

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>
12.	Loss of Flow - Single Loop	S	R	Q	1
13.	Loss of Flow - Two Loops	S	R	Q	1
14.	Steam/Generator Water Level-Low-Low	S	R	Q	1, 2
15.	DELETED				
16.	Undervoltage-Reactor Coolant Pumps	N.A.	R	Q	1
17.	Underfrequency-Reactor Coolant Pumps	N.A.	R	Q	1
18.	Turbine Trip				
	a. Auto Stop Oil Pressure	N.A.	N.A.	S/U <sup>(1)</sup>	1, 2
	b. Turbine Stop Valve Closure	N.A.	N.A.	S/U <sup>(1)</sup>	1, 2
19.	Safety Injection Input from ESF	N.A.	N.A.	R	1, 2
20.	Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21.	Reactor Trip Breaker	N.A.	N.A.	M <sup>(5,11)</sup> and S/U <sup>(1)</sup>	1, 2, 3 <sup>(14)</sup> , 4 <sup>(14)</sup> , 5 <sup>(14)</sup>

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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic Coincident with Safety Injection Signal	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3
c. Refueling Water Storage Tank Level-Low	S	R	Q	1, 2, 3
d. Refueling Water Storage Tank Level - Auto QS Flow Reduction	S	R	M	1, 2, 3
2. CONTAINMENT SPRAY				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3, 4
c. Containment Pressure-High-High	S	R	Q	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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3
c. Containment Pressure-- Intermediate-High-High	S	R	Q	1, 2, 3
d. Steamline Pressure--Low	S	R	Q	1, 2, 3
e. Steamline Pressure Rate-High Negative	S	R	Q	1, 2, 3
5. TURBINE TRIP & FEEDWATER ISOLATION				
a. Steam Generator Water Level-- High-High	S	R	Q	1, 2, 3
6. LOSS OF POWER				
a. 4.16kv Emergency Bus Under- voltage (Loss of Voltage) Trip Feed & Start Diesel	N.A.	R	Q	1, 2, 3, 4
b. 4.16kv and 480v Emergency Bus Undervoltage (Degraded Voltage)	N.A.	R	Q	1, 2, 3, 4

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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
7. AUXILIARY FEEDWATER				
a. Steam Generator Water Level-Low-Low	S	R	Q	1, 2, 3
b. Undervoltage-RCP	S	R	Q	1, 2
c. S.I.	See 1 above (all SI surveillance requirements)			
d. (Deleted)				
e. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2, 3
8. ESF INTERLOCKS				
a. P-4	N.A.	N.A.	R	1, 2, 3
b. P-11	N.A.	R	Q	1, 2, 3
c. P-12	N.A.	R	Q	1, 2, 3

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>
12. Loss of Flow - Single Loop (Above P-8)	S	R	Q	1
13. Loss of Flow - Two Loop (Above P-7 and Below P-8)	S	R	Q	1
14. Steam/Generator Water Level- Low-Low	S	R	Q	1, 2
15. DELETED.				
16. Undervoltage-Reactor Coolant Pumps (Above P-7)	N.A.	R	Q	1
17. Underfrequency-Reactor Coolant Pumps (Above P-7)	N.A.	R	Q	1
18. Turbine Trip (Above P-9)				
A. Emergency Trip Header Low Pressure	N.A.	R	S/U <sup>(1)</sup>	1, 2
B. Turbine Stop Valve Closure	N.A.	R	S/U <sup>(1)</sup>	1, 2
19. Safety Injection Input from ESF	N.A.	N.A.	R	1, 2
20. Reactor Coolant Pump Breaker Position Trip (Above P-7)	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	M <sup>(5, 11)</sup> and S/U <sup>(1)</sup>	1 <sup>(14)</sup> , 2 <sup>(14)</sup> , 3 <sup>(14)</sup> , 4 <sup>(14)</sup> , 5 <sup>(14)</sup>

TABLE 4.3-2

ENGINEERING 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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. SAFETY INJECTION AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q	1, 2, 3
e. Steam Line Pressure--Low	S	R	Q	1, 2, 3
1.1 SAFETY INJECTION-TRANSFER FROM INJECTION TO THE RECIRCULATION MODE				
a. Automatic Actuation Logic Coincident with Safety Injection Signal	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3, 4
b. Refueling Water Storage Tank Level-Extreme Low	S	R	Q	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERING 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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
6. LOSS OF POWER				
a. 4.16kv Emergency Bus				
1. Undervoltage (Trip Feed)	N.A.	R	Q	1, 2, 3, 4
2. Undervoltage (Start Diesel)	N.A.	R	Q	1, 2, 3, 4
b. 4.16kv Emergency Bus (Degraded Voltage)	N.A.	R	Q	1, 2, 3, 4
c. 480v Emergency Bus (Degraded Voltage)	N.A.	R	Q	1, 2, 3, 4
7. AUXILIARY FEEDWATER <sup>(4)</sup>				
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	M <sup>(1)</sup>	1, 2, 3
b. Steam Generator Water Level-Low-Low				
1. Start Turbine Driven Pump	S	R	Q	1, 2, 3
2. Start Motor Driven Pumps	S	R	Q	1, 2, 3

(4) Manual initiation is included in Specification 3.7.1.2.

TABLE 4.3-2 (Continued)

ENGINEERING 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>MODES IN WHICH SURVEILLANCE REQUIRED</u>
7. AUXILIARY FEEDWATER (continued)				
c. Undervoltage - RCP (Start Turbine-Driven Pump)	S	R	Q	1, 2
d. Safety Injection (Start All Auxiliary Feedwater Pumps)	See 1 above (all SI surveillance requirements)			
e. Trip of Main Feedwater Pumps (Start Motor-Driven Pumps)	N.A.	N.A.	R	1, 2, 3
8. ENGINEERED SAFETY FEATURE INTERLOCKS				
a. Reactor Trip, P-4	N.A.	N.A.	R	1, 2, 3
b. Pressurizer Pressure, P-11	N.A.	R	Q	1, 2, 3
c. Low-Low T <sub>avg</sub> , P-12	N.A.	R	Q	1, 2, 3