

TABLE 1.2
FREQUENCY NOTATION

<u>NOTATION</u>	<u>FREQUENCY</u>
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
2 Months	At least once per 62 days
SA	At least once per 184 days.
R	At least once per 549 days.
S/U	Prior to each reactor startup.
P	Completed prior to each release.
N.A.	Not Applicable.

TABLE 3.3-1 (Continued)

		<u>REACTOR TRIP SYSTEM INSTRUMENTATION</u>				
<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>	
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3	1	6 [#]	
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6 [#]	
18. Turbine Trip						
A. Low Fluid Oil Pressure	3	2	2	1	7 [#]	
B. Turbine Stop Valve Closure	4	4	4	1	7 [#]	
19. Safety Injection Input from ESF	2	1	2	1, 2	1	
20. Reactor Coolant Pump Breaker Position Trip						
Above P-7	1/breaker	2	1/breaker per operating loop	1	11	
21. Reactor Trip Breakers	2	1	2	1, 2 3*, 4*, 5*	13, 15 14	
22. Automatic Trip Logic	2	1	2	1, 2 3*, 4*, 5*	1 14	

TABLE 3.3-1 (Continued)

- ACTION 8 - (Deleted.)
- ACTION 9 - (Deleted.)
- ACTION 10 - (Deleted.)
- ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour.
- ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.
- ACTION 13 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 1. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.
- ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.
- ACTION 15 - With the number of OPERABLE Reactor Trip Breaker channels one less than required by the Minimum Channels OPERABLE requirement for reasons other than an inoperable diverse trip feature, restore the inoperable channel to OPERABLE status within 24 hours or be in HOT STANDBY within the following 6 hours. One channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1, provided the other channel is OPERABLE.

REACTOR TRIP SYSTEM INTERLOCKS

<u>DESIGNATION</u>	<u>CONDITION AND SETPOINT</u>	<u>FUNCTION</u>
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels less than 6×10^{-11} amps.	P-6 prevents or defeats the manual block of source range reactor trip.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODE IN WHICH SURVEILLANCE REQUIRED</u>
13. Loss of Flow-Two Loops	S	R(8)	N.A.	1
14. Steam Generator Water Level -- Low-Low	S	R	SA	1, 2
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	SA	1, 2
16. Undervoltage-Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency-Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1, 2
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1, 2
19. Safety Injection Input from ESF	N.A.	N.A.	Q (4)(15)	1, 2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker				
A. Shunt Trip Function	N.A.	N.A.	2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
B. Undervoltage Trip Function	N.A.	N.A.	2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
22. Automatic Trip Logic	N.A.	N.A.	Q(15)	1, 2, 3*, 4*, 5*
23. Reactor Trip Bypass Breaker	N.A.	N.A.	2 Months (5)(12) and S/U(1)(13)	1, 2, 3*, 4*, 5*

TABLE 4.3-1 (Continued)

NOTATION

- * - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
- (1) - If not performed in previous 7 days.
- (2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
- (3) - Compare incore to excore axial imbalance above 15% of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.
- (4) - Manual ESF functional input check every 18 months.
- (5) - Each train tested at least every other 62 days.
- (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (7) - Below P-6 (BLOCK OF SOURCE RANGE REACTOR TRIP) setpoint.
- (8) - The provisions of Specification 4.0.4 are not applicable.
- (9) - The provisions of Specification 4.0.4 are not applicable for f_1 (ΔI) and f_2 (ΔI) penalties, or for measurement of ΔT . (See also Table 2.2-1).
- (10) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).
- (11) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.
- (12) - Local manual shunt trip prior to placing breaker in service.
- (13) - Automatic Undervoltage Trip.
- (14) - The provisions of Specification 4.0.4 are not applicable when leaving MODE 1. In such an event, the calibration and/or functional test shall be performed within 24 hours after leaving MODE 1.
- (15) - Each train tested at least every other 92 days.
- (16) - Not Used.
- (17) - If not performed in previous 184 days.

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

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
 SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Manual Initiation	----- See Functional Unit 9 -----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
c. Containment Pressure-- High	S	R	SA (3)	N.A.	1, 2, 3
d. Pressurizer Pressure--Low	S	R	SA	N.A.	1, 2, 3
e. Differential Pressure Between Steam Lines-- High	S	R	SA	N.A.	1, 2, 3
f. Steam Line Pressure--Low	S	R	SA	N.A.	1, 2, 3
2. CONTAINMENT SPRAY					
a. Manual Initiation	----- See Functional Unit 9 -----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
c. Containment Pressure-- High-High	S	R	SA (3)	N.A.	1, 2, 3

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual				----- See Functional Unit 9 -----	
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
b. Phase "B" Isolation					
1) Manual				----- See Functional Unit 9 -----	
2) Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
3) Containment Pressure--High-High	S	R	SA (3)	N.A.	1, 2, 3
c. Purge and Exhaust Isolation					
1) Manual				----- See Functional Unit 9 -----	
2) Containment Radioactivity--High	S	R	Q	N.A.	1, 2, 3, 4

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
4. STEAM LINE ISOLATION					
a. Manual	----- See Functional Unit 9 -----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3,
c. Containment Pressure-- High-High	S	R	SA (3)	N.A.	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T _{avg} --Low-Low	S	R	SA	N.A.	1, 2, 3
e. Steam Line Pressure-Low	S	R	SA	N.A.	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION					
a. Steam Generator Water Level--High-High	S	R	SA	N.A.	1, 2, 3
6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Steam Generator Water Level--Low-Low	S	R	SA	N.A.	1, 2, 3
b. 4 kv Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3
c. Safety Injection	N.A.	N.A.	Q (2)	N.A.	1, 2, 3
d. Loss of Main Feed Pumps	N.A.	N.A.	R	N.A.	1, 2

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Steam Generator Water Level--Low-Low	S	R	SA	N.A.	1, 2, 3
b. Reactor Coolant Pump Bus Undervoltage	N.A.	R	M	N.A.	1, 2, 3
8. LOSS OF POWER					
a. 4 kv Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3, 4
b. 4 kv Bus Degraded Voltage	S	R	M	N.A.	1, 2, 3, 4

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
9. Manual					
a. Safety Injection (ECCS) Feedwater Isolation Reactor Trip (SI) Containment Isolation- Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps Essential Service Water System	N.A.	N.A.	N.A.	R	1, 2, 3, 4
b. Containment Spray Containment Isolation- Phase "B" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R	1, 2, 3, 4
c. Containment Isolation- Phase "A" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R	1, 2, 3, 4
d. Steam Line Isolation	N.A.	N.A.	Q	R	1, 2, 3
e. Containment Air Recirculation Fan	N.A.	N.A.	N.A.	R	1, 2, 3, 4
10. CONTAINMENT AIR RECIRCULATION FAN					
a. Manual	-----See Functional Unit 9-----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3
c. Containment Pressure - High	S	R	SA (3)	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

TABLE NOTATION

- (1) Deleted
- (2) Each train or logic channel shall be tested at least every other 92 days.
- (3) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either a vacuum or pressure to the appropriate side of the transmitter.

TABLE 1.2
FREQUENCY NOTATION

<u>NOTATION</u>	<u>FREQUENCY</u>
S	At least once per 12 hours
D	At least once per 24 hours
W	At least once per 7 days
M	At least once per 31 days
Q	At least once per 92 days
2 Months	At least once per 62 days
SA	At least once per 184 days
R	At least once per 549 days
S/U	Prior to each reactor start-up
P	Completed prior to each release
N.A.	Not Applicable

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

	<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
16.	Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3	1	6#
17.	Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6#
18.	Turbine Trip					
	A. Low Fluid Oil Pressure	3	2	2	1	7#
	B. Turbine Stop Valve Closure	4	4	3	1	6#
19.	Safety Injection Input from ESF	2	1	2	1, 2	1
20.	Reactor Coolant Pump Breaker Position Trip					
	Above P-7	1/breaker	2	1/breaker per operating loop	1	11
21.	Reactor Trip Breakers	2	1	2	1, 2 3*, 4*, 5*	13, 15 14
22.	Automatic Trip Logic	2	1	2	1, 2 3*, 4*, 5*	1 14

TABLE 3.3-1(Continued)

- ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hours.
- ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.
- ACTION 13 - With one of the diverse trip features (Undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 1. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.
- ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour.
- ACTION 15 - With the number of OPERABLE Reactor Trip Breaker channels one less than required by the Minimum Channels OPERABLE requirement for reasons other than an inoperable diverse trip feature, restore the inoperable channel to OPERABLE status within 24 hours or be in HOT STANDBY within the following 6 hours. One channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1.1, provided the other channel is OPERABLE.

REACTOR TRIP SYSTEM INTERLOCKS

<u>DESIGNATION</u>	<u>CONDITION AND SETPOINT</u>	<u>FUNCTION</u>
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels $< 6 \times 10^{-11}$ amps.	P-6 prevents or defeats the manual block of source range reactor trip.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
13. Loss of Flow-Two Loops	S	R(8)	N.A.	1
14. Steam Generator Water Level -- Low-Low	S	R	SA	1, 2
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	SA	1, 2
16. Undervoltage-Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency-Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1, 2
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1, 2
19. Safety Injection Input from EFS	N.A.	N.A.	Q (4)(15)	1, 2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker				
A. Shunt Trip Function	N.A.	N.A.	2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
B. Undervoltage Trip Function	N.A.	N.A.	2 Months (5)(11) and S/U(1)(11)	1, 2, 3*, 4*, 5*
22. Automatic Trip Logic	N.A.	N.A.	Q (15)	1, 2, 3*, 4*, 5*
23. Reactor Trip Bypass Breaker	N.A.	N.A.	2 Months (5)(12) and S/U(1)(13)	1, 2, 3*, 4*, 5*

TABLE 4.3-1 (Continued)

NOTATION

- * - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.
- (1) - If not performed in previous 7 days.
- (2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.
- (3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference greater than or equal to 3 percent.
- (4) - Manual ESF functional input check every 18 months.
- (5) - Each train tested at least every other 62 days.
- (6) - Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (7) - Below P-6 (BLOCK OF SOURCE RANGE REACTOR TRIP) setpoint.
- (8) - The provisions of Specification 4.0.4 are not applicable.
- (9) - The provisions of Specification 4.0.4 are not applicable for f_1 (ΔI) and f_2 (ΔI) penalties, or for measurement of ΔT . (See also Table 2.2-1).
- (10) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).
- (11) - The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.
- (12) - Local manual shunt trip prior to placing breaker in service.
- (13) - Automatic Undervoltage Trip.
- (14) - The provisions of Specification 4.0.4 are not applicable when leaving MODE 1. In such an event, the calibration and/or functional test shall be performed within 24 hours after leaving MODE 1.
- (15) - Each train tested at least every other 92 days.
- (16) - Not Used.
- (17) - If not performed in previous 184 days.

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

TABLE 4.3-2
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Manual Initiation					----- See Functional Unit 9 -----
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
c. Containment Pressure -- High	S	R	SA (3)	N.A.	1, 2, 3
d. Pressurizer Pressure -- Low	S	R	SA	N.A.	1, 2, 3
e. Differential Pressure Between Steam Lines -- High	S	R	SA	N.A.	1, 2, 3
f. Steam Line Pressure -- Low	S	R	SA	N.A.	1, 2, 3
2. CONTAINMENT SPRAY					
a. Manual Initiation					----- See Functional Unit 9 -----
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
c. Containment Pressure -- High-High	S	R	SA (3)	N.A.	1, 2, 3
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual					----- See Functional Unit 9 -----
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
b. Phase "B" Isolation					
1) Manual					----- See Functional Unit 9 -----
2) Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3, 4
3) Containment Pressure-- High-High	S	R	SA (3)	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>TRIP ACTUATING DEVICE OPERATIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
c. Purge and Exhaust Isolation					
1) Manual	----- See Functional Unit 9 -----				
2) Containment Radioactivity -- High	S	R	Q	N.A.	1, 2, 3, 4
4. STEAM LINE ISOLATION					
a. Manual	----- See Functional Unit 9 -----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3
c. Containment Pressure -- High-High	S	R	SA (3)	N.A.	1, 2, 3
d. Steam Flow in Two Steam Lines -- High Coincident with T _{avg} -- Low-Low	S	R	SA	N.A.	1, 2, 3
e. Steam Line Pressure -- Low	S	R	SA	N.A.	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION					
a. Steam Generator Water Level -- High-High	S	R	SA	N.A.	1, 2, 3
6. MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS					
a. Steam Generator Water Level -- Low-Low	S	R	SA	N.A.	1, 2, 3
b. 4 kV Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3
c. Safety Injection	N.A.	N.A.	Q (2)	N.A.	1, 2, 3
d. Loss of Main Feed Pumps	N.A.	N.A.	R	N.A.	1, 2

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
 SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
7. TURBINE DRIVEN AUXILIARY FEEDWATER PUMP					
a. Steam Generator Water Level -- Low-Low	S	R	SA	N.A.	1, 2, 3
b. Reactor Coolant Pump Bus Undervoltage	N.A.	R	M	N.A.	1, 2, 3
8. LOSS OF POWER					
a. 4 kv Bus Loss of Voltage	S	R	M	N.A.	1, 2, 3, 4
b. 4 kv Bus Degraded Voltage	S	R	M	N.A.	1, 2, 3, 4
9. MANUAL					
a. Safety Injection (ECCS) Feedwater Isolation Reactor Trip (SI) Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation Auxiliary Feedwater Pumps Essential Service Water System	N.A.	N.A.	N.A.	R	1, 2, 3, 4
b. Containment Spray Containment Isolation - Phase "B" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R	1, 2, 3, 4
c. Containment Isolation - Phase "A" Containment Purge and Exhaust Isolation	N.A.	N.A.	N.A.	R	1, 2, 3, 4
d. Steam Line Isolation	N.A.	N.A.	Q	R	1, 2, 3
e. Containment Air Recirculation Fan	N.A.	N.A.	N.A.	R	1, 2, 3, 4
10. CONTAINMENT AIR RECIRCULATION FAN					
a. Manual	-----See Functional Unit 9-----				
b. Automatic Actuation Logic	N.A.	N.A.	Q (2)	N.A.	1, 2, 3
c. Containment Pressure -- High	S	R	SA (3)	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

TABLE NOTATION

- (1) Deleted
- (2) Each train or logic channel shall be tested at least every other 92 days.
- (3) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either a vacuum or pressure to the appropriate side of the transmitter.