ATTACHMENT A1

Markup of Salem Unit 1 Technical Specification 3/4.3.1 - Reactor Trip System Instrumentation

ATTACHMENT A1

Technical Specification 3.3.1 insert.

INSERT 1:

ACTION 10 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY in the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
11. Pressurizer Water Level--High	3	2	2	1, 2	~~7#~~ 6#
12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	~~7#~~ 6#
13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	~~7#~~ 6#
14. Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loops	2/loop in each operating loop	1, 2	~~7#~~ 6#
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	~~7#~~ 6#
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	1/2 twice	4	1	6
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	1/2 twice	4	1	6

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18. Turbine Trip					
Low Autostop Oil Pressure	3	2	2	1	~~7#~~ 6#
Turbine Stop Valve Closure	4	4	3	1	~~7#~~ 6#
19. Safety Injection Input from ESF	2	1	2	1,2	~~1~~ 10
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*	1###, 14 13
22. Automatic Trip Logic	2	1	2	1, 2 3*,4*,5*	~~1~~ 10 13

TABLE NOTATION

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

** The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped condition.

\# The provisions of Specification 3.0.4 are not applicable,

\#\# High voltage to detector may be de-energized above P-6.

\#\#\# If ACTION Statement 1 is entered as a result of Reactor Trip Breaker (RTB) or Reactor Trip Bypass Breakers (RTBB) maintenance testing results exceeding the following acceptance criteria, NRC reporting shall be made in accordance with Specification 6.9.1.9:

1. A RTB or RTBB trip failure during any surveillance test with less than or equal to 300 grams of weight added to the breaker trip bar.

2. A RTB or RTBB time response failure that results in the overall reactor trip system time response exceeding the Technical Specification limit.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1 provided the other channel is OPERABLE.

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

a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour~~.~~ s.

b. The Minimum Channels OPERABLE requirement is met; however, ~~one additional~~ THE INOPERABLE channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

c. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL and the Power Range, Neutron Flux trip setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours.

ACTION 3 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6 but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

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

a. P-6, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above P-6, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour.

b. The Minimum Channels OPERABLE requirement is met; however, ~~one additional~~ THE INOPERABLE channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.1.1. OF OTHER CHANNELS

ACTION 7 - ~~With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.~~

NOT USED

ACTION 8 - NOT USED

ACTION 9 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

ACTION 10 - ~~Deleted.~~ SEE INSERT

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 1/6 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 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 14 - 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 be in at least HOT STANDBY within 6 hours. 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.

REACTOR TRIP SYSTEM INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels < 6x10-11 amps.	P-6 prevents or defeats the manual block of source range reactor trip.
P-7	With 2 of 4 Power Range Neutron Flux Channels ≥ 11% of RATED THERMAL POWER or 1 of 2 Turbine impulse chamber pressure channels ≥ a pressure equivalent to 11% of RATED THERMAL POWER.	P-7 prevents or defeats the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump undervoltage and under-frequency, pressurizer low pressure, pressurizer high level, and the opening of more than one reactor coolant pump breaker.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.[redacted] (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	~~M~~ Q	1, 2
15. Steam/Feedwater Flow Mismatch & Low Steam Generator Water Level	S	R	~~M~~ Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	~~M~~ Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	~~M~~ Q	1
18. Turbine Trip				
A. Low Autostop 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.	M(4)(5)	1, 2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	S/U(10), M(11,13), SA(12,13) and R(14)	1, 2 and *
22. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2 and *

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~~ 31 days.

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

(3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference ≥ 3 percent.

(4) - Manual SSPS functional input check every 18 months.

(5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS.

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

(7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.

(8) - Deleted

(9) - If not performed in the previous 24 hours, conduct a functional test of the Manual Reactor Trip Switches to verify the Manual Reactor Trip Switch and the independent operation of the U.V. and shunt trip wiring.

(10) - If not performed in the previous 24 hours, conduct a functional test of:

- Reactor Trip Breaker independent operation of U.V. and Shunt Trip (via SSPS)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(11) - Perform a functional test of:

- Reactor Trip Breaker independent operation of U.V. Trip and Shunt Trip (via SSPS) and conduct response time testing of U.V. and Shunt Trip/Breakers (event recorders)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(12) - Perform periodic maintenance on Reactor Trip Breakers and Reactor Trip Bypass Breakers semiannually as follows:

a. response time testing, (3 times) (visicorder) trend data
b. trip bar lift force measurements
c. UV output force measurement
d. dropout voltage check
e. servicing/lubrication/adjustments (See Table 3.3-1 Notation ###)
f. repeat testing steps (a-d) following any necessary actions at step (e)

ATTACHMENT A2

Markup of Salem Unit 1 Technical Specification 3/4.3.2 -
Engineered Safety Feature Actuation System Instrumentation

TABLE 3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure-High	3	2	2	1, 2, 3	~~14*~~ 19 *
d. Pressurizer Pressure-Low	3	2	2	1, 2, 3#	~~14*~~ 19 *
e. Differential Pressure Between Steam Lines - High				1, 2, 3##	
Four Loops Operating	3/steam line	2/steam line any steam line	2/steam line		~~14*~~ 19 *
Three Loops Operating	3/operating steam line	1##/steam line, any operating steam line	2/operating steam line		15

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
f. Steam Flow in Two Steam Lines-High				1, 2, 3##	
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		~~14~~ 19*
Three Loops Operating	2/operating steam line	1###/any operating steam line	1/operating steam line		15
COINCIDENT WITH EITHER					
Tavg --Low-Low				1, 2, 3##	
Four Loops Operating	1 Tavg/loop	2 Tavg any loops	1 Tavg any 3 loops		~~14~~ 19*
Three Loops Operating	1 Tavg/operating loop	1### Tavg in any operating loop	1 Tavg in any two operating loops		15

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
OR, COINCIDENT WITH					
Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops		~~14*~~ 19☆
2. CONTAINMENT SPRAY					
a. Manual	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	18
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
Three Loops	1 Tavg/operating loop	1### Tavg in any operating loop	1 Tavg in any two operating loops		15
OR, COINCIDENT WITH Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/loop	1 pressure/any 2 loops	1 pressure/any 3 loops		14*
Three Loops Operating	1 pressure/operating loop	1 ### pressure in any operating loop	1 pressure in any 2 operating loops		15
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water level--High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	~~14*~~ 19*
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1, 2, 3, 4	13
7. UNDERVOLTAGE, VITAL BUS					
a. Loss of Voltage	1/bus	2	3	1, 2, 3	14*
b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1, 2, 3	14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. AUXILIARY FEEDWATER					
a. Automatic Actuation Logic**	2	1	2	1, 2, 3	20
b. Manual Initiation	1/pump	1/pump	1/pump	1, 2, 3	22
c. Steam Generator Water Level--Low-Low					
i. Start Motor Driven Pumps	3/stm. gen.	2/stm. gen.	2 stm. gen.	1, 2, 3	~~14~~ 19*
ii. Start Turbine Driven Pumps	3/stm. gen.	2/stm. gen.	2 stm. gen.	1, 2, 3	~~14~~ 19*
d. Undervoltage - RCP Start Turbine - Driven Pump	4(1/bus)	1/2 x 2	3	1, 2	19
e. S.I. Start Motor-Driven Pumps	See 1 above (All S.I. initiating functions and requirements)				
f. Emergency Trip of Steam Generator Feedwater Pumps Start Motor Driven Pumps	2(1/pump)	2	2(1/pump)	1	21
g. Station Blackout	See 6 and 7 above (SEC and U/V Vital Bus)				

**Applies to items c and d.

TABLE NOTATION

Trip function may be bypassed in this MODE below P-11.

Trip function may be bypassed in this MODE below P-12.

The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped mode.

*The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

RESTORE THE INOPERABLE CHANNEL TO OPERABLE STATUS WITHIN 6 HOURS OR,

ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, ~~be~~ in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.1 PROVIDED THE NEXT THE OTHER CHANNEL IS OPERABLE.

ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated within 6 ~~1~~ hours; one additional channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 17 - With less than the Minimum Channels OPERABLE, operations may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour. ^5

b. The Minimum Channels OPERABLE requirements is met; however, ~~one additional~~ THE INOPERABLE channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.1 OF OTHER CHANNELS

ENGINEERED SAFETY FEATURES INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels ≥ 1925 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
P-12	With 3 of 4 Tavg channels ≥ 545°F.	P-12 prevents or defeats manual block of safety injection actuation high steam line flow and low steam line pressure.
	With 2 of 4 Tavg channels < 541°F.	Allows manual block of safety injection actuation on high steam line flow and low steam line pressure. Causes steam line isolation on high steam flow. Affects steam dump blocks.

ACTION 20 - RESTORE THE INOPERABLE CHANNEL TO OPERABLE STATUS WITHIN 6 HOURS OR, With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to ~~1~~ 2 hours for surveillance testing, PER SPECIFICATION 4.3.2.1.1 PROVIDED THE OTHER CHANNEL IS OPERABLE. THE NEXT

ACTION 21 - With the number of OPERABLE channels one less than the Minimum Number of Channels, operation may proceed provided that either:

a. The inoperable channel is restored to OPERABLE within 72 hours, or

b. If the affected Steam Generator Feedwater Pump is expected to be out of service for more than 72 hours, the inoperable channel is jumpered so as to enable the Start Circuit of the Auxiliary Feedwater Pumps upon the loss of the other Steam Generator Feedwater Pump.

ACTION 22 - With the number of OPERABLE channels relating directly with the number of OPERABLE auxiliary feedwater pumps, the ACTIONs of L.C.O. 3.7.1.2 apply.

TABLE 3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION				
a. Manual Initiation	NA	NA	R	1, 2, 3, 4
b. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q ~~M~~(3)	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q ~~M~~	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R	Q ~~M~~	1, 2, 3
f. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low or Steam Line Pressure-Low	S	R	Q ~~M~~	1, 2, 3
2. CONTAINMENT SPRAY				
a. Manual Initiation	NA	NA	R	1, 2, 3, 4
b. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R	Q ~~M~~(3)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1. Manual	NA	NA	R	1, 2, 3, 4
2. From Safety Injection Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1. Manual	NA	NA	R	1, 2, 3, 4
2. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3, 4
3. Containment Pressure-- High-High	S	R	Q ~~M~~(3)	1, 2, 3
c. Containment Ventilation Isolation				
1. Manual	NA	NA	R	1, 2, 3, 4
2. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3, 4
3. Containment Radioactivity -- High	Per table 4.3-3			

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual	NA	NA	R	1, 2, 3
b. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q ~~M~~(3)	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low or Steam Line Pressure--Low	S	R	Q ~~M~~	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q ~~M~~	1, 2, 3
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC) LOGIC				
a. Inputs	NA	NA	M	1, 2, 3, 4
b. Logic, Timing and Outputs	NA	NA	M(1)	1, 2, 3, 4
7. UNDERVOLTAGE, VITAL BUS				
a. Loss of Voltage	S	R	M	1, 2, 3
b. Sustained Degraded Voltage	S	R	M	1, 2, 3

TABLE 4.3-[illegible]ontinued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. AUXILIARY FEEDWATER				
a. Automatic Actuation Logic	NA	NA	M(2)	1, 2, 3
b. Manual Initiation	NA	NA	M(4)	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Q ~~M~~	1, 2, 3
d. Undervoltage - RCP	S	R	Q ~~M(2)~~	1, 2
e. S.I.	See 1 above (All S.I. surveillance requirements)			
f. Emergency Trip of Steam Generator Feedwater Pumps	NA	NA	R	1
g. Station Blackout	See 6b and 7 above (SEC and U/V Vital Bus)			

ATTACHMENT A3

Markup of Salem Unit 1 Technical Specification 3/4.3.1 and 3/4.3.2 Bases

ATTACHMENT A3

INSERT 1:

New Bases Paragraph #1 (Add to the existing paragraph).

... and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation and, 3) sufficient system functions capability is available from diverse parameters.

INSERT 2:

New Bases Paragraph #2 (Add to existing paragraph).

Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and Supplements to that report. Surveillance intervals and out of service times were determined based on maintaining an appropriate level of reliability of the Reactor Protection System and Engineered Safety Features instrumentation.

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic ~~is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters~~.

ADD NEW INSERT 1

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

ADD NEW INSERT 2

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served

ATTACHMENT B1

Markup of Salem Unit 2 Technical Specification 3/4.3.1 - Reactor Trip System Instrumentation

ATTACHMENT B1

Technical Specification 3.3.1 insert.

INSERT 1:

ACTION 10 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY in the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
11. Pressurizer Water Level--High	3	2	2	1, 2	~~7#~~ 6#
12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	~~7#~~ 6#
13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop in each operating loop	1	~~7#~~ 6#
14. Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loops	2/loop in each operating loop	1, 2	~~7#~~ 6#
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	~~7#~~ 6#
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	1/2 twice	4	1	6
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	1/2 twice	4	1	6

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18. Turbine Trip					
a. Low Autostop Oil Pressure	3	2	2	1	~~7#~~ 6#
b. Turbine Stop Valve Closure	4	4	4	1	~~7#~~ 6#
19. Safety Injection Input from ESF	2	1	2	1,2	~~1~~ 10
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*	1###, 14 13
22. Automatic Trip Logic	2	1	2	1, 2 3*,4*,5*	~~1~~ 10 13

TABLE NOTATION

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

** The channel(s) associated with the protective functions derived from the out of service Reactor Coolant Loop shall be placed in the tripped condition.

\# The provisions of Specification 3.0.4 are not applicable.

\#\# High voltage to detector may be de-energized above P-6.

\#\#\# If ACTION Statement 1 is entered as a result of Reactor Trip Breaker (RTB) or Reactor Trip Bypass Breaker (RTBB) maintenance testing results exceeding the following acceptance criteria, NRC reporting shall be made in accordance with Specification 6.9.1.9:

1. A RTB or RTBB trip failure during any surveillance test with less then or equal to 300 grams of weight added to the breaker trip bar.

2. A RTB or RTBB time response failure that results in the overall reactor trip system time response exceeding the Technical Specification limit.

ACTION STATEMENTS

ACTION 1 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1 provided the other channel is OPERABLE.

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

a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour 5.

b. The Minimum Channels OPERABLE requirement is met; however, THE INOPERABLE ~~one additional~~ channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.1.1. OF OTHER CHANNELS

c. Either, THERMAL POWER is restricted to ≤ 75% of RATED THERMAL and the Power Range, Neutron Flux trip setpoint is reduced to ≤ 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours.

d. The QUADRANT POWER TILT RATIO, as indicated by the remaining three detectors, is verified consistent with the normalized symmetric power distribution obtained by using the movable in-core detectors in the four pairs of symmetric thimble locations at least once per 12 hours when THERMAL POWER is greater than 75% of RATED THERMAL POWER.

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

  a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

  b. Above the P-6 (Block of Source Reactor Trip) setpoint but below 5% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 5% of RATED THERMAL POWER.

  c. Above 5% of RATED THERMAL POWER, POWER OPERATION may continue.

  d. Above 10% of RATED THERMAL POWER, the provisions of Specification 3.0.3 are not applicable.

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

  a. Below the P-6 (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

  b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, operation may continue.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

  a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour. 5

  b. The Minimum Channel OPERABLE requirement is met; however, ~~one additional~~ THE INOPERABLE channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.1.1. 1 OF OTHER CHANNELS

ACTION 7 - ~~With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the tripped condition with 1 hour~~. NOT USED

ACTION 8 - NOT USED

TABLE 3.3-1 (Continued)

ACTION 9 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

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~~ 6 hour. ^ 5

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 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 14 - 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 be in at least HOT STANDBY within 6 hours. 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.

REACTOR TRIP SYSTEM INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-6	With 2 of 2 Intermediate Range Neutron Flux Channels < 6x10-11 amps.	P-6 prevents or defeats the manual block of source range reactor trip.
P-7	With 2 of 4 Power Range Neutron Flux Channels ≥ 11% of RATED THERMAL POWER or 1 of 2 Turbine impulse chamber pressure channels ≥ a pressure equivalent to 11% of RATED THERMAL POWER.	P-7 prevents or defeats the automatic block of reactor trip on: Low flow in more than one primary coolant loop, reactor coolant pump undervoltage and under-frequency, pressurizer low pressure, pressurizer high level, and the opening of more than one reactor coolant pump breaker.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
13. Loss of Flow - Two Loops	S	R	N.A.	1
14. Steam Generator Water Level--Low-Low	S	R	~~M~~ Q	1, 2
15. Steam/Feedwater Flow Mismatch & Low Steam Generator Water Level	S	R	~~M~~ Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	~~M~~ Q	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	~~M~~ Q	1
18. Turbine Trip				
a. Low Autostop Oil Pressure	N.A.	N.A.	S/U(1)	N.A.
b. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	N.A.
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)(5)	1, 2
20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R	N.A.
21. Reactor Trip Breaker	N.A.	N.A.	S/U(10), M(11,13), SA(12,13) and R(14)	1, 2 and *
22. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2 and *

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~~ 31 days.

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

(3) - Compare incore to excore axial offset above 15% of RATED THERMAL POWER. Recalibrate if absolute difference ≥ 3 percent.

(4) - Manual SSPS functional input check every 18 months.

(5) - Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS.

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

(7) - Below P-6 (Block of Source Range Reactor Trip) setpoint.

(8) - Deleted

(9) - If not performed in the previous 24 hours, conduct a functional test of the Manual Reactor Trip Switches to verify the Manual Reactor Trip Switch and the independent operation of the U.V. and shunt trip wiring.

(10) - If not performed in the previous 24 hours, conduct a functional test of:

- Reactor Trip Breaker independent operation of U.V. and Shunt Trip (via SSPS)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(11) - Perform a functional test of:

- Reactor Trip Breaker independent operation of U.V. Trip and Shunt Trip (via SSPS) and conduct response time testing of U.V. and Shunt Trip/Breakers (event recorders)
- Reactor Trip Breaker Shunt Trip (via manual pushbutton controls)

(12) - Perform periodic maintenance on Reactor Trip Breakers and Reactor Trip Bypass Breakers semiannually as follows:
a. response time testing, (3 times) (visicorder) trend data
b. trip bar lift force measurements
c. U.V. output force measurement
d. dropout voltage check

ATTACHMENT B2

Markup of Salem Unit 2 Technical Specification 3/4.3.2 -
Engineered Safety Features Actuation System Instrumentation

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure-High	3	2	2	1, 2, 3	~~14*~~ 19*
d. Pressurizer Pressure-Low	3	2	2	1, 2, 3#	~~14*~~ 19*
e. Differential Pressure Between Steam Lines - High				1, 2, 3##	
Four Loops Operating	3/steam line	2/steam line any steam line	2/steam line		~~14*~~ 19*

TABLE 3.3-1 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
f. Steam Flow in Two Steam Lines-High				1, 2, 3##	
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		~~14*~~ 19*
COINCIDENT WITH EITHER					
Tavg --Low-Low				1, 2, 3##	
Four Loops Operating	1 T_{avg}/loop	1 T_{avg} any 2 loops	1 T_{avg} any 3 loops		~~14*~~ 19*

TABLE 3.3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
OR, COINCIDENT WITH					
Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/ loop	1 pressures any 2 loops	1 pressure any 3 loops		~~14~~ 19*
2. CONTAINMENT SPRAY					
a. Manual	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	18
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. STEAM LINE ISOLATION					
a. Manual	2/steam line	1/steam line	1/operating steam line	1, 2, 3	21
b. Automatic Actuation Logic	2***	1	2	1, 2, 3	20
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16
d. Steam Flow in Two Steam Lines--High					
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		~~14*~~ 19*
COINCIDENT WITH EITHER T_{avg}--Low-Low				1, 2, 3##	
Four Loops Operating	1 T_{avg}/loop	1 T_{avg} in any 2 loops	1 T_{avg} in any 3 loops		~~14*~~ 19*

*** The automatic actuation logic includes two redundant solenoid operated vent valves for each Main Steam Isolation Valve. One vent valve on any one Main Steam Isolation Valve may be isolated without affecting the function of the automatic actuation logic provided the remaining seven solenoid vent valves remain operable. The isolated MSIV vent valve shall be returned to OPERABLE status upon the first entry into MODE 5 following determination that the vent valve is inoperable. For any condition where more than one of the eight solenoid vent valves are inoperable, entry into ACTION 20 is required.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
Three Loops	1 Tavg/operating loop	1### Tavg in any operating loop	1 Tavg in any two operating loops		15
OR, COINCIDENT WITH					
Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops		~~14*~~ 19*
Three Loops Operating	1 pressure/ operating loop	1 ### pressure in any operating loop	1 pressure in any 2 operating loops		15
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water level-- High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	~~14*~~ 19*
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1, 2, 3, 4	13
7. UNDERVOLTAGE, VITAL BUS					
a. Loss of Voltage	1/bus	2	3	1, 2, 3	14*
b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1, 2, 3	14*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. AUXILIARY FEEDWATER					
a. Automatic Actuation Logic**	2	1	2	1, 2, 3	20
b. Manual Initiation	1/pump	1/pump	1/pump	1, 2, 3	23
c. Stm. Gen. Water Level-Low-Low					
i. Start Motor Driven Pumps	3/stm. gen.	2/stm. gen. any stm. gen.	2 stm. gen.	1, 2, 3	~~14~~ 19*
ii. Start Turbine Driven Pumps	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2 stm. gen.	1, 2, 3	~~14~~ 19*
d. Undervoltage - RCP Start Turbine - Driven Pump	4-1/bus	1/2 x 2	3	1, 2	19
e. S.I. Start Motor-Driven Pumps	See 1 above (All S.I. initiating functions and requirements)				
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps	2/pump	1/pump	1/pump	1, 2	22*
9. Semiautomatic Transfer to Recirculation					
a. RWST Level Low	4	2	3	1, 2, 3	16
b. Automatic Actuation Logic	2	1	2	1, 2, 3	~~13~~ 20

**Applies to items c and d.

This page effective prior to startup from the fifth refueling outage. Correction letter dated May 16, 1990.

TABLE NOTATION

Trip function may be bypassed in this MODE below P-11 (Pressurizer Pressure Block of Safety Injection) setpoint.

Trip function may be bypassed in this MODE below P-12 (Tavg Block of Safety Injection) setpoint.

* The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

RESTORE THE INOPERABLE CHANNEL TO OPERABLE STATUS WITHIN 6 HOURS OR,

ACTION 13 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE. THE NEXT

ACTION 14 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated by CHANNEL CHECK within ~~1~~ 6 hour; one additional channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing per Specification 4.3.2.1.

ACTION 17 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 19 - With the number of OPERABLE Channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within ~~1~~ 6 hour. ^ 5

b. The Minimum Channels OPERABLE requirements is met; however, ~~one additional~~ ^ THE INOPERABLE channel may be bypassed for up to ~~2~~ 4 hours for surveillance testing ^ OF OTHER CHANNELS per Specification 4.3.2.1.

ENGINEERED SAFETY FEATURES INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels ≥ 1925 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
P-12	With 3 of 4 Tavg channels ≥ 545°F.	P-12 prevents or defeats manual block of safety injection actuation high steam line flow and low steam line pressure.
	With 2 of 4 Tavg channels < 541°F.	Allows manual block of safety injection actuation on high steam line flow and low steam line pressure. Causes steam line isolation on high steam flow. Affects steam dump blocks.

ACTION 20 - With the number of OPERABLE channels one less than the Total Number of Channels, RESTORE THE INOPERABLE CHANNEL TO OPERABLE STATUS WITHIN 6 HOURS OR, be in at least HOT STANDBY within 6 hours THE NEXT and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to ~~1~~ 4 hour for surveillance testing provided the other channel is OPERABLE.

ACTION 21 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION 22 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 23 - With the Number of OPERABLE channels relating directly with the number of OPERABLE auxiliary feedwater pumps, the ACTIONS of L.C.O. 3.7.1.2 apply.

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION				
a. Manual Initiation	N.A.	N.A.	R	1, 2, 3, 4
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
c. Containment Pressure--High	S	R	Q ~~M~~(3)	1, 2, 3
d. Pressurizer Pressure--Low	S	R	Q ~~M~~	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R	Q ~~M~~	1, 2, 3
f. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low-Low or Steam Line Pressure--Low	S	R	Q ~~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(2)	1, 2, 3, 4
c. Containment Pressure--High-High	S	R	Q ~~M~~(3)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Pressure-- High-High	S	R	Q ~~M~~(3)	1, 2, 3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Radioactivity -- High	Per table 4.3-3			

TABLE 4.3-[illegible] (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q ~~M~~(3)	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with Tavg--Low or Steam Line Pressure--Low	S	R	Q ~~M~~	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q ~~M~~	1, 2, 3
6. SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC) LOGIC				
a. Inputs	N.A.	N.A.	M	1, 2, 3, 4
b. Logic, Timing and Outputs	N.A.	N.A.	M(1)	1, 2, 3, 4
7. UNDERVOLTAGE, VITAL BUS				
a. Loss of Voltage	S	R	M	1, 2, 3
b. Sustained Degraded Voltage	S	R	M	1, 2, 3

TABLE 4.3-1 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. AUXILIARY FEEDWATER				
a. Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3
b. Manual Initiation	N.A.	N.A.	M(5)	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Q ~~M~~	1, 2, 3
d. Undervoltage - RCP	S	R	Q ~~M~~	1, 2
e. S.I.	See 1 above (All S.I. surveillance requirements)			
f. Trip of Main Feedwater Pumps	N.A.	N.A.	S/U(4)	1, 2
9. SEMIAUTOMATIC TRANSFER TO RECIRCULATION				
a. RWST Low Level	S	R	Q ~~M~~	1, 2, 3
b. Automatic Initiation Logic	N.A.	N.A.	N.A.	1, 2, 3, 4

ATTACHMENT B3

Markup of Salem Unit 2 Technical Specification 3/4.3.1 and 3/4.3.2 Bases.

ATTACHMENT B3

INSERT 1:

New Bases Paragraph #1 (Add to the existing paragraph).

... and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection and Engineered Safety Features instrumentation and, 3) sufficient system functions capability is available from diverse parameters.

INSERT 2:

New Bases Paragraph #2 (Add to the existing paragraph).

Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and Supplements to that report. Surveillance intervals and out of service times were determined based on maintaining an appropriate level of reliability of the Reactor Protection System and Engineered Safety Features instrumentation.

BASES

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic ~~is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.~~

ADD NEW INSERT 1

The OPERABILITY of these systems is required to provide the overall reliability, redundance and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

ADD NEW INSERT 2

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.