PROPOSED TECHNICAL SPECIFICATION CHANGE - TSP 880025-0
VIRGIL C. SUMMER NUCLEAR STATION

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3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE with RESPONSE TIMES as shown in Table 3.3-2.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor trip system instrumentation channel and interlock and the automatic trip logic shall be demonstrated OPERABLE by performance of the reactor trip system instrumentation surveillance requirements specified in Table 4.3-1.

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months.* Each test shall include at least one train such that both trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

*A one time extension of the frequency of response time tests is granted until June 30, 1983 for all tests due to be completed before this date. Surveillance tests for response time will be conducted on or before June 30, 1983.

DELETE

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
15. Undervoltage-Reactor Coolant Pumps	3-1/bus	2	2	1	6#
16. Underfrequency-Reactor Coolant Pumps	3-1/bus	2	2	1	6#
17. Turbine Trip					
A. Low Fluid Oil Pressure	3	2	2	1	6#
B. Turbine Stop Valve Closure	4	4	1	1	10#
18. Safety Injection Input from ESF	2	1	2	1, 2	~~6~~ 12

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT		TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
19. Reactor Trip System Interlocks						
A. Intermediate Range Neutron Flux, P-6		2	1	2	2##	7
B. Low Power Reactor Trips Block, P-7	P-10 Input	4	2	3	1	7
	P-13 Input	2	1	2	1	7
C. Power Range Neutron Flux, P-8		4	2	3	1	7
D. Power Range Neutron Flux, P-10		4	2	3	1, 2	7
E. Turbine First Stage Pressure, P-13		2	1	2	1	7
F. Power Range Neutron Flux, P-9		4	2	3	1	7
20. Reactor Trip Breakers		2	1	2	1, 2	8, 11
		2	1	2	3*, 4*, 5*	9
21. Automatic Trip Logic		2	1	2	1, 2	~~8~~ 12
		2	1	2	3*, 4*, 5*	9

TABLE 3.3-1 (Continued)

TABLE NOTATION

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

1) DELETE → **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.

##Below the P-6 (Intermediate Range Neutron Flux Interlock) setpoint.

###Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

****Values left blank pending NRC approval of 2 loop operation.

ACTION STATEMENTS

ACTION 1 - 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 be in at least HOT STANDBY within the next 6 hours.

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 hours.

b. The Minimum Channels OPERABLE requirement is met; however, 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 less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.

ACTION STATEMENTS (Continued)

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

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint.

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) setpoint but below 10 percent of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10 percent of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement suspend all operations involving positive reactivity changes.

ACTION 5 - With the number of OPERABLE channels one less than 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.

DELETE THIS ACTION AND REPLACE WITH NEW WORDING FOR ACTION 6

ACTION 6 - 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 OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 7 - With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3

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 6 hours; and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least 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 9 - 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 10 - With the number of OPERABLE Channels less than the Total Number of Channels operation may continue provided the inoperable channels are placed in the tripped condition within 1 hour.

ACTION 11 - 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 8. 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 OPERABLE status.

ACTION 12 - 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 within 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.

ADD NEW ACTION 12

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	N.A.	R(11)	N.A.	1, 2, 3*, 4*, 5*
2. Power Range, Neutron Flux High Setpoint	S	D(2, 4), M(3, 4), Q(4, 6), R(4, 5)	~~M~~ Q	N.A.	N.A.	1, 2
Low Setpoint	S	R(4)	~~M~~ S/U(1)	N.A.	N.A.	1###, 2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	~~M~~ Q	N.A.	N.A.	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(4)	~~M~~ Q	N.A.	N.A.	1, 2
5. Intermediate Range, Neutron Flux	S	R(4)	S/U(1)~~(X)~~	N.A.	N.A.	1###, 2
6. Source Range, Neutron Flux	S	R(4)	S/U(1), ~~M~~ Q(9)	N.A.	N.A.	2##, 3, 4, 5
7. Overtemperature ΔT	S	R	~~M~~ Q	N.A.	N.A.	1, 2
8. Overpower ΔT	S	R	~~M~~ Q	N.A.	N.A.	1, 2
9. Pressurizer Pressure--Low	S	R	~~M~~ Q	N.A.	N.A.	1
10. Pressurizer Pressure--High	S	R	~~M~~ Q	N.A.	N.A.	1, 2
11. Pressurizer Water Level--High	S	R	~~M~~ Q	N.A.	N.A.	1
12. Loss of Flow	S	R	~~M~~ Q	N.A.	N.A.	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
13. Steam Generator Water Level--Low-Low	S	R	~~M~~ Q	N.A.	N.A.	1, 2
14. Steam Generator Water Level - Low Coincident with Steam/Feedwater Flow Mismatch	S	R	~~M~~ Q	N.A.	N.A.	1, 2
15. Undervoltage - Reactor Coolant Pumps	N.A.	R	N.A.	~~M~~ Q	N.A.	1
16. Underfrequency - Reactor Coolant Pumps	N.A.	R	N.A.	~~M~~ Q	N.A.	1
17. Turbine Trip						
A. Low Fluid Oil Pressure	N.A.	R	N.A.	S/U(1, 10)	N.A.	1
B. Turbine Stop Valve Closure	N.A.	R	N.A.	S/U(1, 10)	N.A.	1
18. Safety Injection Input from ESF	N.A.	N.A.	N.A.	R	N.A	1, 2
19. Reactor Trip System Interlocks						
A. Intermediate Range Neutron Flux, P-6	N.A.	R(4)	~~M~~ R	N.A.	N.A.	2##
B. Low Power Reactor Trips Block, P-7	N.A.	R(4)	~~M (8)~~ R	N.A.	N.A.	1
C. Power Range Neutron Flux, P-8	N.A.	R(4)	~~M (8)~~ R	N.A.	N.A.	1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
D. Low Setpoint Power Range Neutron Flux, P-10	N.A.	R(4)	~~M (8)~~ R	N.A.	N.A.	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	~~M (8)~~ R	N.A.	N.A.	1
F. Low Power Range Neutron Flux, P-9	N.A.	R(4)	~~M (8)~~ R	N.A.	N.A.	1
20. Reactor Trip Breaker	N.A.	N.A.	N.A.	M (7, 12)	N.A.	1, 2, 3*, 4*, 5*
21. Automatic Trip Logic	N.A.	N.A.	N.A.	N.A.	M (7)	1, 2, 3*, 4*, 5*
22. ~~Restore~~ Reactor Trip Bypass Breaker	N.A.	N.A.	N.A.	M(13), R(14)	N.A.	1, 2, 3*, 4*, 5*

TABLE 4.3-1 (Continued)

TABLE NOTATION

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

- Below P-6 (Intermediate Range Neutron Flux Interlock) setpoint.

- Below P-10 (Low Setpoint Power Range Neutron Flux Interlock) setpoint.

(1) - If not performed in previous ~~7~~ 31 days.

(2) - Comparison of calorimetric to excore power indication above 15% of RATED THERMAL POWER. Adjust excore channel gains consistent with calorimetric power if absolute difference is greater than 2 percent. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(3) Single point comparison of incore to excore ~~axial flux difference~~ AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference is greater than or equal to 3 percent. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

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

(5) - Detector plateau curves shall be obtained evaluated and compared to manufacturer's data. For the Power Range Neutron Flux Channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(6) - Incore - Excore Calibration, above 75% of RATED THERMAL POWER. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(7) - Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(8) - DELETE ~~With power greater than or equal to the interlock setpoint the required OPERATIONAL TEST shall consist of verifying that the interlock is in the required state by observing the permissive annunciator window.~~

(9) - ~~Monthly~~ Quarterly Surveillance in MODES 3*, 4* and 5* shall also include verification that permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window.

(10) - Setpoint verification is not required.

(11) - The TRIP ACTUATING DEVICE OPERATIONAL 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).

(12) - The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.

(13) - Local manual shunt trip prior to placing breaker in service.

(14) - Automatic undervoltage trip.

LIMITING CONDITION FOR OPERATION

INSERT

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4 and with RESPONSE TIMES as shown in Table 3.3-5.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

DELETE THIS AND REPLACE WITH INSERT ATTACHED

a. With an ESFAS instrumentation or interlock setpoint trip less conservative than the value shown in the Trip Setpoint column of Table 3.3-4 adjust the setpoint consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation or interlock setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, place the channel in the tripped condition within 1 hour, and within the following 12 hours either:

   1. Determine that Equation 2.2-1 was satisfied for the affected channel and adjust the setpoint consistent with the Trip Setpoint value of Table 3.3-4, or

   2. Declare the channel inoperable and apply the applicable ACTION statement requirements of Table 3.3.3 until the channel is restored to OPERABLE status with its setpoint adjusted consistent with the Trip Setpoint value.

EQUATION 2.2-1 $Z + R + S \leq TA$

where:

Z = the value from column Z of Table 3.3-4 for the affected channel,

R = the "as measured" value (in percent span) of rack error for the affected channel,

S = either the "as measured" value (in percent span) of the sensor error, or the value in column S of Table 3.3-4 for the affected channel, and

TA = the value from column TA of Table 3.3-4 for the affected channel.

INSERT ATTACHED ACTION C. →

INSERT FOR ACTION 3.3.2

a. With an ESFAS Instrumentation or Interlock Trip Setpoint trip less conservative than the value shown in the Trip Setpoint column but more conservative than the value shown in the Allowable Value column of Table 3.3-4, adjust the Setpoint consistent with the Trip Setpoint value.

b. With an ESFAS Instrumentation or Interlock Trip Setpoint less conservative than the value shown in the Allowable Value column of Table 3.3-4, either:

   1. Adjust the Setpoint consistent with the Trip Setpoint value of Table 3.3-4, and determine within 12 hours that Equation 2.2-1 was satisfied for the affected channel, or

c. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel and interlock and the automatic actuation logic and relays shall be demonstrated OPERABLE by performance of the engineered safety feature actuation system instrumentation surveillance requirements specified in Table 4.3-2.

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months*. Each test shall include at least one train such that both trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

Delete

*A one time extension of the frequency of response time tests is granted until June 30, 1983 for all tests due to be completed before this date. Surveillance tests for response time will be conducted on or before June 30, 1983.

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, REACTOR TRIP, FEEDWATER ISOLATION, CONTROL ROOM ISOLATION, START DIESEL GENERATORS, CONTAINMENT COOLING FANS AND ESSENTIAL SERVICE WATER.					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Reactor Building Pressure - High-1	3	2	2	1, 2, 3	~~15*~~ 24*
d. Pressurizer Pressure - Low	3	2	2	1, 2, 3#	~~15*~~ 24*
e. Differential Pressure Between Steam Lines - High	3/steam line	2/steam line twice and 1/3 steam lines	2/steam line	1, 2, 3	~~15*~~ 24*

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 Line Pressure-Low	1 pressure/ loop	1 pressure and 2 loops	1 pressure and 2 loops	1, 2, 3##	~~10*~~ 24*
2. REACTOR BUILDING SPRAY					
a. Manual	2 sets - 2 switches/set	1 set	2 sets	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Reactor Building Pressure--High-3 (Phase 'A' isolation aligns spray system discharge valves and NaOH tank suction valves)	4	2	3	1, 2, 3	16

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					
i. One Switch/line	1/steam line	1/steam line	1/operating steam line	1, 2, 3	23
ii. One Switch/all lines	1	1	1	1, 2, 3	23
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	21
c. Reactor Building Pressure--High-2	3	2	2	1, 2, 3	~~15~~ 24*
d. Steam Flow in Two Steam Lines--High	2/steam line	1/steam line any 2 steam lines	1/steam line	1, 2, 3	~~15~~ 24*
COINCIDENT WITH T_{avg}--Low-Low	1 T_{avg}/loop	1 T_{avg} any 2 loops	1 T_{avg} any 2 loops	1, 2, 3	~~15~~ 24*

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
e. Steam Line Pressure-Low	1 pressure/loop	1 pressure any 2 loops	1 pressure any 2 loops	1, 2, 3##	~~15*~~ 24*
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	~~15*~~ 24*

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
6. EMERGENCY FEEDWATER					
a. Manual Initiation	1 per pump	1 per pump	1 per pump	1, 2, 3	22
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	21
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	24*
ii. Start Turbine-Driven Pump	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2/stm. gen	1, 2, 3	24*
d. Undervoltage-both ESF Busses Start Turbine-Driven Pump	2-1/bus	2	2	1, 2, 3	19
e. S.I. Start Motor-Driven Pumps	See 1 above (all S.I. initiating functions and requirements)				
f. Undervoltage-one ESF bus Start Motor-Driven Pumps	2-1/bus	1	2	1, 2	22
g. Trip of Main Feedwater Pumps Start Motor-Driven Pumps	3-1/pump	3-1/pump	3-1/pump	1, 2	19
h. Suction Transfer on Low Pressure	4	2	3	1, 2, 3	16

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
7. LOSS OF POWER					
a. 7.2 kv Emergency Bus Undervoltage (Loss of Voltage)	2-1/bus	1	2	1, 2, 3, 4	18
b. 7.2 kv Emergency Bus Undervoltage (Degraded Voltage)	2-1/bus	1	2	1, 2, 3, 4	18
8. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
a. RWST level low-low	4	2	3	1, 2, 3	16
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	~~14~~ 21
9. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	20
b. Low-Low T_{avg}, P-12	3	2	2	1, 2, 3	20
c. Reactor Trip, P-4	2	2	2	1, 2, 3	22

TABLE 3.3-3 (Continued)

TABLE NOTATION

#Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) setpoint.

##Trip function may be blocked in this MODE below the P-12 (Low-Low Tavg Interlock) 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 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, 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 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

the next

4

~~NOT~~ USED

DELETE

ACTION 15 - ~~With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed until performance of the next required OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.~~

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 met. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

4

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

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 18 - 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 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 hour.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.2.1.

ACTION 20 - With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

restore the inoperable channel to OPERABLE status within 6 hours or

ACTION 21 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 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.

ACTION 22 - 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 at least HOT SHUTDOWN within the following 6 hours.

ACTION 23 - 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 declare the associated valve inoperable and take the ACTION required by Specification 3.7.1.5.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 24 - 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 6 hours.

b. The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.

ADD
NEW ACTION 24

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. SAFETY INJECTION, REACTOR TRIP FEEDWATER ISOLATION, CONTROL ROOM ISOLATION START DIESEL GENERATORS, CONTAINMENT COOLING FANS AND ESSENTIAL SERVICE WATER								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Reactor Building Pressure-High-1	S	R	~~M~~ Q	N.A.	N.A	N.A.	N.A.	1, 2, 3
d. Pressurizer Pressure--Low	S	R	~~M~~ Q	N.A	N.A.	N.A.	N.A.	1, 2, 3
e. Differential Pressure Between Steam Lines--High	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
f. Steam Line Pressure Low	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2. REACTOR BUILDING SPRAY								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Reactor Building Pressure-High-3	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. CONTAINMENT ISOLATION								
a. Phase "A" Isolation								
1) Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Safety Injection	See 1 above for all Safety Injection Surveillance Requirements							
3) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
b. Phase "B" Isolation								
1) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
2) Reactor Building Pressure-High-3	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
c. Purge and Exhaust Isolation								
1) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
2) Containment Radioactivity-High	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
3) Safety Injection	See 1 above for all Safety Injection Surveillance Requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. STEAM LINE ISOLATION								
a. Manual	N.A.	N.A.	NA.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Reactor Building Pressure-High-2	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
With T_{avg}--Low-Low	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION								
a. Steam Generator Water Level--High-High	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2
b. Automatic Actuation Logic and Actuation Relay	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
6. EMERGENCY FEEDWATER								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
~~AUXILIARY~~ EMERGENCY FEEDWATER (Continued)								
d. Undervoltage - Both ESF Busses	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
e. Safety Injection	See 1 above for all Safety Injection Surveillance Requirements							
f. Undervoltage - One ESF Bus	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
~~f.~~ g. Trip of Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2
~~g.~~ h. Suction transfer on low pressure	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
7. LOSS OF POWER								
a. 7.2 kV Emergency Bus Undervoltage (Loss of Voltage)	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 7.2 kV Emergency Bus Undervoltage (Degraded Voltage)	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
8. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP								
a. RWST level low-low	S	R	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
9. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS								
a. Pressurizer Pressure, P-11	N.A.	R.	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. Low, Low T_{avg}, P-12	N.A.	R.	~~M~~ Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
c. Reactor Trip, P-4	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3

3/4.3.1 and 3/4.3.2 REACTOR TRIP AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Protection System and Engineered Safety Feature Actuation System Instrumentation and interlocks ensure that 1) the associated action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches 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 from diverse parameters.~~ INSERT ATTACHED PARAGRAPH #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.

INSERT ATTACHED PARAGRAPH #2

The Engineered Safety Feature Actuation System Instrumentation Trip Setpoints specified in Table 3.3-4 are the nominal values at which the bistables are set for each functional unit. A setpoint is considered to be adjusted consistent with the nominal value when the "as measured" setpoint is within the band allowed for calibration accuracy.

To accommodate the instrument drift assumed to occur between operational tests and the accuracy to which setpoints can be measured and calibrated, Allowable Values for the setpoints have been specified in Table 3.3-4. Operation with setpoints less conservative than the Trip Setpoint but within the Allowable Value is acceptable since an allowance has been made in the safety analysis to accommodate this error. An optional provision has been included for determining the OPERABILITY of a channel when its trip setpoint is found to exceed the Allowable Value. The methodology of this option utilizes the "as measured" deviation from the specified calibration point for rack and sensor components in conjunction with a statistical combination of the other uncertainties of the instrumentation to measure the process variable and the uncertainties in calibrating the instrumentation. In Equation 3.3-1, $Z + R + S \leq TA$, the interactive effects of the errors in the rack and the sensor, and the "as measured" values of the errors are considered. Z, as specified in Table 3.3-4, in percent span, is the statistical summation of errors assumed in the analysis excluding those associated with the sensor and rack drift and the accuracy of their measurement. TA or Total Allowance is the difference, in percent span, between the trip setpoint and the value used in the analysis for the actuation. R or Rack Error is the "as measured" deviation, in percent span, for the affected channel from the specified trip

INSERT FOR BASES SECTION 3/4.3

Insert 1

New Bases Paragraph #1 (Add to 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.

PROPOSED TECHNICAL SPECIFICATION CHANGE - TSP 880025-0
VIRGIL C. SUMMER NUCLEAR STATION

DESCRIPTION AND SAFETY EVALUATION

I. DESCRIPTION OF CHANGE

SCE&G proposes to revise VCSNS TS 3/4.3.1 and 3/4.3.2 and associated Bases as follows:

1. A. TS 3.3.1

   i) Delete Note * on Page 3/4 3-1. This notation is no longer applicable.

   B. TS 3.3.1, Table 3.3-1

   i) ACTION 6 is changed to be consistent with the Standard Technical Specification ACTION 6 as this allows bypass for surveillance testing of other channels either for normal scheduled surveillance or surveillance necessary to determine if there is a common cause, as required by the WCAP 10271 approval.

   ii) ACTIONs 2 and 10 are revised to increase the time that an inoperable (RTS) channel may be maintained in an untripped condition from 1 hour to 6 hours.

   iii) ACTION 2 is revised to increase the time that an inoperable (RTS) channel may be bypassed to allow testing of another channel in the same function from 2 hours to 4 hours.

   iv) Page 3/4 3-5, Functional Unit 19.A. In the APPLICABLE MODES column the applicable note is changed from # to ##. This corrects a typographical error. Applicability is below P-6 in the Standard Technical Specifications and this is consistent with the MODE applicability in Table 4.3-1 for the same function.

   v) Page 3/4 3-6 Notation ** is removed as it is not used. Notation **** superseded the use of Notation **.

   vi) ACTION 12 is added to reflect the increased AOT granted for the RTS and ESFAS trip logic, (Functional Units 18 and 21), for maintenance and surveillance testing. ACTION 8, previously applied to these two functions, has been retained with the original times as this is still applicable to the Reactor Trip Breakers (Functional Unit 20).

C. TS 3.3.1, Table 4.3-1

i) Page 3/4 3-13, Functional Unit 22, the first word of the function name is changed from "Restore" to "Reactor"; this corrects a typographical error.

ii) ANALOG CHANNEL OPERATIONAL TEST and TRIP ACTUATING DEVICE OPERATIONAL TEST surveillance requirements are changed from monthly to quarterly and monthly to startup for all Functional Units generically approved for such changes in the WCAP-10271 program (Functional Units 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, and 14).

iii) The Surveillance Test Interval in Table 4.3-1 for Functional Unit 19, Reactor Trip System Interlocks, ANALOG CHANNEL OPERATIONAL TEST, is changed from monthly, to "R" (at least once per 18 months) for each of the six interlocks. The monthly (M) ANALOG CHANNEL OPERATIONAL TEST is deleted from Functional Unit 5.

iv) Page 3/4 3-14, Notation (3) axial flux difference is changed to AXIAL FLUX DIFFERENCE as it is a defined term.

v) Table Notation (1) is changed to 31 days as has been generically approved.

vi) Deleted action 8 no longer used.

2. A. TS 3.3.2

i) Delete Note * on Page 3/4 3-15a. This notation is no longer applicable.

ii) ACTIONs have been changed to the format of the Standard Technical Specifications.

B. TS 3.3.2, Table 3.3-3

i) A new version of ACTION 19 has been added as ACTION 24. This is added to reflect the increased AOT granted for the ESFAS trip functions for maintenance and surveillance testing. (The original ACTION 19 has been retained as it continues to apply to channels that were not included in the WCAP 10271 generic program or the plant specific evaluation.) Action 24 also allows 6 hours to place an inoperable channel into the tripped condition. (ACTION 24 is now used for Functional Units 1c, 1d, 1e, 1f, 4c, 4d, 4e, 5a and 6c.)

ii) ACTION 15 is deleted as it is no [illegible].

iii) ACTIONs 14 and 21 are revised to increase the time that an ESFAS Automatic Actuation Logic and Actuation Relay channel may be bypassed to allow testing, provided the other channel is OPERABLE, from 2 hours to 4 hours and to allow 12 hours to be in HOT STANDBY when the number of OPERABLE channels is one less than the Minimum Channels OPERABLE requirement. This permits the approved 4 hour AOT for surveillance testing and 12 hour AOT for maintenance to be performed.

iv) Functional Unit 8.b. applicable ACTION is changed from ACTION 14 to ACTION 21. This change corrects the MODE reduction requirement to take the plant to the MODE below the MODE of APPLICABILITY.

v) Increase in AOT for Functional Units 6.h. and 8.a., Action 16, Emergency Feedwater Suction Transfer on Low Pressure and Automatic Switchover to Containment Sump on RWST Level Low-Low based on a plant specific evaluation.

C. TS 3.3.2, Table 4.3-2

i) Increase in STI for ESFAS ANALOG CHANNEL OPERATIONAL TEST from once per month to once per quarter for all Functional Units generically approved for such changes by the WCAP-10271 generic program (Functional Units 1c, 1d, 1e, 1f, 2c, 3b2, 4c, 4d, 5a, 6c, 6h, 8a, 9a and 9b).

ii) Increase in STI for Functional Units 6.h. and 8.a., Emergency Feedwater Suction Transfer on Low Pressure and Automatic Switchover to Containment Sump on RWST Level Low-Low based on a plant specific evaluation.

iii) Change the numbering of the items in Functional Unit 6 to be consistent with the numbering in Table 3.3-3. to avoid confusion when referencing ESFAS Functional Units.

3. TS 3/4.3.1 and 3/4.3.2 Bases

Change to the bases to insert the necessary wording for referencing the WCAP-10271 and supplements.

II. BACKGROUND

1. History:

In response to growing concerns of the impact of current testing and maintenance requirements on plant operation, particularly as related to instrumentation systems, the Westinghouse Owners Group (WOG) initiated a program to develop a justification to be used to revise generic and plant specific instrumentation technical specifications. Operating plants experienced many inadvertent reactor trips and safeguards actuations during performance of instrumentation surveillance, causing unnecessary transients and challenges to safety systems. Significant time and effort on the part of the operating staff was devoted to performing, reviewing, documenting and tracking the various surveillance activities, which in many instances seemed unwarranted based on the high reliability of the equipment. Significant benefits for operating plants appeared to be achievable through revision of instrumentation test and maintenance requirements.

In their letter dated February 21, 1985 (Reference 1), the NRC issued the Safety Evaluation Report (SER) for WCAP-10271 and Supplement 1. The SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOT for test, and testing in bypass for analog channels of the RTS. The quarterly testing had to be conducted on a staggered basis.

In their letter dated February 22, 1989 (Reference 2), the NRC issued the SER for WCAP-10271 Supplement 2 and Supplement 2, Revision 1. The SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOT for test, and testing in bypass for analog channels of the ESFAS. The ESFAS functions approved in the SER were those presented in Appendix A1 of the referenced WCAPs. These functions are all included in the Westinghouse Standard Technical Specifications. Staggered testing was not required for ESFAS analog channels and the requirement was removed from the RTS analog channels.

In their letter dated April 30, 1990 (Reference 5), the NRC issued the Supplemental SER (SSER) for WCAP-10271 Supplement 2 and Supplement 2, Revision 1. The SSER approved STI and AOT extensions for the ESFAS functions that were included in Appendix A2 of WCAP-10271, Supplement 2, Revision 1. The functions approved are associated with the Safety Injection, Steam Line Isolation, Main Feedwater Isolation, and Auxiliary Feedwater Pump Start signals. The configurations contained in the Appendix A2 are those that are not contained in the Westinghouse Standard Technical Specifications.

With the issuance of the SER and SSER, the relaxations for the analog channels of the RTS and ESFAS are now the same and the special conditions applied to shared analog channels are no longer applicable.

Two Functional Units not included in the WCAP-10271 program, but implemented in the Solid State Protection System at VCSNS, are Functional Units 6.h. and 8.a.: Emergency Feedwater Suction Transfer on Low Pressure and Automatic Switchover to Containment Sump on RWST Level Low-Low. These Functional Units must be relaxed if the extended AOTs for the Automatic Actuation Logic and Actuation Relays are to be granted for the Functional Units that are relaxed by the WCAP-10271 program. This is required because the Logic and Actuation Relays are a single system and if any Functional Unit implemented in the system is not eligible for the relaxations, then that Functional Unit becomes a limiting factor.

SCE&G carried out a plant specific evaluation of these two Functional Units (Attachment 2) to determine the change in availability of these two functions when the same relaxations in AOTs and STIs approved in the generic program are applied. The results show that in both cases the decrease in availability is 12% or less for the automatic functions. This corresponds to the lowest values calculated for any Functional Units in the generic program.

2. Hardware Modification:

No plant modifications are required to implement the items requested in this proposed TS change. Increased AOT and allowed testing in bypass mode will be accomplished with the present plant configuration. At present VCSNS does not have bypass testing capability for any of the analog instrumentation associated with the RTS and ESFAS, except for the Containment Pressure High-3, Low Low RWST Level, and Emergency Feedwater Suction Transfer on Low Pressure channels.

If, in the future, VCSNS does elect to test in bypass, plant modifications will be required. Any future bypass testing modification would be accomplished without reliance upon lifted leads or temporary jumpers and will provide bypass status indications to the plant operators in the control room.

III. JUSTIFICATION

Increasing the STI for the RTS and ESFAS instrumentation minimizes the potential number of inadvertent ESFAS actuations and reactor trips during surveillance testing. Less frequent surveillance testing has been estimated to result in 0.5 fewer inadvertent reactor trips, per unit, per year. Also, increasing the surveillance interval enhances the operational effectiveness of plant personnel. The amount of time plant personnel spend performing surveillance testing will be reduced. This allows manpower to be used for other tasks such as preventative maintenance. The increased AOT has been shown to result in fewer human factor errors, since more time is allowed to perform an action.

WCAP-10271 results show that the reduction in testing and the increase in testing and maintenance AOTs do not adversely affect public health and safety. The results of the plant specific evaluation for the Functional Units 6.h and 8.a., Emergency Feedwater Suction Transfer on Low Pressure and Automatic Switchover to Containment Sump on RWST Level Low-Low also support this conclusion. The proposed revision will reduce the number of inadvertent ESFAS actuations during testing and reactor trips, and allow SCE&G to better manage resources to maintain the plant.

The deletion of Note * on Page 3/4 3-1, Notation ** on Page 3/4 3-6 and Note * on Page 3/4 3-15a is purely administrative. These items are either no longer applicable or are no longer used.

ACTION 6 of Table 3.3-1 is changed to be consistent with the Standard Technical Specification ACTION 6; this allows bypass for surveillance testing of other channels either for normal scheduled surveillance or surveillance necessary to determine if there is a common cause, as required by the SER approving the WCAP-10271 program.

In the APPLICABLE MODES column of Functional Unit 19.A. on Page 3/4 3-5, the applicable note is changed from # to ##. This corrects a typographical error. Applicability is below P-6 in the Standard Technical Specifications and this is consistent with the MODE applicability in Table 4.3-1 for the same function in the VCSNS TS.

On Page 3/4 3-13, in Functional Unit 22, the change of the first word of the function name from "Restore" to "Reactor," corrects a typographical error as does the change on Page 3/4 3-14, Notation (3) where axial flux difference is changed to AXIAL FLUX DIFFERENCE as this is a defined term.

ACTIONs of specification 3.3.2. have been changed to overcome problems noted in the current version; some functions in Table 3.3-4, e.g., Containment Pressure for Containment Spray actuation and RWST Level for Sump Switchover, should not be placed in partial trip for extended periods; Functional Unit 6f, Undervoltage-one ESF bus, if placed in trip starts the Motor Driven pump; the 1 hour time limit for placing a channel in trip would remain for some Functional Units, but a 6 hour time limit per the WCAP-10271 SER approvals applies to others. The proposed ACTIONs are consistent with the approved Westinghouse Standard Technical Specifications.

IV. SAFETY EVALUATION

In WCAP-10271 and its supplements, the WOG evaluated the impact of the proposed STI and AOT changes on core damage frequency and public risk. The NRC staff concluded in its evaluation (Reference 2) of the WOG evaluation that an overall upper bound of the core damage frequency increase due to the proposed STI/AOT changes is less than 6 percent for Westinghouse Pressurized Water Reactor (PWR) plants. The NRC Staff also concluded that actual core damage frequency increases for individual plants are expected to be substantially less than 6 percent. The NRC Staff considered this core damage frequency increase to be small compared to the range of uncertainty in the core damage frequency analyses and therefore acceptable.

Additionally, the NRC Staff concluded that a staggered test strategy need not be implemented for ESFAS analog channel testing and is no longer required for RTS analog channel testing. This conclusion was based on the small relative contribution of the analog channels to RTS/ESFAS unavailability, process parameter signal diversity and normal operational testing sequencing.

The NRC determined that the requirement to routinely verify permissive status is a different consideration than the availability of trip or actuation channels which are required to change state on the occurrence of an event and for which the function availability is more dependent on the surveillance interval. The definition of the CHANNEL CHECK includes comparison of the channel status with other channels for the same parameter. For the RTS Interlocks, the change from M(8) to R (at least once every 18 months) is therefore justified.

The change in TS 3.3.2 ACTIONs makes these ACTIONs the same as many of the most recently licensed plants that use the equation 2.2-1 and the same as the Standard Technical Specifications. Making this change is necessary as some functions in Table 3.3-4 cannot be placed in the trip condition without potential plant upset (e.g., functional unit 6f if placed in trip will start the Motor Driven pump). Channels such as Containment Pressure for Spray Actuation and Sump Switchover should not be placed in the trip condition for long periods of time; they should instead be placed in bypass as indicated in the applicable ACTION for each function. The changes are consistent with the Standard Technical Specifications and do not have an adverse impact on plant safety.

The change to the numbering in Table 4.3-2 is for consistency with Table 3.3-3 which maintained each of the ESF undervoltage actuations as separate Functional Units. This change and the others, editorial in nature, do not impact plant safety.

The majority of the proposed changes are consistent with NRC Safety Evaluation Reports dated February 21, 1985 (Reference 1), February 22, 1989 (Reference 2), and April 30, 1990 (Reference 5), regarding WCAP-10271, WCAP-10271 Supplement 1, WCAP-10271 Supplement 2, and WCAP-10271 Supplement 2, Revision 1. Two Functional Units for which relaxations are requested were not part of the WCAP-10271 generic program. The two functional units are 6.h. and 8.a., Emergency Feedwater Suction Transfer on Low Pressure and Automatic Switchover to Containment Sump on RWST Level Low-Low.

SCE&G carried out a plant specific evaluation of the two Functional Units (Attachment 2) to determine the change in availability when the same relaxations in AOTs and STIs approved in the generic program are applied. The results of the evaluation showed that in both cases the decrease in availability was 12% or less for the automatic functions. This corresponds to the lowest values calculated for any Functional Units in the generic program. (This can be expected as each is a 2 out of 4 configuration with a minimum of modules in each loop.) In the case of RWST Switchover to Containment Sump, since the final switchover is manually initiated, and the Emergency Operating Procedures include steps to verify the automatic function has occurred, the decrease in automatic function availability has no impact on the ultimate success of the switchover. In the case of the Emergency Feedwater Switchover on low pressure, the function is fully automatic and for internal events there is procedural guidance that verifies the switchover occurs.

This function also has a design basis--an external event, such as a tornado, which may damage the Condensate Storage Tank. This is an event of very low probability and the evaluation determined that an increase in unavailability of less than 12% is acceptable for such an event.

The NRC Staff has stated that approval of the changes approved in their SERs is contingent upon confirmation that certain conditions are met. Although WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1, apply to ESFAS instrumentation, it is the interpretation of SCE&G that conditions imposed in the SER (Reference 1) for WCAP-10271 and WCAP-10271 Supplement 1 for the RTS instrumentation shall also be applied to the ESFAS where appropriate. The same conditions are applied to the two Functional Units not covered by the generic program where applicable. SCE&G response to these conditions is provided below.

1. RTS SER Conditions:

   a. SER Condition - NRC Staff stated in the RTS SER (Reference 1, page 10) that approval of an increase in Surveillance Test Interval (STI) for the ANALOG CHANNEL OPERATIONAL TESTS from once per month to once per quarter is contingent on performance of the testing on a staggered test basis. In the ESFAS SER (Reference 2, page 4 of enclosure 1) this requirement was removed.

      SCE&G Response - This SER Condition is not a concern for VCSNS as the changes proposed in this TS change implement RTS and ESFAS at the same time. As the increase in STI for the ANALOG CHANNEL OPERATIONAL TESTS from once per month to once per quarter with the contingency to perform the testing on a staggered test basis was not implemented for RTS functions, it is not necessary to remove this requirement.

   b. SER Condition - NRC Staff stated in the RTS SER (Reference 1, page 10) that approval of items related to extending STI is contingent on procedures being in place to require evaluation of failures for common cause and to require additional testing if necessary.

      SCE&G Response - Prior to the TS being approved and issued for plant use, VCSNS will implement enhancements to existing procedures and procedural steps to evaluate failures for common cause and require additional testing as necessary in accordance with the WOG position given in "Westinghouse Owners Group Guidelines for Preparing Submittals Requesting Revision of Reactor Protection System Technical Specification, Revision 1." These guidelines were reviewed and approved by NRC Staff.

c. SER Condition - NRC Staff stated in the RTS SER (Reference 1, page 10) that for channels which provide dual inputs to other safety related systems such as ESFAS, the approval of items that extend STI and AOT apply only to the RTS function.

SCE&G Response - The ESFAS SER has been issued (References 2 and 5). The extensions approved for the ESFAS analog Channels are the same as the RTS and so this SER Condition is not a concern for VCSNS.

d. SER Condition - NRC Staff stated in the RTS SER (Reference 1, page 10) that approval of channel testing in a bypassed condition is contingent on the capability of the RTS design to allow such testing without lifting leads or installing temporary jumpers.

SCE&G Response - At present the VCSNS does not have bypass testing capability for any of the analog instrumentation associated with the RTS or ESFAS with the exception of the Containment Pressure--High-3, Low Low RWST Level and Emergency Feedwater Suction Transfer on Low Pressure channels.

If in the future VCSNS does elect to test other channels in bypass, plant modifications will be required. Any future bypass testing modification would be accomplished without reliance upon lifted leads or temporary jumpers and will provide bypass status indications to the plant operators in the control room.

e. SER Condition - NRC Staff stated in the RTS SER (Reference 1, page 9) that acceptance was contingent on confirmation that the instrument setpoint methodology includes sufficient margin to offset the drift anticipated as a result of less frequent surveillance.

SCE&G Response - VCSNS implemented a program to evaluate setpoint drift in accordance with the WOG position given in the "Westinghouse Owners Group Guidelines for Preparing Submittals Requesting Revision of Reactor Protection System Technical Specification, Revision 1." These guidelines were reviewed and approved by NRC Staff.

SCE&G has determined that the values used in the setpoint methodology properly account for drift due to extended STIs; see Attachment 1.

2. ESFAS SER Conditions:

a. SER Condition - NRC Staff stated in the ESFAS SER (Reference 2, Table 1 of enclosure 1) that the licensee must confirm the applicability of the generic analyses to the plant.

SCE&G Response - The generic analyses used in WCAP-10271 and Supplements is applicable to the VCSNS. The VCSNS uses the Westinghouse 7300 Process Control System and the Westinghouse Solid State Protection System (SSPS) for both the ESFAS and RTS. Both of these systems were specifically modeled in the generic analyses. The ESFAS Functional Units implemented at VCSNS are all addressed by the generic analyses with the exception of Functional Units 6.h. and 8.a. These Functional Units are addressed on a plant specific basis in Attachment 2 and it has been determined that each of the Functional Units has a change in availability of less than 12%. This corresponds to the lowest values calculated for any Functional Units in the generic program and the evaluation determined that an incrrase in unavailability of less than 12% is acceptable.

b. SER Condition - NRC Staff stated in the ESFAS SER (Reference 2, Table 1 of enclosure 1) that the licensee must confirm that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology.

SCE&G Response - Same as RTS SER Condition e. above.

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION CHANGE - TSP 880025-0
VIRGIL C. SUMMER NUCLEAR STATION
DESCRIPTION AND SAFE™Y EVALUATION

ACCOUNTABILITY OF INSTRUMENT DRIFT IN THE SETPOINT METHODOLOGY

South Carolina Electric & Gas Company

Inter-Office Correspondence

DESIGN ENGINEERING
(Office)

Subject: Technical Specification Optimization Program (TOPS) LAR Evaluation of Channel Drift

Date: October ?5, 1990

To: A. R. Koon

File: CGSS-25689-DE
File: 2.6400
813.20

From: R. L. Rusaw RLR Jc2

Through: BTE for R. J. Waselus

Attention: A. R. Rice

Design Engineering has performed the setpoint drift analysis as outlined in the "WOG Guidelines for Preparing Submittals Requesting Revision of Reactor Protection System Technical Specification Revision 1." The purpose of this analysis is to confirm the applicability of the generic analyses to V. C. Summer. Specifically, we must confirm that our setpoint methodology includes sufficient margin to offset the drift in the RTS and ESFAS Channels as a result of less frequent surveillance.

Surveillance data for 1988 and 1989 was analyzed for RTS and ESFAS Trip setpoint drift. Analysis has shown that trip setpoints are very stable. Normal drift rates are typically less than .05 percent per month with an average error of .02 percent per month. Conservative extrapolation of the monthly drift to quarterly values would yield maximum error of .15 percent.

Evaluation of the Technical Specification Trip Setpoint Margins identifies a minimum margin of .42 percent (Loss of Flow). Therefore the minimum allowable margin is 2.8 times the maximum expected setpoint drift. Based on these results it can be confidently stated that setpoint methodology includes sufficient margin to offset the drift expected as a result of less frequent surveillance.

blt

c: G. G. Soult
M. D. Quinton
K. W. Nettles
B. M. Christiansen

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGE - TSP 880025-0
VIRGIL C. SUMMER NUCLEAR STATION
DESCRIPTION AND SAFETY EVALUATION

RWST AND CST SWITCHOVER JUSTIFICATION

Technical Specification Optimization Program
RWST and CST Switchover Justification for V.C. Summer

1.0 Purpose:

The purpose of this assessment is to provide the justification for extending the Surveillance Test Intervals (STI) and Allowed Outage Time (AOT) changes provided by the WOG Technical Specification Optimization Program (TOP) (Reference 1) to the Refueling Water Storage Tank (RWST) and Condensate Storage Tank (CST) switchover functions for V.C. Summer.

2.0 Background:

WOG TOP evaluated the impact of increasing the STIs and AOTs for the Engineered Safety Features Actuation System (ESFAS) on signal unavailability and plant safety. Plant safety was measured by core damage frequency. In particular, changes associated with the analog channels, process instrumentation, logic cabinets, master relays, and slave relays were evaluated. The WOG requested and the NRC approved increases to the analog channel STIs from monthly to quarterly and increases in AOTs for the analog channels, logic cabinets, master relays, and slave relays to 4 hours for testing and 12 hours for maintenance activities for plants with Solid State Protection Systems (SSPS).

Since this was an Owners Group program only the ESFAS functions which were applicable to a majority of the plants were included in the study. The RWST and CST switchover were not included since the design and implementation of these functions are, for the most part, plant specific.

There are two primary reasons to pursue relaxations for these functions. The first is to provide the improved plant operability for these functions as stated in the documenting WCAP and the second is to provide a consistent set of Technical Specification requirements for ESFAS functions. Two problems may arise when the ESFAS functions do not have consistent STIs and AOTs. First, the administrative task of tracking testing of the different analog channels is complicated since some channels will be tested quarterly and some monthly. Second, for solid state systems any time a logic cabinet test is in progress the logic cabinet under test is inoperable independent of which ESFAS function is being tested. In essence this means that the logic cabinet AOT is dictated by the shortest AOT. For V.C. Summer this would be the AOTs associated with the RWST and CST switchover functions and the relaxations provided by the WOG TOP analysis for the logic cabinets would provide no benefit.

3.0 Approach:

A qualitative approach was used to assess the impact of increasing the STIs and AOTs associated with the RWST and CST switchover functions. These arguments are made with respect to function unavailability and the effect on plant safety as measured by core damage frequency. The objective is to demonstrate that the unavailability and risk results presented in the WCAP for the STI and AOT increases for the functions analyzed are indicative of, or conservative with respect to, the results expected for increasing the STIs and AOTs for the RWST and CST switchover functions.

The following areas were examined in this assessment:

- Analog channel logic
- Analog channel process circuitry
- Logic cabinet circuitry
- Master and slave relay configurations
- Switchover procedures
- Analog channel test configurations

4.0 Results and Discussion:

The following presents the arguments for changing the STIs and AOTs for the RWST and CST switchover functions. Consideration is given to internal events for the functions. External events are also considered for the CST switchover.

RWST Switchover

The RWST switchover design configuration was reviewed. It consists of four level channels providing signals via input relays to each logic train in the SSPS. Each level channel consists of a level sensor, transmitter, channel test switch, loop power supply, comparator, and comparator trip switch. The channels energize to actuate and are tested in the tripped configuration. Each SSPS train consists of a 2 of 4 circuit on the universal logic card and a safeguards driver card. The safeguards driver card provides the output signal from the SSPS to a master relay (K512) which in turn actuates two slave relays (K630 and K632). The slave relays then actuate the required components.

A review of the TOP analysis indicates that the RWST level channel is identical in configuration to the steam generator level channel. In operation a difference exists; the RWST level channel energizes to actuate, but the steam generator level channel de-energizes to actuate. The TOP study did not differentiate between the these modes of operation. TOP modeled analog channel testing in bypass, as compared to testing in trip, since it is the more conservative test configuration with respect to signal unavailability. Testing in trip is consistent with with RWST testing at V.C. Summer. TOP analysis also indicates that for functions using 2 of 4 logic the analog channels are minor contributors to signal unavailability.

Auxiliary feedwater pump start on steam generator level was specifically analyzed in the TOP study. The master relay to slave relay configuration for the auxiliary feedwater pump start signal as analyzed in TOP is the same as the master/slave configuration for the RWST switchover signal (one master relay to two slave relays per train).

Since the V.C. Summer configuration is identical or conservative with respect to the configuration analyzed in TOP, the unavailability values and also the increases in unavailabilities due to the proposed STI and AOT changes calculated in TOP for the auxiliary feedwater pump start on steam generator level signal are directly applicable to RWST switchover signal. TOP calculated a 12% increase in signal unavailability for this signal.

Increases in unavailability values for signals considered in TOP for the proposed changes ranged from 12% to 35%.

RWST switchover requires a manual action to complete. This is in addition to the automatic action which opens the RHR sump valves. A review of Emergency Operating Procedure for this switchover, EOP-2.2, indicates that steps are included to open these valves. This is a backup to the automatic action. Since the success of switchover is dependent on the operator action, success of this operator action will control the success of this event. Therefore, the small increase in signal unavailability will have no impact on plant safety. To provide perspective, an increase of approximately 3% in core damage frequency was calculated for the bounding case evaluation in TOP.

CST Switchover

The CST switchover design configuration was reviewed. It consists of four pressure channels providing signals via input relays to each logic train in the SSPS. Each pressure channel consists of a pressure sensor, transmitter, channel test switch, loop power supply, comparator, and comparator trip switch. The channels energize to actuate and are tested in the tripped configuration. Each SSPS train consists of a 2 of 4 circuit on the universal logic card and a safeguards driver card. The safeguards driver card provides the output signal from the SSPS to a master relay (K531) which in turn actuates two slave relays (K622 and K626). Actuation of each slave relay is delayed by a timer. Each slave has an individual timer. The slave relays then actuate the required components.

A review of the TOP analysis indicates that the CST pressure channel is identical in design to the pressurizer pressure channel. The pressurizer pressure channel design is identical, in function, to the level function for the RWST level measurements and steam generator level measurements. In operation a difference exists; the CST pressure channel energizes to actuate, but the pressurizer pressure channel and steam generator level channel de-energize to actuate. The TOP study did not differentiate between the these modes of operation. TOP modeled analog channel testing in bypass, as compared to testing in trip, since it is the more conservative test configuration with respect to signal unavailability. Testing in trip is consistent with CST testing at V.C. Summer. As previously noted, TOP also indicates that for functions using 2 of 4 logic the analog channels are very minor contributors to signal unavailability.

The master relay to slave relay configuration for this function is the same as for the auxiliary feedwater pump start function as analyzed in TOP (one master relay to two slave relays per train). The only difference is the timers which are used with the CST signal. The timers add to the total signal unavailability, but do not effect any unavailability changes since they are associated with the same AOTs as the slave relays.

Due to these arguments and since this is a 2 of 4 logic function, using a function to represent CST switchover which matches the master relay/slave relay configuration from TOP will provide an acceptable indication of signal unavailability change due to the STI and AOT changes. As with the RWST switchover, the unavailability change for the CST switchover signal will be very similar to that for auxiliary feedwater pump start signals using 2 of 4 logic even though one is based on a pressure measurement and the other on a level measurement. Therefore, a 12% increase in signal unavailability is expected. Again, increases in unavailability values for signals considered in TOP for the proposed changes ranged from 12% to 35%.

To demonstrate that this increase in unavailability has a negligible effect on plant safety, both internal and external events need to be considered. External events need to be considered since this function was added to protect against an event which could cause the CST to be inoperable, such as a tornado.

Even though the CST switchover is an automatic function for internal events, the EOPs provide steps to ensure that it occurs. This is indicated by a review of EOP-2.0 for example. This procedure requires monitoring of the CST level and refilling the CST from the demineralized water system. If the demineralized water system is unavailable and the CST level lo/lo-lo alarm is lit, then the service water system is used as the water supply. The EOP provides the procedure for this alignment and is essentially a backup to the automatic process. For internal events there is substantial time available from the time the event initiates until the switchover is required, if it is required at all. A conservative estimate, based on both EFW pumps operating and not refilling the CST from the demineralized water system, indicates a minimum of two hours. Operator actions with a two hour time frame are highly likely of success. Since this operator action is actually a backup to the automatic switchover the increase in signal unavailability for the automatic switchover will have a negligible impact on core damage frequency. That is, significantly less than the increases presented in TOP for other signals. Again, to provide perspective, an increase of approximately 3% in core damage frequency was calculated for the bounding case evaluation in TOP.

External events of concern are those which can cause a failure of the CST, thereby interrupting the water flow to the emergency feedwater pumps. These include events such as tornados and aircraft crashes. Such events are low frequency events and the impact on plant safety due to these events related to increasing the unavailability of the switchover signal by 12% is judged to be negligible.

5.0 Summary:

Based on the previous discussion, it is judged that the impact on plant safety of implementing TOP STI and AOT requirements on RWST switchover and CST switchover signal is negligible. That is, significantly less than the increases presented in the TOP analysis. This is based on arguments that the signal unavailability increase is relatively small, the RWST switchover requires an operator action for success which also is a backup for the automatic portion of the switchover, the CST switchover is backed up by an operator action, and CST switchover to address external events is,required for low frequency external events.

6.0 References:

1. WCAP-10271-P-A, Supplement 2, Revision 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System", May 1989.

PROPOSED TECHNICAL SPECIFICATION CHANGE - TSP 880023-0
VIRGIL C. SUMMER NUCLEAR STATION

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

SCE&G has evaluated the proposed technical specification change and has determined that it does not represent a significant hazards consideration based on the criteria established in 10CFR50.92(c). Operation of VCSNS in accordance with the proposed amendment will not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

The determination that the results of the proposed change are within all acceptable criteria has been established in the SERs prepared for WCAP-10271, WCAP-10271 Supplement 1, WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1 issued by References 1, 2 and 5. Implementation of the proposed changes is expected to result in an acceptable increase in total Reactor Protection System yearly unavailability. This increase, which is primarily due to less frequent surveillance, results in an increase of similar magnitude in the probability of an Anticipated Transient Without Scram (ATWS) and in the probability of core melt resulting from an ATWS, and also results in a small increase in core damage frequency (CDF) due to ESFAS unavailability.

Implementation of the proposed changes is expected to result in a significant reduction in the probability of core melt from inadvertent reactor trips. This is a result of a reduction in the number of inadvertent reactor trips (0.5 fewer inadvertent reactor trips per unit per year) occurring during testing of RTS instrumentation. This reduction is primarily attributable to less frequent surveillance.

The reduction in inadvertent core melt frequency is sufficiently large to counter the increase in ATWS core melt probability resulting in an overall reduction in total core melt probability.

The values determined by the WOG and presented in the WCAP for the increase in CDF were verified by Brookhaven National Laboratory (BNL) as part of an audit and sensitivity analyses for the NRC Staff. Based on the small value of the increase compared to the range of uncertainty in the CDF, the increase is considered acceptable. The two Functional Units evaluated on a plant specific basis for the VCSNS fall within the same criteria and are also considered to be acceptable.

Editorial changes have no impact on the severity or consequences of an accident previously evaluated.

Changes to STF for the RTS interlocks do not represent a significant reduction in testing. The currently specified test interval for interlock channels allows the surveillance requirement to be satisfied by verifying that the permissive logic is in its required state using the annunciator status light. The surveillance, as currently required, only verifies the status of the permissive logic and does not address verification of channel setpoint or operability. The setpoint verification and channel operability are verified after a refueling shutdown. The definition of the channel check includes comparison of the channel status with other channels for the same parameter. Routine verification of permissive status is a different consideration than availability of trip or actuation channels required to change state on occurrence of an event, for which the function availability is more dependent on the surveillance interval. Therefore, the change in surveillance requirement to at least once every 18 months does not represent a significant change in channel surveillance and does not involve a significant increase in unavailability of the Reactor Protection System.

The proposed changes do not result in an increase in the severity or consequences of an accident previously evaluated. Implementation of the proposed changes affects the probability of failure of the RTS/ESFAS, but does not alter the manner in which protection is afforded, nor the manner in which limiting criteria are established.

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes do not involve hardware changes and do not result in a change in the manner in which the RTS/ESFAS provides plant protection. The changes being made do not alter the function of the RTS/ESFAS. Therefore the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Involve a significant reduction in a margin of safety.

The proposed changes do not alter the manner in which safety limits, limiting safety system setpoints or limiting conditions for operation are determined. The impact of reduced testing, other than as addressed above, is to allow a longer time interval over which instrument uncertainties (e.g., drift) may act. Experimental data indicates that the initial uncertainty assumptions are valid for reduced testing.

Implementation of the proposed changes is expected to result in an overall improvement in safety by:

a. Less frequent testing will result in fewer inadvertent reactor trips and actuations of ESFAS components.

b. Higher quality repairs leading to improved equipment reliability due to longer repair times.

c. Improvements in the effectiveness of the operating staff in monitoring and controlling plant operation. This is due to less frequent distraction of the operator and shift supervisor to attend to instrumentation testing.