Injection Actuation Signal		
a. Matrix Logic	1,2,3	LA02
b. Initiation Logic	1,2,3,4~~(c)~~	
c. Actuation Logic	1,2,3,4	
d. Manual Trip	1,2,3,4	
2. Containment Isolation Actuation Signal		
a. Matrix Logic	1,2,3	LA02
b. Initiation Logic	1,2,3,4~~(c)~~	
c. Actuation Logic	1,2,3,4	
d. Manual Trip	1,2,3,4	
3. Containment Cooling Actuation Signal(a)		
a. Initiation Logic	1,2,3,4~~(c)~~	LA02
b. Actuation Logic	1,2,3,4	
c. Manual Trip	1,2,3,4	
4. Recirculation Actuation Signal		
a. Matrix Logic	1,2,3,4	
b. Initiation Logic	1,2,3,4	
c. Actuation Logic	1,2,3,4	
5. Containment Spray Actuation Signal(b)		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
6. Main Steam Isolation Signal		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	
8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)		
a. Matrix Logic	1,2,3	
b. Initiation Logic	1,2,3	
c. Actuation Logic	1,2,3	
d. Manual Trip	1,2,3	

(a) Automatic SIAS also initiates CCAS.

(b) Automatic SIAS also required for automatic CSAS initiation.

~~(c) Only the portions of initiation Logic necessary for manual trip are required in MODE 4.~~ LA02

DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.6 Required Action C.1 states to "Initiate action to" open at least one contact in the affected trip leg of both ESFAS Actuation Logic immediately. ITS 3.3.6 Required Action C.1 states to open at least one contact in the affected trip leg of both ESFAS Actuation Logic immediately. This changes the CTS by deleting the requirement to "initiate action to" open in the Required Action.

The purpose of CTS 3.3.6 Required Action C.1 is to open at least one set of contacts in a trip leg immediately when two initiation channels in one trip leg is inoperable to prevent the loss of ESFAS Function in the affected trip leg. The proposed change is acceptable because it is not necessary. By deleting the words to "initiate action to" open, is basically the same as opening in this case, because you can open the contact immediately. With regard to "Immediately," Section 1.3 states, "When Immediately is used as a Completion Time, the Required Action should be pursued without delay in a controlled manner." This change is designated as administrative because no technical changes are being made to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.6 does not currently contain an ACTION when two Actuation Logic channels are inoperable; therefore an LCO 3.0.3 entry would be required. ITS 3.3.6 ACTION E requires the unit to be in MODE 3 in 6 hours and MODE 4 in 12 hours when two Actuation Logic channels are inoperable in one or more Functions. This changes the CTS by adding shutdown ACTIONS when two Actuation Logic Channels are inoperable in one or more Functions.

This purpose of ITS 3.3.6 ACTION E, when two Actuation Logic Channels are inoperable, is to ensure the plant is brought to a MODE in which the LCO for the ESFAS Functions do not apply because a loss of Function condition may exist when two Actuation Logic channels are inoperable. The proposed change is acceptable because a Condition will exist in ITS 3.3.6 for two Actuation Logic channels inoperable in one or more Functions instead of requiring an LCO 3.0.3 entry. The ITS 3.3.6 ACTIONS are essentially the same; however, LCO 3.0.3 allows an extra hour prior to beginning a shutdown. This change is designated

DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

as more restrictive because the unit will have one hour less time to reach the required end state in the ITS than what is allowed in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.6.1 requires that a CHANNEL FUNCTIONAL TEST be performed on each ESFAS logic channel every 120 days. CTS SR 3.3.6.2 requires that a subgroup relay test be performed on each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay every 184 days. CTS SR 3.3.6.3 requires that a CHANNEL FUNCTIONAL TEST be performed on each ESFAS Manual Trip Channel every 24 months. ITS SRs 3.3.6.1, 3.3.6.2, and 3.3.6.3 requires similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);

- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;

- Independence of barriers is not degraded;

- Defenses against human errors are preserved; and

- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

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DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 3.3.6-1 contains footnotes (footnote c) for the Initiation Logic for the Safety Injection Actuation Signal (Function 1.b), Containment Isolation Actuation Signal (Function 2.b), and Containment Cooling Actuation Signal (Function 3.b) which states, "Only the portions of initiation Logic necessary for manual trip are required in MODE 4." ITS Table 3.3.6-1 does not contain this footnote. This changes the CTS by removing the footnote that only the portions of the Initiation Logic necessary for manual trip are required in MODE 4 from the Specification and placing it in the Bases.

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 retains the requirement for the Initiation Logic to be OPERABLE in MODE 4 for the applicable Functions. 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 is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.3.6 ACTION E requires a plant shutdown to MODE 3 in 6 hours and MODE 4 in 12 hours when the Required Action and associated Completion Time for Containment Spray Actuation Signal (CSAS), Main Steam Isolation Signal (MSIS) or Emergency Feedwater Actuation Signal (EFAS) is not met. CTS 3.3.6 ACTION F requires a plant shutdown to MODE 3 in 6 hours and MODE 5 in 36 hours when the Required Action and associated Completion Time for Safety Injection Actuation Signal (SIAS), Containment Isolation Actuation Signal (CIAS), Containment Cooling Actuation Signal (CCAS) or Recirculation Actuation Signal (RAS) is not met. ITS 3.3.6 ACTION E requires a plant shutdown to MODE 3 in 6 hours and MODE 4 in 12 hours when the Required Action and associated Completion Time

DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) LOGIC AND MANUAL TRIP

are not met for any ESFAS Functions. ITS 3.3.6 Required Action E.2 contains a Note which modifies the Required Action stating LCO 3.0.4.a is not applicable when entering MODE 4. This changes the CTS by changing the end state from MODE 5 to MODE 4 for SIAS, CIAS, RAS, and CCAS. Thus, with the addition of SIAS, CIAS, RAS, and CCAS to the MODE 4 end state shutdown statement, one shutdown statement is applicable for all the ESFAS Functions, which eliminates the need for CTS 3.3.6 ACTION F. A modifying Note is being added to CTS 3.3.6 Required Action E.2 which states LCO 3.0.4.a is not applicable when entering MODE 4. Additionally, due to ITS 3.3.6 ACTION E being applicable to any ESFAS Function, the listing of the applicable functions in CTS 3.3.6 Condition E are no longer required and will be deleted.

The purpose of CTS 3.3.6 ACTION E and CTS 3.3.6 ACTION F is to place the unit in a condition where the LCO is not applicable. The proposed change, which is consistent with TSTF-422, allows the plant end state for SIAS, CIAS, CCAS, and RAS to conclude at MODE 4 within 12 hours versus MODE 5 within 36 hours. Thus, CTS 3.3.6 ACTION F is being deleted since ITS 3.3.6 ACTION E is applicable to all the ESFAS Functions. Additionally a NOTE is being added to ITS 3.3.6 Required Action E.2 which states LCO 3.0.4.a is not Applicable when entering MODE 4. This change is based on a topical report, CE-NPSD-01186 (approved by NRC on July 17, 2001). The topical report demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states. Preventing plant challenges during shutdown conditions has been, and continues to be, an important aspect of ensuring safe operation of the plant. Past events demonstrate that risk of core damage associated with entry into, and operation in, shutdown cooling is not negligible and should be considered when a plant is required to shutdown. Therefore, the Technical Specifications should encourage plant operation in the steam generator heat removal mode whenever practical, and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions.

The Note which modifies ITS 3.3.6 Required Action E.2 prohibits entry into the end state Mode of Applicability during startup using the provisions of LCO 3.0.4.a. The purpose of this Note is to provide assurance that entry into the end state Mode of Applicability during startup is not made without the appropriate risk assessment. Entry into the end state Mode of Applicability during startup will still be allowed under the provisions of LCO 3.0.4.b. This is acceptable because LCO 3.0.4.b allows entry only 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. Details of the risk assessment are provided in the Bases for LCO 3.0.4.b.

SONGS will adopt the end states proposed in TSTF-422 and will perform a risk assessment in accordance with 10 CFR 50.65(a)(4) when using the end states regardless of whether maintenance is being performed. The risk assessment will follow Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants,” which endorses NUMARC 93-

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DISCUSSION OF CHANGES
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Section 11 guidance for implementation of 10 CFR 50.65(a)(4). SONGS will also follow the industry-developed implementation guidance, WCAP-16364-NP, Revision 0, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," November 2004.

This change is considered less restrictive because it relaxes the end state for the Required Action from MODE 5 to MODE 4 for SIAS, CIAS, CSAS, and RAS.

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

3.3 INSTRUMENTATION

3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip ~~(Digital)~~ 3

LCO 3.3.6

LCO 3.3.6 Six channels of ESFAS Matrix Logic, four channels of ESFAS Initiation Logic, two channels of Actuation Logic, and two channels of Manual Trip shall be OPERABLE for each Function in Table 3.3.6-1.

Applicability

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

ACTIONS Note

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. ------------NOTE------------ This action also applies when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies. --------------------------------- One or more Functions with one Matrix Logic channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
ACTION B	B. One or more Functions with one Manual Trip or Initiation Logic channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION C	C. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	C.1	Open at least one contact in the affected trip leg of both ESFAS Actuation Logics.	Immediately	
		AND			
		C.2	Restore channels to OPERABLE status.	48 hours	
ACTION D	D. One or more Functions with one Actuation Logic channel inoperable.	D.1	---------------NOTE-------------- One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. -------------------------------------		
			Restore inoperable channel to OPERABLE status.	48 hours	
ACTION E, ACTION F	E. One or more Functions with Two Actuation Logic channels inoperable.	E.1	Be in MODE 3.	6 hours	5
	OR	AND			
	Required Action and associated Completion Time ~~of Conditions, for Containment Spray Actuation Signal, Main Steam Isolation Signal, or Emergency Feedwater Actuation Signal~~ not met.	E.2	Be in MODE 4. --------------------NOTE------------------- LCO 3.0.4.a is not applicable when entering MODE 4. ---	~~[~~12~~]~~ hours	2 TSTF-422-A

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two Actuation Logic channels inoperable. OR Required Action and associated Completion Time of Conditions, for Safety Injection Actuation Signal, Containment Isolation Actuation Signal, Recirculation Actuation Signal, or Containment Cooling Actuation Signal not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	6 hours 36 hours

TSTF-422-A

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	SR 3.3.6.1	-------------------------------NOTE------------------------------ Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. --- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	In accordance with the Surveillance Frequency Control Program ~~[92] days~~

TSTF-425-A

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.6.2	SR 3.3.6.2	-------------------------------NOTE------------------------------ Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. --- Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	~~[184] days~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.6.3	SR 3.3.6.3	Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A

Table 3.3.6-1

Table 3.3.6-1 (page 1 of 2)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES
1. Safety Injection Actuation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
d. Manual Trip	1,2,3,4
2. Containment Isolation Actuation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
d. Manual Trip	1,2,3,4
3. Containment Cooling Actuation Signal[(a)]	
a. Initiation Logic	1,2,3,4
b. Actuation Logic	1,2,3,4
c. Manual Trip	1,2,3,4
4. Recirculation Actuation Signal	
a. Matrix Logic	1,2,3 , 4 (4)
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
~~d. Manual Trip~~	~~1,2,3,4~~ (4)
5. Containment Spray Actuation Signal[(b)]	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3

(a) Automatic SIAS also initiates CCAS.

(b) Automatic SIAS also required for automatic CSAS initiation.

Table 3.3.6-1

Table 3.3.6-1 (page 2 of 2)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES
5. Containment Spray Actuation Signal[(b)] (continued)	
d. Manual Trip	1,2,3
6. Main Steam Isolation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3
7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3
8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3

(b) Automatic SIAS also required for automatic CSAS initiation.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.6 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. ISTS Table 3.3.6-1, for the Recirculation Actuation Signal (RAS), requires the Matrix Logic to be Applicable in MODES 1, 2, and 3 and the Manual Trip to be Applicable in MODES 1, 2, 3, and 4. The Applicability for the Matrix Logic is being changed to MODES 1, 2, 3, and 4 and the entry for Manual Trip is being deleted. Deleting the requirement for the RAS Manual Trip is acceptable because SONGS Units 2 and 3 do not have Manual Trip pushbuttons for the RAS in the control room. As a result of RAS not having Manual Trip capability in the Control Room and RAS being required to be available in MODE 4 to support safety injection, the matrix logic is required to be Applicable because automatic actuation is credited for initiating RAS in MODE 4.

5. The first part of ISTS 3.3.6 Condition E is being clarified with the wording "one or more Functions with" added to "two Actuation Logic channels inoperable." This will clarify that the first part of the Condition only applies when the two inoperable Actuation Logic channels are from the same Function. Again, this is the intent of the first Condition. Without the clarifying wording, the first part of the Condition would apply if there are two Actuation Logic channels inoperable from different Functions. SCE believes that this change, which is editorial in nature only, is necessary to clearly understand and apply the Condition.

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

 3

B 3.3 INSTRUMENTATION

B 3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip ~~(Digital)~~ 3

BASES

BACKGROUND

The ESFAS initiates necessary safety systems, based upon the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs) and ensures acceptable consequences during accidents.

The ESFAS contains devices and circuitry that generate the following signals when monitored variables reach levels that are indicative of conditions requiring protective action:

1. Safety Injection Actuation Signal (SIAS),;
2. Containment Isolation Actuation Signal (CIAS),;
3. Containment Cooling Actuation Signal (CCAS),;
4. Recirculation Actuation Signal (RAS),;
5. Containment Spray Actuation Signal (CSAS),;
6. Main Steam Isolation Signal (MSIS),;
7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1),; and
8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2).

4

U Equipment actuated by each of the above signals is identified in the FSAR (Ref. 1). 1

Each of the above ESFAS instrumentation systems is segmented into three interconnected modules. These modules are:

- Measurement channels,;
- Bistable trip units,; and

4

3

BASES

BACKGROUND (continued)

- ESFAS Logic:
  - Matrix Logic ;
  - Initiation Logic (trip paths) ; and
  - Actuation Logic.

4

This LCO addresses ESFAS Logic. Bistables and measurement channels are addressed in LCO 3.3.5, "Engineered Safety Features Actuation System (ESFAS) Instrumentation."

The role of the measurement channels and bistables is described in LCO 3.3.5. The role of the ESFAS Logic is described below.

<u>ESFAS Logic</u>

The ESFAS Logic, consisting of Matrix, Initiation and Actuation Logic, employs a scheme that provides an ESF actuation of both trains when bistables in any two of the four channels sense the same input parameter trip. This is called a two-out-of-four trip logic.

Bistable relay contact outputs from the four channels are configured into six Matrix Logics. Each Matrix Logic checks for a coincident trip in the same parameter in two bistable channels. The matrices are designated the AB, AC, AD, BC, BD, and CD matrices, to reflect the bistable channels being monitored. Each Matrix Logic contains four normally energized matrix relays. When a coincidence is detected in the two channels being monitored by the Matrix Logic, all four matrix relays de-energize.

The matrix relay contacts are arranged into trip paths, with one relay contact from each matrix relay in each of the four trip paths. Each trip path controls two initiation relays. Each of the two initiation relays in each trip path controls contacts in the Actuation Logic for one train of ESF.

Each of the two channels of Actuation Logic, mounted in the Auxiliary Relay Cabinets (ARCs), is responsible for actuating one train of ESF equipment. Each ESF Function has separate Actuation Logic in each ARC.

1

BASES

BACKGROUND (continued)

The contacts from the Initiation Logic are configured in a selective two-out-of-four logic in the Actuation Logic, similar to the configuration employed by the RPS in the RTCBs. This logic controls ARC mounted subgroup relays, which are normally energized. Contacts from these relays, when de-energized, actuate specific ESF equipment.

When a coincidence occurs in two ESFAS channels, all four matrix relays in the affected matrix will de-energize. This, in turn, will de-energize all eight initiation relays, four used in each Actuation Logic.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition, since they are addressed as part of the measurement channel.

Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and the initiation relays.

Actuation Logic consists of all circuitry housed within the ARCs used to actuate the ESF Function, excluding the subgroup relays, and interconnecting wiring to the initiation relay contacts mounted in the PPS cabinet.

The subgroup relays are actuated by the ESFAS Logic. Each ESFAS Function typically employs several subgroup relays, with each subgroup relay responsible for actuating one or more components in the ESFAS Function. Subgroup relays and their contacts are considered part of the actuated equipment and are addressed under the applicable LCO for this equipment.

It is possible to change the two-out-of-four ESFAS Logic to two-out-of-three logic for a given input parameter in one channel at a time by trip channel bypassing select portions of the Matrix Logic. Trip channel bypassing a bistable effectively shorts the bistable relay contacts in the three matrices associated with that channel. Thus, the bistables will function normally, producing normal trip indication and annunciation, but ESFAS actuation will not occur since the bypassed channel is effectively removed from the coincidence logic. Trip channel bypassing can be

3

BASES

BACKGROUND (continued)

simultaneously performed on any number of parameters in any number of channels, providing each parameter is bypassed in only one channel at a time. An interlock prevents simultaneous trip channel bypassing of the same parameter in more than one channel. Trip channel bypassing is normally employed during maintenance or testing. Trip channel bypassing is addressed in LCO 3.3.5.

Manual ESFAS initiation capability is provided to permit the operator to manually actuate an ESF System when necessary with the exception of RAS which does not have manual initiation capability.

Two sets of two push buttons (located in the control room) for each ESF Function except for RAS, are provided, and each set actuates both trains. Each Manual Trip push button opens one trip path, de-energizing one set of two initiation relays, one affecting each train of ESF. Initiation relay contacts are arranged in a selective two-out-of-four configuration in the Actuation Logic. By arranging the push buttons in two sets of two, such that both push buttons in a set must be depressed, it is possible to ensure that Manual Trip will not be prevented in the event of a single random failure. Each set of two push buttons is designated a single channel in this LCO. 1

1

INSERT 1

APPLICABLE SAFETY ANALYSES

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents.

ESFAS Functions are as follows:

1. Safety Injection Actuation Signal

SIAS ensures acceptable consequences during large break loss of coolant accidents (LOCAs), small break LOCAs, control element assembly ejection accidents, and main steam line breaks (MSLBs) inside or outside containment and feedwater line breaks. To provide the required protection, either a high containment pressure or a low pressurizer pressure signal will initiate SIAS. SIAS initiates the Emergency Core Cooling Systems (ECCS) and performs several other Functions, such as initiating a containment cooling actuation, initiating control room isolation, and starting the diesel generators. 1

1

INSERT 1

RAS does not have manual pushbuttons on the Control Room panels. However, all ESFAS functions, including RAS, have manual actuation available from the Manual pushbuttons on the ESFAS panels. These pushbuttons operate contacts in the Actuation Logic, so Initiation Logic is not required for a manual actuation. These push buttons are not credited in the Technical Specifications.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

2. Containment Isolation Actuation Signal

CIAS ensures acceptable mitigating actions during large and small break LOCAs and during MSLBs or feedwater line breaks (FWLBs) ~~either~~ inside ~~or outside~~ containment. CIAS is initiated by ~~low pressurizer pressure or~~ high containment pressure. 1

3. Containment Cooling Actuation Signal

CCAS mitigates containment overpressurization when required by either a manual CCAS actuation or an automatic SIAS Function. ~~This Function is not employed by all plants.~~ 1

4. Recirculation Actuation Signal

At the end of the injection phase of a LOCA, the refueling water storage tank (RWST) will be nearly empty. Continued cooling must be provided by the ECCS to remove decay heat. The source of water for the ECCS pumps is automatically switched to the containment recirculation sump. Switchover from RWST to containment sump must occur before the RWST empties to prevent damage to the ECCS pumps and a loss of core cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment sump to support pump suction. Furthermore, early switchover must not occur to ensure sufficient borated water is injected from the RWST to ensure the reactor remains shut down in the recirculation mode. An RWST Level - Low signal initiates the RAS.

5. Containment Spray Actuation Signal

CSAS actuates containment spray, preventing containment overpressurization during large break LOCAs, small break LOCAs, and MSLBs or FWLBs inside containment. CSAS is initiated by high high containment pressure and an SIAS. This configuration reduces the likelihood of inadvertent containment spray.

BASES

APPLICABLE SAFETY ANALYSES (continued)

6. Main Steam Isolation Signal

MSIS ensures acceptable consequences during an MSLB or FWLB (between the steam generator and the main feedwater check valve) either inside or outside containment. MSIS isolates both steam generators if either generator indicates a low pressure condition ~~or if a high containment pressure condition~~ exists. This prevents an excessive rate of heat extraction and subsequent cooldown of the RCS during these events. 3

7, 8. Emergency Feedwater Actuation Signal

EFAS consists of two steam generator (SG) specific signals (EFAS-1 and EFAS-2). EFAS-1 initiates emergency feed to SG #1, and EFAS-2 initiates emergency feed to SG #2.

EFAS maintains a steam generator heat sink during a steam generator tube rupture event and an MSLB or FWLB event either inside or outside containment.

Low steam generator water level initiates emergency feed to the affected steam generator, providing the generator is not identified (by the circuitry) as faulted (an MSLB or FWLB).

EFAS logic includes steam generator specific inputs from the Steam Generator Pressure - Low bistable comparator (also used in MSIS) and the SG Pressure Difference - High (SG #1 > SG #2 or SG #2 > SG #1, bistable comparators) to determine if a rupture in either generator has occurred.

Rupture is assumed if the affected generator has a low pressure condition, unless that generator is significantly higher in pressure than the other generator.

This latter feature allows feeding the intact steam generator even if both are below the MSIS setpoint, while preventing the ruptured generator from being fed. Not feeding a ruptured generator prevents containment overpressurization during the analyzed events.

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

BASES

LCO

The LCO requires all channel components necessary to provide an ESFAS actuation to be OPERABLE.

The requirements for each Function are listed below. The reasons for the applicable MODES for each Function are addressed under APPLICABILITY.

1. Safety Injection Actuation Signal

Automatic SIAS is required to initiate CCAS and CSAS. Automatic SIAS occurs in Pressurizer Pressure - Low or Containment Pressure - High and is explained in Bases 3.3.5.

a. Manual Trip

This LCO requires two channels of SIAS Manual Trip to be OPERABLE in MODES 1, 2, 3, and 4.

b. Matrix Logic

This LCO requires six channels of SIAS Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

c. Initiation Logic

This LCO requires four channels of SIAS Initiation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

d. Actuation Logic

This LCO requires two channels of SIAS Actuation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

2. Containment Isolation Actuation Signal

For ~~plants where the SIAS and CIAS are actuated on Pressurizer Pressure - Low or~~ Containment Pressure - High, the SIAS and CIAS share the same input channels, bistables, and matrices and matrix relays. The remainder of the initiation channels, the manual channels, and the Actuation Logic are separate. Since their applicability is also the same, they have identical actions. 5

a. Manual Trip

This LCO requires two channels of CIAS Manual Trip to be OPERABLE in MODES 1, 2, 3, and 4.

BASES

LCO (continued)

b. Matrix Logic

This LCO requires six channels of CIAS Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

c. Initiation Logic

This LCO requires four channels of CIAS Initiation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

d. Actuation Logic

This LCO requires two channels of CIAS Actuation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

3. Containment Cooling Actuation Signal

will
automatic
except for RAS

~~For plants employing a separate CCAS signal,~~ the CCAS Function ~~can~~ be automatically actuated on an SIAS. It can also be manually actuated using two channels of CCAS push buttons, configured similarly to all other ESFAS Manual Trips. CCAS therefore shares the SIAS sensor channels, bistables, coincidence matrices, and matrix relays. It has separate manual channels and Actuation Logic. 1 8 5

a. Manual Trip

This LCO requires two channels of CCAS Manual Trip to be OPERABLE in MODES 1, 2, 3, and 4.

INSERT 2

c ~~b~~. Initiation Logic

This LCO requires four channels of CCAS Initiation Logic to be OPERABLE in MODES 1, 2, 3, and 4. 8

d ~~c~~. Actuation Logic

This LCO requires two channels of CCAS Actuation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

8 INSERT 2

b. Automatic SIAS (Function 1)

This LCO requires four channels of Automatic SIAS input to CCAS to be OPERABLE in MODES 1, 2, and 3, as required by footnote (a).

The Automatic SIAS occurs on Pressurizer Pressure – Low or Containment Pressure – High and is explained above.

BASES

LCO (continued)

4. Recirculation Actuation Signal

~~a. Manual Trip~~

~~This LCO requires two channels of RAS Manual Trip to be OPERABLE in MODES 1, 2, 3, and 4.~~ 5

a ~~b~~. Matrix Logic 5

This LCO requires six channels of RAS Matrix Logic to be OPERABLE in MODES 1, 2, 3, and ~~3~~ 4. 5

b ~~c~~. Initiation Logic 5

This LCO requires four channels of RAS Initiation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

c ~~d~~. Actuation Logic 5

This LCO requires two channels of RAS Actuation Logic to be OPERABLE in MODES 1, 2, 3, and 4.

5. Containment Spray Actuation Signal

CSAS is initiated either manually or automatically. For an automatic actuation it is necessary to have a Containment Pressure - High High signal, coincident with an SIAS. The SIAS requirement should always be satisfied on a legitimate CSAS, since the Containment Pressure - High signal used in the SIAS will initiate before the Containment Pressure - High High input signal to CSAS. This ensures that a CSAS will not initiate unless required.

a. Manual Trip

This LCO requires two channels of CSAS Manual Trip to be OPERABLE in MODES 1, 2, and 3.

b. Automatic SIAS (Function 1)

This LCO requires four channels of Automatic SIAS input to CSAS to be OPERABLE in MODES 1, 2, and 3, as required by footnote (b). 8

The Automatic SIAS occurs on Pressurizer Pressure - Low or Containment Pressure - High and is explained above.

BASES

LCO (continued)

c. Matrix Logic

This LCO requires six channels of CSAS Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

d. Initiation Logic

This LCO requires four channels of CSAS Initiation Logic to be OPERABLE in MODES 1, 2, and 3.

e. Actuation Logic

This LCO requires two channels of CSAS Actuation Logic to be OPERABLE in MODES 1, 2, and 3.

6. Main Steam Isolation Signal

a. Manual Trip

This LCO requires two channels of MSIS Manual Trip to be OPERABLE in MODES 1, 2, and 3.

b. Matrix Logic

This LCO requires six channels of MSIS Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

c. Initiation Logic

This LCO requires four channels of MSIS Initiation Logic to be OPERABLE in MODES 1, 2, and 3.

d. Actuation Logic

This LCO requires two channels of MSIS Actuation Logic to be OPERABLE in MODES 1, 2, and 3.

7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)

EFAS-1 is initiated either by a low steam generator level coincident with no low pressure trip present on SG #1 or by a low steam generator level coincident with a differential pressure between the two generators with the higher pressure in SG #1.

3

BASES

LCO (continued)

The steam generator secondary differential pressure is used, in conjunction with a Steam Generator Pressure - Low input from each steam generator, as an input of the EFAS logic where it is used to determine if a generator is intact. The EFAS logic inhibits feeding a steam generator if a Steam Generator Pressure - Low condition exists in that generator and the pressure in that steam generator is less than the Steam Generator Pressure Difference (SGPD) - High setpoint pressure.

The SGPD logic thus enables the feeding of a steam generator in the event that a plant cooldown causes a Steam Generator Pressure - Low condition, while inhibiting feeding the other (lower pressure) steam generator, which may be ruptured. The setpoint is high enough to allow for small pressure differences and normal instrumentation errors between the steam generator channels during normal operation.

a. Manual Trip

This LCO requires two channels of Manual Trip to be OPERABLE in MODES 1, 2, and 3.

b. Matrix Logic

This LCO requires six channels of Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

c. Initiation Logic

This LCO requires four channels of Initiation Logic to be OPERABLE in MODES 1, 2, and 3.

d. Actuation Logic

two s

This LCO requires ~~one~~ channel of Actuation Logic to be OPERABLE in MODES 1, 2, and 3. 10

8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)

EFAS-2 is initiated either by a low steam generator level coincident with no low pressure trip present on SG #2 or by a low steam generator level coincident with a differential pressure between the two generators with the higher pressure in SG #2.

BASES

LCO (continued)

The steam generator secondary differential pressure is used, in conjunction with a Steam Generator Pressure - Low input from each steam generator, as an input of the EFAS Logic where it is used to determine if a generator is intact. The EFAS Logic inhibits feeding a steam generator if a Steam Generator Pressure - Low condition exists in that generator and the pressure in that steam generator is less than the SGPD - High setpoint pressure.

The SGPD logic thus enables the feeding of a steam generator in the event that a plant cooldown causes a Steam Generator Pressure - Low condition, while inhibiting feeding the other (lower pressure) steam generator, which may be ruptured. The setpoint is high enough to allow for small pressure differences and normal instrumentation errors between the steam generator channels during normal operation.

a. Manual Trip

This LCO requires two channels of Manual Trip to be OPERABLE in MODES 1, 2, and 3.

b. Matrix Logic

This LCO requires six channels of Matrix Logic to be OPERABLE in MODES 1, 2, and 3.

c. Initiation Logic

This LCO requires four channels of Initiation Logic to be OPERABLE in MODES 1, 2, and 3.

d. Actuation Logic

This LCO requires ~~one~~ two channels of Actuation Logic to be OPERABLE in MODES 1, 2, and 3. 10

APPLICABILITY

In MODES 1, 2 and 3, there is sufficient energy in the primary and secondary systems to warrant automatic ESF System responses to:

- Close the main steam isolation valves to preclude a positive reactivity addition~~.~~; 4

BASES

APPLICABILITY (continued)

- Actuate emergency feedwater to preclude the loss of the steam generators as a heat sink (in the event the normal feedwater system is not available)~~,~~ ; 4

- Actuate ESF systems to prevent or limit the release of fission product radioactivity to the environment by isolating containment and limiting the containment pressure from exceeding the containment design pressure during a design basis LOCA or MSLB~~,~~ ; and 4

- Actuate ESF systems to ensure sufficient borated inventory to permit adequate core cooling and reactivity control during a design basis LOCA or MSLB accident.

In MODES 4, 5, and 6, automatic actuation of these Functions is not required because adequate time is available to evaluate plant conditions and respond by manually operating the ESF components if required.

ESFAS Manual Trip capability is required in MODE 4 for SIAS, CIAS, CCAS~~,~~ and ~~RAS~~ even though automatic actuation is not required. 5
Because of the large number of components actuated by these Functions, ESFAS actuation is simplified by the use of the Manual Trip 5
push buttons.

The RAS function does not have manual trip push buttons.

CSAS, MSIS, and EFAS have relatively few components, which can be actuated individually if required in MODE 4, and the systems may be disabled or reconfigured, making system level Manual Trip impossible and unnecessary.

The ESFAS logic must be OPERABLE in the same MODES as the automatic and Manual Trip. In MODE 4, only the portion of the ESFAS logic responsible for the required Manual Trip must be OPERABLE.

In MODES 5 and 6, the systems initiated by 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.

ACTIONS

When the number of inoperable channels in a trip Function exceeds those specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 should be entered immediately, if applicable in the current MODE of operation.

BASES

ACTIONS (continued)

A Note has been added to the ACTIONS to clarify the application of the Completion Time rules. The Conditions of this Specification may be entered independently for each Function. The Completion Time for the inoperable channel of a Function will be tracked separately for each Function, starting from the time the Condition was entered for that Function.

A.1

Condition A applies if one Matrix Logic channel is inoperable. Since matrix power supplies in a given matrix (e.g., AB, BC, etc.) are common to all ESFAS Functions, a single power supply failure may affect more than one matrix.

Failures of individual bistables and their relays are considered measurement channel failures. This section describes failures of the Matrix Logic not addressed in the above, such as the failure of matrix relay power supplies, or the failure of the trip channel bypass contact in the bypass condition. Loss of a single vital bus will de-energize one of the two power supplies in each of three matrices. This will result in two initiation circuits de-energizing, reducing the ESFAS Actuation Logic to a one-out-of-two logic in both trains.

This Condition has been modified by a Note stating that for the purposes of this LCO, de-energizing up to three matrix power supplies due to a single failure, such as loss of a vital instrument bus, is to be treated as a single matrix channel failure, providing the affected matrix relays de-energize as designed. Although each of the six matrices within an ESFAS Function uses separate power supplies, the matrices for the different ESFAS Functions share power supplies. Thus, failure of a matrix power supply may force entry into the Condition specified for each of the affected ESFAS Functions.

The channel must be restored to OPERABLE status within 48 hours. This provides the operator with time to take appropriate actions and still ensures that any risk involved in operating with a failed channel is acceptable. Operating experience has demonstrated that the probability of a random failure of a second Matrix Logic channel is low during any given 48 hour period. If the channel cannot be restored to OPERABLE status with in 48 hours, Condition E is entered. 11

BASES

ACTIONS (continued)

B.1

Condition B applies to one Manual Trip or Initiation Logic channel inoperable.

The channel must be restored to OPERABLE status within 48 hours. Operating experience has demonstrated that the probability of a random failure in a second channel is low during any given 48 hour period.

Failure of a single Initiation Logic channel may open one contact affecting both Actuation Logic channels. For the purposes of this Specification, the Actuation Logic is not inoperable. This prevents the need to enter LCO 3.0.3 in the event of an Initiation Logic channel failure. The Actions differ from those involving one RPS manual channel inoperable, because in the case of the RPS, opening RTCBs can be easily performed and verified. Opening an initiation relay contact is more difficult to verify, and subsequent shorting of the contact is always possible.

C.1 and C.2

Condition C applies to the failure of both Initiation Logic channels affecting the same trip leg.

In this case, the Actuation Logic channels are not inoperable, since they are in one-out-of-two logic and capable of performing as required. This obviates the need to enter LCO 3.0.3 in the event of a matrix or vital bus power failure.

Both Initiation Logic channels in the same trip leg will de-energize if a matrix power supply or vital instrument bus is lost. This will open the Actuation Logic contacts, satisfying the Required Action to open at least one set of contacts in the affected trip leg. Indefinite operation in this condition is prohibited because of the difficulty of ensuring the contacts remain open under all conditions. Thus, the channel must be restored to OPERABLE status within 48 hours. This provides the operator with time to take appropriate actions and still ensures that any risk involved in operating with a failed channel is acceptable. Operating experience has demonstrated that the probability of a random failure of a second channel is low during any given 48 hour period. If the channel cannot be restored to OPERABLE status with in 48 hours, Condition E is entered. 11

BASES

ACTIONS (continued)

Of greater concern is the failure of the initiation circuit in a nontrip condition, e.g., due to two initiation relay failures. With one failed, there is still the redundant contact in the trip leg of each Actuation Logic. With both failed in a nontrip condition, the ESFAS Function is lost in the affected train. To prevent this, immediate opening of at least one contact in the affected trip leg is required. If the required contact has not opened, as indicated by annunciation or trip leg current lamps, Manual Trip of the affected trip leg contacts may be attempted. Caution must be exercised, since depressing the wrong ESFAS push buttons may result in an ESFAS actuation.

INSERT 3 1

D.1

Condition D applies to Actuation Logic.

With one Actuation Logic channel inoperable, automatic actuation of one train of ESF may be inhibited. The remaining train provides adequate protection in the event of Design Basis Accidents, but the single failure criterion may be violated. For this reason operation in this condition is restricted.

The channel must be restored to OPERABLE status within 48 hours. Operating experience has demonstrated that the probability of a random failure in the Actuation Logic of the second train is low during a given 48 hour period.

Failure of a single Initiation Logic channel, matrix channel power supply, or vital instrument bus may open one or both contacts in the same trip leg in both Actuation Logic channels. For the purposes of this Specification, the Actuation Logic is not inoperable. This obviates the need to enter LCO 3.0.3 in the event of a vital bus, matrix, or initiation channel failure.

Required Action D.1 is modified by a Note to indicate that one channel of Actuation Logic may be bypassed for up to 1 hour for Surveillance, provided the other channel is OPERABLE.

This allows performance of a PPS CHANNEL FUNCTIONAL TEST on an OPERABLE ESFAS train without generating an ESFAS actuation in the inoperable train.

1

INSERT 3

For the EFAS-1 and EFAS-2 Functions only, the contact opened must be in series with the Interposing relay. This will cause the cycling valve actuated by that relay to go to the open position and remain there, and will cause a contact to open in series with the subgroup relays. Opening only the contact in series with the subgroup relays would preserve the ability to deenergize the subgroup relays, but would leave the cycling valve unable to go to the EFAS actuated position.

With one EFAS cycling valve held open by a deenergized EFAS Interposing relay, an MSIS actuation will not be able to take that cycling valve to its MSIS actuated position (closed). Other MSIS actuated valves will prevent feeding the affected steam generator, but there will only be single valve isolation. This single valve isolation is acceptable for the short period of time allowed to restore the channel.

3

BASES

ACTIONS (continued)

E.1 and E.2

in one or more Functions

If two associated Actuation Logic channels are inoperable, or if the Required Actions and associated Completion Times ~~of Conditions for CSAS, MSIS, or EFAS~~ cannot be met, the plant must be brought to a MODE in which the ~~LCO does not apply~~. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

overall plant risk is minimized

INSERT 4

5

2

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~~F.1 and F.2~~

~~If two associated Actuation Logic channels are inoperable, or if the Required Actions and associated Completion Times for SIAS, CIAS, RAS, or CCAS are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.~~

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SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

A CHANNEL FUNCTIONAL TEST is performed ~~every [92] days~~ to ensure the entire channel will perform its intended function when needed. 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.

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INSERT 4

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action E.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The CHANNEL FUNCTIONAL TEST is part of an overlapping test sequence similar to that employed in the RPS. This sequence, consisting of SR 3.3.5.2, SR 3.3.5.3, SR 3.3.6.1, and SR 3.3.6.2, tests the entire ESFAS from the bistable input through the actuation of the individual subgroup relays. These overlapping tests are described in Reference 1. SR 3.3.5.2 and SR 3.3.6.1 are normally performed together and in conjunction with ESFAS testing. SR 3.3.6.2 verifies that the subgroup relays are capable of actuating their respective ESF components when de-energized. 5

These tests verify that the ESFAS is capable of performing its intended function, from bistable input through the actuated components. SR 3.3.5.2 is addressed in LCO 3.3.5. SR 3.3.6.1 includes Matrix Logic tests and trip path (Initiation Logic) tests.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each function removes power to the matrix relays. During testing, power is applied to the matrix relay test coils, preventing the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic, such as may be caused by faulty bistable relay or trip channel bypass contacts. 9

Trip Path (Initiation Logic) Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening one contact in each Actuation Logic channel.

The initiation circuit lockout relay must be reset (except for EFAS, which lacks initiation circuit lockout relays) prior to testing the other three initiation circuits, or an ESFAS actuation may result.

Automatic Actuation Logic operation is verified during Initiation Logic testing by verifying that current is interrupted in each trip leg in the selective two-out-of-four actuation circuit logic whenever the initiation relay is de-energized. A Note is added to indicate that testing of Actuation Logic shall include verification of the proper operation of each initiation relay.

INSERT 5

~~The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 2).~~ TSTF-425-A

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INSERT 5

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 6

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.2

Individual ESFAS subgroup relays must also be tested, one at a time, to verify the individual ESFAS components will actuate when required. Proper operation of the individual subgroup relays is verified by de-energizing INSERT 6 ~~these relays one at a time using an ARC mounted test circuit~~. 1 Proper operation of each component actuated by the individual relays is thus verified without the need to actuate the entire ESFAS function.

INSERT 7 ~~The 184 day Frequency is based on operating experience and ensures individual relay problems can be detected within this time frame. Considering the large number of similar relays in the ARC, and the similarity in their use, a large test sample can be assembled to verify the validity of this Frequency. The actual justification is based on CEN-403, "Relaxation of Surveillance Test Interval for ESFAS Subgroup Relay Testing" (Ref. 3).~~ TSTF-425-A

Some components cannot be tested at power since their actuation might lead to plant trip or equipment damage. Reference 1 lists those relays exempt from testing at power, with an explanation of the reason for each exception. Relays not tested at power must be tested in accordance with the Note to this SR.

SR 3.3.6.3

A CHANNEL FUNCTIONAL TEST is performed on the manual ESFAS actuation circuitry, de-energizing relays and providing manual actuation of the 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 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 verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed. INSERT 7 ~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.~~ TSTF-425-A

1

INSERT 6

each relay in response to a test signal, energizing the relay by releasing the test signal and verifying at least one connected component or pair of contacts is observed to actuate when the relay de-energizes

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INSERT 7

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 6

3

BASES

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REFERENCES

1. FSAR, Section [7.3]. 1 2

~~2. CEN-327, May 1986, including Supplement 1, March 1989.~~

~~3. CEN-403.~~

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2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October 2001.

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1

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.6 BASES, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS) LOGIC AND MANUAL TRIP

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.6 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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

6. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

7. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies

8. ISTS 3.3.6 Bases LCO Section for CCAS was revised to incorporate that an Automatic SIAS initiates CCAS as required by Table 3.3.6-1 footnote (a). Also, changes were made to state that the SIAS input is required for the CCAS to be OPERABLE. These changes are being made to depict the SONGS specific design and to be consistent with the level of detail in the ISTS for other Functions (CSAS) relationship with the SIAS. The added text is consistent with the SONGS CTS Bases. The addition of reference to footnote (b) to the ISTS Bases LCO Section for CSAS was added to match the LCO requirements in the Specification.

9. The ISTS SR 3.3.6.1 Bases Section is being revised to state that during Matrix Logic testing power is applied to the matrix relay test coils, preventing the matrix relay contacts from assuming their "deenergized" state. The ISTS incorrectly states "engergized" state. This corrects and error in the ISTS; the matrix relay contacts deenergize, not energize, to cause a trip.

10. Changes are made to be consistent with the actual Specification.

11. Grammatical error corrected.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.6, ENGINEERED SAFETY FEATURES ACTUATION SYSTEM (ESFAS)
LOGIC AND MANUAL TRIP

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 7

ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

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

A01

ITS

3.3 INSTRUMENTATION

3.3.7

3.3.7 Diesel Generator (DG) — Undervoltage Start

LCO 3.3.7

LCO 3.3.7 Four channels of Loss of Voltage Function and four channels of Degraded Voltage Function auto-initiation instrumentation per DG shall be OPERABLE.

Applicability

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

ACTIONS

ACTIONS Note

-----------------------------------NOTES-----------------------------------

1. Separate Condition entry is allowed for each Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 shall be reviewed by the Onsite Review Committee.~~

LA01

ACTION A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per DG inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

(continued)

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION B	B. One or more Functions with two channels per DG inoperable.	B.1	Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG — Undervoltage Start instrumentation.	1 hour	
		OR			
		B.2	~~---------NOTE---------- LCO 3.0.4 is not applicable. ----------------------~~		M01
			Place one channel in bypass and the other channel in trip.	1 hour	
ACTION C	C. One or more Functions with more than two channels inoperable.	C.1	Restore all but ~~at least~~ two channels to OPERABLE status.	1 hour	A02
ACTION D	D. Required Action and associated Completion Time not met.	D.1	Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG — Undervoltage Start instrumentation.	Immediately	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.3.7.1	SR 3.3.7.1 Perform CHANNEL CHECK.	~~12 hours~~	LA02
SR 3.3.7.2	SR 3.3.7.2 Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~	LA02
SR 3.3.7.3	SR 3.3.7.3 Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function: i. Dropout ≥ 4109.0 V ii. Pickup ≤ 4153.1 V SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3644.89 V and ≤ 3694.52 V Time delay: ≥ 0.69 seconds and ≤ 1.0 seconds (voltage change from 115.5 V to 57.0 V).	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02

A01

ITS

3.3 INSTRUMENTATION

3.3.7 3.3.7 Diesel Generator (DG) — Undervoltage Start

LCO 3.3.7 LCO 3.3.7 Four channels of Loss of Voltage Function and four channels of Degraded Voltage Function auto-initiation instrumentation per DG shall be OPERABLE.

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

ACTIONS

ACTIONS Note

------------------------------------NOTES------------------------------------

1. Separate Condition entry is allowed for each Function.

~~2. If a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 shall be reviewed by the Onsite Review Committee.~~ LA01

ACTION A

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per DG inoperable.	A.1 Place channel in bypass or trip. AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry

(continued)

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ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION B	B. One or more Functions with two channels per DG inoperable.	B.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG — Undervoltage Start instrumentation. OR B.2 ~~---------NOTE---------~~ ~~LCO 3.0.4 is not applicable.~~ ~~----------------------~~ Place one channel in bypass and the other channel in trip.	1 hour 1 hour	M01
ACTION C	C. One or more Functions with more than two channels inoperable.	C.1 Restore all but ~~at least~~ two channels to OPERABLE status.	1 hour	A02
ACTION D	D. Required Action and associated Completion Time not met.	D.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG — Undervoltage Start instrumentation.	Immediately	

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.7.1	SR 3.3.7.1 Perform CHANNEL CHECK.	~~12 hours~~	LA02
SR 3.3.7.2	SR 3.3.7.2 Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~	LA02
SR 3.3.7.3	SR 3.3.7.3 Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function: i. Dropout ≥ 4109.0 V ii. Pickup ≤ 4153.1 V SDVS (Sustained Degraded Grid Voltage Signal): Time delay: i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. DGVSS (Degraded Grid Voltage with SIAS Signal): Time delay: i. 127D ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S ≥ 4.16 seconds and ≤ 4.44 seconds. iii. 162T ≥ 0.88 seconds and ≤ 1.62 seconds. b. Loss of Voltage Function ≥ 3644.89 V and ≤ 3694.52 V Time delay: ≥ 0.69 seconds and ≤ 1.0 seconds (voltage change from 115.5 V to 57.0 V).	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02

DISCUSSION OF CHANGES
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.7 Required Action C.1 requires restoration of "at least" two channels to OPERABLE status when one or more Functions with more than two channels inoperable. ITS 3.3.7 Required Action C.1 requires restoration of "all but" two channels to OPERABLE status when one or more Functions with more than two channels inoperable. This changes the CTS by changing Required Action C.1 by replacing the wording "at least" with "all but."

The purpose of CTS 3.3.7 Required Action C.1 is to restore sufficient channels to OPERABLE status such that no more than two remain inoperable. Once there are only two channels inoperable, Condition C is exited, and ACTION B is still applicable because it is for the condition with two channels inoperable. The proposed change replaces "at least" with "all but." This change is acceptable because wording in the Required Action is being replaced to clarify the Required Action without changing the intent. This change is designated as administrative because no technical change is being made to the Specification.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.7 Required Action B.2 requires one channel to be placed in bypass and the other channel in trip when one or more Functions with two channels inoperable. CTS 3.3.7 Required Action B.2 is further modified by a Note which states LCO 3.0.4 is not applicable. ITS 3.3.7 Required Action B.2 is similar; however, ITS 3.3.7 Required Action B.2 is not modified by a Note which excludes the applicability of LCO 3.0.4. This changes the CTS by deleting the provision that LCO 3.0.4 is not applicable.

The purpose of the Note to CTS 3.3.7 Required Action B.2 is to allow the unit to continue MODE changes during startup with two channels of DG Loss of Voltage inoperable. The proposed change to CTS 3.3.7 deletes the Note. Thus, if two or more DG Loss of Voltage channels are inoperable, ITS 3.3.7 will only allow MODE changes using the allowances of ITS LCO 3.0.4.b, which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is designated as more restrictive because additional requirements are being added to the ITS than are required by the CTS.

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DISCUSSION OF CHANGES
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS 3.3.7 contains an ACTION Note (Note 2) which states if a channel is placed in bypass, continued operation with the channel in the bypassed condition for the Completion Time specified by Required Action A.2 shall be reviewed by the Onsite Review Committee. ITS 3.3.7 ACTIONS do not contain this Note. This changes the CTS by moving Note 2 to the Quality Assurance Program (QAP).

The purpose of CTS 3.3.7 ACTION Note 2 is to ensure a review is perform by the onsite review committee to discuss the desirability of maintaining the channel in the bypassed condition. The removal of the Note from the Technical Specification 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. ITS 3.3.7 still contains the requirements to place the channel in bypass or trip and to restore the channel to OPERABLE status prior to entering MODE 2 following the next MODE 5 entry. Also, this change is acceptable because these types of details will be adequately controlled in the QAP. Any changes to the QAP are made under 10 CFR 50.54(a), which ensure 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 Specifications.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.7.1 requires that a CHANNEL CHECK be performed every 12 hours. CTS SR 3.3.7.2 requires that a CHANNEL FUNCTIONAL TEST be performed every 24 months. CTS SR 3.3.7.3 requires that a CHANNEL CALIBRATION be performed every 24 months. ITS SRs 3.3.7.1, 3.3.7.2, and 3.3.7.3 require similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

DISCUSSION OF CHANGES
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past

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DISCUSSION OF CHANGES
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
   - Independence of barriers is not degraded;
   - Defenses against human errors are preserved; and
   - The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

   These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and

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DISCUSSION OF CHANGES
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are 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)

3.3 INSTRUMENTATION

3.3.7 Diesel Generator (DG) - ~~Loss of Voltage~~ Start ~~(LOVS)~~ ~~(Digital)~~ 1 3

Undervoltage

LCO 3.3.7

LCO 3.3.7 ~~[~~Four~~]~~ channels of Loss of Voltage Function and ~~[~~four~~]~~ channels of Degraded Voltage Function auto-initiation instrumentation per DG shall be OPERABLE. 2

Applicability

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

ACTIONS

ACTIONS Note 1

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One or more Functions with one channel per DG inoperable.	A.1 Place channel in bypass or trip AND A.2 Restore channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
ACTION B	B. One or more Functions with two channels per DG inoperable.	B.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - ~~LOVS~~ Undervoltage Start instrumentation. OR	1 hour

1

1 3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
		B.2	Place one channel in bypass and the other channel in trip.	1 hour
ACTION C	C. One or more Functions with more than two channels inoperable.	C.1	Restore all but two channels to OPERABLE status.	1 hour
ACTION D	D. Required Action and associated Completion Time not met.	D.1	Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - ~~LOVS~~ Undervoltage Start instrumentation.	Immediately

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.3.7.1	SR 3.3.7.1	~~[~~ Perform CHANNEL CHECK.	~~12 hours~~ ~~]~~ In accordance with the Surveillance Frequency Control Program
SR 3.3.7.2	SR 3.3.7.2	Perform CHANNEL FUNCTIONAL TEST.	~~[92] days~~ In accordance with the Surveillance Frequency Control Program

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U2/U3 CTS

DG - ~~LOVS~~ ~~(Digital)~~ Undervoltage Start
3.3.7

1 3

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.7.3	Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function ~~≥ [3180] V and ≤ [3220] V~~ : i. Dropout ≥ 4109.0 V. ii. Pickup ≤ 4153.1 V. Sustained Degraded Grid Voltage Signal (SDVS): Time delay: ~~≥ [ ] seconds and ≤ [ ] seconds at [ ] V and~~ i. 127D ≤ 2.17 seconds. ii. 162D ≥ 78 seconds and ≤ 128 seconds. Degraded Grid Voltage with SIAS (DGVSS): Time delay: i. 127D is ≥ 1.83 seconds and ≤ 2.17 seconds. ii. 162S is ≥ 4.16 seconds and ≤ 4.44 seconds iii. 162T is ≥ 0.88 seconds and ≤ 1.62 seconds b. Loss of Voltage Function ≥ ~~[3180]~~ 3644.89 V and ≤ ~~[3220]~~ 3694.52 V Time delay: ≥ ~~[ ]~~ 0.69 seconds and ≤ ~~[ ]~~ 1.0 seconds ~~at [ ] V~~ (voltage change from 115.5 V to 57.0 V).	~~[18] months~~ In accordance with the Surveillance Frequency Control Program

SR 3.3.7.3

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2

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.7 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

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

B 3.3 INSTRUMENTATION

B 3.3.7 Diesel Generator (DG) - ~~Loss of Voltage~~ Undervoltage Start ~~(LOVS)~~ ~~(Digital)~~ 1 3

BASES

BACKGROUND

The DGs provide a source of emergency power when offsite power is either unavailable or insufficiently stable to allow safe unit operation. Undervoltage protection will generate a Loss of Voltage Signal (LOVS) in the event a Loss of Voltage or Degraded Voltage condition occurs. There are two LOVS Functions for each 4.16 kV vital bus. 1

Four undervoltage relays with inverse 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. Four undervoltage relays with definite time characteristics are provided for the purpose of detecting a sustained degraded voltage condition. The relays are combined in a two-out-of-four logic to generate a LOVS if the voltage is below 75% for a short time or below 90% for a long time. The LOVS initiated actions are described in "Onsite Power Systems" (Ref. 1). 1

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

The trip setpoints and Allowable Values are based on the analytical limits presented in "Accident Analysis," Reference 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. To allow for calibration tolerances, instrumentation uncertainties, and instrument drift, Allowable Values specified in SR 3.3.7.3 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 Reference ~~3~~ 1. The actual nominal trip setpoint is normally still more conservative than that required by the plant specific setpoint calculations. If the measured trip setpoint does not exceed the documented Surveillance acceptance criteria, the undervoltage relay is considered OPERABLE. 1

Setpoints in accordance with the Allowable Values will ensure that the consequences of accidents will be acceptable, providing the plant is operated from within the LCOs at the onset of the accident and the equipment functions as designed.

BASES

BACKGROUND (continued)

The undervoltage protection scheme has been designed to protect the plant from spurious trips caused by the offsite power source. This is made possible by the inverse voltage time characteristics or definite time characteristics of the relays used. A complete loss of offsite power will result in approximately a 1 second delay in LOVS actuation. The DG starts and is available to accept loads within a 10 second time interval on the Engineered Safety Features Actuation System (ESFAS) or LOVS. Emergency power is established within the maximum time delay assumed for each event analyzed in the accident analysis (Ref. 2). 1

Since there are four protective channels in a two-out-of-four 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 Standard 279-1971 criteria (Ref. ~~4~~ 3). 1

APPLICABLE SAFETY ANALYSES

The DG - LOVS is required for Engineered Safety Features (ESF) systems 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 DG based on a loss of offsite power during a loss of coolant accident. The actual DG 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 DG supplied power following a loss of offsite power. The analysis assumes a nonmechanistic DG loading, which does not explicitly account for each individual component of the loss of power detection and subsequent actions. This delay time includes contributions from the DG start, DG loading, and Safety Injection System component actuation. The response of the DG 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 LOVS, in conjunction with the ESF systems powered from the DGs, provide plant protection in the event of any of the analyzed accidents discussed in Reference 2, in which a loss of offsite power is assumed. LOVS channels are required to meet the redundancy and testability requirements of GDC 21 in 10 CFR 50, Appendix A (Ref. ~~5~~ 4). 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

The delay times assumed in the safety analysis for the ESF equipment include the [10] second DG start delay and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.5, "Engineered Safety Features Actuation System (ESFAS) Instrumentation," include the appropriate DG loading and sequencing delay. 2

The DG - LOVS channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO for the LOVS requires that four channels per bus of each LOVS instrumentation Function be OPERABLE in MODES 1, 2, 3, and 4 and when the associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown." The LOVS supports safety systems associated with the ESFAS. In MODES 5 and 6, the four channels must be OPERABLE whenever the associated DG is required to be OPERABLE to ensure that the automatic start of the DG is available when needed.

Actions allow maintenance (trip channel) bypass of individual channels. Plants are restricted to 48 hours in a trip channel bypass condition before either restoring the Function to four channel operation (two-out-of-four logic) or placing the channel in trip (one-out-of-three logic). At units where adequate channel to channel independence has been demonstrated, specific exceptions have been approved by the NRC staff to permit one of the two-out-of-four channels to be bypassed for an extended period of time. 7

Loss of LOVS Function could result in the delay of safety system initiation when required. This could lead to unacceptable consequences during accidents. During the loss of offsite power, which is an anticipated operational occurrence, the DG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only the one turbine driven pump as well as an increased potential for a loss of decay heat removal through the secondary system.

Only Allowable Values are specified for each Function in the LCO. Nominal trip setpoints are specified in the plant 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 plant specific setpoint calculation. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

1 3

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~[For this unit, the Bases for the Allowable Values and trip setpoints are as follows:]~~ 2

APPLICABILITY

The DG - LOVS actuation Function is required in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. For the Degraded Voltage Function, this LCO is applicable when the diesel generator circuit breaker is open. Actuation in MODE 5 or 6 is required whenever the required DG must be OPERABLE, so that it can perform its function on a loss of power or degraded power to the vital bus. 1

ACTIONS

A LOVS channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. Determination of setpoint drift is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the instrument is set up for adjustment to bring it within specification. If the actual trip setpoint is not within the Allowable Value, the channel is inoperable and the appropriate Conditions must be entered.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then all affected Functions provided by that channel must be declared inoperable and the LCO Condition entered. The required channels are specified on a per DG basis.

~~When the number of inoperable channels in a trip Function exceeds those specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 should be entered immediately if applicable in the current MODE of operation.~~ 8

A Note has been added to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each DG - LOVS Function. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function, starting from the time the Condition was entered for that Function.

A.1 and A.2

Condition A applies if one channel is inoperable for one or more Functions per DG bus.

BASES

ACTIONS (continued)

If the channel cannot be restored to OPERABLE status, the affected channel should either be bypassed or tripped within 1 hour (Required Action A.1).

Placing this channel in either Condition ensures that logic is in a known configuration. In trip, the LOVS Logic is one-out-of-three. In bypass, the LOVS Logic is two-out-of-three~~, and interlocks prevent bypass of a second channel for the affected Function~~. The 1 hour Completion Time is sufficient to perform these Required Actions. 4

Once Required Action A.1 has been complied with, Required Action A.2 allows prior to entering MODE 2 following the next MODE 5 entry to repair the inoperable channel. If the channel cannot be restored to OPERABLE status, the plant cannot enter MODE 2 following the next MODE 5 entry. The time allowed to repair or trip the channel is reasonable to repair the affected channel while ensuring that the risk involved in operating with the inoperable channel is acceptable. The prior to entering MODE 2 following the next MODE 5 entry Completion Time is based on adequate channel independence, which allows a two-out-of-three channel operation since no single failure will cause or prevent a reactor trip.

<u>B.1 and B.2</u>

Condition B applies if two channels are inoperable for one or more Functions.

If the channel cannot be placed in bypass or trip within 1 hour, the Conditions and Required Actions for the associated DG made inoperable by DG - LOVS instrumentation are required to be entered. Alternatively, one affected channel is required to be bypassed and the other is tripped, in accordance with Required Action B.2. This places the Function in one-out-of-two logic. The 1 hour Completion Time is sufficient to perform the Required Actions.

One of the two inoperable channels will need to be restored to OPERABLE status prior to the next required CHANNEL FUNCTIONAL TEST because channel surveillance testing on an OPERABLE channel requires that the OPERABLE channel be placed in bypass. However, it is not allowed ~~possible~~ to bypass more than one DG - LOVS channel, and placing a second channel in trip will result in a loss of voltage diesel start signal. 4
~~Therefore, if one DG - LOVS channel is in trip and a second channel is in bypass, a third inoperable channel would place the unit in LCO 3.0.3.~~ 8

1 3

BASES

ACTIONS (continued)

After one channel is restored to OPERABLE status, the provisions of Condition A still apply to the remaining inoperable channel.

C.1

Condition C applies when more than two undervoltage or Degraded Voltage channels on a single bus are inoperable.

Required Action C.1 requires all but two channels to be restored to OPERABLE status within 1 hour. With more than two channels inoperable, the logic is not capable of providing the DG - LOVS signal for valid Loss of Voltage or Degraded Voltage conditions. The 1 hour Completion Time is reasonable to evaluate and take action to correct the degraded condition in an orderly manner and takes into account the low probability of an event requiring LOVS occurring during this interval.

D.1

Condition D applies if the Required Actions and associated Completion Times are not met.

Required Action D.1 ensures that Required Actions for the affected DG inoperabilities are initiated. Depending upon plant MODE, the ACTIONS specified in LCO 3.8.1, "AC Sources - Operating," or LCO 3.8.2 are required immediately.

SURVEILLANCE REQUIREMENTS

The following SRs apply to each DG - LOVS Function.

~~[~~ SR 3.3.7.1 2

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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 indicated output of the potential transformers that feed the LOVS undervoltage relays. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two channels could be an indication of excessive drift in one of the channels or of something even more serious. Observing the status of the trip indication of the relays for the respective channels and the 4 kV Bus undervoltage alarm will satisfy the comparison requirement of the CHANNEL CHECK. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. ~~]~~ 1 2

1 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ Agreement criteria are determined by the plant staff based on a combination of channel instrument uncertainties, including indication and readability. If the channels are within the criteria, it is an indication that the channels are OPERABLE. 2

INSERT 1

~~The Frequency, about once every shift, is based upon 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.~~ ~~]~~ TSTF-425-A 2

SR 3.3.7.2

A CHANNEL FUNCTIONAL TEST is performed ~~every [92] days~~ to ensure that the entire channel will perform its intended function when needed. 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. TSTF-425-A

INSERT 1

~~The Frequency of [92] days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any [92] day Frequency is a rare event.~~ Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis. TSTF-425-A

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology.

~~The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [6].~~ TSTF-493

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INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 6

--- Reviewers Note ---
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
----

1 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.3

SR 3.3.7.3 is the performance of a CHANNEL CALIBRATION ~~every [18] months~~. The CHANNEL CALIBRATION verifies the accuracy of each component within the instrument channel. This includes calibration of the undervoltage relays and demonstrates that the equipment falls within the specified operating characteristics defined by the manufacturer. The Surveillance 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 between successive surveillances to ensure the instrument channel remains operational. ~~CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.~~ There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

TSTF-425-A

~~The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [6].~~

TSTF-493

The setpoints, as well as the response to a Loss of Voltage and Degraded Voltage test, shall include a single point verification that the trip occurs within the required delay time, as shown in Reference 1. ~~The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.~~ INSERT 2

TSTF-425-A

REFERENCES

1. FSAR, Section ~~[~~8.3~~]~~.

U

2. FSAR, Chapter ~~[~~15~~]~~.

~~3. "Plant Protection System Selection of Trip Setpoint Values."~~

~~4~~ 3. IEEE Standard 279-1971.

~~5~~ 4. 10 CFR 50, Appendix A, GDC 21.

~~6. [ ].~~

2 1 2

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 6

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.7 BASES, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.7 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. ISTS 3.3.7 Bases ACTIONS A.1 and A.2 Section Second Paragraph contains the sentence, in bypass, the LOVS Logic is two-out-of-three, "and interlocks prevent bypass of a second channel for the affected Function." The SONGS ITS 3.3.7 Bases will not contain the last part of the sentence, "and interlocks prevent bypass of a second channel for the affected Function." ISTS 3.3.7 Bases ACTIONS B.1 and B.2 Section Second Paragraph contains the sentence, however, it is not "possible" to bypass more than one DG – LOVS channel, and placing second channel in trip will result in a loss of voltage diesel start signal. The SONGS ITS 3.3.7 Bases will replace the word "possible" with the word "allowed." These changes are consistent with the SONGS plant design which does not contain an interlock which prevents more than one channel from being bypassed. However, SONGS procedures do not allow more than one channel to be placed in bypass at the same time. This change is also consistent with the SONGS CTS 3.3.7 Bases.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies

7. ISTS 3.3.7 LCO Bases paragraph is being deleted because the information is more informational directed to either reviewers or drafters of ITS. This paragraph is not consistent with the way SONGS operates or with the ISTS ACTIONS.

8. ISTS 3.3.7 ACTIONS Bases paragraph states that if the number of inoperable channels in a trip Function exceeds those specified in a related Condition, then the plant is outside the safety analysis and LCO 3.0.3 should be immediately entered. The ISTS ACTIONS (as well as SONGS ITS) contains ACTIONS for one channel

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.7 BASES, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

(ACTION A), two channels (ACTION B), and two or more channels (ACTION C) inoperable. Therefore, the number of inoperable channels cannot exceed the number for which a Condition currently exists.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.7, DIESEL GENERATOR (DG) - UNDERVOLTAGE START

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 8

ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

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

ITS A01 CPIS 3.3.8

3.3 INSTRUMENTATION

3.3.8 3.3.8 Containment Purge Isolation Signal (CPIS)

LCO 3.3.8 LCO 3.3.8 One CPIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4,
~~During CORE ALTERATIONS,~~
During movement of irradiated fuel assemblies within containment. L01

-----------------------------NOTE-----------------------------
Only required when the penetration is not isolated by at least one ~~appropriate~~ closed and de-activated automatic valve~~(s)~~, closed manual valve~~(s)~~, or blind flange~~(s)~~. A02

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. CPIS Manual Trip, Actuation Logic, or one or more required channels of containment airborne radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1 Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves," made inoperable by CPIS instrumentation.	Immediately L02
ACTION B B. Required Action and associated Completion Time not met in MODES 1, 2, 3, or 4.	B.1 Be in MODE 3. AND B.2 Be in MODE ~~5~~ 4.	6 hours ~~36~~ 12 hours L03

-------------------NOTE-------------------
LCO 3.0.4.a is not applicable when entering MODE 4.

(continued)

ITS

A01

CPIS
3.3.8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C. One or more required channels of containment airborne radiation monitors inoperable in MODES 1, 2, 3, and 4.~~	~~C.1 Enter applicable conditions and required actions of LCO 3.4.15, "RCS Leak Detection."~~	~~Immediately~~
D. CPIS Manual Trip, Actuation Logic, or one or more required channels of containment airborne radiation monitors inoperable during ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies within containment.	~~-----NOTE----- The provisions of LCO 3.0.3 are not applicable. ----------~~ D.1 Place and maintain containment purge supply and exhaust valves in closed position. OR ~~D.2.1 Suspend CORE ALTERATIONS.~~ ~~AND~~ D.2.2 Suspend movement of irradiated fuel assemblies in containment.	 Immediately ~~Immediately~~ Immediately

ACTION C

A03

A04

L01

L01

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.8.1 Perform a CHANNEL CHECK on required containment airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

SR 3.3.8.1

LA01

(continued)

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ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.8.2	SR 3.3.8.2 Perform a CHANNEL FUNCTIONAL TEST on each required containment airborne radiation monitor channel. Verify trip setpoint is in accordance with the following: Containment Airborne Radiation Monitor: set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.3	SR 3.3.8.3 -------------------NOTE------------------- Surveillance of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each initiation relay. --- Perform a CHANNEL FUNCTIONAL TEST on required CPIS Actuation Logic channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.4	SR 3.3.8.4 Perform a CHANNEL CALIBRATION on required containment airborne radiation monitor channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.5	SR 3.3.8.5 Verify that response time of required CPIS channel is within limits.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.6	SR 3.3.8.6 Perform CHANNEL FUNCTIONAL TEST on required CPIS Manual Trip channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01

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ITS A01 CPIS 3.3.8

3.3 INSTRUMENTATION

3.3.8 3.3.8 Containment Purge Isolation Signal (CPIS)

LCO 3.3.8 LCO 3.3.8 One CPIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4,
~~During CORE ALTERATIONS,~~
During movement of irradiated fuel assemblies within containment. L01

---------------------------NOTE---------------------------
Only required when the penetration is not isolated by at least one ~~appropriate~~ closed and de-activated automatic valve~~(s)~~, closed manual valve~~(s)~~, or blind flange~~(s)~~. A02

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A	A. Manual Trip, CPIS Actuation Logic, or one or more required channels of containment airborne radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1 Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves," made inoperable by CPIS instrumentation.	Immediately	L02
ACTION B	B. Required Action and associated Completion Time not met in MODES 1, 2, 3, or 4.	B.1 Be in MODE 3. AND B.2 -------------------NOTE------------------- LCO 3.0.4.a is not applicable when entering MODE 4. -- Be in MODE ~~5~~ 4.	6 hours ~~36~~ 12 hours	L03

(continued)

ITS

A01

CPIS
3.3.8

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C. One or more required channels of containment airborne radiation monitors inoperable in MODES 1, 2, 3, and 4.~~	~~C.1 Enter applicable conditions and required actions of LCO 3.4.15, "RCS Leak Detection."~~	~~Immediately~~ A03
ACTION C D. CPIS Manual Trip, Actuation Logic, or one or more required channels of containment airborne radiation monitors inoperable during ~~CORE ALTERATIONS or~~ movement of irradiated fuel assemblies within containment.	~~-----NOTE----- The provisions of LCO 3.0.3 are not applicable. ----------~~ D.1 Place and maintain containment purge supply and exhaust valves in closed position. OR ~~D.2.1 Suspend CORE ALTERATIONS.~~ ~~AND~~ D.2.2 Suspend movement of irradiated fuel assemblies in containment.	A04 Immediately L01 ~~Immediately~~ L01 ` Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.8.1 SR 3.3.8.1 Perform a CHANNEL CHECK on required containment airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA01

(continued)

ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.8.2	SR 3.3.8.2 Perform a CHANNEL FUNCTIONAL TEST on each required containment airborne radiation monitor channel. Verify trip setpoint is in accordance with the following: Containment Airborne Radiation Monitor: set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.3	SR 3.3.8.3 -------------------NOTE------------------- Surveillance of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each initiation relay. -- Perform a CHANNEL FUNCTIONAL TEST on required CPIS Actuation Logic channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.4	SR 3.3.8.4 Perform a CHANNEL CALIBRATION on required containment airborne radiation monitor channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.5	SR 3.3.8.5 Verify that response time of required CPIS channel is within limits.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.8.6	SR 3.3.8.6 Perform CHANNEL FUNCTIONAL TEST on required CPIS Manual Trip channel.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01

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DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 The CTS 3.3.8 Applicability contains a Note that states, only required when the penetration is not isolated by "appropriate" closed and de-activated automatic valve(s), closed manual valve(s), or blind flange(s). The ITS 3.3.8 Applicability contains a Note that states only required when the penetration is not isolated by "at least one" closed and de-activated automatic valve, close manual valve, or blind flange. This changes the CTS by changing the Applicability Note to replace the word "appropriate" with "at least one" and by making the mechanisms to isolate the penetration singular because of the wording change to "at least one."

The purpose of the CTS 3.3.8 Applicability Note is to state the specification is not required for those Containment Purge Valve penetrations that are isolated by "appropriate" closed and de-activated automatic valve, closed manual valve, or blind flange. The proposed change from using "appropriate" to "at least one" is acceptable because it makes the wording in the Note consistent with wording in CTS and ITS 3.6.3 which allows operation with a penetration that is isolated with "at least one" closed and de-activated automatic valve, closed manual valve, or blind flange. Thus per CTS 3.6.3, the "appropriate" method of isolation is by the use of "at least one" closed and de-activated automatic valve, closed manual valve, or blind flange. This change is designated as administrative because no technical change is being made to the Specification.

A03 CTS 3.3.8 ACTION C requires entering the applicable Conditions and Required Actions of LCO 3.4.15, "RCS Leak Detection," immediately when one or more required channels of containment airborne radiation monitors are inoperable in MODES 1, 2, 3, and 4. ITS 3.3.8 will not contain a similar ACTION. This changes the CTS by removing the requirement to enter LCO 3.4.15 when one or more required channels of the containment airborne radiation monitors are inoperable in MODES 1, 2, 3, or 4.

The purpose of CTS 3.3.8 ACTION C is to assist the operator in remembering that the containment airborne radiation monitors are also required by another LCO. The ACTION is essentially a cross-reference to that LCO, LCO 3.4.15, "RCS Leakage Detection Instrumentation." The containment airborne radiation monitor is also required by LCO 3.4.15 for a reason different than LCO 3.3.8. However, there is no reason to include this cross-reference, as LCO 3.4.15 adequately covers the requirements when the RCS leakage detection instrument is also inoperable. The Technical Specifications do not include cross-references

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DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

to other LCOs when a component is required in multiple LCOs. Therefore, since the other LCO (LCO 3.4.15) adequately controls the requirements for RCS Leakage Detection, this cross-reference ACTION is not needed and has been deleted. This change is designated as administrative since it does not result in any technical changes.

A04 CTS 3.3.8 ACTION D requires the containment purge valves to be closed and the movement of irradiated fuel assemblies in containment be suspended when the CPIS Manual Trip, Actuation Logic, or one or more required radiation monitor channels are inoperable during movement of irradiated fuel assemblies within containment. CTS 3.3.8 ACTION D is modified by a Required Actions Note which states the provisions of LCO 3.0.3 are not applicable. ITS 3.3.8 ACTION C is equivalent to CTS 3.3.8 ACTION D but does not contain the Required Actions Note. This changes the CTS by deleting the exception to LCO 3.0.3.

The proposed change, which deletes the exception to LCO 3.0.3, is acceptable because the exception to LCO 3.0.3 is actually not required. CTS 3.3.8 ACTION D is only applicable during movement of irradiated fuel assemblies within containment. Movement of irradiated fuel assemblies in containment occurs during MODE 6 or when defueled. LCO 3.0.3 is only applicable during MODES 1, 2, 3, and 4. Therefore, the exception to LCO 3.0.3 is not required. This change is designated as administrative because no technical changes are being made to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.8.1 requires that a CHANNEL CHECK be performed on the required containment airborne radiation monitor channel every 12 hours. CTS SR 3.3.8.2 requires that a CHANNEL FUNCTIONAL TEST be performed on the required containment airborne radiation monitor channel every 92 days. CTS SR 3.3.8.3 requires that a CHANNEL FUNCTIONAL TEST be performed on the required CPIS Actuation Logic Channel every 24 months. CTS SR 3.3.8.4 requires that a CHANNEL CALIBRATION be performed on the required containment airborne radiation monitor channel every 24 months. CTS SR 3.3.8.5 requires verifying that the response time of the required CPIS channel is within limits every 24 months. CTS SR 3.3.8.6 requires that a CHANNEL FUNCTIONAL TEST be performed on the required CPIS Manual Trip Channel

DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

every 24 months. ITS SRs 3.3.8.1, 3.3.8.2, 3.3.8.3, 3.3.8.4, 3.3.8.5, and 3.3.8.6 requires similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

"(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core

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DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* The CTS 3.3.8 Applicability for the Containment Purge Isolation Signal (CPIS) includes "during CORE ALTERATIONS." CTS 3.3.8 ACTION D specifies compensatory actions when the CPIS Manual Trip, Actuation Logic, or one or more required channels of containment airborne radiation monitors are inoperable during CORE ALTERATIONS. One of the compensatory actions (CTS 3.3.8 Required Action D.2.1) is to suspend CORE ALTERATIONS. ITS 3.3.8 Applicability and ACTION

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DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

C contain similar requirements; however, the ITS eliminates reference to CORE ALTERATIONS in the Applicability and Conditions, and ITS 3.3.8 does not require suspension of CORE ALTERATIONS in the ACTIONS. This changes the CTS by deleting the requirement for the CPIS to be OPERABLE during CORE ALTERATIONS and all references to this operation in the ACTIONS.

The purpose of CTS LCO 3.3.8 is to ensure the CPIS Instrumentation is available to generate a close signal to the containment purge valves upon detection of high gaseous radiation in containment. When the CPIS Instrumentation is not OPERABLE during CORE ALTERATIONS, CTS 3.3.8 ACTIONS suspend CORE ALTERATIONS to preclude an event that could result in a release of gaseous radiation in containment. CORE ALTERATIONS is defined in CTS 1.12, in part, as "the movement or manipulation of any fuel, sources, reactivity control components, or other components…affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel." This change is acceptable because suspending CORE ALTERATIONS has no effect on the initial conditions or mitigation of any DBA or transient. The requirement to suspend core alterations applies an operational burden with no corresponding safety benefit. Furthermore, the requirement to suspend movement of irradiated fuel assemblies basically ensures that CORE ALTERATIONS is suspended, since the main contributor to reactivity changes is fuel movement. Therefore the use of the defined term CORE ALTERATIONS are all being removed from TS per TSTF-471.

The term “core alteration” does not appear in the Standard Review Plan or in Title 10 of the Code of Federal Regulations. Since CORE ALTERATIONS only occur when the reactor vessel head is removed, it only applies in MODE 6. There are only two accidents considered during MODE 6 for PWRs: a fuel handling accident and a boron dilution accident. According to the Standard Review Plan, a fuel handling accident is initiated by the dropping of a [recently] irradiated fuel assembly, either in the containment or in the fuel building. There are no mitigation actions, except some plants credit ventilation systems to reduce the dose consequences. Suspension of CORE ALTERATIONS, except for suspension of movement of irradiated assemblies, will not prevent or impair the mitigation of a fuel handling accident.

The second analyzed event is a boron dilution accident. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. Unit procedures ensure the specified boron concentration in order to maintain an overall core reactivity of $k_{eff} \leq 0.95$ during fuel handling, with control element assemblies (CEAs) and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed by unit procedures. The accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no effect on the mitigation of a boron dilution accident. Movement of control rods or fuel do not affect the initial conditions of a boron dilution accident as it is assumed that the control rods and fuel are in the most adverse conditions with a large safety margin ($k_{eff} \leq 0.95$).

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DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

In summary, with the exception of suspending movement of irradiated fuel assemblies, there are no DBAs or transients that are initiated by, or mitigation affected by, suspension of CORE ALTERATIONS. Therefore, if all Required Actions that require suspension of CORE ALTERATIONS also require suspension of movement of irradiated fuel assemblies, suspension of CORE ALTERATIONS provides no safety benefit.

This change is designated as less restrictive because the Required Actions of the ITS are being relaxed from what is currently in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.3.8 ACTION A requires the applicable Conditions and Required Actions of LCO 3.6.3 to be entered immediately when the CPIS Actuation Logic, or one or more required channels of radiation monitors are inoperable in MODES 1, 2, 3, and 4. CTS 3.3.8 does not contain a specific ACTION when the CPIS Manual Trip is inoperable; therefore, LCO 3.0.3 would be applicable. ITS 3.3.8 ACTION A is similar to CTS 3.3.8 ACTION A except the ACTION is also applicable to the CPIS Manual Trip. This changes the CTS by changing the ACTIONS when the CPIS Manual Trip is inoperable in MODE 1, 2, 3, and 4 from an immediate shutdown via LCO 3.0.3 to entering the ACTIONS of LCO 3.6.3.

The purpose of CTS 3.3.8 ACTION A is to ensure the CPIS Instrumentation is available in MODES 1, 2, 3, and 4 to close the containment purge isolation valves on a high containment gaseous radiation signal and if not available to enter the ACTIONS of LCO 3.6.3 for the affected valves. However, the CTS ACTIONS do not include the CPIS Manual Trip, so a LCO 3.0.3 entry would be required. The proposed change will add the Manual Trip to ITS 3.3.8 Action A; therefore, if the CPIS Manual Trip is inoperable in MODE 1, 2, 3, and 4, ITS 3.6.3 ACTIONS would be entered. ITS 3.6.3 ACTION A would require the affected penetration(s) to be isolated with at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured and periodically verified isolated. This is acceptable because with the penetration isolated, the safety function of closing the penetration is performed. This change is designated as less restrictive because the Required Action, when the CPIS Manual Trip is inoperable in MODES 1, 2, 3, or 4, in the ITS have been relaxed from the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.3.8 ACTION B provides the actions when the Required Actions and associated Completion Time is not met in MODES 1, 2, 3, or 4. It requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. ITS 3.3.8 ACTION B provides the actions to be taken under the same conditions. However, it requires the unit to be in MODE 3 in 6 hours and MODE 4 in 12 hours. Furthermore, the Required Action to be in MODE 4 is modified by a Note which states LCO 3.0.4.a is not applicable when entering MODE 4. This changes the CTS by eliminating the requirement for the unit to be in MODE 5 within 36 hours and only requires the unit to be in MODE 4 within 12 hours.

The purpose of CTS 3.3.8 ACTION B is to place the unit in a condition where the LCO is not applicable. The proposed change, which is consistent with TSTF-

DISCUSSION OF CHANGES
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

422, allows the plant end state to conclude at MODE 4 within 12 hours versus MODE 5 within 36 hours. This change is based on a topical report, CE NPSD-01186 (approved by NRC on July 17, 2001). The topical report demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states. Preventing plant challenges during shutdown conditions has been, and continues to be, an important aspect of ensuring safe operation of the plant. Past events demonstrate that risk of core damage associated with entry into, and operation in, shutdown cooling is not negligible and should be considered when a plant is required to shutdown. Therefore, the Technical Specifications should encourage plant operation in the steam generator heat removal mode whenever practical, and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions.

The Note which modifies ITS 3.3.8 Required Action B.2 prohibits entry into the end state Mode of Applicability during startup using the provisions of LCO 3.0.4.a. The purpose of this Note is to provide assurance that entry into the end state Mode of Applicability during startup is not made without the appropriate risk assessment. Entry into the end state Mode of Applicability during startup will still be allowed under the provisions of LCO 3.0.4.b. This is acceptable because LCO 3.0.4.b allows entry only 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. Details of the risk assessment are provided in the Bases for LCO 3.0.4.b.

SONGS will adopt the end states proposed in TSTF-422 and will perform a risk assessment in accordance with 10 CFR 50.65(a)(4) when using the end states regardless of whether maintenance is being performed. The risk assessment will follow Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants,” which endorses NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Section 11 guidance for implementation of 10 CFR 50.65(a)(4). SONGS will also follow the industry-developed implementation guidance, WCAP-16364-NP, Revision 0, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," November 2004.

This change is designated as less restrictive because it relaxes the end state from MODE 5 to MODE 4.

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

3.3 INSTRUMENTATION

3.3.8 3.3.8 Containment Purge Isolation Signal (CPIS) ~~(Digital)~~ 3

LCO 3.3.8 LCO 3.3.8 One CPIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of ~~[recently]~~ irradiated fuel assemblies within containment. 2

--NOTE--
Only required when the penetration is not isolated by at least one closed and de-activated automatic valve, closed manual valve, or blind flange.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION A	A. CPIS Manual Trip, Actuation Logic, or one or more required channels of containment airborne radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1	Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves," made inoperable by CPIS instrumentation.	Immediately	7
ACTION B	B. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	B.1 AND B.2	Be in MODE 3. ---------------NOTE--------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------ Be in MODE ~~5~~ 4.	6 hours ~~36~~ 12 hours	TSTF-422

U2/U3 CTS

CPIS ~~(Digital)~~ 3
3.3.8

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION D	C. CPIS Manual Trip, Actuation Logic, or one or more required containment airborne channels of radiation monitors inoperable during movement of ~~[recently]~~ irradiated fuel assemblies within containment.	C.1	Place and maintain containment supply purge and exhaust valves in closed position.	Immediately	1 7
		OR			2
		C.2	Suspend movement of ~~[recently]~~ irradiated fuel assemblies in containment.	Immediately	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.8.1	SR 3.3.8.1	Perform a CHANNEL CHECK on required containment ~~area and gaseous~~ airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A 7 1
	~~SR 3.3.8.2~~	~~Perform a CHANNEL CHECK on required containment particulate and iodine radiation monitor channel.~~	~~7 days~~	4
SR 3.3.8.2	SR 3.3.8.~~3~~ 2	~~-------------------------------NOTE------------------------------- Only required to be met in MODES 1, 2, 3, and 4. ---~~ Perform a CHANNEL FUNCTIONAL TEST on each required containment airborne radiation monitor channel. Verify setpoint ~~[Allowable Value]~~ is in accordance with the following: ~~Containment Gaseous Monitor: ≤ [2X background]~~ ~~Containment Particulate Monitor: ≤ [2X background]~~ ~~Containment Area Gamma Monitor: ≤ [325 mR/hr]~~ Containment Airborne Radiation Monitor: set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur.	In accordance with the Surveillance Frequency Control Program ~~92 days~~	6 5 TSTF-425-A 7 2 5

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
~~SR 3.3.8.4~~	~~------------------------------NOTE------------------------------ Only required to be met during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment. --~~ ~~Perform a CHANNEL FUNCTIONAL TEST on required containment radiation monitor channel. Verify setpoint [Allowable Value] is in accordance with the following:~~ ~~Containment Gaseous Monitor: ≤ [2X background]~~ ~~Containment Particulate Monitor: ≤ [2X background]~~ ~~Containment Iodine Monitor: ≤ [2X background]~~ ~~Containment Area Gamma Monitor: ≤ [2X background]~~	~~92 days~~ 5
SR 3.3.8.3 SR 3.3.8.~~5~~ 3	------------------------------NOTE------------------------------ Surveillance of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each initiation relay. -- Perform a CHANNEL FUNCTIONAL TEST on required CPIS Actuation Logic channel.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program 6 TSTF-425-A
SR 3.3.8.4 SR 3.3.8.~~6~~ 4	Perform a CHANNEL CALIBRATION on required containment airborne radiation monitor channel.	~~[18] months~~ 6 7 TSTF-425-A
SR 3.3.8.5 SR 3.3.8.~~7~~ 5	Verify that response time of required CPIS channel is within limits.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program 6 TSTF-425-A
SR 3.3.8.6 SR 3.3.8.~~8~~ 6	Perform CHANNEL FUNCTIONAL TEST on required CPIS Manual Trip channel.	~~[18] months~~ 6 TSTF-425-A

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.8 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. ISTS SR 3.3.8.2 is being deleted. SONGS does not utilize a Containment PIG (Particulate, Iodine, and Gaseous) radiation monitor in the CPIS Instrumentation to isolate containment purge. SONGS utilizes a containment airborne gaseous radiation monitor.

5. ISTS SRs 3.3.8.3 and 3.3.8.4 require CHANNEL FUNCTIONAL TESTs for the required containment radiation monitors (containment PIG) utilized in the CPIS Instrumentation to close the containment purge valves; however, one contains the setpoint values for the test during MODES 1, 2, 3, and 4 and the other contains the setpoint values for the test during the movement of fuel assemblies in containment. Consistent with SONGS CTS (utilizes a containment airborne gaseous radiation monitor versus a containment PIG radiation monitor) the specific setpoint value will not be contained in the SRs. Therefore, the requirement for two SRs is not required which results in ISTS SR 3.3.8.4 being deleted and ISTS SR 3.3.8.3 being revised to delete the SR Note and the specific setpoint values.

6. The ISTS SRs are being renumbered due to the deletion of SRs 3.3.8.2 and 3.3.8.4.

7. The specific radiation monitor (containment airborne) is being added to the ISTS Required Actions and Surveillance Requirements. This change is acceptable because the LCO only requires the "airborne," not a combination of instruments like that listed in the ISTS Bases. So for clarity, the term containment airborne is specified and is consistent with the CTS.

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

B 3.3 INSTRUMENTATION

B 3.3.8 Containment Purge Isolation Signal (CPIS) ~~(Digital)~~ 3

BASES

BACKGROUND

This LCO encompasses the CPIS, which is a plant specific instrumentation channel that performs an actuation function required for plant protection but is not otherwise included in LCO 3.3.6, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip," or LCO 3.3.7, "Diesel Generator (DG) - Undervoltage ~~Loss of Voltage~~ Start ~~(LOVS)~~." ~~Individual plants shall include the CPIS Function and LCO requirements that are applicable to them.~~ 1

The CPIS provides protection from the release of radioactive contamination from the containment in the event a fuel assembly should be severely damaged during handling. It also closes the purge valves during plant operation in response to a Reactor Coolant System (RCS) leak.

The CPIS will detect high gaseous radiation ~~any abnormal amounts of radioactive material~~ in the containment and will initiate purge valve closure to limit the release of radioactivity to the environment. Both the minipurge and large volume purge supply and exhaust valves are closed on a CPIS when a high radiation level in containment is detected. 1

The CPIS includes two independent, redundant logic subsystems, including actuation trains. Each train employs one gaseous sensor. ~~four sensors, each one detecting one of the following:~~ 1

- ~~Gaseous~~
- ~~Airborne particulate~~
- ~~Iodine~~
- ~~Gamma (area)~~

If either ~~any~~ one of the corresponding ~~these~~ sensors exceeds the bistable trip setpoint, the CPIS train will be actuated ~~(one-out-of-four logic)~~.

Each train actuates a separate series valve in the containment purge supply and return lines. Either train controls sufficient equipment to perform the isolation function. Minipurge ~~These~~ valves are also isolated on a Safety Injection Actuation Signal (SIAS) and Containment Isolation Actuation Signal (CIAS) in MODES 1, 2, and 3. 1

BASES

BACKGROUND (continued)

Trip Setpoints and Allowable Values

INSERT 1

Trip setpoints used in the bistables are based on the analytical limits (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, and instrument drift, the trip setpoint ~~Allowable Values specified in LCO 3.3.8 are~~ is 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 "~~Plant Protection System Selection of Trip Setpoint Values~~ Containment Airborne Monitor Setpoint Calculation" (Ref. ~~2~~ 1). 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. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE. 1

Setpoints in accordance with the Allowable Value will ensure that safety limits are not violated during anticipated operational occurrences (AOOs) and the consequences of Design Basis Accidents will be acceptable, providing the plant is operated from within the LCOs at the onset of the AOO or accident and the equipment functions as designed.

APPLICABLE SAFETY ANALYSES

The CPIS is a backup to the CIAS systems in MODES 1, 2, 3, and 4 and will close the containment purge valves in the event of high radiation levels resulting from a primary leak in the containment.

INSERT 2

~~The CPIS is also required to close the containment purge valves in the event of the fuel handling accident in containment [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)], as described in Reference 1. This accident is a limiting case representing a class of accidents that might involve radiation release in containment without CIAS actuation. The CPIS ensures the consequences of a dropped [recently] irradiated fuel assembly in containment are not as severe as a dropped [recently] irradiated assembly in the fuel handling building. This ensures that the offsite consequences of radiation accidents in containment are within 10 CFR 100 limits (Ref. 3).~~ 1

The CPIS satisfies the requirements of Criterion 3 of 10 CFR 50.36(c)(2)(ii).

1

INSERT 1

The trip setpoint is set sufficiently high to prevent spurious alarms/trips yet sufficiently low to assure an alarm/trip should an inadvertent release occur. Compliance with this requirement provides suitable confirmation that the monitors are capable of performing their intended function.

1

INSERT 2

The calculations show that, following a fuel handling accident in containment due to the response time of the containment airborne radiation monitors there will be some release of radioactivity to the environment prior to isolation of the purge by the CPIS. In order to calculate the off-site doses resulting from such a release, it was conservatively assumed that all of the airborne radioactivity resulting from a fuel handling accident in containment was released to the environment (i.e., the containment purge was not isolated following a fuel handling accident). The analysis showed that the 2 hour site boundary (exclusion area boundary (EAB)) dose and the event duration low population zone (LPZ) dose would be below the Regulatory Guide (RG) 1.183 (Ref. 2) limit of 6.3 rem TEDE.

Furthermore, 10 CFR 50.67 (Ref. 3) specifies that adequate radiation protection shall be provided to permit access to and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The analysis demonstrated that the dose value is below the 10 CFR 50.67 (Ref. 3) control room dose limit.

BASES

LCO

LCO 3.3.8 requires one CPIS channel to be OPERABLE. The required channel consists of ~~[particulate, iodine~~, gaseous~~, and area~~ radiation monitors~~]~~; Actuation Logic; and Manual Trip. ~~The specific Allowable Values for the setpoints of the CPIS are listed in the SRs.~~ 2 1

~~Only the Allowable Values are specified for each trip Function in the LCO.~~ 7
Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable, provided that the difference between the nominal trip setpoint and the Allowable Value is equal to or greater than the drift allowance assumed for each trip in the transient and accident analyses. A channel is inoperable if its actual trip setpoint is not within its Allowable Value.

Each Allowable Value specified is more conservative than the analytical limit assumed in the transient and accident analysis in order to account for instrument uncertainties appropriate to the trip function. These uncertainties are defined in the "~~Plant Protection System Selection of Trip Setpoint Values~~" (Ref. ~~2~~). 1

Containment Airborne Monitor Setpoint Calculation

1

The Bases for the LCO on CPIS are discussed below for each Function:

a. Manual Trip

The LCO on Manual Trip backs up the automatic trip and ensures operators have the capability to rapidly initiate the CPIS Function if any parameter is trending toward its setpoint. Only one manual channel of CPIS is required in MODES 1, 2, 3, and 4, since the CPIS is redundant with the CIAS and SIAS. Only one manual channel of CPIS is required during ~~CORE ALTERATIONS and~~ movement of irradiated fuel assemblies, since there are additional means of closing the containment purge valves in the event of a channel failure. TSTF-471-A

Gaseous

b. Airborne Radiation ~~and Containment Area Radiation~~ 1

The monitor detects containment gaseous airborne radiation and provides an alarm and trip function upon reaching the setpoint value. The trip function opens a contact in the actuation logic. There are two monitors with input into redundant actuation trains.

The LCO on the radiation channels requires that each channel be OPERABLE for each Actuation Logic channel, since they are not totally redundant to each other.

The trip setpoint of twice background is selected to allow detection of small deviations from normal. The absolute value of the trip setpoint in MODES 5 and 6 differs from the setpoint in MODES 1, 2, 3, and 4 so that a fuel handling accident can be detected in the lower background radiation expected in these MODES.

BASES

LCO (continued)

c. Actuation Logic 1

Actuation logic provides close signals to both mini and main train related containment purge valves.

One channel of Actuation Logic is required, since the valves can be shut independently of the CPIS signal either manually from the control room or using either the SIAS or CIAS push button.

APPLICABILITY

In MODES 1, 2, 3, and 4, the minipurge valves may be open. In ~~the~~ these 1 MODES, it is necessary to ensure the valves will shut in the event of a primary leak in containment whenever any of the containment purge valves are open.

With the purge valves open during movement of ~~[recently]~~ irradiated fuel 2 assemblies within containment, there is the possibility of a fuel handling accident requiring CPIS on high radiation in containment. ~~[Due to radioactive decay, CPIS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days).]~~ 1

The APPLICABILITY is modified by a Note, which states that the CPIS Specification is only required when the penetration is not isolated by at least one closed and de-activated automatic valve, closed manual valve, or blind flange.

ACTIONS

A CPIS channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is not large and would result in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it within specification. If the trip setpoint is not consistent with the Allowable Value, the channel must be declared inoperable immediately, and the appropriate Conditions must be entered.

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the sensor, instrument loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel are required to be declared inoperable and the LCO Condition entered for the particular protective function affected.

BASES

ACTIONS (continued)

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered if applicable in the current MODE of operation.

A.1

airborne

Condition A applies to the failure of CPIS Manual Trip, Actuation Logic, and required ~~[particulate, iodine,~~ gaseous~~, and area~~ radiation monitors~~]~~. 2 The Required Action is to enter the applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves." The Completion Time accounts for the condition that the capability to isolate containment on valid containment high radiation or manual signals is degraded during power operation or shutdown modes.

B.1 and B.2

overall plant risk is minimized

Condition B applies when the Required Action and associated Completion Time of Condition A are not met in MODE 1, 2, 3, or 4. If Required Action A cannot be met within the required Completion Time, the plant must be brought to a MODE in which ~~the LCO does not apply~~. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ within ~~36~~ hours. TSTF-422

4 12

INSERT 3 TSTF-422

C.1 and C.2

Condition C applies to the same conditions as are described in Condition A; however, the applicability is during the movement of ~~[recently]~~ irradiated fuel assemblies within containment. Required 2 Action C.1 is to place the containment purge and exhaust isolation valves in the closed position. The Required Action immediately performs the isolation function of the CPIS. Required Action C.2 may be performed in lieu of Required Action C.1. Required Action C.2 requires suspension of movement of ~~[recently]~~ irradiated fuel in containment immediately. The 2 Completion Time accounts for the fact that the automatic capability to isolate containment on valid containment high radiation signals is degraded during conditions in which a fuel handling accident is possible and CPIS provides the only required automatic mitigation of radiation release.

TSTF-422

INSERT 3

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.8.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred on the required ~~area and~~ airborne gaseous radiation monitor channels used in the CPIS. 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. TSTF-425-A 4

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; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant 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 transmitter or the signal processing equipment has drifted outside its limit.

INSERT 4 ~~The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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 the LCO required channels.~~ TSTF-425-A

~~SR 3.3.8.2~~

~~SR 3.3.8.2 is the performance of a CHANNEL CHECK on the particulate and iodine channels used in the CPIS. It differs only in the Frequency, which is weekly. These channels use a filter to trap the particulate and iodine activity prior to the air sample being pumped to the gaseous activity chamber. This technique results in an integration of total particulate and iodine activity until the filter assemblies are replaced. The low levels of activity expected make more frequent monitoring unnecessary.~~ 4

TSTF-425-A

INSERT 4

The Frequency is controlled under the Surveillance Frequency Control Program. 6

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.~~3~~ 2 4

gaseous airborne

2

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology.

A CHANNEL FUNCTIONAL TEST is performed on the required containment radiation monitoring channel to ensure the entire channel will perform its intended function. Setpoints must be found within the Allowable Values specified in SR 3.3.8.~~3~~ and left consistent with the assumptions of the plant specific setpoint analysis (Ref. ~~4~~). 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 of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 92 day Frequency is a rare event.~~ 1 4 1 TSTF-422 TSTF-493

INSERT 5 TSTF-425-A

~~A Note to the SR indicates this Surveillance is required to be met in MODES 1, 2, 3, and 4 only.~~ 4

~~SR 3.3.8.4~~

~~A CHANNEL FUNCTIONAL TEST is performed on the required containment radiation monitoring channel to ensure the entire channel will perform its 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 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 SR 3.3.8.4 and left consistent with the assumptions of the plant specific setpoint methodology (Ref. 4). The Frequency of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 92 day interval is a rare event.~~ 4

~~A Note to the SR indicates that this test is only required to be met during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment.~~

TSTF-425-A

INSERT 5

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.5 ← 3 4

Proper operation of the individual initiation relays is verified by actuating these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic ~~every [18] months~~. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. ~~The Frequency of [18] months is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function during any [18] month interval is a rare event.~~ 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. A Note to the SR indicates that this Surveillance includes verification of operation for each initiation relay.

INSERT 6

TSTF-425-A

SR 3.3.8.6 ← 4 4

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology.

TSTF-493

~~The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [5].~~

TSTF-493

~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~

INSERT 6

TSTF-425-A

TSTF-425-A

INSERT 6

The Frequency is controlled under the Surveillance Frequency Control Program. 6

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.~~7~~ 5 4

This Surveillance ensures that the train actuation response times are less than or equal to the maximum times assumed in the analyses. ~~The [18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.~~ INSERT 7 TSTF-425-A Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance.

SR 3.3.8.~~8~~ 6 4

~~Every [18] months,~~ a CHANNEL FUNCTIONAL TEST is performed on the CPIS Manual Trip 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. 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. TSTF-425-A

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing manual actuation of the Function. ~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.~~ INSERT 7 TSTF-425-A

REFERENCES

1. ~~FSAR, Chapter [15]~~. DBD-SO23-690 2
2. ~~"Plant Protection System Selection of Trip Setpoint Values."~~ Regulatory Guide 1.183. 1
3. 10 CFR ~~100~~ 50.67.
4. ~~Plant Specific Setpoint Methodology~~. CE-NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001 TSTF-422
~~5. [ ].~~ 1

TSTF-425-A

INSERT 7

The Frequency is controlled under the Surveillance Frequency Control Program. 6

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.8 BASES, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.8 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. Changes are made to be consistent with changes made to the Specification.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies

7. Changes are made to be consistent with the actual Specifications.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.8, CONTAINMENT PURGE ISOLATION SIGNAL (CPIS)

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 9

ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

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

A01

ITS

3.3 INSTRUMENTATION

3.3.9 3.3.9 Control Room Isolation Signal (CRIS)

LCO 3.3.9 LCO 3.3.9 One CRIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of irradiated fuel assemblies.

ACTIONS

~~-----NOTES-----~~
~~1. The provisions of LCO 3.0.3 are not applicable.~~
~~2. The provisions of LCO 3.0.4 are not applicable.~~
~~----------~~

L01

A03

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A: A. CRIS Manual Trip, Actuation Logic, or one required channel of control room airborne radiation monitors inoperable in MODES 1, 2, 3, or 4.	A.1 --------NOTE--------- Place Control Room Emergency Air Cleanup System (CREACUS) in isolation mode if automatic transfer to isolation mode inoperable. ---------------------- Place one CREACUS train in emergency mode.	1 hour

(continued)

INSERT 1

L01

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ITS

L01 **INSERT 1**

ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 -------------NOTE------------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------------------------------- Be in MODE 4.	6 hours 12 hours

A01

ITS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION C	B. CRIS Manual Trip, Actuation Logic, or required control room airborne radiation monitors inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	B.1	--------NOTE--------- Place CREACUS in isolation mode if automatic transfer to isolation mode inoperable. --------------------- Place one CREACUS train in emergency mode.	Immediately
		OR		
		B.2.1	Suspend movement of irradiated fuel assemblies.	Immediately
		AND		
		B.2.2	--------NOTE--------- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. --------------------- Suspend positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.9.1	SR 3.3.9.1	Perform a CHANNEL CHECK on the required control room airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01

(continued)

ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
SR 3.3.9.2	SR 3.3.9.2	Perform a CHANNEL FUNCTIONAL TEST on required CRIS airborne radiation monitor channel. Verify CRIS high radiation setpoint is ≤ ~~4E2 cpm~~ 1.80E-5 μCi/cc above normal background.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	LA01 A02
SR 3.3.9.3	SR 3.3.9.3	-------------------NOTE------------------- Surveillance of Actuation Logic shall include the verification of the proper operation of each initiation relay. -- Perform a CHANNEL FUNCTIONAL TEST on required CRIS Actuation Logic channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.4	SR 3.3.9.4	Perform a CHANNEL CALIBRATION on required CRIS airborne radiation monitor channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.5	SR 3.3.9.5	Perform a CHANNEL FUNCTIONAL TEST on required CRIS Manual Trip channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.6	SR 3.3.9.6	Verify that response time of required CRIS channel is within limits.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01

ITS

A01

3.3 INSTRUMENTATION

3.3.9 3.3.9 Control Room Isolation Signal (CRIS)

LCO 3.3.9 LCO 3.3.9 One CRIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of irradiated fuel assemblies.

ACTIONS

~~------------NOTES------------~~
~~1. The provisions of LCO 3.0.3 are not applicable.~~
~~2. The provisions of LCO 3.0.4 are not applicable.~~
~~-------------------------------~~

L01

A03

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CRIS Manual Trip, Actuation Logic, or one required channel of control room airborne radiation monitors inoperable in MODES 1, 2, 3, or 4.	A.1	--------NOTE--------- Place Control Room Emergency Air Cleanup System (CREACUS) in isolation mode if automatic transfer to isolation mode inoperable. ---------------------	
		Place one CREACUS train in emergency mode.	1 hour

ACTION A

(continued)

INSERT 1

L01

3.3.9

ITS

L01 **INSERT 1**

ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	-------------NOTE------------- LCO 3.0.4.a is not applicable when entering MODE 4. ----------------------------------	
			Be in MODE 4.	12 hours

A01

ITS

ACTIONS (continued)

ACTION C

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. CRIS Manual Trip, Actuation Logic, or required control room airborne radiation monitors inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	B.1 --------NOTE--------- Place CREACUS in isolation mode if automatic transfer to isolation mode inoperable. --------------------- Place one CREACUS train in emergency mode.	Immediately
	OR	
	B.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	B.2.2 --------NOTE--------- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. --------------------- Suspend positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.9.1 Perform a CHANNEL CHECK on the required control room airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

SR 3.3.9.1

LA01

(continued)

ITS

A01

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
SR 3.3.9.2	SR 3.3.9.2 Perform a CHANNEL FUNCTIONAL TEST on required CRIS airborne radiation monitor channel. Verify CRIS high radiation setpoint is ≤ ~~4E2 cpm~~ 1.80E-5 μCi/cc above normal background.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	LA01 A02
SR 3.3.9.3	SR 3.3.9.3 -------------------NOTE------------------- Surveillance of Actuation Logic shall include the verification of the proper operation of each initiation relay. -- Perform a CHANNEL FUNCTIONAL TEST on required CRIS Actuation Logic channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.4	SR 3.3.9.4 Perform a CHANNEL CALIBRATION on required CRIS airborne radiation monitor channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.5	SR 3.3.9.5 Perform a CHANNEL FUNCTIONAL TEST on required CRIS Manual Trip channel.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.9.6	SR 3.3.9.6 Verify that response time of required CRIS channel is within limits.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	LA01

DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS SR 3.3.9.2 requires performance of a CHANNEL FUNCTIONAL TEST on the required CRIS airborne radiation monitor and verification the CRIS high radiation setpoint is ≤ 4E2 cpm above normal background. ITS SR 3.3.9.2 requires performance of a CHANNEL FUNCTIONAL TEST on the required CRIS airborne radiation monitor and verification the CRIS high radiation setpoint is ≤ 1.80E-5 μCi/cc above normal background. This changes the CTS by revising the units of the CRIS radiation setpoint from CPM to μCi/cc.

The purpose of SR 3.3.9.2 requirement to perform a CHANNEL FUNCTIONAL TEST is to ensure the entire CRIS channel will perform its intended function. Additionally, CTS SR 3.3.9.2 requires verification the CRIS high radiation setpoint is ≤ 4E2 cpm above normal background. The proposed change revises the units for the setpoint to an equivalent amount in μCi/cc (1.80E-5 μCi/cc) which will be incorporated into ITS SR 3.3.9.2. This change is being made because SCE replaced the analog monitors whose indication was in cpm with digital monitors whose indication is in μCi/cc. The amount is equivalent as depicted in Calculation J-SPA-179. The change from analog to digital radiation monitors for containment purge isolation and control room isolation was approved for SONGS Units 2 and 3 UFSAR in License Amendments 154 and 145 in a letter from the NRC dated July 12, 1999. This change is designated as administrative because the CRIS radiation monitor setpoint value above normal background, while being changed from cpm to μCi/cc, is equivalent in the ITS and CTS.

A03 CTS 3.3.9 ACTIONS contain a Note which states, "The provisions of LCO 3.0.4 are not applicable." ITS 3.3.9 does not contain this specific exception to LCO 3.0.4. This changes the CTS by deleting the specified ACTIONS Note.

This change is considered acceptable because CTS 3.0.4 is structured such that this exception is not required. The CTS Note effectively allows changes in MODES while in the CTS ACTIONS. However, CTS and ITS LCO 3.0.4 already allow entry into a MODE provided the ACTIONS permit continued operation in the MODE for an unlimited amount of time. Thus, the Note is redundant to what is already allowed in CTS and ITS LCO 3.0.4. Therefore, the Note has been deleted. This change is designated as administrative because it does not result in technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.9.1 requires that a CHANNEL CHECK be performed on the required control room airborne radiation monitor channel every 12 hours. CTS SR 3.3.9.2 requires that a CHANNEL FUNCTIONAL TEST be performed on the required CRIS airborne radiation monitor channel every 92 days. CTS SR 3.3.9.3 requires that a CHANNEL FUNCTIONAL TEST be performed on the required CRIS Actuation Logic Channel every 18 months. CTS SR 3.3.9.4 requires that a CHANNEL CALIBRATION be performed on the required CRIS airborne radiation monitor channel every 18 months. CTS SR 3.3.9.5 requires that a CHANNEL FUNCTIONAL TEST be performed on the required CRIS Manual Trip Channel every 18 months. CTS SR 3.3.9.6 requires verifying that the response time of the required CRIS channel is within limits every 18 months. ITS SRs 3.3.9.1, 3.3.9.2, 3.3.9.3, 3.3.9.4, 3.3.9.5, and 3.3.9.6 requires similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

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DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

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DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 - Relaxation of Required Action)* When the CRIS Manual Trip, Actuation Logic or one required channel of control room airborne radiation monitor is inoperable, CTS 3.3.9 Required Action A.1 requires one Control Room Emergency Air Cleanup System (CREACUS) train to be placed in the emergency mode within 1 hour. Furthermore, a Note to the ACTIONS (Note 1) states that the provisions of LCO 3.0.3 are not applicable. This essentially means that this Required Action must be performed, and a unit shutdown is not allowed in lieu of placing a CREACUS train in the emergency mode. Under similar conditions, ITS 3.3.9 does not have the ACTIONS Note 1 restriction and a new ACTION B will allow the unit to be shut down to MODE 3 within 6 hours and MODE 4 within 12 hours in lieu of placing a train in the emergency mode. ITS 3.3.9 Required Action B.2 also prohibits the use of LCO 3.0.4.a when this Condition is entered (i.e., when the CRIS Manual Trip, Actuation Logic or one required channel of control room airborne radiation monitor is inoperable and a train of CREACUS is not in the emergency mode). This changes the CTS by allowing a unit shutdown to MODE 4 in lieu of starting and operating a CREACUS train in the emergency mode. In addition, due to the addition of ITS 3.3.9 ACTION B, the ACTIONS Note 1 is not needed and has been deleted.

The purpose of the current Required Action to place one train of CREACUS in the emergency mode is to compensate for the inoperable instrumentation and to perform the function of the instrumentation. The proposed change is acceptable since it provides for an orderly shutdown if the train is not placed in the emergency mode. This allowance is consistent with that provided in the CREACUS Specification, when an actual train is inoperable. Once the unit is in MODE 4, the probability of an event requiring the CREACUS is minimized.

DISCUSSION OF CHANGES
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

This change is based on CE-NPSD-1186 which currently does not specifically apply to SONGS Units 2 and 3 CTS 3.3.9 because the SONGS CTS 3.3.9 does not have an ACTION to shutdown. The ISTS 3.3.9 currently has an ACTION to shutdown to MODE 5 in 36 hours. With the adoption of TSTF-422, the ISTS end state will be changed from MODE 5 in 36 hours to MODE 4 in 12 hours. The SONGS ITS Conversion will adopt ISTS 3.3.9 and TSTF-422. The SONGS ITS 3.3.9 will contain an ACTION to shutdown and with the adoption of TSTF-422, the end state is MODE 4. SCE has performed an evaluation and has determined that CE-NPSD-024 applies to SONGS ITS 3.3.9. Therefore, the topical report which demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states applies to SONGS. Preventing plant challenges during shutdown conditions has been, and continues to be, an important aspect of ensuring safe operation of the plant. Past events demonstrate that risk of core damage associated with entry into, and operation in, shutdown cooling is not negligible and should be considered when a plant is required to shutdown. Therefore, the Technical Specifications should encourage plant operation in the steam generator heat removal mode whenever practical, and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions.

The Note which modifies ITS 3.3.9 Required Action B.2 prohibits entry into the end state Mode of Applicability during startup using the provisions of LCO 3.0.4.a. The purpose of this Note is to provide assurance that entry into the end state Mode of Applicability during startup is not made without the appropriate risk assessment. Entry into the end state Mode of Applicability during startup will still be allowed under the provisions of LCO 3.0.4.b. This is acceptable because LCO 3.0.4.b allows entry only 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. Details of the risk assessment are provided in the Bases for LCO 3.0.4.b.

SONGS will adopt the end states proposed in TSTF-422 and will perform a risk assessment in accordance with 10 CFR 50.65(a)(4) when using the end states regardless of whether maintenance is being performed. The risk assessment will follow Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants,” which endorses NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Section 11 guidance for implementation of 10 CFR 50.65(a)(4). SONGS will also follow the industry-developed implementation guidance, WCAP-16364-NP, Revision 0, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," November 2004.

This change is designated as less restrictive because the ITS provides an alternate action than is not currently allowed in the CTS.

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

3.3 INSTRUMENTATION

3.3.9 **3.3.9 Control Room Isolation Signal (CRIS) ~~(Digital)~~** 3

LCO 3.3.9 LCO 3.3.9 One CRIS channel shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, ~~[~~5, and 6~~]~~, 2
During movement of ~~[recently]~~ irradiated fuel assemblies. 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. CRIS Manual Trip, Actuation Logic, or ~~[~~one ~~or more~~ required channel~~s~~ of control room airborne ~~particulate/iodine or gaseous]~~ radiation monitors inoperable in MODE 1, 2, 3, or 4.	A.1 ---------------NOTE-------------- Place Control Room Emergency Air Cleanup System (CREACS) in U ~~toxic gas protection~~ isolation mode if automatic transfer to ~~toxic gas protection~~ isolation mode inoperable. ------------------------------------- U Place one CREACS train in emergency ~~radiation protection~~ mode.	1 hour
DOC L02 B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE ~~5~~ 4. --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. -------------------------------------	6 hours ~~36~~ 12 hours TSTF-422

2 1

U2/U3 CTS

CRIS ~~(Digital)~~ 3
3.3.9

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION B C. CRIS Manual Trip, Actuation Logic, or required ~~particulate/iodine or gaseous~~ control room airborne radiation monitors inoperable ~~[~~in MODE 5 or 6~~]~~, or during movement of ~~[recently]~~ irradiated fuel assemblies.	C.1 ---------------NOTE-------------- U Place CREACS in ~~toxic gas protection~~ isolation mode if automatic transfer to ~~toxic gas protection~~ isolation mode inoperable. --------------------------------------- U Place one CREACS train in emergency ~~radiation protection~~ mode.	Immediately 1 2 1
	OR	
	C.2.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately 2
	AND	
	C.2.2 ---------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. --------------------------------------- Suspend positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.9.1 SR 3.3.9.1 Perform a CHANNEL CHECK on the required control room airborne radiation monitor channel.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program 1 TSTF-425-A

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
SR 3.3.9.2	SR 3.3.9.2	Perform a CHANNEL FUNCTIONAL TEST on required CRIS control room airborne radiation monitor channel. Verify CRIS high radiation setpoint ~~[Allowable Value]~~ is ≤ ~~[6E4] cpm~~ 1.80E-5 μCi/cc above normal background.	~~[92] days~~ In accordance with the Surveillance Frequency Control Program	1 2 5 TSTF-425-A
SR 3.3.9.3	SR 3.3.9.3	-----------------------------NOTE~~S~~--------------------------- ~~1.~~ Surveillance of Actuation Logic shall include the verification of the proper operation of each initiation relay. ~~2. Relays associated with plant equipment that cannot be operated during plant operation are required to be tested during each MODE 5 entry exceeding 24 hours unless tested within the previous 6 months.~~ --- Perform a CHANNEL FUNCTIONAL TEST on required CRIS Actuation Logic channel.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	4 TSTF-425-A
SR 3.3.9.4	SR 3.3.9.4	Perform a CHANNEL CALIBRATION on required CRIS control room airborne radiation monitor channel.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A 1
SR 3.3.9.5	SR 3.3.9.5	Perform a CHANNEL FUNCTIONAL TEST on required CRIS Manual Trip channel.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	TSTF-425-A
SR 3.3.9.6	SR 3.3.9.6	~~[~~ Verify that response time of required CRIS channel is within limits.	~~[18] months~~ ~~]~~ In accordance with the Surveillance Frequency Control Program	2 TSTF-425-A

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.9 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. The ISTS SR 3.3.9.3, second Note is being deleted. The Note provides an allowance that states relays associated with plant equipment that cannot be opened during plant operation are required to be tested during each MODE 5 entry exceeding 24 hours unless tested within the previous 6 months. SONGS does not need this Note because all portions of this test can be performed online. Also due to the Frequencies being relocated to the Surveillance Frequency Control Program, the Note is no longer needed in the Specifications.

5. The ISTS SR 3.3.9.2 references the CRIS high radiation setpoint value above background. Currently the units are in cpm. This change revises the units to be in μCi/cc for the SONGS ITS. This change is a result of SCE replacing the old Analog radiation monitors that indicate in cpm with new digital radiation monitors that indicate in μCi/cc. The replacement of the analog monitors was approved by the NRC in SONGS Units 2 and 3 Amendments 154 and 145, respectively, dated July 12, 1999 (ADAMS Accession No. ML022000412).

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

B 3.3 INSTRUMENTATION

B 3.3.9 Control Room Isolation Signal (CRIS) ~~(Digital)~~ 3

BASES

BACKGROUND

This LCO encompasses CRIS actuation, which is a plant specific instrumentation channel that performs an actuation Function required for plant protection but is not otherwise included in LCO 3.3.6, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip," or LCO 3.3.7, "Diesel Generator (DG) ~~Loss of Voltage~~ Undervoltage Start ~~(LOVS)~~." This is a non-Nuclear Steam Supply System ESFAS Function that, because of differences in purpose, design, and operating requirements, is not included in LCO 3.3.6 and LCO 3.3.7. ~~Details of this LCO are for illustration only. Individual plants shall include those Functions and LCO requirements that are applicable to them.~~ 4 1

The CRIS terminates the normal supply of outside air to the control room and initiates actuation of the ~~Emergency Radiation Protection System~~ Control Room Emergency Air Cleanup System (CREACUS) to minimize operator radiation exposure. The CRIS includes two independent, redundant ~~subsystems, including actuation~~ trains. Each train consists of a gaseous radiation monitor, manual trip function, and actuation logic. ~~employs two separate sensors. One sensor detects gaseous activity. The other detects particulate and iodine activity. Since the two sensors detect different types of activity, they are not considered redundant to each other. However, since there are separate sensors in each train, the trains are redundant.~~ If the bistable monitoring either sensor indicates an unsafe condition, that train will be actuated (one-out-of-two logic). The two trains actuate separate equipment. Actuating either train will perform the intended function. Control room isolation also occurs on a Safety Injection Actuation Signal (SIAS). 1 1 1

<u>Trip Setpoint</u>~~s and Allowable Values~~ 1

Trip setpoints used in the bistables are based on the analytical limits (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, and instrument drift, Allowable Values specified in LCO 3.3.9 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 "~~Plant Protection System Selection of Trip Setpoint Values~~ Control Room Monitor Setpoint Calculation" (Ref. ~~2~~ 1). ~~The actual nominal trip setpoint entered into the bistable is normally still more~~ 1

BASES

BACKGROUND (continued)

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. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE. 1

Setpoints in accordance with the Allowable Value will ensure that Safety Limits are not violated during anticipated operational occurrences (AOOs) and the consequences of Design Basis Accidents will be acceptable, providing the plant is operated from within the LCOs at the onset of the AOO or accident and the equipment functions as designed.

APPLICABLE SAFETY ANALYSES

U The CRIS, in conjunction with the Control Room Emergency Air Cleanup System (CREACS), maintains the control room atmosphere within conditions suitable for prolonged occupancy throughout the duration of any one of the accidents discussed in Reference ~~1~~. The radiation exposure of control room personnel, through the duration of any one of the postulated accidents discussed in "Accident Analysis," FSAR, Chapter ~~[~~15~~]~~ (Ref. ~~1~~), does not exceed the limits set by 10 CFR 50, Appendix A, GDC 19 (Ref. 3). 1 U 2 2 1 2

The CRIS satisfies the requirements of Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

LCO 3.3.9 requires one channel of CRIS to be OPERABLE. The required channel consists of Actuation Logic, Manual Trip, and ~~[particulate/iodine and gaseous~~ radiation monitors~~]~~. The specifi~~c Allowable~~ Value~~s~~ for the setpoint~~s~~ of the CRIS ~~are~~ listed in the SR~~s~~. 2 4

control room airborne

is ed

Only the Allowable Values are specified for each trip Function in the LCO. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable, provided that the difference between the nominal trip setpoint and the Allowable Value is equal to or greater than the drift allowance assumed for each trip in the transient and accident analyses. 1

Each Allowable Value specified is more conservative than the analytical limit assumed in the transient and accident analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. 2). A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The Bases for the LCO on the CRIS are discussed below for each Function:

a. Manual Trip

The LCO on Manual Trip backs up the automatic trips and ensures operators have the capability to rapidly initiate the CRIS Function if any parameter is trending toward its setpoint. One channel must be OPERABLE. This considers that the Manual Trip capability is a backup and that other means are available to actuate the redundant train if required, including manual SIAS.

b. Airborne Radiation

Control Room
One ~~Both~~ channel~~s~~ of Airborne Radiation detection in the required train is ~~are~~ required to be OPERABLE to ensure the control room isolates on ~~either high iodine and~~ high ~~particulate or~~ gaseous concentration. 1

~~[For this unit, the basis for the Allowable Value is as follows:]~~ 2

c. Actuation Logic

One train of Actuation Logic must be OPERABLE, since there are alternate means available to actuate the redundant train, including SIAS.

APPLICABILITY

The CRIS Functions must be OPERABLE in MODES 1, 2, 3, 4, ~~[~~5, and 6~~]~~ and during movement of ~~[recently]~~ irradiated fuel assemblies to ensure a habitable environment for the control room operators. ~~[Due to radioactive decay, CRIS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)].~~ 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~For those plants that credit gas decay tank rupture accidents, the CRIS must also be OPERABLE in MODES 5 and 6.~~
~~--~~ 5

ACTIONS

A CRIS channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is not large and would result in a delay of actuation rather than a total loss of function. This determination is

BASES

ACTIONS (continued)

generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it within specification. If the trip setpoint is not within the Allowable Value, the channel is inoperable and the appropriate Conditions must be entered.

A.1, B.1, B.2, C.1, C.2.1, and C.2.2

isolation

U Conditions A and C have been modified by a Note, which specifies that CREACS be placed manually in the ~~toxic gas protection~~ isolation mode if the automatic transfer to the ~~toxic gas protection~~ isolation mode is inoperable. ~~[At this unit, the basis for this Note is as follows:]~~ 2 4

U Conditions A, B, and C are applicable to manual and automatic actuation of the CREACS by CRIS. Condition A applies to the failure of the CRIS Manual Trip, Actuation Logic, and required ~~[particulate/iodine and required gaseous]~~ control room airborne radiation monitor channels ~~]~~ in MODE 1, 2, 3, or 4. Entry into this Condition requires action to either restore the failed channel(s) or manually perform the CRIS safety function (Required Action A.1). The Completion Time of 1 hour is sufficient to complete the Required Actions and accounts for the fact that CRIS supplements control room isolation by other Functions (e.g., SIAS) in MODES 1, 2, 3, and 4. If the channel cannot be restored to OPERABLE status, or CREACUS train cannot be placed in the emergency mode within one hour, the plant must be brought to a MODE in which the ~~LCO does not apply~~ overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours (Required Action B.1) and to MODE ~~5~~ 4 within ~~36~~ 12 hours (Required Action B.2). INSERT 1 The Completion Times of 6 hours and ~~36~~ 12 hours for reaching MODES 3 and ~~5~~ 4 from MODE 1 are reasonable, based on operating experience and normal cooldown rates, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant safety systems or operators. 4 7 TSTF-422-A

Condition C applies to the failure of CRIS Manual Trip, Actuation Logic, and required ~~particulate/iodine and required gaseous~~ control room airborne radiation monitor channels ~~[~~in MODE 5 or 6 ~~]~~ or when moving ~~[recently]~~ irradiated assemblies. The Required Actions are immediately taken to place one OPERABLE CREACS train in the emergency ~~radiation protection~~ mode, or to suspend positive reactivity additions and movement of ~~[recently]~~ irradiated fuel assemblies. The Completion Time recognizes the fact that the radiation signals are the only Functions available to initiate control room isolation in the event of a fuel handling accident ~~[involving handling recently irradiated fuel]~~. U 2 1 2 4 2

TSTF-422-A

INSERT 1

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

BASES

ACTIONS (continued)

Required Action ~~[~~ C.2.2 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM. 2

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. TSTF-425-A

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; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant 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 transmitter or the signal processing equipment has drifted outside its limit.

INSERT 2

~~The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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 the LCO required channels.~~ TSTF-425-A

~~At this unit, the following administrative controls and design features (e.g., downscale alarms) immediately alert operations to loss of function in the nonredundant channels.~~ 1

~~[At this unit, verification of sample system alignment and operation for gaseous, particulate, and iodine monitors is required as follows:]~~

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.9.2

A CHANNEL FUNCTIONAL TEST is performed on the required control room radiation monitoring channel to ensure the entire channel will perform its 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 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. There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis. TSTF-493

~~The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the frequency extension analysis. The requirements for this review are outlined in Reference [4].~~ 5 TSTF-493 TSTF-422-A

INSERT 3 ~~The Frequency of [92] days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any [92] day interval is a rare event.~~ TSTF-425-A

SR 3.3.9.3

Proper operation of the individual initiation relays is verified by de-energizing these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic ~~every [18] months~~. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. 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. TSTF-425-A

INSERT 3 ~~The Frequency of [18] months is based on plant operating experience with regard to channel OPERABILITY, which demonstrates that failure of more than one channel of a given Function in any [18] month interval is a rare event.~~ TSTF-425-A

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~---~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

A

Note 1 indicates this Surveillance includes verification of operation for each initiation relay. 4

Note 2 indicates that relays that cannot be tested at power are excepted from the Surveillance Requirement while at power. These relays must, however, be tested during each entry into MODE 5 exceeding 24 hours unless they have been tested within the previous 6 months. 4

SR 3.3.9.4

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology.

TSTF-493

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [4]. 5

TSTF-493

TSTF-422-A

INSERT 4

The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

TSTF-425-A

SR 3.3.9.5

Every [18] months, a CHANNEL FUNCTIONAL TEST is performed on the manual CRIS actuation circuitry. 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.

TSTF-425-A

TSTF-425-A

INSERT 4

The Frequency is controlled under the Surveillance Frequency Control Program. 6

--- Reviewers Note ---
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the function. ~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.~~ INSERT 5 TSTF-425-A

~~[~~ SR 3.3.9.6 4

A time limit to isolate the control room is needed to ensure compliance with 10 CFR 50 Appendix A General Design Criterion 19.

This Surveillance ensures that the train actuation response times are less than the maximum times assumed in the analyses. ~~The [18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance testing.~~ ~~]~~ INSERT 5 1 TSTF-425-A

Response time testing acceptance criteria are included in Reference 5. 1 4

REFERENCES

1. J-SPA-179, Control Room Monitor Setpoint Calculation.

U ~~1.~~ 2 FSAR, Chapter ~~[~~15~~].~~ 1 2

~~2. "Plant Protection System Selection of Trip Setpoint Values."~~ 1

3. 10 CFR 50, Appendix A, GDC 19. TSTF-422-A

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. 1

~~5~~ ~~4. [ ].~~ TSTF-493

5. Licensee Controlled Specification 3.3.100, "RPS/ESFAS Response Times."

TSTF-425-A

INSERT 5

The Frequency is based on the Surveillance Frequency Control Program. 6

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.9 BASES, CONTROL ROOM ISOLATION SIGNAL (CRIS)

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.9 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. Changes are made to be consistent with changes made to the Specification.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies

7. Changes are made to be consistent with the actual Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.9, CONTROL ROOM ISOLATION SIGNAL (CRIS)

There are no specific No Significant Hazards Considerations for this Specification.

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ATTACHMENT 10

ITS 3.3.11, PAM INSTRUMENTATION

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

ITS

A01

3.3 INSTRUMENTATION

3.3.11 3.3.11 Post Accident Monitoring Instrumentation (PAMI)

LCO 3.3.11 LCO 3.3.11 The PAMI for each Function in Table 3.3.11-1 shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----------------------------------NOTES-----------------------------------

~~1. LCO 3.0.4 not applicable.~~ M01

ACTIONS Note ~~2.~~ Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A	A. ~~----------NOTE---------- Not applicable to Functions 18, 21, 24, or 25. -----------------------~~ One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days	L01
ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1 ~~Prepare and submit a Special Report to the NRC in accordance with Specification 5.7.2.~~ Initiate action in accordance with Specification 5.7.2.a.	~~30 days~~ Immediately	M02

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C	C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days	
ACTION A	~~D. Required channel of Functions 18, 21, 24, or 25 inoperable.~~	~~D.1 Restore required channel to OPERABLE status.~~	~~7 days~~	L01
ACTION D	E. Required Action and associated Completion Time of Condition C ~~or D~~ not met.	E.1 Enter the Condition referenced in Table 3.3.11-1 for the channel.	Immediately	L01
ACTION E	F. As required by Required Action E.1 and referenced in Table 3.3.11-1.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	6 hours 12 hours	
ACTION F	G. As required by Required Action E.1 and referenced in Table 3.3.11-1.	G.1 ~~Prepare and submit a Special Report to the NRC in accordance with Specification 5.7.2.~~ Initiate action in accordance with Specification 5.7.2.a.	~~30 days~~ Immediately	M02

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ITS

A01

SURVEILLANCE REQUIREMENTS

~~NOTE~~
~~These SRs apply to each PAMI Function in Table 3.3.11-1, with exceptions noted.~~

A03

	SURVEILLANCE	FREQUENCY	
SR 3.3.11.1	SR 3.3.11.1 Perform CHANNEL CHECK for Function 9.	~~12 hours~~	LA01
SR 3.3.11.2	SR 3.3.11.2 Perform CHANNEL CHECK for each required instrumentation channel, except Function 9, that is normally energized.	~~31 days~~	LA01
SR 3.3.11.3	SR 3.3.11.3 ~~Perform CHANNEL FUNCTIONAL TEST for function 9.~~ Not used.	~~31 days~~	L02
SR 3.3.11.4	SR 3.3.11.4 Perform CHANNEL CALIBRATION, for functions 2,3,14,15,16,17, and 20.	~~18 months~~	LA01
SR 3.3.11.5	SR 3.3.11.5 Perform CHANNEL CALIBRATION for functions 1,4,5,6,7,8,9,11,12,13,18, 19,21,22,23,24,25,26, and 27.	~~24 months~~	LA01

In accordance with the Surveillance Frequency Control Program

-----------------------NOTE--------------------------
Neutron detectors are excluded from the CHANNEL CALIBRATION.

L03

A01 L01

ITS

Table
3.3.11-1

Table 3.3.11-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION ~~F~~ D.1
1. Excore Neutron Flux	2	~~F~~ E
2. Reactor Coolant System Hot Leg Temperature	2 (1 per steam generator)	~~F~~ E
3. Reactor Coolant System Cold Leg Temperature	2 (1 per steam generator)	~~F~~ E
4. Reactor Coolant System Pressure (wide range)	2	~~F~~ E
5. Reactor Vessel Water Level	2(d)	~~G~~ F
6. Containment Water Level (wide range)	2	~~F~~ E
7. Containment Pressure (wide range)	2	~~F~~ E
8. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path(a) (b)	~~F~~ E
9. Containment Area Radiation (high range)	2	~~G~~ F
10. Deleted		
11. Pressurizer Level	2	~~F~~ E
12. Steam Generator Water Level (wide range)	2 per steam generator	~~F~~ E
13. Condensate Storage Tank Level	2	~~F~~ E
14. Core Exit Temperature – Quadrant 1	2(c)	~~F~~ E
15. Core Exit Temperature – Quadrant 2	2(c)	~~F~~ E
16. Core Exit Temperature – Quadrant 3	2(c)	~~F~~ E
17. Core Exit Temperature – Quadrant 4	2(c)	~~F~~ E
18. Auxiliary Feedwater Flow	1 per steam generator	~~F~~ E
19. Containment Pressure (narrow range)	2	~~F~~ E
20. Reactor Coolant System Subcooling Margin Monitor	2	~~F~~ E
21. Pressurizer Safety Valve Position Indication	1 per valve	~~F~~ E
22. Containment Temperature	2	~~F~~ E
23. Containment Water Level (narrow range)	2	~~F~~ E
24. HPSI Flow Cold Leg	1 per cold leg	~~F~~ E
25. HPSI Flow Hot Leg	1 per hot leg	~~F~~ E
26. Steam Line Pressure	2 per steam generator	~~F~~ E
27. Refueling Water Storage Tank Level	2	~~F~~ E

A02

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

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

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

(d) ~~A channel consists of eight sensors in a probe.~~ A channel is OPERABLE if four or more sensors, one sensor in the upper head and three sensors in the ~~lower head~~ upper plenum are OPERABLE.

LA02 A04

ITS

A01

3.3 INSTRUMENTATION

3.3.11 3.3.11 Post Accident Monitoring Instrumentation (PAMI)

LCO 3.3.11 LCO 3.3.11 The PAMI for each Function in Table 3.3.11-1 shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----------------------------------NOTES-----------------------------------

~~1. LCO 3.0.4 not applicable.~~

M01

ACTIONS Note ~~2.~~ Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A	A. ~~----------NOTE----------~~ ~~Not applicable to Functions 18, 21, 24, or 25.~~ ~~------------------------~~ One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days	L01
ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1 ~~Prepare and submit a Special Report to the NRC in accordance with Specification 5.7.2.~~ Initiate action in accordance with Specification 5.7.2.a.	~~30 days~~ Immediately	M02

(continued)

ITS

A01

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION C	C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days	
ACTION A	~~D. Required channel of Functions 18, 21, 24, or 25 inoperable.~~	~~D.1 Restore required channel to OPERABLE status.~~	~~7 days~~	L01
ACTION D	E. Required Action and associated Completion Time of Condition C ~~or D~~ not met.	E.1 Enter the Condition referenced in Table 3.3.11-1 for the channel.	Immediately	L01
ACTION E	F. As required by Required Action E.1 and referenced in Table 3.3.11-1.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	6 hours 12 hours	
ACTION F	G. As required by Required Action E.1 and referenced in Table 3.3.11-1.	G.1 ~~Prepare and submit a Special Report to the NRC in accordance with Specification 5.7.2.~~ Initiate action in accordance with Specification 5.7.2.a.	~~30 days~~ Immediately	M02

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ITS

A01

SURVEILLANCE REQUIREMENTS

~~NOTE~~
~~These SRs apply to each PAMI Function in Table 3.3.11-1, with exceptions noted.~~

A03

	SURVEILLANCE	FREQUENCY	
SR 3.3.11.1	SR 3.3.11.1 Perform CHANNEL CHECK for Function 9.	~~12 hours~~	LA01
SR 3.3.11.2	SR 3.3.11.2 Perform CHANNEL CHECK for each required instrumentation channel, except Function 9, that is normally energized.	~~31 days~~	LA01
SR 3.3.11.3	SR 3.3.11.3 ~~Perform CHANNEL FUNCTIONAL TEST for function 9.~~ Not used.	~~31 days~~	L02
SR 3.3.11.4	SR 3.3.11.4 Perform CHANNEL CALIBRATION, for functions 2,3,14,15,16,17, and 20.	~~18 months~~	LA01
SR 3.3.11.5	SR 3.3.11.5 Perform CHANNEL CALIBRATION for functions 1,4,5,6,7,8,9,11,12,13,18, 19,21,22,23,24,25,26, and 27.	~~24 months~~	LA01

In accordance with the Surveillance Frequency Control Program

-----------------------NOTE-------------------------
Neutron detectors are excluded from the CHANNEL CALIBRATION.

L03

A01 L01

ITS

Table 3.3.11-1

Table 3.3.11-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION ~~F~~ D.1
1. Excore Neutron Flux	2	~~F~~ E
2. Reactor Coolant System Hot Leg Temperature	2 (1 per steam generator)	~~F~~ E
3. Reactor Coolant System Cold Leg Temperature	2 (1 per steam generator)	~~F~~ E
4. Reactor Coolant System Pressure (wide range)	2	~~F~~ E
5. Reactor Vessel Water Level	2[(d)]	~~G~~ F
6. Containment Water Level (wide range)	2	~~F~~ E
7. Containment Pressure (wide range)	2	~~F~~ E
8. Containment Isolation Valve Position Penetration Flow Path	2 per penetration flow path[(a)(b)]	~~F~~ E
9. Containment Area Radiation (high range)	2	~~G~~ F
10. Deleted		
11. Pressurizer Level	2	~~F~~ E
12. Steam Generator Water Level (wide range)	2 per steam generator	~~F~~ E
13. Condensate Storage Tank Level	2	~~F~~ E
14. Core Exit Temperature — Quadrant 1	2[(c)]	~~F~~ E
15. Core Exit Temperature — Quadrant 2	2[(c)]	~~F~~ E
16. Core Exit Temperature — Quadrant 3	2[(c)]	~~F~~ E
17. Core Exit Temperature — Quadrant 4	2[(c)]	~~F~~ E
18. Auxiliary Feedwater Flow	1 per steam generator	~~F~~ E
19. Containment Pressure (narrow range)	2	~~F~~ E
20. Reactor Coolant System Subcooling Margin Monitor	2	~~F~~ E
21. Pressurizer Safety Valve Position Indication	1 per valve	~~F~~ E
22. Containment Temperature	2	~~F~~ E
23. Containment Water Level (narrow range)	2	~~F~~ E
24. HPSI Flow Cold Leg	1 per cold leg	~~F~~ E
25. HPSI Flow Hot Leg	1 per hot leg	~~F~~ E
26. Steam Line Pressure	2 per steam generator	~~F~~ E
27. Refueling Water Storage Tank Level	2	~~F~~ E

A02

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

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

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

(d) ~~A channel consists of eight sensors in a probe.~~ A channel is OPERABLE if four or more sensors, one sensor in the upper head and three sensors in the ~~lower head~~ upper plenum are OPERABLE.

LA02 A04

DISCUSSION OF CHANGES
ITS 3.3.11, PAM INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS Table 3.3.11-1, Function 8, is the line item in the Table for Containment Isolation Valve Position. ITS Table 3.3.11-1, Function 8, is the line item in the Table for "Penetration Flow Path" Containment Isolation Valve Position. This changes the CTS by changing the title for a line item in by adding "Penetration Flow Path" to Containment Isolation Valve Position.

CTS Table 3.3.11-1 lists the Post Accident Monitoring Instrumentation Function, Required Channels, and Conditions Referenced from Required Action D.1. The proposed change will revise the title of Function 8, "Containment Isolation Valve Position" to "Penetration Flow Path Containment Isolation Valve Position." This change is acceptable because it clarifies that information about the Containment Isolation Valve Position provides the status of the Penetration Flow Paths. This change is designated as administrative because it clarifies the purpose of the Containment Isolation Valve Position Function without technically changing the Specification.

A03 CTS 3.3.11 contains an SR Note which states, These SRs apply to each PAMI Function in Table 3.3.11-1, with exceptions noted. ITS 3.3.11 does not contain this Note. This changes the CTS by deleting the SR Note which states the SRs apply to each PAM Instrumentation Function with exceptions noted.

The purpose of the CTS 3.3.11 SR Note is to ensure each SR is performed for each PAM Instrumentation Function with the exceptions noted. The proposed change deletes the CTS 3.3.11 SR Note because the Note is not required to ensure the SRs are performed for each Function. Each CTS and ITS SR already specifies which PAM Instrumentation Functions apply to the SR, thus rendering the SR Note redundant. This change is acceptable because an SR Note which is redundant is being deleted. This change is designated as administrative because redundant information is being deleted that does not technically affect the Specifications.

A04 CTS Table 3.3.11-1 Function 5 requires two Reactor Vessel Water Level channels to be OPERABLE. Footnote d further states that each channel is OPERABLE if one sensor in the upper head and three sensors in the lower head are OPERABLE. ITS Table 3.3.11-1 Function 5 includes the same two channel requirement for the Reactor Vessel Water Level Function. However, ITS Table 3.3.11-1 Footnote d requires one sensor in the upper head and three sensors in the upper plenum to be OPERABLE. This changes the CTS by

DISCUSSION OF CHANGES
ITS 3.3.11, PAM INSTRUMENTATION

modifying the location of the three sensors from the lower head to the upper plenum.

The purpose of the Footnote is to accurately describe the location and the required number of sensors to ensure the reactor Vessel Water Level Function is adequately monitored. The current location description for the three required sensors is not correct. The sensors are actually in the upper plenum, not the lower head. This is described in UFSAR Table 7.5-2a and b. This is also described in UFSAR Section 7.5.3.3.1.2 and shown pictorially in UFSAR Figure 7.5-8. Therefore, since the actual physical location of the sensors is not being changed, but only the description in the Footnote is being changed to be consistent with the actual physical location, this change is considered acceptable. This change is designated as administrative since the physical location of the sensors is not being changed.

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.11 ACTIONS are modified by a Note (Note 1) which states LCO 3.0.4 is not applicable. ITS 3.3.11 ACTIONS do not include this Note. This changes the CTS by deleting the exception to LCO 3.0.4 from the ACTIONS.

The purpose of Note 1 to CTS 3.3.11 ACTIONS is to allow the unit to continue MODE changes during a startup with required PAM Instrumentation channels inoperable. The proposed change deletes the CTS 3.3.11 ACTIONS Note 1. Thus, if one or more required PAM Instrumentation channels are inoperable, ITS 3.3.11 will only allow MODE changes during a startup using the allowances of ITS LCO 3.0.4.b, which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is designated as more restrictive because additional requirements are being added to the ITS that are not required by the CTS.

M02 CTS 3.3.11 Required Action B.1 requires a special report be prepared and submitted in accordance with Specification 3.7.2 within 30 days when the inoperable channel is not restored as required in CTS 3.3.11 ACTION A. ITS 3.3.11 Required Action B.1 includes a similar requirement, but specifies that the requirements of Specification 5.7.2.a be entered immediately. CTS 3.3.11 Required Action G.1 requires a special report be prepared and submitted in accordance with Specification 3.7.2 within 30 days when specified by Required Action E.1 and Table 3.3.11-1. ITS 3.3.11 Required Action F.1 includes a similar requirement, but specifies that the requirements of Specification 5.7.2.a be entered immediately. ITS 5.7.2.a requires the special report to be prepared and submitted within 14 days. This changes the CTS by requiring the special report to be submitted within 14 days in lieu of the current 30 day time period.

The purpose of the special report is to provide information to the NRC as to why the channel is inoperable and the plans for restoring it to OPERABLE status and to monitor the associated function while the channel remains inoperable. This change is acceptable because the requirement is purely an administrative reporting requirement that can be met within the proposed 14 day time period. Also, CTS and ITS 3.3.11 ACTION A already provides 30 days to restore the inoperable channel; thus during this time plans can be made to determine the best approach to restore the channel and to compensate for the inoperability. No additional time is needed to perform these compensatory measures - they will be in place when the original 30 day Completion Time expires. This change is designated as more restrictive since less time is allowed to prepare and submit a report in the ITS than is allowed in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.11.1 requires performance of a CHANNEL CHECK for Function 9 every 12 hours. CTS SR 3.3.11.2 requires performance of a CHANNEL CHECK of the required instrumentation channel that is normally energized once per 31days. CTS SR 3.3.11.4 requires performance of a CHANNEL CALIBRATION for Functions 2, 3, 14, 15, 16, 17, and 20 every 18 months. CTS SR 3.3.11.5 requires performance of a CHANNEL CALIBRATION for Functions 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 18, 19, 21, 22, 23, 24, 25, 26, and 27 every 24 months. ITS SRs 3.3.11.1, 3.3.11.2, 3.3.11.4, and 3.3.11.5 require similar Surveillances and specify the periodic Frequencies as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

DISCUSSION OF CHANGES
ITS 3.3.11, PAM INSTRUMENTATION

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

DISCUSSION OF CHANGES
ITS 3.3.11, PAM INSTRUMENTATION

- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

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ITS 3.3.11, PAM INSTRUMENTATION

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3.11-1 Footnote d for Reactor Vessel Water Level contains a statement that a channel consists of eight sensors in a probe. ITS Table 3.3.11-1 Footnote d for Reactor Vessel Water Level will not contain this information. This changes the CTS by moving information in the footnote that there are eight sensors in a probe for Reactor Vessel Water Level instrumentation to the Bases.

CTS Table 3.3.11-1 Footnote d contains detail that there are eight sensors in a probe for reactor vessel water level instrumentation. The removal of this information from the CTS footnote 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. This level of detail is not required in the Technical Specifications. This information is already contained in the CTS 3.3.11 Bases (and will be included in the ITS Bases). This change is acceptable because this type of detail will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This change is designated as a less restrictive removal of detail change because details of the number of sensors in a probe are being removed from the Technical Specifications.

LESS STRICTIVE CHANGES

L01 *(Category 3 - Relaxation of Completion Time)* CTS 3.3.11 ACTION D provides 7 days to restore a channel to OPERABLE status when PAM Instrumentation channels for Functions 18, 21, 24, or 25 are inoperable. ITS 3.3.11 ACTION A will allow 30 days to restore an inoperable channel for these same Functions. This changes the CTS by extending the time to restore an inoperable channel for Functions 18, 21, 24, and 25 from 7 days to 30 days. In addition, due to this change, the Note in CTS 3.3.11 Condition A has been deleted and the reference in CTS 3.3.11 Condition E to Condition D has been deleted. Also, due to the changes to CTS 3.3.11 ACTIONS, the references to the Conditions in Table 3.3.11-1 have been changed accordingly.

The purpose of CTS 3.3.1 ACTION D is to provide some time for restoration of the channel when it becomes inoperable. The change in the Completion Time is

DISCUSSION OF CHANGES
ITS 3.3.11, PAM INSTRUMENTATION

acceptable because there are other indications available to ensure the function monitored by the inoperable instrumentation is performing properly. Function 18, Auxiliary Feedwater Flow, can be confirmed by ensuring the flow path is aligned properly and that the pump is operating. Function 21, Pressurizer Safety Valve Position, can be confirmed by monitoring the RCS pressure and noting that nothing untoward is occurring. Functions 24 and 25, HPSI Flow Cold and Hot Legs, can be confirmed by verifying the flow paths are aligned properly and that the pump is operating. This change is also consistent with that allowed in NUREG-1432. This change is designated as less restrictive because more time is allowed to restore an inoperable channel in the ITS than is allowed in the CTS.

L02 *(Category 5 - Deletion of Surveillance Requirement)* CTS SR 3.3.11.3 requires performance of a CHANNEL FUNCTIONAL TEST of Function 9, Containment Area Radiation (high range) channels. ITS 3.3.11 does not include this Surveillance. This changes the CTS by deleting this CHANNEL FUNCTIONAL TEST Surveillance.

The purpose of a CHANNEL FUNCTIONAL TEST, as defined in the CTS Section 1.1, is to inject a signal into the device to verify the alarms, interlocks and trip work properly. However, the PAM instrumentation is provided for monitoring purposes only, not to provide automatic actions. The CTS does not provide any setpoints for this instrument in CTS 3.3.11. It is included only to provide indication of containment radiation and not to provide an automatic action. The indication is currently required to have a CHANNEL CHECK (CTS SR 3.3.11.1) and a CHANNEL CALIBRATION (CTS SR 3.3.11.5) performed to ensure it can meet the PAM instrumentation requirements. Both these SRs are maintained in the ITS (ITS SR 3.3.11.1 and SR 3.3.11.5). Therefore, this change is acceptable because the PAM Containment Area Radiation channels are not assumed to perform any automatic functions and adequate SRs remain to properly test the PAM Containment Area Radiation Function. This change is designated as less restrictive because an SR required by the CTS is not being included in the ITS.

L03 *(Category 6 - Relaxation of Surveillance Requirement Acceptance Criteria)* CTS SR 3.3.11.5 requires performance of a CHANNEL CALIBRATION for selected PAM Instrumentation Functions (including Excore Neutron Flux). ITS SR 3.3.11.5 is a similar Surveillance, but contains a note stating that the neutron detectors are excluded from the CHANNEL CALIBRATION. This changes the CTS by adding a Note to SR 3.3.11.5 which exempts the neutron detectors from the CHANNEL CALIBRATION.

The purpose of the CHANNEL CALIBRATION on the Excore Neutron Flux Instrumentation is to ensure the indicator is providing accurate indication to the operator. The ITS allows the neutron detector to be excluded from the CHANNEL CALIBRATION. This change is acceptable because the neutron detectors are passive devices with minimal drift and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the calorimetric calibration (ITS SR 3.3.1.5) and the linear subchannel gain check (ITS SR 3.3.1.6). This change is designated as less restrictive because the CHANNEL CALIBRATION of the Excore Neutron Flux Instrumentation now excludes the actual neutron detector and only includes the indication loop.

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

3.3 INSTRUMENTATION

3.3.11 ## 3.3.11 Post Accident Monitoring (PAM) Instrumentation ~~(Digital)~~ 1

LCO 3.3.11 LCO 3.3.11 The PAM instrumentation for each Function in Table 3.3.11-1 shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

ACTIONS Note 2

--NOTE--

Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A, ACTION D	A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days	
ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification ~~5.6.5~~ 5.7.2.a.	Immediately	3
ACTION C	C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days	
ACTION E	D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.11-1 for the channel.	Immediately	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION F	E. As required by Required Action D.1 and referenced in Table 3.3.11-1.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours	
ACTION G	F. [As required by Required Action D.1 and referenced in Table 3.3.11-1.	F.1 Initiate action in accordance with Specification ~~5.6.5~~ 5.7.2.a.	Immediately]	4 3

SURVEILLANCE REQUIREMENTS

~~--NOTE--~~
~~These SRs apply to each PAM instrumentation Function in Table 3.3.11-1.~~
~~--~~ 7

	SURVEILLANCE	FREQUENCY		
	SR 3.3.11.1 Perform CHANNEL CHECK for Function 9.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	7	TSTF-425-A
SR 3.3.11.2	SR 3.3.11.~~1~~ 2 Perform CHANNEL CHECK for each required instrumentation channel ,except for Function 9, that is normally energized.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	3	TSTF-425-A
	SR 3.3.11.3 Not used.		7	
SR 3.3.11.5	SR 3.3.11.~~2~~ 5 ------------------------------NOTE------------------------------ Neutron detectors are excluded from the CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION for Functions 1, 4, 5, 6, 7, 8, 9, 11, 12, 13, 18, 19, 21, 22, 23, 24, 25, 26, and 27.	~~[18] months~~ 24 months In accordance with the Surveillance Frequency Control Program	3 7	TSTF-425-A
	SR 3.3.11.4 Perform CHANNEL CALIBRATION for Functions 2, 3, 14, 15, 16, 17, and 20.	~~18 months~~ In accordance with the Surveillance Frequency Control Program	7	TSTF-425-A

Table 3.3.11-1

Table 3.3.11-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	
1. ~~[Wide Range]~~ Excore Neutron Flux	2	E	4
2. Reactor Coolant System Hot Leg Temperature	2 ~~per loop~~ (1 per steam generator)	E	5
3. Reactor Coolant System Cold Leg Temperature	2 ~~per loop~~ (1 per steam generator)	E	
4. Reactor Coolant System Pressure (wide range)	2	E	
5. Reactor Vessel Water Level	2(d)	~~[~~F~~]~~	5 4
6. Containment ~~Sump~~ Water Level (wide range)	2	E	5
7. Containment Pressure (wide range)	2	E	
8. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path(a)(b)	E	
9. Containment Area Radiation (high range)	2	~~[~~F~~]~~	4
10. Not Used			
~~10~~ 11. Pressurizer Level	2	E	3
~~11~~ 12. Steam Generator Water Level (wide range)	2 per steam generator	E	
~~12~~ 13. Condensate Storage Tank Level	2	E	
~~13~~ 14. Core Exit Temperature - Quadrant ~~[~~1~~]~~	2(c)	E	4
~~14~~ 15. Core Exit Temperature - Quadrant ~~[~~2~~]~~	2(c)	E	
~~15~~ 16. Core Exit Temperature - Quadrant ~~[~~3~~]~~	2(c)	E	
~~16~~ 17. Core Exit Temperature - Quadrant ~~[~~4~~]~~	2(c)	E	
~~17~~ 18. ~~Emergency~~ Auxiliary Feedwater Flow	2	E	
INSERT 1			5

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

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

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

(d) A channel is OPERABLE if four or more sensors, one sensor in the upper head and three sensors in the upper plenum, are OPERABLE. 5

~~--REVIEWER'S NOTE--~~
~~Table 3.3.11-1 shall be amended for each unit as necessary to list:~~
~~1. All Regulatory Guide 1.97, Type A instruments and~~
~~2. All Regulatory Guide 1.97, Category I, non-Type A instruments specified in the unit's Regulatory Guide 1.97, Safety Evaluation Report.~~
~~--~~ 6

Table 3.3.11-1

5 **INSERT 1**

19. Containment Pressure (narrow range)	2	E
20. Reactor Coolant System Subcooling Margin Monitor	2	E
21. Pressurizer Safety Valve Position Indication	1 per valve	E
22. Containment Temperature	2	E
23. Containment Water Level (narrow range)	2	E
24. HPSI Flow Cold Leg	1 per cold leg	E
25. HPSI Flow Hot Leg	1 per hot leg	E
26. Steam Line Pressure	2 per steam generator	E
27. Refueling Water Storage Tank Level	2	E

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JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11, PAM INSTRUMENTATION

1. The headings for ISTS 3.3.11 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

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

3. The Specification number referenced in ISTS 3.3.11 Required Action B.1 was changed from 5.6.5 to 5.7.2.a to be consistent with the SONGS ITS numbering in Section 5.0. In addition, SCE has decided not to renumber the CTS to be consistent with the ISTS because by doing so would result in the unnecessary administrative burden of changing TS numbers in plant procedures. For this reason, "Not used" is inserted for ITS SR 3.3.11.3. Also, The Function numbers in ISTS Table 3.3.11-1 are being renumbered to be consistent with SONGS CTS Table 3.3.11-1 to also minimize the administrative burden of revising plant procedures to only change TS numbers.

4. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

5. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis or licensing basis description. The Functions listed in ITS Table 3.3.3-1 have been modified to be consistent with the SONGS RG 1.97 requirements and the SONGS CTS, as required by the Reviewer's Note to the Table.

6. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

7. Surveillance Requirements are being added to the ISTS 3.3.11 and the existing SRs are being revised to be consistent with the SONGS CTS 3.3.11 SR. Specifically, two SRs (ITS SR 3.3.11.1 and SR 3.3.11.4) are being added to ISTS 3.3.11 Surveillance Requirements. ITS SR 3.3.11.1 requires performance of a CHANNEL CHECK for Function 9, (Containment Area Radiation Monitors) and ITS SR 3.3.11.4 requires performance of a CHANNEL CALIBRATION for Functions 2, 3, 14, 15, 16, 17, and 20. These SRs are being added because the CTS have different Frequencies for these SRs. ISTS SR 3.3.11.1 is being renumbered to ITS SR 3.3.11.2 to be consistent with the CTS 3.3.11 SR numbering and is being revised to exclude Function 9 (which is covered by ITS SR 3.3.11.1). ISTS SR 3.3.11.2 is being renumbered to ITS SR 3.3.11.5 to match the CTS 3.3.11 SR numbering and is being revised to add the specific PAM Functions which apply (due to the different SR Frequencies). In addition ITS SR 3.3.11.3 is being added as a "not used" SR so the subsequent SR numbering can remain consistent with the CTS SR numbering. The numbering changes are being made to be consistent with the CTS to avoid the

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11, PAM INSTRUMENTATION

unnecessary administrative burden of changing SR numbers in plant procedures. These SRs are currently being performed at SONGS, consistent with SONGS Units 2 and 3 CTS. Also, the ISTS 3.3.11 SR Note which states, "These SRs apply to each PAM Instrumentation Function in Table 3.3.11-1," is being deleted. The SR Note is not required because of the changes described above, which adds the Functions (or exceptions to, as in ITS SR 3.3.11.2) that apply to each SR.

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

B 3.3 INSTRUMENTATION

B 3.3.11 Post Accident Monitoring (PAM) Instrumentation ~~(Digital)~~ 1

BASES

BACKGROUND

The primary purpose of the PAM instrumentation is to display plant 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, that are required for safety systems to accomplish their safety functions for Design Basis Events.

The OPERABILITY of PAM instrumentation ensures that there is sufficient information available on selected plant parameters to monitor and assess plant status and behavior following an accident.

The availability of PAM instrumentation is important so that responses to corrective actions can be observed and the need for, and magnitude of, further actions can be determined. These essential instruments are identified by plant specific documents (Ref. 1) addressing the recommendations of Regulatory Guide 1.97 (Ref. 2), as required by Supplement 1 to NUREG-0737, "TMI Action Items" (Ref. 3).

Type A variables are included in this LCO because they provide the primary information required to permit the control room operator to take specific manually controlled actions, for which no automatic control is provided, that are required for safety systems to accomplish their safety functions for Design Basis Accidents (DBAs). ~~Because the list of Type A variables differs widely between plants, Table 3.3.11-1 in the accompanying LCO contains no examples of Type A variables, except for those that may also be Category I.~~ 2

Category I variables are the key variables deemed risk significant because they are needed to:

- Determine whether other systems important to safety are performing their intended functions~~,~~ ; 3
- 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 3
- Provide information regarding the release of radioactive materials to allow for early indication of the need to initiate action necessary to protect the public as well as to obtain an estimate of the magnitude of any impending threat.

BASES

BACKGROUND (continued)

These key variables are identified by plant specific Regulatory Guide 1.97 analyses (Ref. 1). These analyses identified the plant specific Type A variables and provided justification for deviating from the NRC proposed list of Category I variables.

~~-----------------------------------REVIEWER'S NOTE------------------------------------~~
~~Table 3.3.11-1 provides a list of variables typical of those identified by plant specific Regulatory Guide 1.97 analyses. Table 3.3.11-1 in the plant specific Technical Specifications (TS) shall list all Type A and Category I variables identified by plant specific Regulatory Guide 1.97 analyses, as amended by the NRC's Safety Evaluation Report (SER) (Ref. 4). The specific instrument Functions listed in Table 3.3.11-1 are discussed in the LCO Bases.~~
~~---~~ 4

APPLICABLE SAFETY ANALYSES

The PAM instrumentation ensures the OPERABILITY of Regulatory Guide 1.97 Type A variables, 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 ; and 3
- Take the specified, preplanned, manually controlled actions, for which no automatic control is provided, that are required for safety systems to accomplish their safety functions.

The PAM instrumentation also ensures OPERABILITY of Category I, non-Type A variables. This ensures the control room operating staff can:

- Determine whether systems important to safety are performing their intended functions ~~,~~ ; 3
- Determine the potential for causing a gross breach of the barriers to radioactivity release ~~,~~ ; 3
- Determine if a gross breach of a barrier has occurred ~~,~~ ; and 3
- Initiate action necessary to protect the public as well as to obtain an estimate of the magnitude of any impending threat.

BASES

APPLICABLE SAFETY ANALYSES (continued)

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 I, non-Type A PAM instruments are retained in the Specification because they are intended to assist operators in minimizing the consequences of accidents. Therefore, these Category I, non-Type A variables are important in reducing public risk.

LCO

LCO 3.3.11 requires two OPERABLE channels ~~for all but one Function~~ to ensure no single failure prevents the operators from being presented with the information necessary to determine the status of the plant and to bring the plant 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 plants if the Regulatory Guide 1.97 analysis determined that failure of one accident monitoring channel results in information ambiguity (that is, the redundant displays disagree) that could lead operators to defeat or to fail to accomplish a required safety function.]~~ 5

, Auxiliary Feedwater Flow, Pressurizer Safety Valve Position, HPSI Flow Cold Leg, and HPSI Flow Hot Leg

For Penetration Flow Path Containment Isolation Valve Position

s

are

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. 6

Listed below are discussions of the specified instrument Functions listed in Table 3.3.11-1. ~~These discussions are intended as examples of what should be provided for each Function when the plant specific list is prepared.~~ 2

Excore

1. ~~[Wide Range]~~ Neutron Flux 5

~~[Wide Range]~~ Neutron Flux indication is provided to verify reactor shutdown.

The channels provide indication over a range of 10^{-8}% to 200% power.

~~[At this unit, the [Wide Range] Neutron Flux PAM channels consist of the following:]~~ 5

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BASES

LCO (continued)

2, 3. Reactor Coolant System (RCS) Hot and Cold Leg Temperature

RCS Hot and Cold Leg Temperatures are Category I variables provided for verification of core cooling and long term surveillance.

Reactor outlet temperature inputs to the PAM are provided by two fast response resistance elements and associated transmitters ~~in each loop~~. The channels provide indication over a range of ~~32~~ 0°F to 710 ~~700~~°F. 2

4. Reactor Coolant System Pressure (wide range)

RCS Pressure (wide range) is a Category I variable, provided for verification of core cooling and RCS integrity long term surveillance.

Wide range RCS loop pressure is a measured by pressure transmitters with a span of 0 ~~psig~~ to 3000 psi~~g~~. The pressure transmitters are located inside ~~outside~~ the containment. Redundant monitoring capability is provided by two trains of instrumentation. Control room indications are provided through the Qualified Safety Parameters Display System (QSPDS) ~~inadequate core cooling (ICC)~~ plasma display. The QSPDS ~~ICC~~ plasma display is the primary indication used by the operator during an accident. Therefore, the PAM instrumentation Specification deals specifically with this portion of the instrument channel. 2

~~In some plants, RCS pressure is a Type A variable because the operator uses this indication to monitor the cooldown of the RCS following a steam generator tube rupture or small break loss of coolant accident (LOCA).~~ 2 Operator actions to maintain a controlled cooldown, such as adjusting steam generator pressure or level, would use this indication. Furthermore, RCS pressure is one factor that may be used in decisions to terminate reactor coolant pump operation.

5. Reactor Vessel Water Level

Reactor Vessel Water Level is provided for verification and long term surveillance of core cooling.

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BASES

LCO (continued)

The Reactor Vessel Water 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. 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.

Each channel consists of eight sensors in a probe. As Noted (Table 3.3.11-1 footnote (d)), a channel is OPERABLE if four sensors, with one sensor in the upper head and three sensors in the upper plenum, are OPERABLE. 2

6. Containment ~~Sump~~ Water Level (wide range) 2

Containment ~~Sump~~ Water Level is provided for verification and long term surveillance of RCS integrity.

The channels provide indication over a range of 11 ft 1 inch to 30 ft 2 inches. Each channel consists of normal sump level, emergency sump level, and area indication.

~~[For this unit, Containment Sump Water Level instrumentation consists of the following:]~~ 5

7. Containment Pressure (wide range)

Containment Pressure is provided for verification of RCS and containment OPERABILITY.

The channels provide indication over a range of 0 to 200 psig.

~~[For this unit, Containment Pressure instrumentation consists of the following:]~~ 5

8. Penetration Flow Path Containment Isolation Valve Position

Penetration Flow Path Containment Isolation Valve (CIV) Position is provided for verification of containment OPERABILITY.

BASES

LCO (continued)

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.

~~[For this unit, the CIV position PAM instrumentation consists of the following:]~~ 5

9. Containment Area Radiation (high range)

Containment Area Radiation is provided to monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans.

The channels provide indication over a range of 10^0 to 10^8 R/hr.

~~[For this unit, Containment Area Radiation instrumentation consists of the following:]~~ 5

10. Not used.

11 ~~10~~. Pressurizer Level 6

Pressurizer Level 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 plant conditions necessary to establish natural circulation in the RCS and to verify that the plant is maintained in a safe shutdown condition.

The channels provide indication over a range of 0 to 100%.

~~[For this unit, Pressurizer Level instrumentation consists of the following:]~~ 5

BASES

LCO (continued)

12 ~~11~~. Steam Generator Water Level 6

Steam Generator Water Level is provided to monitor operation of decay heat removal via the steam generators. The Category I indication of steam generator level is the ~~extended startup~~ wide range level instrumentation. The ~~extended startup~~ wide range level covers ~~a~~ an approximate span of ~~6~~ 32.4 inches to ~~394~~ 509 inches above the ~~lower~~ tubesheet. The measured differential pressure is converted and displayed ~~in inches of water at 68°F.~~ to 0% to 100% level between these two elevation points. Temperature ~~compensation of~~ correction is applied to 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 plant computer ~~, a~~ and control room indicat~~or, and the Emergency Feedwater (EFW) Control System~~ion. 2

~~At some plants,~~ operator action is based on the control room indication of Steam Generator Water Level. The RCS response during a design basis small break LOCA is dependent on the break size. For a certain range of break sizes, the boiler condenser mode of heat transfer is necessary to remove decay heat. ~~At these plants,~~ Wide ~~extended startup~~ range level is a Type A variable because the operator must manually raise and control the steam generator level to establish steaming ~~boiler condenser heat transfer~~. Operator action is initiated on a loss of subcooled margin. Feedwater flow is increased until the indicated wide ~~extended startup~~ range level reaches the minimum required level ~~boiler condenser setpoint~~.

13 ~~12~~. Condensate Storage Tank (CST) Level 6

CST Level is provided to ensure water supply for A~~E~~FW. The CST provides the ensured, safety grade water supply for the A~~E~~FW System. The CST consists of two ~~identical~~ tanks that can be connected by ~~a~~ interconnected piping ~~common outlet header~~. Inventory is monitored by ~~a~~ 0 to 100% ~~144 inch~~ level indicators ~~indication~~ for one ~~each~~ tank (T-121). CST Level is displayed on a control room indicator, strip chart recorder, and plant computer. In addition, a control room annunciator alarms on low level.

~~At some plants,~~ CST Level is considered a Type A variable because the control room meter and annunciator are considered the primary indication used by the operator. The DBAs that require A~~E~~FW are the loss of electric power, steam line break (SLB), and small break LOCA. The CST is the initial source of water for the A~~E~~FW System. However, as ~~the~~ CST T-121 is depleted, manual operator action is necessary to replenish the CST or align suction to the A~~E~~FW pumps from CST T-120 ~~the hotwell~~. 2

BASES

LCO (continued)

~~13,~~ 14, 15, 16, 17. <u>Core Exit Temperature</u> 6

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 necessary for inadequate core cooling detection. The evaluation determined the reduced complement of core exit thermocouples necessary to detect initial core recovery and trend the ensuing core heatup. The evaluations account for core nonuniformities including incore effects of the radial decay power distribution and excore effects of condensate runback in the hot legs and nonuniform inlet temperatures. Based on these evaluations, adequate or inadequate core cooling detection is ensured with two valid core exit thermocouples per quadrant.

The design of the Incore Instrumentation System includes a Type K (chromel alumel) thermocouple within each of the 56 incore instrument detector assemblies. The junction of each thermocouple is located a few inches above the fuel assembly, inside a structure that supports and shields the incore instrument detector assembly string from flow forces in the outlet plenum region. These core exit thermocouples monitor the temperature of the reactor coolant as it exits the fuel assemblies.

The core exit thermocouples have a usable temperature range from 32°F to 2300°F, although accuracy is reduced at temperatures above 1800°F.

18 ~~17~~. Auxiliary ~~Emergency~~ <u>Feedwater (A~~E~~FW) Flow</u> 6 2

A~~E~~FW Flow is provided to monitor operation of decay heat removal via the steam generators. 2

A~~E~~FW Flow to each steam generator is determined from a differential pressure measurement calibrated to a span of 0 gpm to 800 ~~1200~~ gpm. ~~Redundant monitoring capability is provided by two independent trains of instrumentation for each steam generator.~~ Each differential pressure transmitter provides an input to a control room indicator and the plant computer. Since the primary indication used by the operator during an accident is the control room indicator, the PAM instrumentation Specification deals specifically with this portion of the instrument channel. 2 6

BASES

LCO (continued)

~~At some plants EFW Flow is a Type A variable because operator action is required to throttle flow during an SLB accident in order to prevent the EFW pumps from operating in runout conditions.~~ ~~E~~ A FW Flow is also used by the operator to verify that the ~~E~~ A FW System is delivering the correct flow to each steam generator. However, the primary indication used by the operator to ensure an adequate inventory is steam generator level. 2

INSERT 1

Two channels are required to be OPERABLE for all but ~~one~~ five Function s. Two OPERABLE channels ensure that no single failure within the PAM instrumentation or its auxiliary supporting features or power sources, concurrent with failures that are a condition of or result from a specific accident, prevents the operators from being presented the information necessary for them to determine the safety status of the plant and to bring the plant to and maintain it in a safe condition following that accident.

TSTF-470 6

In Table 3.3.11-1 the exception s to the two channel requirement ~~is~~ are Containment Isolation Valve Position Penetration Flow Path , Auxiliary Feedwater Flow, Pressurizer Safety Valve Position, HPSI Flow Cold Leg, and HPSI Flow Hot Leg.

Two OPERABLE ~~channels of~~ core exit thermocouples are required for each channel in each quadrant to provide indication of radial distribution of the coolant temperature rise across representative regions of the core. Power distribution symmetry was considered in determining the specific number and locations provided for diagnosis of local core problems. ~~Therefore, two randomly selected thermocouples may not be sufficient to meet the two thermocouples per channel requirement in any quadrant. The two thermocouples in each channel must meet the additional requirement that one be located near the center of the core and the other near the core perimeter, such that the pair of core exit thermocouples indicate the radial temperature gradient across their core quadrant.~~ Plant specific evaluations in response to Item II.F.2 of NUREG-0737 (Ref. 3) ~~should have identified the~~ have concluded that specific thermocouple pairings ~~that~~ within a core quadrant are not necessary to satisfy these requirements. Two sets of two thermocouples in each quadrant ensure a single failure will not disable the ability to determine the radial temperature gradient. 8 2 2

For loop and steam generator related variables, the required information is individual loop temperature and individual steam generator level. In these cases two channels (one channel for T_C and T_H) are required to be OPERABLE for each loop of steam generator to redundantly provide the necessary information. 2

2

INSERT 1

19. Containment Pressure (Narrow Range)

    Containment Pressure is provided for verification of containment OPERABILITY. The channels provide indication over a range of -4 to 85 psig.

20. Reactor Coolant System Subcooling Margin Monitor

    The RCS subcooled Margin Monitor is required since it provides information to the operator regarding core cooling.

21. Pressurizer Safety Valve Position

    Pressurizer Safety Valve Position is provided for proper position verification of the Pressurizer Safety Valves.

22. Containment Temperature

    Containment Temperature is provided for verification of containment temperature. The channels provide indication over a range of 0 to 400ºF.

23. Containment Water Level (Narrow Range)

    Containment Water Level is provided for determination of water level in the sump. The channels provide indication over a range of 11 ft 1 inch to 16 ft 6 inches.

24, 25. HPSI Flow Cold Leg

    HPSI Flow Cold Leg and Hot Leg are provided for determination of HPSI flow. The channels provide indication over a range of 0 to 500 gpm.

26. Steam Line Pressure

    Steam Line Pressure is provided for steam line pressure verification. The channels provide indication over a range of 0 to 1200 psia.

27. Refueling Water Storage Tank Level

    Refueling Water Storage Tank (RWST) Level is provided for verification of the level in the RWST. The channels provide indication over a range of 0 to 100% level.

BASES

LCO (continued)

Penetration Flow Path

In the case of Containment Isolation Valve Position, 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. TSTF-470

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, plant conditions are such that the likelihood of an event occurring that would require PAM instrumentation is low; therefore, PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in Table 3.3.11-1. The Completion Time(s) of the inoperable channel(s) 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 that is inoperable, the required inoperable channel must be restored to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and 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.

BASES

ACTIONS (continued)

B.1

5.7.2.a This Required Action specifies initiation of actions in accordance with Specification ~~5.6.5~~, which requires a written report to be submitted to the Nuclear Regulatory Commission. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative Required Actions. This Required Action is appropriate in lieu of a shutdown requirement, given the likelihood of plant conditions that would require information provided by this instrumentation. Also, alternative Required Actions are identified before a loss of functional capability condition occurs. 6

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 operation and the availability of alternate 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 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

This Required Action directs entry into the appropriate Condition referenced in Table 3.3.11-1. The applicable Condition referenced in the Table is Function dependent. Each time Required Action C.1 is not met, and the associated Completion Time has expired, Condition D is entered for that channel and provides for transfer to the appropriate subsequent Condition.

BASES

ACTIONS (continued)

E.1 and E.2

If the Required Action and associated Completion Time of Condition C are not met and Table 3.3.11-1 directs entry into Condition E, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~[~~ F.1 5

~~At this plant,~~ alternate means of monitoring Reactor Vessel Water Level and Containment Area Radiation have been developed and tested. These alternate means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. If these alternate means are used, the Required Action is not to shut down the plant, but rather to follow the directions of Specification ~~5.6.5~~ 5.7.2.a. 6 The report provided to the NRC should discuss whether the alternate 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. ~~]~~ 5

SURVEILLANCE REQUIREMENTS

~~A Note at the beginning of the SR Table specifies that the following SRs apply to each PAM instrumentation Function found in Table 3.3.11-1.~~

6

SR 3.3.11.1 and SR 3.3.11.2

SR 3.3.11.1 requires performance of the CHANNEL CHECK for Containment Area Radiation Monitors and SR 3.3.11.2 requires performance of a CHANNEL CHECK for the remaining PAM Instrumentation Functions.

Performance of the CHANNEL CHECK ~~once every 31 days~~ 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. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

TSTF-425-A

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined by the plant 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. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

INSERT 2

~~The Frequency of 31 days is based upon plant 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. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel during normal operational use of the displays associated with this LCO's required channels.~~ TSTF-425-A

SR 3.3.11.3

Not used.

SR 3.3.11.~~2~~ 4 and SR 3.3.11.5 6 TSTF-425-A

A ~~CHANNEL CALIBRATION is performed every [18] months or approximately every refueling.~~ CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies the channel responds to the measured parameter within the necessary range and accuracy. A Note to SR 3.3.11.5 allows exclusion of the neutron detectors from the CHANNEL CALIBRATION. 6

~~[At this unit, CHANNEL CALIBRATION shall find measurement errors are within the following acceptance criteria:]~~ 5

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.

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.

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

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.

INSERT 3

~~The Frequency is based upon operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift.~~

TSTF-425-A

REFERENCES

~~[1. Plant specific document (e.g., FSAR, NRC Regulatory Guide 1.97, SER letter).]~~

SONGS Units 2 and 3 Regulatory Guide 1.97 Instrumentation Report #90010A.

5

2. Regulatory Guide 1.97.

3. NUREG-0737, Supplement 1.

~~4. NRC Safety Evaluation Report (SER).~~

2

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 7

-- Reviewers Note --
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.11 BASES, PAM INSTRUMENTATION

1. The headings for ISTS 3.3.11 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

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. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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

5. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

6. Changes have been made to the Bases to reflect changes made to the Specifications.

7. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

8. Changes have been made to the Bases to be consistent with the actual Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.11, PAM INSTRUMENTATION

There are no specific No Significant Hazards Considerations for this Specification.

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ATTACHMENT 11

ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

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

ITS

A01

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown System

LCO 3.3.12

LCO 3.3.12 The Remote Shutdown System Functions ~~in Table 3.3.12-1~~ shall be OPERABLE.

LA01

Applicability

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

ACTIONS Note

-----------------------------------NOTES-----------------------------------

~~1. LCO 3.0.4 is not applicable.~~

M01

2. Separate Condition entry is allowed for each Function.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One or more required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	30 days
ACTION B	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

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ITS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.12.1	SR 3.3.12.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.12.2	SR 3.3.12.2	------------------NOTE------------------ Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION for each required instrumentation channel. INSERT 1	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA02 M02

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ITS

M02 **INSERT 1**

SR 3.3.12.3	SR 3.3.12.3	Verify each required control circuit and transfer Switch is capable of performing the intended Function.	In accordance with the Surveillance Frequency Control Program

A01 LA01

~~Table 3.3.12-1 (page 1 of 1)~~
~~Remote Shutdown System Instrumentation and Controls~~

~~FUNCTION/INSTRUMENT OR CONTROL PARAMETER~~	~~REQUIRED NUMBER OF CHANNELS~~
~~1. Reactivity Control~~	
~~a. Source Range Neutron Flux~~	~~1~~
~~b. Boric Acid Makeup Tank Level~~	~~1~~
~~2. Vital Auxiliaries~~	
~~a. Diesel Generator Voltage~~	~~1~~
~~b. Diesel Generator Frequency~~	~~1~~
~~3. Reactor Coolant System Inventory Control~~	
~~a. Pressurizer Level~~	~~1~~
~~4. Reactor Coolant System Pressure Control~~	
~~a. Pressurizer Pressure~~	~~1~~
~~5. Decay Heat Removal (via Steam Generators)~~	
~~a. Reactor Coolant Hot Leg Temperature~~	~~1 per loop~~
~~b. Reactor Coolant Cold Leg Temperature~~	~~1 per loop~~
~~c. Steam Generator Pressure~~	~~1 per steam generator~~
~~d. Steam Generator Level Narrow Range~~	~~1 per steam generator~~
~~e. Condensate Storage Tank Level~~	~~1~~

ITS

A01

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown System

LCO 3.3.12

LCO 3.3.12 The Remote Shutdown System Functions ~~in Table 3.3.12-1~~ shall be OPERABLE. LA01

Applicability

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

------------------------------------NOTES------------------------------------

~~1. LCO 3.0.4 is not applicable.~~ M01

ACTIONS Note

2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A — A. One or more required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	30 days
ACTION B — 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	
SR 3.3.12.1	SR 3.3.12.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days~~ In accordance with the Surveillance Frequency Control Program	LA02
SR 3.3.12.2	SR 3.3.12.2 ------------------NOTE------------------- Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION for each required instrumentation channel.	~~24 months~~	LA02 M02
INSERT 1			

ITS

M02 **INSERT 1**

SR 3.3.12.3	SR 3.3.12.3	Verify each required control circuit and transfer Switch is capable of performing the intended Function.	In accordance with the Surveillance Frequency Control Program

A01 LA01

~~Table 3.3.12-1 (page 1 of 1)~~
~~Remote Shutdown System Instrumentation and Controls~~

~~FUNCTION/INSTRUMENT OR CONTROL PARAMETER~~	~~REQUIRED NUMBER OF CHANNELS~~
~~1. Reactivity Control~~	
~~a. Source Range Neutron Flux~~	~~1~~
~~b. Boric Acid Makeup Tank Level~~	~~1~~
~~2. Vital Auxiliaries~~	
~~a. Diesel Generator Voltage~~	~~1~~
~~b. Diesel Generator Frequency~~	~~1~~
~~3. Reactor Coolant System Inventory Control~~	
~~a. Pressurizer Level~~	~~1~~
~~4. Reactor Coolant System Pressure Control~~	
~~a. Pressurizer Pressure~~	~~1~~
~~5. Decay Heat Removal (via Steam Generators)~~	
~~a. Reactor Coolant Hot Leg Temperature~~	~~1 per loop~~
~~b. Reactor Coolant Cold Leg Temperature~~	~~1 per loop~~
~~c. Steam Generator Pressure~~	~~1 per steam generator~~
~~d. Steam Generator Level Narrow Range~~	~~1 per steam generator~~
~~e. Condensate Storage Tank Level~~	~~1~~

DISCUSSION OF CHANGES
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

MORE RESTRICTIVE CHANGES

M01 CTS 3.3.12 ACTIONS are modified by a Note (Note 1) which states LCO 3.0.4 is not applicable. ITS 3.3.12 ACTIONS do not include this Note. This changes the CTS by deleting the exception to LCO 3.0.4 from the ACTIONS.

The purpose of Note 1 to CTS 3.3.12 ACTIONS is to allow the unit to continue MODE changes during a startup with required Remote Shutdown System Functions inoperable. The proposed change deletes the CTS 3.3.12 ACTIONS Note 1. Thus, if the required Remote Shutdown System Functions are inoperable, ITS 3.3.12 will only allow MODE changes during a startup using the allowances of ITS LCO 3.0.4.b, which requires performance of a risk assessment prior to changing MODES. This change adds the requirement to perform a risk assessment in order to enter the MODES of Applicability while the LCO is not met. Therefore, this change is considered acceptable. This change is designated as more restrictive because additional requirements are being added to the ITS that are not required by the CTS.

M02 ITS 3.3.12 contains an SR (SR 3.3.12.3) to verify that each required control circuit and transfer switch is capable of performing the intended function at a Frequency that will be specified in the Surveillance Frequency Control Program. CTS 3.3.12 does not contain a similar Surveillance Requirement. This changes the CTS by adding a Surveillance Requirement to verify that each required control circuit and transfer switch is capable of performing the intended function.

The purpose of ITS SR 3.3.12.2 is to verify that each required Remote Shutdown System transfer switch and control circuit performs its intended function to transfer control of selected equipment to the reactor shutdown panel and local control stations. The Frequency for this new SR will be specified in the Surveillance Frequency Control Program. The initial Frequency specified will be 24 months, which is consistent with the current SONGS refueling outage Surveillance interval. Any change to this 24 month Frequency will be made in accordance with the Surveillance Frequency Control Program. The proposed change is acceptable because it ensures that if the control room becomes inaccessible, the unit can be brought to and maintained in MODE 3 from the reactor shutdown panel and the local control stations. This change is designated

DISCUSSION OF CHANGES
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

as more restrictive because a Surveillance Requirement is required in the ITS that is not required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.3.12 requires the Remote Shutdown System Functions in Table 3.3.12-1 to be OPERABLE and CTS Table 3.3.12-1 is located in the Specification and provides a list of all the Functions required for the Remote Shutdown System. ITS LCO 3.3.12 requires the Remote Shutdown Functions to be OPERABLE; however, ITS 3.3.12 does not contain a Table listing the Remote Shutdown System Functions in the Specification. This changes the CTS by moving the Table of Remote Shutdown System Functions from the 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 System 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 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.12.1 requires performance of a CHANNEL CHECK of the required instrumentation channel that is normally energized once per 31 days. CTS SR 3.3.12.2 requires performance of a CHANNEL CALIBRATION for each required instrumentation channel every 24 months. ITS SRs 3.3.12.1 and 3.3.12.2 require similar Surveillances and specify the periodic Frequencies as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

DISCUSSION OF CHANGES
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past

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DISCUSSION OF CHANGES
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);

   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;

   - Independence of barriers is not degraded;

   - Defenses against human errors are preserved; and

   - The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

   These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and

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DISCUSSION OF CHANGES
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

None

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

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown System ~~(Digital)~~ 3

LCO 3.3.12

LCO 3.3.12 The Remote Shutdown System Functions shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

ACTIONS Note 2

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

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION A	A. One or more required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	30 days	
ACTION B	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	2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.12.1	SR 3.3.12.1	~~[~~ Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days]~~	2 TSTF-425-A
DOC M02	SR 3.3.12.~~2~~ 3	Verify each required control circuit and transfer switch is capable of performing the intended function.	~~[18] months~~ In accordance with the Surveillance Frequency Control Program	5 TSTF-425-A

Move SR 3.3.12.3 to page 3.3.12-2

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
SR 3.3.12.2	SR 3.3.12.~~3~~ 2	-------------------------------NOTE------------------------------ Neutron detectors are excluded from the CHANNEL CALIBRATION. -- Perform CHANNEL CALIBRATION for each required instrumentation channel.	5 ~~[18] months~~ In accordance with the Surveillance Frequency Control Program TSTF-425-A
INSERT SR 3.3.12.3 from page 3.3.12-1			5
	~~SR 3.3.12.4~~	~~[Perform CHANNEL FUNCTIONAL TEST of the reactor trip circuit breaker open/closed indication.~~	~~18 months]~~ 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.12 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. ISTS SR 3.3.12.4 requires performing a CHANNEL FUNCTIONAL TEST of the reactor trip circuit breaker open/closed indication. The SONGS remote shutdown panel does not include reactor trip breaker open/closed indication. Therefore, this SR has not been adopted.

5. SCE has decided not to renumber the CTS to be consistent with the ISTS because by doing so would result in the unnecessary administrative burden of changing TS numbers in plant procedures. For this reason, ISTS SR 3.3.12.2, which is not in the SONGS CTS, but is being added as part of this submittal, is being numbered as ITS SR 3.3.12.3. Also, ISTS SR 3.3.12.3 is being numbered as ITS SR 3.3.12.2, consistent with the current SONGS CTS number.

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

B 3.3 INSTRUMENTATION

B 3.3.12 Remote Shutdown System ~~(Digital)~~

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 a location 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 ~~[~~Auxiliary Feedwater (AFW) System~~]~~ and the steam generator safety valves or the steam generator atmospheric dump valves can be used to remove core decay heat and meet all safety requirements. The long term supply of water for the ~~[~~AFW System~~]~~ and the ability to borate the Reactor Coolant System (RCS) from outside the control room allow 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 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 plant parameters to bring the plant to, and maintain it 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 the plant and maintain it 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) ~~and Appendix R (Ref. 2)~~.

The Remote Shutdown System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

The Remote Shutdown System LCO provides the requirements for the OPERABILITY of the instrumentation and controls necessary to place and maintain the plant in MODE 3 from a location other than the control room. The instrumentation and controls required are listed in Table B 3.3.12-1.

The controls, instrumentation, and transfer switches are those required for:

- Reactivity Control (initial and long term)~~.~~ ;
- Vital Auxiliaries; 1
- RCS Pressure Control~~.~~ ;
- Decay Heat Removal~~.~~ ; 10
- RCS Inventory Control~~.~~ ; and
- Safety support systems for the above Functions, as well as ~~service water~~ salt water cooling, component cooling water, and onsite power including the diesel generators. 1

A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the remote shutdown Functions are OPERABLE. In some cases, Table B 3.3.12-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Remote Shutdown System is OPERABLE as long as one channel of any of the alternate information or control sources for each Function is OPERABLE.

The Remote Shutdown System instrumentation and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure that the instrument and control circuits will be OPERABLE if plant 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 in the condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control Functions if control room instruments or control become unavailable.

BASES

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.~~ 7

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function. 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

Functions

Condition A addresses the situation where one or more ~~channels~~ of the Remote Shutdown System are inoperable. This includes the control and transfer switches for any required Function. 6

Functions

The Required Action is to restore the ~~divisions~~ to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room. 6

B.1 and B.2

If the Required Action and associated Completion Time of Condition A are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 MODE from full power conditions in an orderly manner and without challenging plant systems. 2

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BASES

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.3.12.1 2

Performance of the CHANNEL CHECK ~~once every 31 days~~ 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 instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. Agreement criteria are determined by the plant 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. As specified in the Surveillance, a CHANNEL CHECK is only required for those channels that are normally energized. TSTF-425-A

~~The Frequency is based on plant operating experience that demonstrates channel failure is rare.]~~ TSTF-425-A

INSERT 1

3

SR 3.3.12.~~2~~ 9

Move SR 3.3.12.3 Bases to page B 3.3.12-5

SR 3.3.12.~~2~~ verifies that each required Remote Shutdown System transfer switch and control circuit performs its intended function. This verification is performed from the reactor 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 inaccessible, the plant can be brought to and maintained in MODE 3 from the reactor 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 plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience demonstrates that Remote Shutdown System control channels seldom fail to pass the Surveillance when performed at a Frequency of once every [18] months.~~ TSTF-425-A

INSERT 1

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 5

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4
~~--~~

 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

2

SR 3.3.12.~~3~~ 9

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies that the channel responds to the measured parameter within the necessary range and accuracy. 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.

~~The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.~~ TSTF-425-A

INSERT 2

Move SR 3.3.12.3 Bases to page B 3.3.12-5 9

~~[SR 3.3.12.4~~

~~SR 3.3.12.4 is the performance of a CHANNEL FUNCTIONAL TEST every 18 months. This Surveillance should verify the OPERABILITY of the reactor trip circuit breaker (RTCB) open/closed indication on the remote shutdown panels by actuating the RTCBs. 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 of 18 months was chosen because the RTCBs cannot be exercised while the unit is at power. Operating experience has shown that these components usually pass the Surveillance when performed at a Frequency of once every 18 months. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.]~~ 9

REFERENCES

1. 10 CFR 50, Appendix A, GDC 19.

~~2. 10 CFR 50, Appendix R.~~ 8

~~3. NRC Safety Evaluation Report (SER).~~ 4

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 5

-- Reviewers Note --
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 4

Table B 3.3.12-1 (page 1 of 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. 4

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF DIVISIONS
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	[4]
2. Reactor Coolant System Pressure Control	
a. Pressurizer Pressure or RCS Wide Range Pressure	[1]
b. Pressurizer Power Operated Relief Valve Control and Block Valve Control	[1, controls must be for power operated relief valve and block valves on same line]
3. Decay Heat Removal via Steam Generators	
a. Reactor Coolant\ Hot Leg Temperature	[1 per loop]
b. Reactor Coolant Cold Leg Temperature	[1 per loop]
c. Auxiliary Feedwater Controls	[1]
d. Steam Generator Pressure	[1 per steam generator]
e. Steam Generator Level or Auxiliary Feedwater Flow	[1 per steam generator]
f. Condensate Storage Tank Level	[1]
4. Reactor Coolant System Inventory Control	
a. Pressurizer Level	[1]
b. Reactor Coolant Charging Pump Controls	[1]

INSERT 3 1

---REVIEWER'S NOTE---
The number of channels that fulfill GDC 19 requirements for the number of OPERABLE channels required depends upon the plant's licensing basis as described in the NRC plant specific Safety Evaluation Report (SER) (Ref. 3). Generally, two divisions are required to be OPERABLE. However, only one channel is required if the plant has justified such a design and the NRC's SER accepted the justification. 4

1 **INSERT 3**

FUNCTION/INSTRUMENT OR CONTROL PARAMETER	REQUIRED NUMBER OF CHANNELS
1. Reactivity Control	
a. Source Range Neutron Flux	1
b. Boric Acid Makeup Tank Level	1
2. Vital Auxiliaries	
a. Diesel Generator Voltage	1
b. Diesel Generator Frequency	1
3. Reactor Coolant System Inventory Control	
a. Pressurizer Level	1
4. Reactor Coolant System Pressure Control	
a. Pressurizer Pressure	1
5. Decay Heat Removal via Steam Generators	
a. Reactor Coolant Hot Leg Temperature	1 per loop
b. Reactor Coolant Cold Leg Temperature	1 per loop
c. Steam Generator Pressure	1 per steam generator
d. Steam Generator Level (Narrow Range)	1 per steam generator
e. Condensate Storage Tank Level	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.12 BASES, REMOTE SHUTDOWN SYSTEM

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.12 Bases include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. This "Reviewers Note" (and references used in the Reviewer's Note) is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

5. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies.

6. Changes are made to be consistent with the actual Specification.

7. The first paragraph in the ACTIONS Bases has been deleted. SONGS does not require multiple divisions of Remote Shutdown System to be OPERABLE. As shown in CTS Table 3.3.12-1, only a single instrument for each Function is required.

8. 10 CFR 50 Appendix R is not one of the criteria governing what is in ISTS 3.3.12; the requirements of ISTS 3.3.12 are only required to meet 10 CFR 50 Appendix A requirements. This is shown in all the other NRC NUREGs for other vendor types (NUREGs-1430, -1431, -1433, and -1434). This is also consistent with the SONGS CTS Bases, which does not include 10 CFR 50 Appendix R in the Applicable Safety Analyses section of the Bases. As such, all references to 10 CFR 50 Appendix R have been deleted.

9. Changes are made to be consistent with changes made to the Specification.

10. Correct punctuation is used and is consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01. Also, grammatical errors are corrected.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.12, REMOTE SHUTDOWN SYSTEM

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 12

ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

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

ITS

A01

~~Source Range~~ Boron Dilution Monitoring Channels
3.3.13

L01

3.3 INSTRUMENTATION

3.3.13 3.3.13 ~~Source Range~~ Boron Dilution Monitoring Channels

LCO 3.3.13 LCO 3.3.13 Two channels of ~~source range~~ boron dilution monitoring instrumentation shall be OPERABLE.

Applicability APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One or more required channels inoperable.	A.1 --------NOTE--------- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. --------------------- Suspend all operations involving positive reactivity additions.	Immediately
	AND	
	A.2 Perform SDM verification in accordance with SR 3.1.1.2~~, if T_{avg} > 200°F, or SR 3.1.2.1, if T_{avg} ≤ 200°F~~.	4 hours AND Once per 12 hours thereafter

A02

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ITS

A01

~~Source Range~~ Boron Dilution Monitoring Channels
3.3.13

L01

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.13.1	SR 3.3.13.1 Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.13.2	SR 3.3.13.2 Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.3.13.3	SR 3.3.13.3 -------------------NOTE-------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	~~24 months~~ In accordance with the Surveillance Frequency Control Program	LA01

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ITS

A01

~~Source Range~~ Boron Dilution Monitoring Channels
3.3.13

L01

3.3 INSTRUMENTATION

3.3.13 3.3.13 ~~Source Range~~ Boron Dilution Monitoring Channels

LCO 3.3.13 LCO 3.3.13 Two channels of ~~source range~~ boron dilution monitoring instrumentation shall be OPERABLE.

Applicability APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One or more required channels inoperable.	A.1 --------NOTE--------- Limited plant control operations are allowed provided the changes are accounted for in the calculated SDM. --------------------- Suspend all operations involving positive reactivity additions.	Immediately
	AND	
	A.2 Perform SDM verification in accordance with SR 3.1.1.2~~, if T_{avg} > 200°F, or SR 3.1.2.1, if T_{avg} ≤ 200°F~~.	4 hours AND Once per 12 hours thereafter

A02

ITS

A01

~~Source Range~~ Monitoring Channels
3.3.13

L01

Boron Dilution

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.13.1	SR 3.3.13.1 Perform CHANNEL CHECK.	~~12 hours~~
SR 3.3.13.2	SR 3.3.13.2 Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~
SR 3.3.13.3	SR 3.3.13.3 -------------------NOTE-------------------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program ~~24 months~~

LA01

LA01

LA01

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DISCUSSION OF CHANGES
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications Combustion Engineering Plants" (ISTS) and additional approved Technical Specification Task Force (TSTF) travelers included in this submittal.

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

A02 CTS 3.3.13 Required Action A.2 requires the performance of a SDM verification in accordance with SR 3.1.1.2, if T_{avg} > 200°F, or SR 3.1.2.1, if T_{avg} ≤ 200°F. ITS 3.3.13 Required Action A.2 requires performance of a SDM verification in accordance with SR 3.1.1.2. This changes the CTS by referencing the SDM verification be performed in accordance with SR 3.1.1.2 instead of SRs 3.1.1.2 and 3.1.2.1.

The proposed change is acceptable because CTS 3.1.1 (SDM- T_{avg} > 200°F) whose Applicability is MODES 3 and 4, and 3.1.2 (SDM- T_{avg} ≤ 200°F) whose Applicability is MODE 5, have been combined into one Specification in the ITS . The new combined Specification, ITS 3.1.1, is for SDM in MODES 3, 4, and 5. Both CTS SRs 3.1.1.2 and 3.1.2.1 require the SDM to be verified to be within the limits specified in the COLR. ITS SR 3.1.1.2 also requires the SDM to be verified to be within the limits of the COLR. This change is designated as administrative because no technical changes have been made to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.3.13.1 requires that a CHANNEL CHECK be performed every 12 hours. CTS SR 3.3.13.2 requires that a CHANNEL FUNCTIONAL TEST be performed every 92 days. CTS SR 3.3.13.3 requires that a CHANNEL CALIBRATION be performed every 24 months. ITS SRs 3.3.13.1, 3.3.13.2, and 3.3.13.3 require similar Surveillances; however, the specific periodic Frequencies are being replaced with "In accordance with the

DISCUSSION OF CHANGES
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. The proposed change is consistent with the defense-in-depth philosophy.

As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

- A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
- Independence of barriers is not degraded;
- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered

DISCUSSION OF CHANGES
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.3.13 title is Source Range Monitoring Channels. CTS 3.3.13 LCO requires two channels of source range monitoring instrumentation to be OPERABLE. ITS 3.3.13 title is Boron Dilution Monitoring Channels. ITS 3.3.13 LCO requires two channels of boron dilution monitoring instrumentation to be OPERABLE. This changes the CTS by revising the title and LCO to reflect the function of the monitors, which is to detect boron dilution events, and allows SONGS more flexibility in crediting other instrumentation that meets the requirements of the Safety Analysis.

DISCUSSION OF CHANGES
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

The purpose of CTS 3.3.13 is to monitor core reactivity changes and trigger operator actions to respond to reactivity transients (i.e., boron dilution events) for conditions when the RPS is not required. SCE currently credits two channels of source range monitoring instrumentation that provide a boron dilution monitor and alarm in the control room to alert the operator. The proposed change will allow SCE the flexibility to credit other instrumentation that meet the current requirements of the Safety Analysis for detection and alarm capability as satisfying the LCO. This change is acceptable because any instrument used to satisfy the LCO will be required to meet all the requirements of the Safety Analysis and be evaluated via the 10 CFR 50.59 program. This change is designated as less restrictive because SCE will be allowed to utilize any instrument that meets the requirements of the Safety Analysis to meet the LCO requirement for boron dilution monitoring instrumentation.

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

3.3 INSTRUMENTATION

Boron Dilution

3.3.13 ~~[Logarithmic] Power~~ Monitoring Channels ~~(Digital)~~ 2 3

boron dilution

LCO 3.3.13

LCO 3.3.13 Two channels of ~~[logarithmic] power level~~ monitoring instrumentation shall be OPERABLE. 2

Applicability

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

ACTION A

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channels inoperable.	A.1	---------------NOTE-------------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. -------------------------------------	
		Suspend all operations involving positive reactivity additions.	Immediately
	AND		
	A.2	Perform SDM verification in accordance with SR 3.1.1.~~1~~. 2	4 hours AND Once per 12 hours thereafter

4

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.3.13.1	SR 3.3.13.1	Perform CHANNEL CHECK.	~~12 hours~~	TSTF-425-A
SR 3.3.13.2	SR 3.3.13.2	Perform CHANNEL FUNCTIONAL TEST.	~~[92] days~~	TSTF-425-A
SR 3.3.13.3	SR 3.3.13.3	-------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program ~~[18] months~~	TSTF-425-A

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.13 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. The SR number in Required Action A.2 has been changed to be consistent with the number used in the SONGS CTS. SCE has decided not to renumber the CTS to be consistent with the ISTS because by doing so would result in unnecessary administrative burden of changing TS numbers in plant procedures.

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

B 3.3 INSTRUMENTATION

B 3.3.13 ~~[Logarithmic] Power~~ Monitoring Channels ~~(Digital)~~ 4 3

Boron Dilution

BASES

boron dilution

count rate level

BACKGROUND

The ~~[logarithmic] power~~ monitoring channels provide neutron flux ~~power~~ indication from ~~< 1E-7% RTP to > 100% RTP~~. They also provide ~~reactor protection when the reactor trip circuit breakers (RTCBs) are shut, in the form of a Power Rate of Change - High trip (analog plants) or a [Logarithmic] Power Level - High trip (digital plants).~~ 2

0.1 to 100,000 cps

a Boron Dilution Monitor and alarm in the Control Room to alert the operator of a boron dilution event.

This LCO addresses MODES 3, 4, and 5 with the RTCBs open. When the RTCBs are shut, the ~~[~~logarithmic~~]~~ power ~~monitoring channels~~ are addressed by LCO 3.3.2, "Reactor Protective System (RPS) Instrumentation - Shutdown." 2

Level – High trip channels, which

protection is provided by

both boron dilution monitoring

When the RTCBs are open, ~~two of the four wide range power~~ channels must be available to monitor neutron flux ~~power~~. ~~In this application, the RPS channels need not be OPERABLE since the reactor trip Function is not required.~~ By monitoring neutron flux ~~(wide range) power~~ when the RTCBs are open, loss of SDM caused by boron dilution can be detected as an increase in flux. Alarms are also provided when ~~power increases above the fixed bistable setpoints~~. ~~For plants employing separate post accident, wide range~~ nuclear instrumentation channels with adequate range~~, these~~ can be substituted for the ~~[logarithmic] power range~~ channels. Two channels must be OPERABLE to provide single failure protection and to facilitate detection of channel failure by providing CHANNEL CHECK capability. 1 2

level

level

the count rate level exceeds the setpoint

and alarm function

boron dilution monitoring

APPLICABLE SAFETY ANALYSES

The ~~[logarithmic] power~~ monitoring channels are necessary to monitor core reactivity changes. They are the primary means for detecting and triggering operator actions to respond to reactivity transients initiated from conditions in which the RPS is not required to be OPERABLE. They also trigger operator actions to anticipate RPS actuation in the event of reactivity transients starting from shutdown or low power conditions. The ~~[logarithmic] power~~ monitoring channel's LCO requirements support compliance with 10 CFR 50, Appendix A, GDC 13 (Ref. 1). Reference 2 describes the specific ~~[logarithmic] power~~ monitoring channel features that are critical to comply with the GDC. 2

boron dilution

The OPERABILITY of ~~[logarithmic] power~~ monitoring channels is necessary to meet the assumptions of the safety analyses and provide for the mitigation of accident and transient conditions.

The ~~[logarithmic] power~~ monitoring channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

~~[Logarithmic] Power~~ Boron Dilution Monitoring Channels ~~(Digital)~~ 4 3
B 3.3.13

BASES

LCO

The LCO on the ~~[logarithmic] power~~ boron dilution monitoring channels ensures that adequate information is available to verify core reactivity conditions while shut down. 4

A minimum of two ~~[logarithmic] power~~ boron dilution monitoring channels are required to be OPERABLE. ~~Some plants may have four or six channels capable of performing this function. In these cases, multiple failures may be tolerated while the plants are still complying with LCO requirements.~~ 4 7

APPLICABILITY

In MODES 3, 4, and 5, with RTCBs open or the Control Element Assembly (CEA) Drive System not capable of CEA withdrawal, ~~[logarithmic] power~~ boron dilution monitoring channels must be OPERABLE to monitor core power for reactivity changes. In MODE~~S 1 and~~ 2, and in MODES 3, 4, and 5, with the RTCBs shut and the CEAs capable of withdrawal, the ~~[~~logarithmic~~]~~ power monitoring channels are addressed as part of the RPS in LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating." and LCO 3.3.2, "Reactor Protective System (RPS) Instrumentation – Shutdown" 2 8 2 1

The requirements for source range neutron flux monitoring in MODE 6 are addressed in LCO 3.9.2, "Nuclear Instrumentation." The source range nuclear instrumentation channels provide neutron flux coverage extending an additional one to two decades below the ~~[~~logarithmic~~]~~ channels for use during refueling, when neutron flux may be extremely low. ~~They are built into the [wide range] neutron flux channels in the analog plants and in many of the post accident channels used in both the digital and analog plants.~~ 2 1

ACTIONS

A channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. These criteria are outlined in the LCO section of the Bases.

<u>A.1 and A.2</u>

With one required channel inoperable, it may not be possible to perform a CHANNEL CHECK to verify that the other required channel is OPERABLE. Therefore, with one or more required channels inoperable, the ~~[logarithmic] power~~ boron dilution monitoring Function cannot be reliably performed. Consequently, the Required Actions are the same for one required channel inoperable or more than one required channel inoperable. The absence of reliable neutron flux indication makes it difficult to ensure SDM is maintained. Required Action ~~[~~A.1~~]~~ is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided they are accounted for in the calculated SDM. 2 2

BASES

ACTIONS (continued)

SDM must be verified periodically to ensure that it is being maintained. Both required channels must be restored as soon as possible. The initial Completion Time of 4 hours and once every 12 hours thereafter to perform SDM verification takes into consideration that Required Action A.1 eliminates many of the means by which SDM can be reduced. These Completion Times are also based on operating experience in performing the Required Actions and the fact that plant conditions will change slowly.

SURVEILLANCE REQUIREMENTS

SR 3.3.13.1

~~SR 3.3.13.1 is the performance of a CHANNEL CHECK on each required channel every 12 hours.~~ A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based upon the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between 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; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. TSTF-425-A

Agreement criteria are determined by the plant staff and should be based on a combination of the channel instrument uncertainties including control isolation, indication, and readability. If a channel is outside of the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside of its limits. 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 the rarity of channel failure. Since the probability of two random failures in redundant channels in any 12 hour period is extremely low, CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of displays associated with the LCO required channels.~~ INSERT 1 TSTF-425-A

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~--- Reviewers Note ---~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.13.2

A CHANNEL FUNCTIONAL TEST is performed ~~every [92] days~~ to ensure that the entire channel is capable of properly indicating neutron flux. Internal test circuitry is used to feed preadjusted test signals into the preamplifier to verify channel alignment. 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. It is not necessary to test the detector, because generating a meaningful test signal is difficult; the detectors are of simple construction, and any failures in the detectors will be apparent as change in channel output. ~~[This Frequency is the same as that employed for the same channels in the other applicable MODES.]~~ INSERT 2 TSTF-425-A

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology. TSTF-493

~~[At this unit, the channel trip Functions tested by the CHANNEL FUNCTIONAL TEST are as follows:]~~ 2

SR 3.3.13.3

SR 3.3.13.3 is the performance of a CHANNEL CALIBRATION. ~~A CHANNEL CALIBRATION is performed every [18] months.~~ The Surveillance is a complete check and readjustment of the ~~[logarithmic] power~~ boron dilution channel from the preamplifier input through to the remote indicators. The Surveillance 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 between successive calibrations to ensure that the channel remains operational. ~~CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.~~ TSTF-425-A 2

There is a plant specific program which verifies that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology. TSTF-493

This SR is modified by a Note to indicate that it is not necessary to test the detector, because generating a meaningful test signal is difficult; the detectors are of simple construction, and any failures in the detectors will be apparent as change in channel output. ~~[This test interval is the same as that employed for the same channels in the other applicable MODES.]~~ INSERT 2 TSTF-425-A

REFERENCES

1. 10 CFR 50, Appendix A, GDC 13.
2. U FSAR, Chapter ~~[~~7~~]~~ and Chapter ~~[~~15~~]~~. 1 2

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 6

~~-- Reviewers Note --~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 5
~~--~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.13 BASES, BORON DILUTION MONITORING CHANNELS

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The headings for ISTS 3.3.13 include the parenthetical expression "(Digital)." This identifying information is not included in the San Onofre Nuclear Generating Station (SONGS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific ITS implementation. SONGS Units 2 and 3 are digital plants; therefore analog requirements and specific labels that identify a requirement is digital are not required.

4. Changes are made to be consistent with changes made to the Specification.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk is not always true for each of the Frequencies

7. ISTS 3.3.13 Bases (LCO) contains a section that states, "Some plants may have four or six channels for performing this function. In these cases, multiple failures may be tolerated while the plants are still complying with LCO requirements." This statement is being deleted because it is more like a Note that goes in the standard only and not information that should go into plant specific Technical Specifications.

8. Changes are made to be consistent with the actual 3.3.1 Specification (Table 3.3.1-1 Function 2 for Logarithmic Power).

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.3.13, BORON DILUTION MONITORING CHANNELS

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 13

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) NOT ADOPTED IN SONGS ITS

ISTS 3.3.10, FUEL HANDLING ISOLATION SIGNAL (FHIS)

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

3.3 INSTRUMENTATION

3.3.10 Fuel Handling Isolation Signal (FHIS) (Digital)

LCO 3.3.10 One FHIS channel shall be OPERABLE.

APPLICABILITY: [MODES 1, 2, 3, and 4,]
During movement of [recently] irradiated fuel in the fuel building.

ACTIONS

---NOTE---

LCO 3.0.3 is not applicable.

-- 1

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. [Actuation Logic, Manual Trip, or [one or more required channels of particulate/iodine and gaseous] radiation monitors inoperable in MODE 1, 2, 3, or 4.	A.1 Place one OPERABLE Fuel Building Air Cleanup System (FBACS) train in operation.	1 hour]
B. [Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours]
C. Actuation Logic, Manual Trip, or [one or more required channels of particulate/iodine and gaseous] radiation monitors inoperable during movement of [recently] irradiated fuel assemblies.	C.1 Place one OPERABLE FBACS train in operation. <u>OR</u> C.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.10.1	Perform a CHANNEL CHECK on required FHIS radiation monitor channel.	12 hours
SR 3.3.10.2	Perform a CHANNEL FUNCTIONAL TEST on required FHIS radiation monitor channel. Verify radiation monitor setpoint [Allowable Values]: [Airborne Particulate/ Iodine: ≤ [6E4] cpm above background] Airborne Gaseous: ≤ [6E4] cpm above background	92 days
SR 3.3.10.3	------------------------------NOTE----------------------------- Testing of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each ignition relay. --- Perform a CHANNEL FUNCTIONAL TEST on required FHIS Actuation Logic channel.	[18] months
SR 3.3.10.4	Perform a CHANNEL FUNCTIONAL TEST on required FHIS Manual Trip logic.	[18] months
SR 3.3.10.5	Perform a CHANNEL CALIBRATION on required FHIS radiation monitor channel.	[18] months
SR 3.3.10.6	[Verify response time of required FHIS channel is within limits.	[18] months]

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.3.10, FUEL HANDLING ISOLATION SIGNAL (FHIS)

1. ISTS 3.3.10, "Fuel Handling Isolation Signal (FHIS)," is not included in the SONGS ITS. SONGS License Amendments 208 and 200 (SONGS Units 2 and 3, respectively) dated December 4, 2006 (ADAMS Accession No. ML062980429) approved removal of the FHIS from the SONGS Units 2 and Unit 2 CTS.

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

B 3.3 INSTRUMENTATION

B 3.3.10 Fuel Handling Isolation Signal (FHIS) (Digital)

BASES

BACKGROUND

This LCO encompasses FHIS actuation, which is a plant specific instrumentation channel that performs an actuation Function required for plant protection but is not otherwise included in LCO 3.3.6, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip," or LCO 3.3.7, "Diesel Generator (DG) - Loss of Voltage Start (LOVS)." This is a non-Nuclear Steam Supply System ESFAS Function that, because of differences in purpose, design, and operating requirements, is not included in LCO 3.3.6 and LCO 3.3.7. Details of this LCO are for illustration only. Individual plants shall include those Functions and LCO requirements that are applicable to them. 1

The FHIS provides protection from radioactive contamination in the spent fuel pool area in the event that a spent fuel element ruptures during handling.

The FHIS will detect radioactivity from fission products in the fuel and will initiate appropriate actions so the release to the environment is limited. More detail is provided in Reference 1.

The FHIS includes two independent, redundant subsystems, including actuation trains. Each train employs two separate sensors. One sensor detects gaseous activity. The other detects particulate and iodine activity. Since the two sensors detect different types of activity, they are not considered redundant to each other. However, since there are separate sensors in each train, the trains are redundant. If the bistable monitoring either sensor indicates an unsafe condition, that train will be actuated (one-out-of-two logic). The two trains actuate separate equipment.

Trip Setpoints and Allowable Values

Trip setpoints used in the bistables are based on the analytical limits (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. To allow for calibration tolerances, instrumentation uncertainties, and instrument drift, Allowable Values specified in LCO 3.3.10 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 "Plant

BASES

BACKGROUND (continued)

Protection System Selection of Trip Setpoint Values" (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. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

Setpoints in accordance with the Allowable Value will ensure that Safety Limits are not violated during anticipated operational occurrences (AOOs) and the consequences of Design Basis Accidents will be acceptable, providing the plant is operated from within the LCOs at the onset of the AOO or accident and the equipment functions as designed. 1

APPLICABLE SAFETY ANALYSES

The FHIS is required to isolate the normal Fuel Building Air Cleanup System (FBACS) and automatically initiate the recirculation and filtration systems in the event of the fuel handling accident [involving handling recently irradiated fuel] in the fuel handling building, as described in Reference 2. The FHIS helps ensure acceptable consequences for the dropping of a spent fuel bundle breaching up to 60 fuel pins.

The FHIS satisfies the requirements of Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

LCO 3.3.10 requires one channel of FHIS to be OPERABLE. The required channel consists of Actuation Logic, Manual Trip, and [particulate/iodine and] gaseous radiation monitors. The specific Allowable Values for the setpoints of the FHIS are listed in the SRs.

Only the Allowable Values are specified for each trip Function in the SRs. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable, provided that the difference between the nominal trip setpoint and the Allowable Value is equal to or greater than the drift allowance assumed for each trip in the transient and accident analyses.

Each Allowable Value specified is more conservative than the analytical limit assumed in the transient and accident analysis in order to account for instrument uncertainties appropriate to the trip Function. These uncertainties are defined in the "Plant Protection System Selection of Trip Setpoint Values" (Ref. 3).

BASES

LCO (continued)

The Bases for the LCO on the FHIS are discussed below for each Function:

a. Manual Trip

The LCO on Manual Trip ensures that the FHIS Function can easily be initiated if any parameter is trending rapidly toward its setpoint. Components can be actuated independently of the FHIS. Both available channels are required to ensure a single failure will not disable automatic initiation capability.

b. Airborne Radiation

The LCO on the two Airborne Radiation channels requires that each channel be OPERABLE for the required Actuation Logic channel, since they are not redundant to each other.

[At this plant, the basis for the FHIS radiation monitor Allowable Values is as follows:]

c. Actuation Logic

Two channels of Actuation Logic are required to be OPERABLE to ensure no single random failure can prevent automatic actuation.

APPLICABILITY

One FHIS channel is required to be OPERABLE during movement of [recently] irradiated fuel in the fuel building. The FHIS isolates the fuel building area in the event of a fuel handling accident [involving handling recently irradiated fuel].

[The FHIS is required to be OPERABLE in MODES 1, 2, 3, and 4 and during movement of [recently] irradiated fuel because the fuel building heating, ventilation, and air conditioning (HVAC) is shared with Engineered Safety Features (ESF) equipment.]

The FHIS must be OPERABLE in [MODES 1, 2, 3, and 4] and during movement of [recently] irradiated fuel in the fuel building, since the FHIS isolates the fuel handling area in the event of a fuel handling accident in any MODE or other condition. [Due to radioactive decay, FHIS is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days).]

1

BASES

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.

An FHIS channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is not large and would result in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it within specification. If the trip setpoint is not consistent with the Allowable Value in LCO 3.3.10, the channel must be declared inoperable immediately and the appropriate Conditions must be entered. 1

In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the sensor, instrument loop, signal processing electronics, or bistable is found inoperable, then all affected Functions provided by that channel are required to be declared inoperable and the LCO Condition entered for the particular protective function affected.

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered if applicable in the current MODE of operation.

[A.1, B.1, and B.2

Conditions A and B apply only to those plants whose fuel building HVAC is shared with an ESF equipment room.

Condition A applies to FHIS Manual Trip, Actuation Logic, and required [particulate/iodine and gaseous radiation monitors] inoperable.

BASES

ACTIONS (continued)

The Required Actions are to restore the affected channels to OPERABLE status or place one OPERABLE FBACS train in operation within 1 hour. The Completion Time of 1 hour is sufficient to perform the Required Actions. The Completion Time accounts for the fact that the FHIS radiation monitors are the only signals available to automatically initiate the FBACS to mitigate radiation releases in the fuel building and credits the relatively lower likelihood of such events when irradiated fuel is not being moved.

Condition B applies if the affected channels cannot be restored to OPERABLE status or one OPERABLE FBACS train cannot be placed in operation. If the channels cannot be restored to OPERABLE status, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 MODE from full power conditions in an orderly manner and without challenging plant systems.] 1

C.1 and C.2

Condition C applies to FHIS Manual Trip, Actuation Logic, and required [particulate/iodine and] gaseous radiation monitor inoperable during movement of [recently] irradiated fuel in the fuel building.

The Required Actions are to restore required channels to OPERABLE status, or place one OPERABLE FBACS train in operation, or suspend movement of [recently] irradiated fuel in the fuel building. These Required Actions are required to be completed immediately. The Completion Time accounts for the higher likelihood of releases in the fuel building during fuel handling.

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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant 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 transmitter or the signal processing equipment has drifted outside its limit. 1

The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. 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 the LCO required channels.

[For this plant, the CHANNEL CHECK verification of sample system alignment and operation for gaseous, particulate, iodine, and gamma monitors is as follows:]

SR 3.3.10.2

A CHANNEL FUNCTIONAL TEST is performed on the required fuel building radiation monitoring channel to ensure the entire channel will perform its 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 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 plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the frequency extension analysis. The requirements for this review are outlined in Reference [4].

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 92 day Frequency is a rare event.

SR 3.3.10.3

Proper operation of the individual initiation relays is verified by actuating these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic every [18] months. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. 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 of [18] months is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function during any [18] month Frequency is a rare event. 1

A Note to the SR indicates that this Surveillance includes verification of operation for each initiation relay.

[At this unit, the verification is conducted as follows:]

SR 3.3.10.4

Every 18 months, a CHANNEL FUNCTIONAL TEST is performed on the FHIS Manual Trip 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. 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This Surveillance verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the Function. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

1

SR 3.3.10.5

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance 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 between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [4].

The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

[SR 3.3.10.6

This Surveillance ensures that the train actuation response times are less than the maximum times assumed in the analyses. The [18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance.]

BASES

REFERENCES

1. FSAR, Chapter [9].

2. FSAR, Chapter [15].

3. "Plant Protection System Selection of Trip Setpoint Values."

4. [ ].

1

Attachment 1, Volume 6, Rev. 0, Page 598 of 599

JUSTIFICATION FOR DEVIATIONS
ISTS 3.3.10 BASES, FUEL HANDLING ISOLATION SIGNAL (FHIS)

1. The ISTS 3.3.10 Bases is not included because the ISTS 3.3.10 Specification was not included in the SONGS Units 2 and 3 ITS.

Attachment 1, Volume 6, Rev. 0, Page 599 of 599