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I

Instrumentation

(continued)

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.6 --------NOTES-------- 1. Only required to be performed if the cause of the QPTR alarm is not associated with inoperable QPTR instrumentation. 2. Required Action A.6 must be completed when Required Action A.5 is completed and Note 1, above, does not apply. 3. Only one of the Completion Times, whichever becomes applicable first, must be met. ---------- Perform SR 3.2.1.1 and SR 3.2.2.1.	Within 24 hours after reaching RTP OR Within 48 hours after increasing THERMAL POWER ~~increased~~ above the limits of Required Actions A.1 and A.2

2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Q. Required Action and Associated Completion Time of Condition P not met.	Q.1 Reduce THERMAL POWER to < 50% RTP. AND	6 hours
	Q.2.1 Verify Steam Dump System is OPERABLE. OR	7 hours
	Q.2.2 Reduce THERMAL POWER to < 8% RTP.	7 hours
R. As required by Required Action A.1 and referenced by Table 3.3.1-1.	R.1 --------NOTE-------- ~~The inoperable~~ one train may be bypassed for up to 4 hours for surveillance testing provided ~~OR~~ the other train is OPERABLE. ---------- Restore train to OPERABLE status.	6 hours
S. As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1 Verify interlock is in required state for existing plant conditions. OR	1 hour
	S.2 Declare associated RTS Function channel(s) inoperable.	1 hour

3.1

(continued)

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

Note 1: Overtemperature ΔT

The Overtemperature ΔT Function Trip Setpoint is defined by:

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

Where:

ΔT is measured RCS ΔT, °F.
ΔT_o is the indicated ΔT at RTP, °F.

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

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

P is the measured pressurizer pressure, psig.
P' is the nominal RCS operating pressure, psig.

K_1 is the Overtemperature ΔT reactor trip setpoint, 1.20.
K_2 is the Overtemperature ΔT reactor trip depressurization setpoint penalty coefficient, 0.000900.
K_3 is the Overtemperature ΔT reactor trip heatup setpoint penalty coefficient, 0.0209.

τ_1 is the measured lead/lag time constant, 25 seconds.

τ_2 is the measured lead/lag time constant, 5 seconds.

$f(\Delta I)$ is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

3.ii

$f(\Delta I) = 0$ when $q_t - q_b$ is ≤ +13% RTP

$f(\Delta I) = 0.013 \{ (q_t - q_b) - 13 \}$ when $q_t - q_b$ is > +13% RTP

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

Note 2: Overpower ΔT

The Overpower ΔT Function Trip Setpoint is defined by:

$$\text{Overpower } \Delta T \leq \Delta T_o \left\{ K_4 - K_5 (T - T') - K_6 \left[\frac{\tau_3 s T}{\tau_3 s + 1} \right] - f(\Delta I) \right\}$$

Where:

ΔT is measured RCS ΔT, °F.
ΔT_o is the indicated ΔT at RTP, °F.

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

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

K_4 is the Overpower ΔT reactor trip setpoint, 1.077.
K_5 is the Overpower ΔT reactor trip heatup setpoint penalty coefficient which is:
0.0 for $T < T^2$ and;
0.0011 for $T \geq T^2$.
K_6 is the Overpower ΔT reactor trip thermal time delay setpoint penalty which is:
0.0262 for increasing T and;
0.00 for decreasing T.

τ_3 is the measured lead/lag time constant, 10 seconds.

f(ΔI) is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

3.11

$f(\Delta I) = 0$ when $q_t - q_b$ is ≤ +13% RTP

$f(\Delta I) = 0.013 \{ (q_t - q_b) - 13 \}$ when $q_t - q_b$ is > +13% RTP

SURVEILLANCE REQUIREMENTS

NOTE

Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.2.2	Perform COT.	92 days
SR 3.3.2.3	NOTE Verification of relay setpoints not required. Perform TADOT.	92 days
SR 3.3.2.4	NOTE Verification of relay setpoints not required. Perform TADOT.	24 months
SR 3.3.2.5	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.6	Verify the Pressurizer Pressure – Low and Steam Line Pressure – Low Functions are not bypassed when pressurizer pressure > 2000 psig.	24 months
SR 3.3.2.7	Perform ACTUATION LOGIC TEST.	24 months

Table 3.3.3-1 (page 1 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION
1.	Pressurizer Pressure	2	G
2.	Pressurizer Level	2	G
3.	Reactor Coolant System (RCS) Hot Leg Temperature	1 per loop	G
4.	RCS Cold Leg Temperature	1 per loop	G
5.	RCS Pressure (Wide Range)	2	G
6.	RCS Subcooling Monitor	2	G
7.	Reactor Vessel Water Level	2	H
8.	Containment Sump B Water Level	2	G
9.	Containment Pressure (Wide Range)	2	G
10.	Containment Area Radiation (High Range)	2	H
11.	Hydrogen Monitors	2	G
12.	Condensate Storage Tank Level	2	G
13.	Refueling Water Storage Tank Level	2	G
14.	Residual Heat Removal Flow	2	G
15.	Core Exit Temperature – Quadrant 1	2(a)	G
16.	Core Exit Temperature – Quadrant 2	2(a)	G
17.	Core Exit Temperature – Quadrant 3	2(a)	G
18.	Core Exit Temperature – Quadrant 4	2(a)	G
19.	Auxiliary Feedwater (AFW) Flow to Steam Generator (SG) A	2	G
20.	AFW Flow to SG B	2	G
21.	SG A Water Level (Narrow Range) ~~to SG A~~	2	G
22.	SG B Water Level (Narrow Range) ~~to SG B~~	2	G

(continued)

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

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION
23.	SG Water Level (Wide Range) ~~to SG A~~	2	G
24.	SG Water Level (Wide Range) ~~to SG B~~	2	G
25.	SG Pressure ~~to SG A~~	2	G
26.	SG Pressure ~~to SG B~~	2	G

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Table 3.3.5-1 (page 1 of 1)
Containment Ventilation Isolation Instrumentation

	FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1.	Automatic Actuation Logic and Actuation Relays	2 trains	SR 3.3.5.3	NA
2.	Containment Radiation			
	a. Gaseous	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	(a)
	b. Particulate	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	(a)
3.	Containment Isolation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3, for all initiation functions and requirements.		
4.	Containment Spray –Manual ~~Isolation~~ Initiation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 2.a, for all initiation functions and requirements.		

Notes:

(a) Per Radiological Effluent Controls Program.

BASES

ACTIONS (continued)

M.1

If the Required Actions and Completion Times of Condition L 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 pressurizer pressure reduced to < 2000 psig 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.

N.1

Condition N applies if a AFW Manual Initiation channel is inoperable. If a manual initiation switch is inoperable, the associated AFW or SAFW pump must be declared inoperable and the applicable Conditions of LCO 3.7.5, "Auxiliary Feedwater (AFW) System" must be entered immediately. Each AFW manual initiation switch controls one AFW or SAFW pump. Declaring the associated pump inoperable ensures that appropriate action is taken in LCO 3.7.5 based on the number and type of pumps involved.

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1. Each channel of process protection supplies both trains of the ESFAS. When testing Channel 1, Train A and Train B must be examined. Similarly, Train A and Train B must be examined when testing Channel 2, Channel 3, and Channel 4 (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

4 (A) → Note ⊕ has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

(continued)

Attachment III

Proposed Technical Specifications

Included Pages:

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TOC ii
TOC iii
3.2-13
3.3-7
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3.3-19
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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.6 --------NOTES-------- 1. Only required to be performed if the cause of the QPTR alarm is not associated with inoperable QPTR instrumentation. 2. Required Action A.6 must be completed when Required Action A.5 is completed and Note 1, above, does not apply. 3. Only one of the Completion Times, whichever becomes applicable first, must be met. ---------- Perform SR 3.2.1.1 and SR 3.2.2.1.	Within 24 hours after reaching RTP OR Within 48 hours after increasing THERMAL POWER above the limits of Required Actions A.1 and A.2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Q. Required Action and Associated Completion Time of Condition P not met.	Q.1	Reduce THERMAL POWER to < 50% RTP.	6 hours
	AND		
	Q.2.1	Verify Steam Dump System is OPERABLE.	7 hours
		OR	
	Q.2.2	Reduce THERMAL POWER to < 8% RTP.	7 hours
R. As required by Required Action A.1 and referenced by Table 3.3.1-1.	R.1	--------NOTE-------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---------- Restore train to OPERABLE status.	6 hours
S. As required by Required Action A.1 and referenced by Table 3.3.1-1.	S.1	Verify interlock is in required state for existing plant conditions.	1 hour
	OR		
	S.2	Declare associated RTS Function channel(s) inoperable.	1 hour

(continued)

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

Note 1: Overtemperature ΔT

The Overtemperature ΔT Function Trip Setpoint is defined by:

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

Where:

ΔT is measured RCS ΔT, °F.
ΔT_o is the indicated ΔT at RTP, °F.

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

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

P is the measured pressurizer pressure, psig.
P' is the nominal RCS operating pressure, psig.

K_1 is the Overtemperature ΔT reactor trip setpoint, 1.20.
K_2 is the Overtemperature ΔT reactor trip depressurization setpoint penalty coefficient, 0.000900.
K_3 is the Overtemperature ΔT reactor trip heatup setpoint penalty coefficient, 0.0209.

τ_1 is the measured lead/lag time constant, 25 seconds.

τ_2 is the measured lead/lag time constant, 5 seconds.

f(ΔI) is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

$f(\Delta I) = 0$ when $q_t - q_b$ is $\leq$ +13% RTP

$f(\Delta I) = 0.013 \{ (q_t - q_b) - 13 \}$ when $q_t - q_b$ is > +13% RTP

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

Note 2: Overpower ΔT

The Overpower ΔT Function Trip Setpoint is defined by:

$$\text{Overpower } \Delta T \leq \Delta T_o \left\{ K_4 - K_5 (T - T') - K_6 \left[\frac{\tau_3 s T}{\tau_3 s + 1} \right] - f(\Delta I) \right\}$$

Where:

ΔT is measured RCS ΔT, °F.
ΔT_o is the indicated ΔT at RTP, °F.

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

T is the measured RCS average temperature, °F.
T' is the nominal T_{avg} at RTP, °F.

K_4 is the Overpower ΔT reactor trip setpoint, 1.077.
K_5 is the Overpower ΔT reactor trip heatup setpoint penalty coefficient which is:
0.0 for $T < T'$ and;
0.0011 for $T \geq T'$.
K_6 is the Overpower ΔT reactor trip thermal time delay setpoint penalty which is:
0.0262 for increasing T and;
0.00 for decreasing T.

τ_3 is the measured lead/lag time constant, 10 seconds.

f(ΔI) is a function of the indicated difference between the top and bottom detectors of the Power Range Neutron Flux channels where q_t and q_b are the percent power in the top and bottom halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RTP.

| $f(\Delta I) = 0$ when $q_t - q_b$ is $\leq$ +13% RTP

| $f(\Delta I) = 0.013 \{ (q_t - q_b) - 13 \}$ when $q_t - q_b$ is > +13% RTP

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.2.2	Perform COT.	92 days
SR 3.3.2.3	----------NOTE---------- Verification of relay setpoints not required. --- Perform TADOT.	92 days
SR 3.3.2.4	----------NOTE---------- Verification of relay setpoints not required. --- Perform TADOT.	24 months
SR 3.3.2.5	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.6	Verify the Pressurizer Pressure—Low and Steam Line Pressure—Low Functions are not bypassed when pressurizer pressure > 2000 psig.	24 months
SR 3.3.2.7	Perform ACTUATION LOGIC TEST.	24 months

Table 3.3.3-1 (page 1 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION
1.	Pressurizer Pressure	2	G
2.	Pressurizer Level	2	G
3.	Reactor Coolant System (RCS) Hot Leg Temperature	1 per loop	G
4.	RCS Cold Leg Temperature	1 per loop	G
5.	RCS Pressure (Wide Range)	2	G
6.	RCS Subcooling Monitor	2	G
7.	Reactor Vessel Water Level	2	H
8.	Containment Sump B Water Level	2	G
9.	Containment Pressure (Wide Range)	2	G
10.	Containment Area Radiation (High Range)	2	H
11.	Hydrogen Monitors	2	G
12.	Condensate Storage Tank Level	2	G
13.	Refueling Water Storage Tank Level	2	G
14.	Residual Heat Removal Flow	2	G
15.	Core Exit Temperature – Quadrant 1	2(a)	G
16.	Core Exit Temperature – Quadrant 2	2(a)	G
17.	Core Exit Temperature – Quadrant 3	2(a)	G
18.	Core Exit Temperature – Quadrant 4	2(a)	G
19.	Auxiliary Feedwater (AFW) Flow to Steam Generator (SG) A	2	G
20.	AFW Flow to SG B	2	G
21.	SG A Water Level (Narrow Range)	2	G
22.	SG B Water Level (Narrow Range)	2	G

(continued)

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

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION
23.	SG A Water Level (Wide Range)	2	G
24.	SG B Water Level (Wide Range)	2	G
25.	SG A Pressure	2	G
26.	SG B Pressure	2	G

Table 3.3.5-1 (page 1 of 1)
Containment Ventilation Isolation Instrumentation

	FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	TRIP SETPOINT
1.	Automatic Actuation Logic and Actuation Relays	2 trains	SR 3.3.5.3	NA
2.	Containment Radiation			
	a. Gaseous	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	(a)
	b. Particulate	1	SR 3.3.5.1 SR 3.3.5.2 SR 3.3.5.4	(a)
3.	Containment Isolation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3, for all initiation functions and requirements.		
4.	Containment Spray -Manual Initiation	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 2.a, for all initiation functions and requirements.		

Notes:

(a) Per Radiological Effluent Controls Program.

BASES

ACTIONS (continued)

M.1

If the Required Actions and Completion Times of Condition L 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 pressurizer pressure reduced to < 2000 psig 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.

N.1

Condition N applies if a AFW Manual Initiation channel is inoperable. If a manual initiation switch is inoperable, the associated AFW or SAFW pump must be declared inoperable and the applicable Conditions of LCO 3.7.5, "Auxiliary Feedwater (AFW) System" must be entered immediately. Each AFW manual initiation switch controls one AFW or SAFW pump. Declaring the associated pump inoperable ensures that appropriate action is taken in LCO 3.7.5 based on the number and type of pumps involved.

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1. Each channel of process protection supplies both trains of the ESFAS. When testing Channel 1, Train A and Train B must be examined. Similarly, Train A and Train B must be examined when testing Channel 2, Channel 3, and Channel 4 (if applicable). The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

(continued)