October 9, 1991

Docket No. STN 50-483

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Mr. Donald F. Schnell
Senior Vice President - Nuclear
Union Electric Company
Post Office Box 149
St. Louis, Missouri 63166

Dear Mr. Schnell:

SUBJECT: AMENDMENT NO. 64 TO FACILITY OPERATING LICENSE NO. NPF-30 (TAC NO. M79969)

The Commission has issued the enclosed Amendment No. 64 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. This amendment revises the Technical Specifications in response to your application dated March 19, 1991.

The amendment extends the allowable out-of-service times (AOTs) and the surveillance test intervals for the analog channels of the Engineered Safety Features Actuation System (ESFAS). Specifically, Tables 3.3-1, 4.3-1, 3.3-3 and 4.3-2 and the associated Bases have been revised. These revisions also include extended AOTs for the ESFAS actuation logic and actuation relays of the solid state protection system.

A copy of the Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original Signed by:

M. D. Lynch, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 64 to License No. NPF-30
2. Safety Evaluation

cc w/enclosures:
See next page

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S. Newberry 9/26/91

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cp1

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. STN 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 64
License No. NPF-30

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by Union Electric Company (UE, the licensee) dated March 19, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-30 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 64, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into the license. UE shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

M. D. Lynch, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of issuance: October 9, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 64

OPERATING LICENSE NO. NPF-30

DOCKET NO. STN 50-483

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Corresponding overleaf pages are provided to maintain document completeness.

REMOVE	INSERT
3/4 3-3(a)	3/4 3-3(a)
3/4 3-4	3/4 3-4
3/4 3-5	3/4 3-5
3/4 3-6	3/4 3-6
3/4 3-6(a)	3/4 3-6(a)
3/4 3-9	3/4 3-9
3/4 3-10	3/4 3-10
3/4 3-12a	3/4 3-12a
3/4 3-14	3/4 3-14
3/4 3-16	3/4 3-16
3/4 3-17	3/4 3-17
3/4 3-18	3/4 3-18
3/4 3-18(a)	3/4 3-18(a)
3/4 3-20	3/4 3-20
3/4 3-21	3/4 3-21
3/4 3-21(a)	3/4 3-21(a)
-	3/4 3-21(b)
3/4 3-33	3/4 3-33
3/4 3-34	3/4 3-34
3/4 3-35	3/4 3-35
3/4 3-36	3/4 3-36
3/4 3-36(a)	3/4 3-36(a)
3/4 3-37	3/4 3-37
3/4 3-39	3/4 3-39
3/4 3-40	3/4 3-40
B 3/4 3-1	B 3/4 3-1
B 3/4 3-2	B 3/4 3-2
B 3/4 3-2(a)	B 3/4 3-2(a)

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
14. Undervoltage-Reactor Coolant Pumps	4-2/bus	2-1/bus	3	1	6#
15. Underfrequency-Reactor Coolant Pumps	4-2/bus	2-1/bus	3	1	6#
16. Turbine Trip					
a. Low Fluid Oil Pressure	3	2	2	1	6#
b. Turbine Stop Valve Closure	4	4	1	1	11#
17. Safety Injection Input from ESF	2	1	2	1, 2	31

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
18. Reactor Trip System Interlocks					
a. Intermediate Range Neutron Flux, P-6	2	1	2	2##	8
b. Low Power Reactor Trips Block, P-7 P-10 Input	4	2	3	1	8
or P-13 Input	2	1	2	1	8
c. Power Range Neutron Flux, P-8	4	2	3	1	8
d. Power Range Neutron Flux, P-9	4	2	3	1	8
e. Power Range Neutron Flux, P-10	4	2	3	1, 2	8
f. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	8
19. Reactor Trip Breakers	2	1	2	1, 2	9,12
	2	1	2	3*, 4*, 5*	10
20. Automatic Trip and Interlock Logic	2	1	2	1, 2	31
	2	1	2	3*, 4*, 5*	10

TABLE 3.3-1 (Continued)

TABLE NOTATIONS

*Only if the Reactor Trip System breakers happen to be in the closed position and the Control Rod Drive System is capable of rod withdrawal.

**The boron dilution flux doubling signals may be blocked during reactor startup in accordance with approved procedures.

#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.

(1) The applicable MODES for these channels noted in Table 3.3-3 are more restrictive and, therefore, applicable.

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 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 6 hours,

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, and

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 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; or

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

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

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 - a. 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, suspend all operations involving positive reactivity changes and verify Valves BG-V178 and BG-V601 are closed and secured in position within the next hour.

b. With no channels OPERABLE, open the Reactor Trip Breakers, suspend all operations involving positive reactivity changes and verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and every 12 hours thereafter, and verify valves BG-V178 and BG-V601 are closed and secured in position within 4 hours and verified to be closed and secured in position every 14 days.

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.

ACTION 7 - With an inoperable delay timer in the Trip Time Delay circuitry, STARTUP and/or POWER OPERATION may proceed provided that the Vessel Delta-T (Power-1, Power-2) channels in the affected protection sets are placed in the tripped condition within 6 hours.

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 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 9 - With the number of OPERABLE Reactor Trip Breakers one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one breaker may be bypassed for up to 2 hours for breaker surveillance testing per Specification 4.3.1.1, provided the other breaker is OPERABLE.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 10 - 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 11 - 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 6 hours.

ACTION 12 - With one of the diverse trip features (Undervoltage or Shunt Trip Attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the affected breaker inoperable and apply ACTION 9. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

ACTION 13 - With the number of OPERABLE channels less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that the Containment Pressure-Environmental Allowance Modifier channels in the affected protection sets are placed in the tripped condition within 6 hours.

(NOTE: ACTION STATEMENTS 14 THROUGH 30 ARE LOCATED ON OTHER TABLES.)

ACTION 31 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 12 hours; however, one channel may be bypassed, with the associated reactor trip breaker bypassed, for up to 4 hours for logic surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

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(16)	N.A.	1, 2, 3*, 4*, 5*
2. Power Range, Neutron Flux a. High Setpoint	S	D(2, 4), M(3, 4), Q(4, 6), R(4, 5)	Q	N.A.	N.A.	1, 2
b. Low Setpoint	S	R(4)	S/U(1)	N.A.	N.A.	1###, 2
3.. Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	Q	N.A.	N.A.	1, 2
4. Deleted						
5. Intermediate Range, Neutron Flux	S	R(4, 5)	S/U(1)	N.A.	N.A.	1###, 2
6. Source Range, Neutron Flux	S	R(4, 5, 12)	S/U(1),Q(9)	N.A.	N.A.	2##, 3, 4, 5
7. Overtemperature ΔT	S	R	Q	N.A.	N.A.	1, 2
8. Overpower ΔT	S	R	Q	N.A.	N.A.	1, 2
9. Pressurizer Pressure-Low	S	R	Q	N.A.	N.A.	1
10. Pressurizer Pressure-High	S	R	Q	N.A.	N.A.	1, 2
11. Pressurizer Water Level-High	S	R	Q	N.A.	N.A.	1
12. Reactor Coolant Flow-Low	S	R	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						
a. Steam Generator Water Level Low-Low (Adverse Containment Environment)	S	R	Q (15)	N.A.	N.A.	1, 2
b. Steam Generator Water Level Low-Low (Normal Containment Environment)	S	R	Q (15)	N.A.	N.A.	1, 2
c. Vessel ΔT (Power-1, Power-2)	S	R	Q (15)	N.A.	N.A.	1, 2
d. Containment Pressure-Environmental Allowance Modifier	S	R	Q (15)	N.A.	N.A.	1, 2
14. Undervoltage - Reactor Coolant Pumps	N.A.	R	N.A.	Q	N.A.	1
15. Underfrequency - Reactor Coolant Pumps	N.A.	R	N.A.	Q	N.A.	1
16. 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

TABLE 4.3-1 (Continued)

TABLE NOTATIONS

(10) Setpoint verification is not required.

(11) Following maintenance or adjustment of the Reactor trip breakers, the TRIP ACTUATING DEVICE OPERATIONAL TEST shall include independent verification of the Undervoltage and Shunt trips.

(12) At least once per 18 months during shutdown, verify that on a simulated Boron Dilution Doubling test signal the normal CVCS discharge valves will close and the centrifugal charging pumps suction valves from the RWST will open within 30 seconds.

(13) Deleted

(14) Deleted

(15) The surveillance MODES specified for these channels in Table 4.3-2 are more restrictive and, therefore, applicable.

(16) 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.

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

(18) Automatic Undervoltage Trip.

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Features 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:

a. With an ESFAS Instrumentation or Interlock Trip Setpoint 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 Values 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

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 from Column S (Sensor Error) of Table 3.3-4 for the affected channel, and
TA = The value from Column TA (Total Allowance) of Table 3.3-4 for the affected channel.

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 the performance of the ESFAS 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.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Safety Injection (Reactor Trip, Phase "A" Isolation, Feedwater Isolation, Component Cooling Water, Turbine Trip, Auxiliary Feedwater-Motor-Driven Pump, Emergency Diesel Generator Operation, Containment Cooling, and Essential Service Water Operation)					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	14
c. Containment Pressure-High-1	3	2	2	1, 2, 3	33*
d. Pressurizer Pressure - Low	4	2	3	1, 2, 3#	33*
e. Steam Line Pressure-Low	3/steam line	2/steam line any steam line	2/steam line	1, 2, 3#	33*
2. Containment Spray					
a. Manual Initiation	2 pair	1 pair operated simultaneously	2 pair	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	14
c. Containment Pressure-High-3	4	2	3	1, 2, 3	16

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. Containment Isolation					
a. Phase "A" Isolation					
1) Manual Initiation	2	1	2	1, 2, 3, 4	18
2) Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	14
3) Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
b. Phase "B" Isolation					
1) Manual Initiation	2 pair	1 pair operated simultaneously	2 pair	1, 2, 3, 4	18
2) Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	14
3) Containment Pressure-High-3	4	2	3	1, 2, 3	16
c. Containment Purge Isolation					
1) Manual Initiation	2	1	2	1, 2, 3, 4	17

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. Containment Isolation (continued)					
2) Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	17
3) Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	2	1	2	1, 2, 3, 4	17
4) Phase "A" Isolation	See Item 3.a. for all Phase "A" Isolation initiating functions and requirements.				
4. Steam Line Isolation					
a. Manual Initiation					
1) Individual	1/steam line	1/steam line	1/operating steam line	1, 2, 3	23
2) System	2	1	2	1, 2, 3	22
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3	34
c. Containment Pressure-High-2	3	2	2	1, 2, 3	33*
d. Steam Line Pressure-Low	3/steam line	2/steam line any steam line	2/steam line	1, 2, 3#	33*
e. Steam Line Pressure-Negative Rate-High	3/steam line	2/steam line any steam line	2/steam line	3##	33*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. Feedwater Isolation & Turbine Trip					
a. Automatic Actuation Logic and Actuation Relay (SSPS)	2	1	2	1, 2	27
b. Steam Generator Water Level High-High	4/stm. gen.	2/stm. gen. in any operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2	33*
c. Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
6. Auxiliary Feedwater					
a. Manual Initiation	3(1/pump)	1/pump	1/pump	1, 2, 3	24
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3	34
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	2	1	2	1, 2, 3	21
d. Steam Generator Water Level Low-Low					
1) Start Motor-Driven Pumps					
a) Steam Generator Water Level Low-Low (Adverse Containment Environment)	4/stm. gen.	2/stm. gen. in any operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	33*, 35

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater (Continued)					
d. Steam Generator Water Level Low-Low (Continued)					
1) Start Motor-Driven Pumps (Continued)					
b) Steam Generator Water Level Low-Low (Normal Containment Environment)	4/stm. gen.	2/stm. gen. in any operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	35, 36*
c) Vessel ΔT (Power-1, Power-2)	4	2	3	1, 2, 3	37*
d) Containment Pressure-Environmental Allowance Modifier	4	2	3	1, 2, 3	37*
2) Start Turbine-Driven Pump					
a) Steam Generator Water Level Low-Low (Adverse Containment Environment)	4/stm. gen.	2/stm. gen. in any operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	33*, 35
b) Steam Generator Water Level Low-Low (Normal Containment Environment)	4/stm. gen.	2/stm. gen. in any operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	35, 36*
c) Vessel ΔT (Power-1, Power-2)	4	2	3	1, 2, 3	37*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater (Continued)					
d. Steam Generator Water Level Low-Low (Continued)					
2) Start Turbine-Driven Pump (Continued)					
d) Containment Pressure-Environmental Allowance Modifier	4	2	3	1, 2, 3	37*
e. Safety Injection Start Motor-Driven Pumps	See Item 1 above for all Safety Injection initiating functions and requirements.				
f. Loss-of-Offsite Power-Start Turbine-Driven Pump	2	1	2	1, 2, 3	22
g. Trip of all Main Feedwater Pumps -Start Motor-Driven Pumps	4-(2/pump)**	2-(1/pump in same separation)	3	1, 2###	19***
h. Auxiliary Feedwater Pump Suction Pressure-Low (Transfer to ESW)	3	2	2	1, 2, 3	15*
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	14
b. RWST Level - Low-Low Coincident With Safety Injection	4	2	3	1, 2, 3, 4	32
	See Item 1 above for Safety Injection initiating functions and requirements.				

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. Loss of Power					
a. 4 kV Bus Undervoltage -Loss of Voltage	4/Bus	2/Bus	3/Bus	1, 2, 3, 4	19*
b. 4 kV Bus Undervoltage -Grid Degraded Voltage	4/Bus	2/Bus	3/Bus	1, 2, 3, 4	19*
9. Control Room Isolation					
a. Manual Initiation	2	1	2	All	26
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3, 4	26
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	2	1	2	All	26
d. Phase "A" Isolation	See Item 3.a above for all Phase "A" Isolation initiating functions and requirements.				
10. Solid-State Load Sequencer	2-1/Train	1/Train	2-1/Train	1, 2, 3, 4	25
11. Egnineered Safety Features Actuation System Interlocks					
a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	20
b. Reactor Trip, P-4	4-2/Train	2/Train	2/Train	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 automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on low steam line pressure is not blocked.

###Trip function may be blocked just before shutdown of the last operating main feedwater pump and restored just after the first main feedwater pump is put into service (following its startup trip test).

*The provisions of Specification 3.0.4 are not applicable.

**One in Separation Group 1 and one in Separation Group 4.

***The de-energization of one train of BOP-ESFAS actuation logic and actuation relays renders two of the four channels inoperable. Action Statement 21 applies to both Functional Units 6.c and 6.g in this case.

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 12 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

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 ANALOG CHANNEL 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 bypass condition and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.

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

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, and

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

b. The Minimum Channels OPERABLE requirement 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 Channels OPERABLE, within 1 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 21 - 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 at least HOT SHUTDOWN within the following 6 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.

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 the next 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.

ACTION 24 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, declare the affected auxiliary feedwater pump inoperable and take the ACTION required by Specification 3.7.1.2.

ACTION 25 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, declare the affected diesel generator and off-site power source inoperable and take the ACTION required by Specification 3.8.1.1.

ACTION 26 - 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 initiate and maintain operation of the Control Room Emergency Ventilation System.

ACTION 27 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 12 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.

(NOTE: ACTION STATEMENTS 28 THROUGH 31 ARE LOCATED ON OTHER TABLES.)

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 32 - With the number of OPERABLE channels one less than the Total Number of Channels, except for testing, STARTUP and/or POWER OPERATION may proceed for up to 72 hours 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 4.3.2.1.

Restore the inoperable channel to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

With the number of OPERABLE channels one less than the Total Number of Channels due to testing of a channel, that channel may be tripped for up to 4 hours for surveillance testing per Specification 4.3.2.1.

ACTION 33 - 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 4.3.2.1.

ACTION 34 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 12 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.

ACTION 35 - With an inoperable delay timer in the Trip Time Delay circuitry, STARTUP and/or POWER OPERATION may proceed provided that the Vessel ΔT (Power-1, Power-2) channels in the affected protection sets are placed in the tripped condition within 6 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 36 - With the number of OPERABLE channels less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided that the Containment Pressure-Environmental Allowance Modifier channels in the affected protection sets are placed in the tripped condition within 6 hours.

ACTION 37 - 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 6 hours.

TABLE 4.3-2

ENGINEERED SAFETY FEATURES 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, Phase "A" Isolation, Feedwater Isolation, Turbine Trip, Component Cooling Water, Auxiliary Feedwater-Motor-Driven Pump, Emergency Diesel Generator Operation, Containment Cooling, and Essential Service Water Operation)								
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 (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
c. Containment Pressure-High-1	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Pressurizer Pressure-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2. Containment 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 (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
c. Containment Pressure-High-3	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES 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 Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays (SSPS)	N.A	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
b. Phase "B" Isolation								
1) Manual Initiation	N.A.	N.A.	N.A.	R#	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
3) Containment Pressure-High-3	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
c. Containment Purge Isolation								
1) Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
3) Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	1, 2, 3, 4
4) Phase "A" Isolation	See Item 3.a. above for all Phase "A" Isolation Surveillance Requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES 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 Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Containment Pressure-High-2	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Line Pressure-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure-Negative Rate-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	3
5. Feedwater Isolation & Turbine Trip								
a. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2
b. Steam Generator Water Level-High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2
c. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
6. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES 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
6. Auxiliary Feedwater (Continued)								
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	1, 2, 3
d. Steam Generator Water Level Low-Low								
1) Steam Generator Water Level Low-Low (Adverse Containment Environment)	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2) Steam Generator Water Level Low-Low (Normal Containment Environment)	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
3) Vessel ΔT (Power-1, Power-2)	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
4) Containment Pressure - Environmental Allowance Modifier	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Safety Injection	See Item 1 above for all Safety Injection Surveillance Requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES 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
6. Auxiliary Feedwater (Continued)								
f. Loss-of-Offsite Power	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3
g. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2
h. Auxiliary Feedwater Pump Suction Pressure-Low	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
7. Automatic Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
b. RWST Level - Low-Low Coincident With Safety Injection	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
	See Item 1 above for all Safety Injection Surveillance Requirements.							
8. Loss of Power								
a. 4 kV Undervoltage-Loss of Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 4 kV Undervoltage-Grid Degraded Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES 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. Control Room Isolation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	All
b. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	All
d. Phase "A" Isolation	See Item 3.a. above for all Phase "A" Isolation Surveillance Requirements.							
10. Solid-State Load Sequencer	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	1, 2, 3, 4
11. Engineered Safety Features Actuation System Interlocks								
a. Pressurizer Pressure, P-11	N.A.	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. Reactor Trip, P-4	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3

TABLE NOTATIONS

(1) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
(2) Continuity check may be excluded from the ACTUATION LOGIC TEST.
(3) Except Relays K602, K620, K622, K624, K630, K740, and K741, which shall be tested at least once per 18 months during refueling and during each COLD SHUTDOWN exceeding 24 hours unless they have been tested within the previous 90 days.
The specified 18 month frequency may be waived for Cycle I provided the surveillance is performed prior to restart following the first refueling outage or June 1, 1986, whichever occurs first. The provisions of Specification 4.0.2 are reset from performance of this surveillance.

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING FOR PLANT OPERATIONS

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels for plant operations shown in Table 3.3-6 shall be OPERABLE with their Alarm/Trip Setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel Alarm/Trip Setpoint for plant operations exceeding the value shown in Table 3.3-6, adjust the Setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels for plant operations inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel for plant operations shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and ANALOG CHANNEL OPERATIONAL TEST for the MODES and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

FUNCTIONAL UNIT	CHANNELS TO TRIP/ALARM	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1. Containment					
a. Gaseous Radioactivity-RCS Leakage Detection (GT-RE-31 & 32)	N.A.	1	1, 2, 3, 4	N.A.	29
b. Particulate Radioactivity-RCS Leakage Detection (GT-RE-31 & 32)	N.A.	1	1, 2, 3, 4	N.A.	29
2. Fuel Building					
a. Fuel Building Exhaust-Gaseous Radioactivity-High (GG-RE-27 & 28)	1	2	**	##	30
b. Criticality-High Radiation Level					
1) Spent Fuel Pool (SD-RE-37 or 38)	1	1	*	$\leq$ 15 mR/h	28
2) New Fuel Pool (SD-RE-35 or 36)	1	1	*	$\leq$ 15 mR/h	28
3. Control Room					
Air Intake-Gaseous Radioactivity-High (GK-RE-04 & 05)	1	2	All	#	38

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

*With fuel in the respective fuel storage pool.

**With irradiated fuel in the fuel storage areas or fuel building.

#Trip Setpoint concentration value ($\mu Ci/cm^3$) is to be established such that the actual submersion dose rate would not exceed 2 mR/h in the control room.

##Trip Setpoint concentration value ($\mu Ci/cm^3$) is to be established such that the actual submersion dose rate would not exceed 4 mR/h in the fuel building.

ACTION STATEMENTS

(NOTE: ACTION STATEMENTS 26 and 27 ARE LOCATED ON OTHER TABLES.)

ACTION 28 - With less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided an appropriate portable continuous monitor with the same Alarm Setpoint is provided in the fuel area. Restore the inoperable monitors to OPERABLE status within 30 days or suspend all operations involving fuel movement in the fuel building.

ACTION 29 - Must satisfy the ACTION requirement for Specification 3.4...1.

ACTION 30 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, isolate the Fuel Building Ventilation System and initiate operation of the Emergency Exhaust System to maintain the fuel building at a negative pressure within 72 hours, or with no OPERABLE channels within 1 hour.

ACTION 38 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, isolate the Control Room Emergency Ventilation System and initiate operation of the Control Room Emergency Ventilation System in the recirculation mode within 72 hours, or with no OPERABLE channels within 1 hour.

(NOTE: ACTION STATEMENTS 31 THROUGH 37 ARE LOCATED ON OTHER TABLES.)

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

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures 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.

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 safety 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. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271 and its Supplement 1, "Evaluation of Surveillance Frequencies and Out of Service times for the Reactor Protection Instrumentation System," the NRC's Safety Evaluation dated February 21, 1985, WCAP-10271 Supplement 2 and WCAP-10271-P-A Supplement 2, Revision 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System," the NRC's Safety Evaluation dated February 22, 1989, and the NRC's Supplemental Safety Evaluation dated April 30, 1990. 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.

With the exception of the containment pressure High-3 analog channels for containment spray actuation and phase B containment isolation, Callaway does not have the capability to perform surveillance testing on a routine basis with an analog instrumentation channel in a bypassed condition. Action Statements 2, 6, 19, 32 and 33 allow an inoperable analog channel to be bypassed for surveillance testing. This allowance is based on an interpretation that this applies to cases where the bypassed condition is the state when a failed channel can be taken out of the test mode (in which a channel trip was forced on the protection system) and returned to operation. Due to the failed nature of the channel, the channel cannot be considered to be OPERABLE and is, therefore, considered to be in a state of bypass when the channel failure is such that its bistable is not tripped.

The Engineered Safety Features 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.

REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

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 Setpoint. S or Sensor Error is either the "as measured" deviation of the sensor from its calibration point or the value specified in Table 3.3-4, in percent span, from the analysis assumptions.

The methodology to derive the Trip Setpoints is based upon combining all of the uncertainties in the channels. Inherent to the determination of the Trip Setpoints are the magnitudes of these channel uncertainties. Sensor and rack instrumentation utilized in these channels are expected to be capable of operating within the allowances of these uncertainty magnitudes. Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Being that there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

The measurement of response time at the specified frequencies provides assurance that the Reactor Trip and the Engineered Safety Features actuation associated with each channel is completed within the time limit assumed in the safety 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.

REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

Engineered Safety Features response time specified in Table 3.3-5 which include sequential operation of the RWST and VCT valves (Notes 3 and 4) are based on values assumed in the non-LOCA safety analyses. These analyses take credit for injection of borated water from the RWST. Injection of borated water is assumed not to occur until the VCT charging pump suction valves are closed following opening of the RWST charging pump suction valves. When the sequential operation of the RWST and VCT valves is not included in the response times (Note 7), the values specified are based on the LOCA analyses. The LOCA analyses take credit for injection flow regardless of the source. Verification of the response time specified in Table 3.3-5 will assure that the assumptions used for the LOCA and non-LOCA analyses with respect to operation of the VCT and RWST valves are valid.

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents, events, and transients. Once the required logic combination is completed, the system sends actuation signals to those Engineered Safety Features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss-of-coolant accident: (1) Safety Injection pumps start and automatic valves position, (2) Reactor trips, (3) Feedwater System isolates, (4) the emergency diesel generators start, (5) containment spray pumps start and automatic valves position, (6) containment isolates, (7) steam lines isolate, (8) Turbine trips, (9) auxiliary feedwater pumps start and automatic valves position, (10) containment cooling fans start and automatic valves position, (11) essential service water pumps start and automatic valves position, and (12) isolate normal control room ventilation and start Emergency Ventilation System.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 64 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY
CALLAWAY PLANT, UNIT 1
DOCKET NO. STN 50-483

1.0 INTRODUCTION

By letter dated March 19, 1991, the Union Electric Company (the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-30) for the Callaway Plant, Unit 1. The proposed changes would be in accordance with the staff's safety evaluations (SEs) and supplemental safety evaluations (SSEs) described below to modify the engineered safety features actuation systems (ESFAS) and reactor trip system (RTS) instrumentation surveillance and testing.

2.0 BACKGROUND

In response to growing concerns over 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 have experienced inadvertent reactor trips and safeguards actuations during performance of instrumentation surveillances, causing unnecessary transients and challenges to safety systems. Significant time and effort on the part of plant operating staffs have been devoted to performing, reviewing, documenting, and tracking the various surveillance activities.

In response to this concern, the WOG submitted WCAP-10271, "Evaluation of Surveillance Frequencies and Out-of-Service Times for the Reactor Protection Instrumentation System," to the NRC on February 3, 1983. In July 1983, the NRC requested additional information from the WOG (letter from C.O. Thomas to J. J. Sheppard dated July 28, 1983). The WOG responded in October 1983 with Supplement 1 to WCAP-10271, which contained the additional information requested. Specifically, Supplement 1 demonstrated the applicability of the justification contained in WCAP-10271 to the Reactor Trip System (RTS) for two, three, and four loop plants with either relay or solid state logic. Additionally, this supplement extended the evaluation to topics not addressed in the original Westinghouse report, such as the interdependence of surveillance intervals and hardware failure rates.

The NRC issued an SE in February 1985 that allowed for: (1) an increase in surveillance test intervals (STI) from monthly to quarterly; (2) an increase in the time allowed for an inoperable channel to be placed in the tripped

condition from 1 to 6 hours; (3) an increase in the allowable out of service time for surveillance and maintenance; and (4) testing in bypass for analog channels of the RTS. The SE also required quarterly testing to be conducted on a staggered basis. Subsequently, the licensee submitted on October 16, 1985, a request for a revision to the Callaway Technical Specifications (TSs) in accordance with the SE cited above. These were approved in License Amendment No. 17 issued on September 8, 1986.

This license amendment revised TS Table 3.3-1, "RTS Instrumentation," and TS Table 4.3-1, "RTS Instrumentation Surveillance Requirements," to increase the allowable out-of-service time (AOT) for the RTS analog channels and to extend the surveillance test interval (STI) for the analog channel operational tests (ACOTs). These changes were in accordance with WCAP-10271 and WCAP-10271, Supplement 1, as approved by the NRC staff in its SE dated February 21, 1985.

Specifically, the revisions approved by the NRC in License Amendment No. 17 allowed the licensee, for the RTS analog channels only, to: (1) perform STIs quarterly on a staggered basis; (2) take 6 hours to place an inoperable channel in a tripped mode; (3) increase AOTs for test up to 4 hours and for maintenance up to 12 hours; and (4) do testing in bypass.

On March 20, 1986, the WOG submitted WCAP-10271, Supplement 2, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation Systems." On May 12, 1987, the WOG submitted WCAP-10271, Supplement 2, Revision 1. After reviewing these additional Westinghouse reports, the NRC issued another SE on February 22, 1989 (letter from C.E. Rossi to R.A. Newton). This SE extended the staff's approval of the same changes that it had previously approved for the RTS analog channels only, to the ESFAS analog channels. Staggered testing was not required for ESFAS analog channels and this requirement was removed from the RTS analog channels. This latest SE also concluded that 4-hour test and 12-hour maintenance AOTs are acceptable for ESFAS automatic actuation logic and actuation relays.

On April 30, 1990, the NRC issued an SSE for WCAP-10271, Supplement 2, Revision 1 (letter from C.E. Rossi to G.T. Goering). This SSE approved AOT and STI extensions for the ESFAS functions which are non-Standard Technical Specifications and also approved 4-hour test and 12-hour maintenance AOTs for the RTS actuation logic. No changes were approved for the test and maintenance AOTs for the reactor trip breakers.

The reduction in testing associated with these changes is expected to result in fewer inadvertent reactor trips and less frequent spurious actuations of ESFAS components. As stated in the staff's SEs and SSEs cited above, the increase of AOTs and STIs for the ESFAS analog channels and AOTs for the actuation logic and relays will result in a slight increase in the probability of core damage accidents. The staff concluded that an overall conservative upper bound for the core damage frequency (CDF) increase due to the proposed STI/AOT changes is slightly less than 6 percent for Westinghouse PWR plants. The staff also concluded that actual CDF increases for individual plants are expected to be substantially less than 6 percent.

The staff considered this CDF increase to be small compared to the range of uncertainty in the CDF analyses and therefore acceptable. Based on the WOG analyses and subsequent staff review, the staff concluded that the proposed STI and AOT changes for the ESFAS and RTS would have only a small and, therefore, acceptable impact on overall plant risk.

In both its SE dated February 22, 1989, and its SSE dated April 30, 1990, the NRC encouraged licensees to propose changes to their technical specifications which are consistent with the guidance provided by the staff. An acceptable format for proposing technical specification changes based on the Westinghouse reports cited above was provided to the WOG in the SE dated February 22, 1989. In order for the staff to find the licensee's submittals acceptable, the licensees must:

1. Confirm the applicability of the generic analyses of WCAP-10271, Supplement 2, and WCAP-10271, Supplement 2, Revision 1; and

2. Confirm that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology. (Licensees were to use the letter from C. E. Rossi to R. F. Janecek, dated April 27, 1988, for guidance on this issue.)

3.0 EVALUATION

As discussed above, in order for the generic technical specification changes to be acceptable for specific plants, licensees must address two specific issues. The licensee must first confirm the applicability of the generic analyses of WCAP-10271, Supplement 2, and WCAP-10271, Supplement 2, Revision 1, to its facility. In its letter of March 19, 1991, the licensee stated that the methodology of WCAP-10271 and its supplements were applied to specific RTS and ESFAS functions implemented in the Callaway facility via the Westinghouse Solid State Protection System (SSPS). The licensee performed a review to determine that the functions used in the generic analysis and the use of the SSPS to perform ESFAS functions, as described in the generic analysis, are applicable to the Callaway design. Based on its review, the licensee concluded that the Westinghouse reports cited above are applicable to the Callaway design.

The second issue that needed to be addressed was the staff's concern regarding instrument drift over the extended STIs. In its submittal, the licensee stated that instrument drift data from previous analog channel operational tests had been examined and concluded that a review of the data confirmed that the setpoint drift which could be expected under the extended STIs remains within the existing allowance in the instrument setpoint calculation. In addition, the licensee committed to review "as found" and "as left" data for those channels with increased STIs for a 1-year period to verify that setpoint drift remains within the existing allowance in the instrument setpoint calculation.

The specific changes proposed by the licensee to the Callaway Technical Specifications include the following:

1. Tables 3.3-1 and 4.3-1, Functional Unit 14

   Notes 1 and 15 are deleted from Tables 3.3-1 and 4.3-1, respectively, for Functional Unit 14. These notes deal with channels that are shared by both the RTS and ESFAS; however, Functional Unit 14 of Tables 3.3-1 and 4.3-1 (RCP Undervoltage Reactor Trip) is unrelated to Functional Units 6.f and 8 of Tables 3.3-3 and 4.3-2 (Loss of Offsite Power-Start Turbine Driven Auxiliary Feedwater Pump and Loss of Power). The former deals with 13.8 kv power supplies (buses PA01 and PA02) whereas the latter deal with 4.16 kv power supplies (buses NB01 and NB02). These notes were inadvertently added to Functional Unit 14 via References 1 and 2. (Refer to Section 7.0 of this SE.) It is noted that Table 3.6-9 of Reference 3 analyzed for unavailability effects on the start of the auxiliary feedwater pump associated with RCP bus undervoltage and that this functional relationship is included in the Westinghouse Standard Technical Specifications (STS). However, this design does not apply to Callaway.

2. Table 3.3-1, Functional Units 17 and 20

   Per Reference 4 and Appendix D to Reference 3, test and maintenance AOTs for SSPS logic cabinets are extended. New Action Statement 31 provides for these test and maintenance AOT extensions. The extended test AOT for the RTS logic surveillance includes bypassing the associated reactor trip breaker (i.e., racking in the bypass breaker) for 4 hours. Since Functional Unit 17 is implemented in the SSPS logic, given that the action statement changes on page D-7 of Reference 3 were approved in Reference 4, this new Action Statement 31 applies to both the RTS safety injection input from engineered safety features (ESF) as well as the automatic trip and interlock logic. Current Action Statement 9 will apply only to the reactor trip breakers, Functional Unit 19, and has been clarified as such.

3. Tables 3.3-1 and 4.3-1

   With the approval of the ESFAS changes discussed in References 3,4 and 5, the AOTs and STIs for RTS and ESFAS analog channels are now the same. Note 1 of Table 3.3-1 and Note 15 of Table 4.3-1 have been revised appropriately.

4. Table 4.3-1

   Per References 3 and 5, staggered testing is no longer required for RTS analog channels. Note 14 has been deleted appropriately.

5. Table 3.3-3

   Per Reference 5 which approved changes for ESFAS functions in the Westinghouse STS, as given in Appendix A1 of Reference 3, (i.e., Callaway Functional Units 1.c, 1.d, 2.c, and 3.b.3) and Reference 4 which approved changes for non-STS ESFAS functions, as given in Appendix A2 of Reference 3, (i.e., Callaway Functional Units 1.e, 4.c, 4.d, 4.e, 5.b, and 6.d), AOTs

for ESFAS analog channels are extended. Revised Action Statement 16 provides for an extended AOT (from 2 hours to 4 hours) for surveillance testing of analog channels of Functional Units 2.c and 3.b.3). New Action Statement 33 allows 6 hours to place an inoperable channel in the tripped mode as well as an extended AOT (from 2 hours to 4 hours) for surveillance testing of analog channels of Functional Units 1.c, 1.d, 1.e, 4.c, 4.d, 4.e, 5.b, and 6.d (see Item 11 below). New Action Statement 32 provides similar AOT extensions for Functional Unit 7.b, as further discussed in Item 12 below. Current Action Statement 19 remains applicable to Functional Units 6.g, 8.a and 8.b which are associated with the Balance-of-Plant ESFAS (BOP-ESFAS) and the Load Shedding and Emergency Load Sequencing (LSELS) systems. These systems were not included in the Reference 3 analyses. (This is discussed in Item 1.a on Page 9, Attachment 1, of the licensee's letter dated March 19, 1991.)

6. Table 3.3-3

Per Reference 5, AOTs for the ESFAS automatic actuation logic and actuation relays in the SSPS are extended. Revised Action Statement 14 provides for these test and maintenance AOT extensions for Functional Units 1.b., 2.b, 3.a.2, 3.b.2, and 7.a. New Action Statement 34 provides the same test and maintenance AOT extensions for Functional Units 4.b and 6.b. Current Action Statement 21 remains applicable to Functional Unit 6.c which is associated with the BOP-ESFAS, not included in the Reference 3 analyses. (This is also discussed in Item 1.a on Page 9, Attachment 1, of the licensee's letter dated March 19, 1991.) Revised Action Statement 27, applicable only to Functional Unit 5.a, also provides for the above test and maintenance AOT extensions. The requirement to be in at least HOT STANDBY within 12 hours in revised Action Statements 14 and 27 as well as in new Action Statements 31 and 34 reflects the approved 12-hour maintenance AOT.

7. Table 3.3-3, Functional Unit 6.g

The de-energization of one train of BOP-ESFAS actuation logic and actuation relays will render two of the four main feedwater pump pressure switches inoperable. This situation impacts both Functional Units 6.c and 6.g. Action Statement 21 for Functional Unit 6.c provides for operation with an AOT with one BOP-ESFAS logic train de-energized. However, operation is not permitted under current Action Statement 19 for Functional Unit 6.g with two pressure switches inoperable. As such, Specification 3.0.3 would be entered. Therefore, for clarification, a new footnote indicated by 3 asterisks has been added which states that Action Statement 21 applies to both Functional Units 6.c and 6.g in this situation (i.e., it applies to both the BOP-ESFAS logic and to the AFW start on trip of both main feedwater pumps if one train of BOP-ESFAS logic is de-energized).

8. Table 3.3-3, Action Statement 22

Action Statement 22 is clarified regarding the sequence of actions in a manner similar to Action Statements 1, 10, and 18.

9. Table 3.3-3, Action Statement 35

Action Statement 35 (previously 27(a) in Reference 6) is grammatically corrected such that the plurality of the object of a prepositional phrase matches that of the subject being described (i.e., "...channels in the affected protection sets...."). This is consistent with Action Statements 7 and 36 (previously 27(b) in Reference 6) and represents the changes as requested in Reference 7.

10. Table 4.3-2

As discussed in the background for Item 5 above, quarterly STIs for analog channel operational testing (ACOT) were approved in References 3, 4 and 5. Therefore, the STI for Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.d, 4.e, 5.b, 6.d and 7.b (see Item 11 below), and 11.a is changed from monthly to quarterly.

11. Tables 3.3-3 and 4.3-2, Functional Units 6.d and 7.b

AOT extensions for surveillance testing and STI extensions for the ACOT of analog channels of Functional Unit 7.b, RWST Level Low-Low Coincident with Safety Injection (for Automatic Switchover to Containment Sump), were not approved as a part of the generic Technical Specification Optimization Program (TOP) discussed in References 3, 4 and 5 nor did the generic program consider the effects of the Environmental Allowance Modifier (EAM) and Trip Time Delay (TTD) added to the steam generator level analog channel circuitry as discussed in References 6, 7 and 8.

A separate evaluation was performed which demonstrated that the unavailability and risk results presented in Reference 3 for the AOT and STI increases are indicative of, or conservative with respect to, the results expected for increasing the AOT and STI of the analog channels of Functional Unit 7.b. Reference 3 demonstrated that the effects of the analog channel changes have a minimal impact on overall reliability and risk, based on the small relative contribution of analog channels in general to RTS/ESFAS unavailability. The unavailability of the RWST low-low-1 (2 out of 4) signal would be expected to be on the same order of magnitude as that for the OT-Delta T, OP-Delta T, and High Pressurizer Pressure reactor trip signals due to similarities in logic coincidence and circuit cards in the instrument loops. Table 4.4-3 of WCAP-10271-P-A establishes this value as 10^{-4}. This approximate unavailability for the RWST low-low-1 signal is generally an order of magnitude less than the Case 1 safety injection signal unavailabilities given on Table 3.6-6 of Reference 3. Therefore, this separate evaluation concludes that the AOT and STI extensions for Functional Unit 7.b should be acceptable since the safety injection signal (SIS) unavailability, increases to which were accepted by the staff, would be expected to dominate the automatic switchover signal unavailability (i.e., slight increases in RWST level signal unavailability would be outweighed by the SIS unavailability whose coincidence is necessary for automatic switchover).

In addition to the generic conclusions regarding the relative insignificance of the analog channels to ESFAS unavailability, the AOT and STI extensions for Functional Unit 6.d are supported by the following considerations:

i) As discussed in Section 3.4.2 of WCAP-11883, submitted via Reference 8 for the EAM/TTD modification, and as described in Section 5.5 of the RTD Bypass Licensing Report attached to Reference 9 (i.e., the Delta-T input to TTD), the mean time between failure (MTBF) values for the 7300 printed circuit cards used in these modifications are sufficiently high that the reliability of the protection systems is not degraded.

ii) Although the TTD timer modules are unique to Functional Unit 6.d (see Functional Unit 13.c of Table 3.3-1), they are disabled above 20% rated thermal power as discussed in Reference 8.

iii) Extended AOTs and STIs were approved for RTS Functional Unit 13 of Tables 3.3-1 and 4.3-1 Steam Generator Water Level Low-Low in References 2 and 6. Since these level channels are common to both the RTS and ESFAS, consistent AOTs and STIs are desirable. (This is discussed in Item 2.d on Page 12, Attachment 1, of the licensee's letter dated March 19, 1991.)

12. Table 3.3-3, Functional Unit 7.b

New Action Statement 32 allows for 6 hours to place an inoperable channel in the tripped mode as well as an extended AOT (from 2 hours to 4 hours) for surveillance testing of analog channels of Functional Unit 7.b, if the channel is inoperable for any reason other than surveillance testing. The inoperable channel must be restored to OPERABLE status within 72 hours or the plant must be shut down. If the channel is inoperable because it is being tested, the channel may be tripped for up to 4 hours for the surveillance testing. Current Action Statement 16 does not apply to Functional Unit 7.b since testing or operation in bypass, other than as discussed in Item 2.c, on Page 11, Attachment 1, of the licensee's letter dated March 19, 1991, is not applicable to the RWST level channels due to the absence of bypass indication in the control room. Prior surveillance testing of these normally de-energized, energize-to-actuate channels has been performed with the tested channel's bistable in the tripped condition.

This new Action Statement limits the duration that an RWST level channel could be tripped, due to its being inoperable or for testing, in order to limit the probability for automatic switchover to an empty containment sump upon receipt of an inadvertent safety injection signal (SIS) coincident with a single failure of another RWST level channel. This sequence of events, as shown in Figure 7.6-3 of the Callaway Final Safety Analysis Report (FSAR), would start the residual heat removal (RHR) pumps, open the containment sump RHR suction valves and, after meeting the sump suction valve open position interlock, the RWST RHR suction valves would close.

The 72-hour restoration time for an inoperable channel is consistent with that given in other Callaway TSs affecting RHR operability; e.g., TS 3.5.2 for one ECCS train inoperable and TS 3.8.1.1 for one diesel generator inoperable.

13. BASES 3/4.3.1 and 3/4.3.2

References 3, 4 and 5 were added to the BASES with regard to ESFAS surveillance intervals and allowed outage times. A discussion of analog channel bypass testing was also added for clarification, consistent with the discussion of Item 2.c on Page 11, Attachment 1 of the licensee's letter dated March 19, 1991.

14. Table 3.3-6

Action Statement 27 is renumbered to 38.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Missouri State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (56 FR 24221). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. Licensee letter dated October 16, 1985.

2. Amendment No. 17 to Facility Operating License NPF-30, dated September 8, 1986.

3. Westinghouse Owners Group letter to NRC OG-90-38 dated July 20, 1990 (transmitting WCAP-10271, Supplement 2, Revision 1-P-A (updated), "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System").

4. USNRC letter from C.E. Rossi to G.T. Goering, dated April 30, 1990 (NRC Supplemental Safety Evaluation for WCAP-10271, Supplement 2, Revision 1).

5. USNRC letter from C.E. Rossi to R.A. Newton dated February 22, 1989 (NRC Safety Evaluation for WCAP-10271, Supplement 2 and Supplement 2, Revision 1).

6. Amendment No. 43 to Facility Operating License NPF-30 dated April 14, 1989.

7. Licensee letter dated February 7, 1989.

8. Licensee letter dated August 30, 1988.

9. Licensee letter dated April 12, 1990.

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