Docket Nos. 50-327/328 December 31, 1987

Mr. S. A. White
Manager of Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: REACTOR PROTECTION SYSTEM AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION CORRECTIONS (TS-87-20) (TAC 00128, 00129)

Re: Sequoyah Nuclear Plant, Units 1 and 2

The Commission has issued the enclosed Amendment No. 63 to Facility Operating License No. DPR-77 and Amendment No. 55 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated May 22, 1987.

The amendment revises several functions for the reactor trip system and engineered safety features actuation system instrumentation. The channel calibration requirement for the P-4 function is deleted, clarification for manual actuation is added, a response time correction is made, and automatic actuation logic requirements are added.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Original Signed by

Gary G. Zech, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

8801140410 871231
PDR ADOCK 05000327
P PDR

Enclosures:
1. Amendment No. 63 to License No. DPR-77
2. Amendment No. 55 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures:
See next page

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Mr. S. A. White
Tennessee Valley Authority

Sequoyah Nuclear Plant

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Dr. Henry Myers, Science Advisor
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U.S. House of Representatives
Washington, D.C. 20515

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 63
License No. DPR-77

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated May 22, 1987, 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.

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P PDR

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. DPR-77 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 63 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Gary G. Zech, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 31, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 63

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the 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. Overleaf pages* are provided to maintain document completeness.

REMOVE	INSERT
3/4 3-11	3/4 3-11*
3/4 3-12	3/4 3-12
3/4 3-15	3/4 3-15*
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 3-19	3/4 3-19
3/4 3-20	3/4 3-20*
3/4 3-21a	3/4 3-21a
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24*
3/4 3-25	3/4 3-25*
3/4 3-26	3/4 3-26
3/4 3-28	3/4 3-28
3/4 3-31	3/4 3-31
3/4 3-32	3/4 3-32*
3/4 3-35	3/4 3-35*
3/4 3-36	3/4 3-36
3/4 3-37a	3/4 3-37a

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-1 (Continued)
REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A.	R	S/U(8)	2, and *
B. Power Range Neutron Flux, P-7	N.A.	R	S/U(8)	1
C. Power Range Neutron Flux, P-8	N.A.	R	S/U(8)	1
D. Power Range Neutron Flux, P-10	N.A.	R	S/U(8)	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	S/U(8)	1
F. Power Range Neutron Flux, P-9	N.A.	R	S/U(8)	1
G. Reactor Trip, P-4	N.A.	N.A.	S/U(8)	1, 2, and *
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION					
a. Manual Initiation	2	1	2	1, 2, 3, 4	20
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
c. Containment Pressure-High	3	2	2	1, 2, 3	16*
d. Pressurizer Pressure - Low	3	2	2	1, 2, 3#	16*
e. Differential Pressure Between Steam Lines - High				1, 2, 3	
Four Loops Operating	3/steam line	2/steam line any steam line	2/steam line		16*
f. Steam Flow in Two Steam Lines-High				1, 2, 3##	
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		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
COINCIDENT WITH EITHER T_{avg}--Low-Low				1, 2, 3##	
Four Loops Operating	1 T_{avg}/loop	2 T_{avg} any loops	1 T_{avg} any 3 loops		16*
OR, COINCIDENT WITH Steam Line Pressure-Low				1, 2, 3##	
Four Loops Operating	1 pressure/ loop	2 pressures any loops	1 pressure any 3 loops		16*
2. CONTAINMENT SPRAY					
a. Manual	2	1*	2	1, 2, 3, 4	20
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	20
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15

*Two switches must be operated simultaneously for actuation.

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
b. Phase "B" Isolation					
1) Manual	2	1*	2	1, 2, 3, 4	20
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Pressure-High-High	4	2	3	1, 2, 3	18
c. Containment Ventilation Isolation					
1) Manual	2	1	2	1, 2, 3, 4	19
2) Automatic Isolation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Gas Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19
4) Containment Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19
5) Containment Particulate Activity High	2	1	1	1, 2, 3, 4	19

*Two switches must be operated simultaneously for actuation.

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	1/steam line	1/steam line	1/operating steam line	1, 2, 3	25
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
d. Steam Flow in Two Steam Lines--High				1, 2, 3	
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		16*
COINCIDENT WITH EITHER T_{avg} --Low-Low				1, 2, 3	
Four Loops Operating	1 T_{avg}/loop	2 T_{avg} any loop	1 T_{avg} any 3 loops		16*
OR, COINCIDENT WITH Steam Line Pressure-Low				1, 2, 3	
Four Loops Operating	1 pressure/loop	2 pressures any loops	1 pressure any 3 loops		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
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level--High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	16*
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
6. AUXILIARY FEEDWATER					
a. Manual Initiation	2	1	2	1, 2, 3	24
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
c. Main 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	16*
ii. Start Turbine-Driven Pump	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2/stm. gen	1, 2, 3	16*
d. S.I. Start Motor-Driven Pumps and Turbine Driven Pump	See 1 above (all S.I. initiating functions and requirements)				

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. Station Blackout Start Motor-Driven Pump associated with the shutdown board and Turbine Driven Pump	2/shutdown board	1/shutdown board	2/shutdown board	1, 2, 3	20
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump	1, 2	20*
g. Auxiliary Feedwater Suction Pressure-Low	3/pump	2/pump	2/pump	1, 2, 3	20*
**7. LOSS OF POWER					
a. 6.9 kv Shutdown Board --Loss of Voltage					
1. Start Diesel Generators	2/shutdown board	1 loss of voltage on any shutdown board	2/shutdown board	1, 2, 3, 4	20*
2. Load Shedding	2/shutdown board	1/shutdown board	2/shutdown board	1, 2, 3, 4	20*

**NOTE: This technical specification is to be implemented during the startup following the 2nd refueling outage or following completion of the modification, whichever is earlier.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure - Not P-11	3	2	2	1, 2, 3	22a
b. T_{avg} - P-12	4	2	3	1, 2, 3	22b
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
a. RWST Level - Low COINCIDENT WITH	4	2	3	1, 2, 3, 4	18
Containment Sump Level - High AND	4	2	3	1, 2, 3, 4	18
Safety Injection	(See 1 above for Safety Injection Requirements)				
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15

TABLE 3.3-3 (Continued)

TABLE NOTATION

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

##Trip function may be bypassed in this MODE below P-12 (T_{avg} Block of Safety Injection) setpoint.

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

*The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 15 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 17 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 19 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment ventilation isolation valves are maintained closed.

ACTION 20 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION 21 - 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, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:

a. Safety Injection
   Pressurizer Pressure

b. Safety Injection
   High Steam Line Flow
   Steam Line Isolation
   High Steam Line Flow
   Steam Dump

c. Turbine Trip
   Steam Generator Level High-High
   Feedwater Isolation
   Steam Generator Level High-High

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

ACTION 24 - 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 25 - 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 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High	$\leq$ 1.54 psig	$\leq$ 1.7 psig
d. Pressurizer Pressure--Low	$\geq$ 1870 psig	$\geq$ 1860 psig
e. Differential Pressure Between Steam Lines--High	$\leq$ 100 psi	$\leq$ 112 psi
f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	$\leq$ A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load	$\leq$ A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load
	$T_{avg} \geq 540°F$ $\geq$ 600 psig steam line pressure	$T_{avg} \geq 538°F$ $\geq$ 580 psig steam line pressure

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	≤ 2.81 psig	≤ 2.97 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation logic	Not Applicable	Not Applicable
b. Phase "B" Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure--High-High	≤ 2.81 psig	≤ 2.97 psig
c. Containment Ventilation Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Isolation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
3. Containment Gas Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3}$ μCi/cc	$\leq 8.5 \times 10^{-3}$ μCi/cc
4. Containment Purge Air Exhaust Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3}$ μCi/cc	$\leq 8.5 \times 10^{-3}$ μCi/cc
5. Containment Particulate Activity-High	$\leq 1.5 \times 10^{-5}$ μCi/cc	$\leq 1.5 \times 10^{-5}$ μCi/cc
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq$ 2.81 psig	$\leq$ 2.97 psig
d. Steam Flow in Two Steam lines--High Coincident with T_{avg}--Low-Low Or Steam Line Pressure--Low	$\leq$ A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load.	$\leq$ A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load
	$T_{avg} \geq 540°F$	$T_{avg} \geq 538°F$
	$\geq$ 600 psig steam line pressure	$\geq$ 580 psig steam line pressure
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water level--High-High	$\leq$ 75% of narrow range instrument span each steam generator	$\leq$ 76% of narrow range instrument span each steam generator
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS (Continued)		
b. T_{avg} Prevents Manual Block of Safety Injection P-12	$\leq$ 540°F	$\leq$ 542°F
c. T_{avg} Manual Block of Safety Injection, Steam Line Isolation, Block Steam Dump	$\geq$ 540°F	$\geq$ 538°F
d. Steam Generator Level Turbine Trip, Feedwater Isolation P-14	(See 5. above)	
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP		
a. RWST Level - Low	130" from tank base	130" ± 4" from tank base
COINCIDENT WITH Containment Sump Level - High	30" above elev. 680'	30" ± 2.5" above elev. 680'
AND Safety Injection	(See 1 above for all Safety Injection Setpoints/Allowable Valves)	
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low	
a. Safety Injection (ECCS)	$\leq$ 28.0(7)/28.0(1)
b. Reactor Trip (from SI)	$\leq$ 3.0
c. Feedwater Isolation	$\leq$ 8.0(2)
d. Containment Isolation-Phase "A"(3)	$\leq$ 18.0(8)/28.0(9)
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	$\leq$ 60
g. Essential Raw Cooling Water System	$\leq$ 65.0(8)/75.0(9)
h. Steam Line Isolation	$\leq$ 8.0
i. Emergency Gas Treatment System	$\leq$ 38.0(9)
7. Containment Pressure--High-High	
a. Containment Spray	$\leq$ 208(9)
b. Containment Isolation-Phase "B"	$\leq$ 65(8)/75(9)
c. Steam Line Isolation	$\leq$ 7.0
d. Containment Air Return Fan	$\geq$ 540.0 and $\leq$ 660
8. Steam Generator Water Level--High-High	
a. Turbine Trip	$\leq$ 2.5
b. Feedwater Isolation	$\leq$ 11.0(2)
9. Main Steam Generator Water Level - Low-Low	
a. Motor-driven Auxiliary Feedwater Pumps(4)	$\leq$ 60.0
b. Turbine-driven Auxiliary Feedwater Pumps(5)	$\leq$ 60.0

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
10. Station Blackout	
a. Auxiliary Feedwater Pumps	$\leq$ 60
11. Trip of Main Feedwater Pumps	
a. Auxiliary Feedwater Pumps	$\leq$ 60
*12. Loss of Power	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	$\leq$ 10(10)
13. RWST Level-Low Coincident with Containment Sump Level-High and Safety Injection	
a. Automatic Switchover to Containment Sump	$\leq$ 250
14. Containment Purge Air Exhaust Radioactivity - High	
a. Containment Ventilation Isolation	$\leq$ 10(6)
15. Containment Gas Monitor Radioactivity High	
a. Containment Ventilation Isolation	$\leq$ 10(6)
16. Containment Particulate Activity High	
a. Containment Ventilation Isolation	$\leq$ 10(6)

*NOTE: This technical specification to be implemented at the startup following the second refueling outage or following completion of the modification, whichever is earlier.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4) Containment Purge Air Exhaust Monitor Radioactivity-High	S	R	M	1, 2, 3, 4
5) Containment Particulate Activity-High	S	R	M	1, 2, 3, 4
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	S	R	Q	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3
6. AUXILIARY FEEDWATER				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R(2)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A.	R(2)	N.A.	1, 2, 3
c. Steam Generator Level, P-14	N.A.	R(2)	N.A.	1, 2
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP				
a. RSWT Level - Low	S	R	M	1, 2, 3, 4
COINCIDENT WITH				
Containment Sump Level - High	S	R	M	1, 2, 3, 4
AND				
Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)			
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3, 4

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 55
License No. DPR-79

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated May 22, 1987, 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. DPR-79 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 55 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Gary G. Zech, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 31, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 55

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Revise the 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. Overleaf pages* are provided to maintain document completeness.

REMOVE	INSERT
3/4 3-11	3/4 3-11*
3/4 3-12	3/4 3-12
3/4 3-17	3/4 3-17
3/4 3-18	3/4 3-18*
3/4 3-19	3/4 3-19
3/4 3-20	3/4 3-20*
3/4 3-21a	3/4 3-21a
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24*
3/4 3-25	3/4 3-25*
3/4 3-26	3/4 3-26
3/4 3-28	3/4 3-28
3/4 3-31	3/4 3-31
3/4 3-32	3/4 3-32*
3/4 3-35	3/4 3-35*
3/4 3-36	3/4 3-36
3/4 3-37	3/4 3-37*
3/4 3-37a	--
3/4 3-38	3/4 3-38

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S	R	Q	1, 2
16. Undervoltage - Reactor Coolant Pumps	N.A.	R	M	1
17. Underfrequency - Reactor Coolant Pumps	N.A.	R	M	1
18. Turbine Trip				
A. Low Fluid Oil Pressure	N.A.	N.A.	S/U(1)	1
B. Turbine Stop Valve Closure	N.A.	N.A.	S/U(1)	1
19. Safety Injection Input from ESF	N.A.	N.A.	M(4)	1, 2
20. Reactor Trip Breaker	N.A.	N.A.	M(5) and S/U(1)	1, 2, and *
21. Automatic Trip Logic	N.A.	N.A.	M(5)	1, 2, and *
22. Reactor Trip System Interlocks				
A. Intermediate Range Neutron Flux, P-6	N.A	R	S/U (8)	2, and *
B. Power Range Neutron Flux, P-7	N.A.	R	S/U (8)	1
C. Power Range Neutron Flux, P-8	N.A.	R	S/U (8)	1
D. Power Range Neutron Flux, P-10	N.A.	R	S/U (8)	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	S/U (8)	1
F. Power Range Neutron Flux, P-9	N.A.	R	S/U (8)	1
G. Reactor Trip, P-4	N.A.	N.A.	S/U (8)	1, 2, and *
23. Reactor Trip Bypass Breaker	N.A.	N.A.	M(10)R(11)	1, 2, and *

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
2. CONTAINMENT SPRAY					
a. Manual	2	1*	2	1, 2, 3, 4	20
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	20
2) From Safety Injection Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
b. Phase "B" Isolation					
1) Manual	2	1*	2	1, 2, 3, 4	20
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Pressure-High-High	4	2	3	1, 2, 3	18

*Two switches must be operated simultaneously for actuation.

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
c. Containment Ventilation Isolation					
1) Manual	2	1	2	1, 2, 3, 4	19
2) Automatic Isolation Logic	2	1	2	1, 2, 3, 4	15
3) Containment Gas Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19
4) Containment Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19
5) Containment Particulate Activity High	2	1	1	1, 2, 3, 4	19
4. STEAM LINE ISOLATION					
a. Manual	1/steam line	1/steam line	1/operating steam line	1, 2, 3	25
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
c. Containment Pressure--High-High	4	2	3	1, 2, 3	18
d. Steam Flow in Two Steam Lines--High				1, 2, 3	
Four Loops Operating	2/steam line	1/steam line any 2 steam lines	1/steam line		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
COINCIDENT WITH EITHER T_{avg} --Low-Low Four Loops Operating	1 T_{avg}/loop	2 T_{avg} any loop	1 T_{avg} any 3loops	1, 2, 3	16*
OR, COINCIDENT WITH Steam Line Pressure-Low				1, 2, 3	
Four Loops Operating	1 pressure/ loop	2 pressures any loops	1 pressure any 3 loops		16*
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level-- High-High	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2, 3	16*
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23

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. AUXILIARY FEEDWATER					
a. Manual Initiation	2	1	2	1, 2, 3	24
b. Automatic Actuation Logic	2	1	2	1, 2, 3	23
c. Main 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	16*
ii. Start Turbine-Driven Pump	3/stm. gen.	2/stm. gen. any 2 stm. gen.	2/stm. gen	1, 2, 3	16*
d. S.I. Start Motor-Driven Pumps and Turbine Driven Pump	See 1 above (all S.I. initiating functions and requirements)				
e. Station Blackout Start Motor-Driven Pump associated with the shutdown board and Turbine Driven Pump	2/shutdown board	1/shutdown board	2/shutdown board	1, 2, 3	20
f. Trip of Main Feedwater Pumps Start Motor-Driven Pumps and Turbine Driven Pump	1/pump	1/pump	1/pump	1, 2	20*
g. Auxiliary Feedwater Suction Pressure-Low	3/pump	2/pump	2/pump	1, 2, 3	20*

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS					
a. Pressurizer Pressure - Not P-11	3	2	2	1, 2, 3	22a
b. T_{avg} - P-12	4	2	3	1, 2, 3	22b
c. Steam Generator Level P-14	3/loop	2/loop any loop	3/loop	1, 2	22c
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP					
a. RWST Level - Low	4	2	3	1, 2, 3, 4	18
COINCIDENT WITH Containment Sump Level - High	4	2	3	1, 2, 3, 4	18
AND Safety Injection	(See 1 above for Safety Injection Requirements)				
b. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	15

TABLE 3.3-3 (Continued)

TABLE NOTATION

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

##Trip function may be bypassed in this MODE below P-12 (T_{avg} Block of Safety Injection) setpoint.

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

*The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 15 - With the number of OPERABLE Channels one less than the Total Number of Channels, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1 provided the other channel is OPERABLE.

ACTION 16 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST, provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 17 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the following 12 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 18 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 19 - With less than the Minimum Channels OPERABLE, operation may continue provided the containment ventilation isolation valves are maintained closed.

ACTION 20 - With the number of OPERABLE Channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 21 - 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, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 22 - With less than the Minimum Number of Channels OPERABLE, declare the interlock inoperable and verify that all affected channels of the functions listed below are OPERABLE or apply the appropriate ACTION statement(s) for those functions. Functions to be evaluated are:

a. Safety Injection
   Pressurizer Pressure

b. Safety Injection
   High Steam Line Flow
   Steam Line Isolation
   High Steam Line Flow
   Steam Dump

c. Turbine Trip
   Steam Generator Level High-High
   Feedwater Isolation
   Steam Generator Level High-High

ACTION 23 - With the number of OPERABLE channels one less than the Total Number of Channels, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

ACTION 24 - 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 25 - 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 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. SAFETY INJECTION, TURBINE TRIP AND FEEDWATER ISOLATION		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High	$\leq$1.54 psig	$\leq$1.7 psig
d. Pressurizer Pressure--Low	$\geq$1870 psig	$\geq$1860 psig
e. Differential Pressure Between Steam Lines--High	$\leq$100 psi	$\leq$112 psi
f. Steam Flow in Two Steam Lines--High Coincident with T_{avg}--Low-Low or Steam Line Pressure--Low	$\leq$A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load	$\leq$A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load
	T_{avg} $\geq$540°F $\geq$600 psig steam line pressure	T_{avg} $\geq$538°F $\geq$580 psig steam line pressure

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	≤2.81 psig	≤2.97 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation logic	Not Applicable	Not Applicable
b. Phase "B" Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure--High-High	≤2.81 psig	≤2.97 psig
c. Containment Ventilation Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Isolation Logic	Not Applicable	Not Applicable

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
3. Containment Gas Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3}$ μCi/cc	$\leq 8.5 \times 10^{-3}$ μCi/cc
4. Containment Purge Air Exhaust Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3}$ μCi/cc	$\leq 8.5 \times 10^{-3}$ μCi/cc
5. Containment Particulate Activity-High	$\leq 1.5 \times 10^{-5}$ μCi/cc	$\leq 1.5 \times 10^{-5}$ μCi/cc
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq$2.81 psig	$\leq$2.97 psig
d. Steam Flow in Two Steam lines--High Coincident with T_{avg}--Low-Low Or Steam Line Pressure--Low	$\leq$A function defined as follows: A Δp corresponding to 40% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 110% of full steam flow at full load.	$\leq$A function defined as follows: A Δp corresponding to 44% of full steam flow between 0% and 20% load and then a Δp increasing linearly to a Δp corresponding to 111.5% of full steam flow at full load
	$T_{avg} \geq 540°F$ $\geq$600 psig steam line pressure	$T_{avg} \geq 538°F$ $\geq$580 psig steam line pressure
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water level--High-High	$\leq$75% of narrow range instrument span each steam generator	$\leq$76% of narrow range instrument span each steam generator
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS (Continued)		
b. T_{avg} Prevents Manual Block of Safety Injection P-12	$\leq$ 540°F	$\leq$542°F
c. T_{avg} Manual Block of Safety Injection, Steam Line Isolation, Block Steam Dump	$\geq$ 540°F	$\geq$538°F
d. Steam Generator Level Turbine Trip, Feedwater Isolation P-14	(See 5. above)	
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP		
a. RWST Level - Low	130" from tank base	130" ± 4" from tank base
COINCIDENT WITH Containment Sump Level - High	30" above elev. 680'	30" ± 2.5" above elev. 680'
AND Safety Injection	(See 1 above for all Safety Injection Setpoints/Allowable Valves)	
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low	
a. Safety Injection (ECCS)	≤ 28.0(7)/28.0(1)
b. Reactor Trip (from SI)	≤ 3.0
c. Feedwater Isolation	≤ 8.0(2)
d. Containment Isolation-Phase "A"(3)	≤ 18.0(8)/28.0(9)
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤60
g. Essential Raw Cooling Water System	≤ 65.0(8)/75.0(9)
h. Steam Line Isolation	≤ 8.0
i. Emergency Gas Treatment System	≤38.0(9)
7. Containment Pressure--High-High	
a. Containment Spray	≤ 208(9)
b. Containment Isolation-Phase "B"	≤ 65(8)/75(9)
c. Steam Lire Isolation	≤ 7.0
d. Containment Air Return Fan	≥ 540.0 and ≤660
8. Steam Generator Water Level--High-High	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0(2)
9. Main Steam Generator Water Level - Low-Low	
a. Motor-driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-driven Auxiliary Feedwater Pumps(5)	≤ 60.0

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
10. Station Blackout	
a. Auxiliary Feedwater Pumps	$\leq$ 60
11. Trip of Main Feedwater Pumps	
a. Auxiliary Feedwater Pumps	$\leq$ 60
*12. Loss of Power	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	$\leq 10^{(10)}$
13. RWST Level-Low Coincident with Containment Sump Level-High and Safety Injection	
a. Automatic Switchover to Containment Sump	$\leq$ 250
14. Containment Purge Air Exhaust Radioactivity - High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
15. Containment Gas Monitor Radioactivity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$
16. Containment Particulate Activity High	
a. Containment Ventilation Isolation	$\leq 10^{(6)}$

*NOTE: This technical specification is to be implemented during the startup following the first refueling outage.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4) Containment Purge Air Exhaust Monitor Radioactivity-High	S	R	M	1, 2, 3, 4
5) Containment Particulate Activity-High	S	R	M	1, 2, 3, 4
4. STEAM LINE ISOLATION				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3
c. Containment Pressure--High-High	S	R	Q	1, 2, 3
d. Steam Flow in Two Steam Lines--High Coincident with T_{avg}-- Low-Low or Steam Line Pressure--Low	S	R	Q	1, 2, 3
5. TURBINE TRIP AND FEEDWATER ISOLATION				
a. Steam Generator Water Level--High-High	S	R	Q	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3
6. AUXILIARY FEEDWATER				
a. Manual	N.A.	N.A.	R	1, 2, 3
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
c. Main Steam Generator Water Level-Low-Low	S	R	Q	1, 2, 3
d. S.I.	See 1 above (all SI surveillance requirements)			
e. Station Blackout	N.A.	R	N.A.	1, 2, 3
f. Trip of Main Feedwater Pumps	N.A.	N.A.	R	1, 2
g. Auxiliary Feedwater Suction	N.A.	R	M	1, 2, 3
*7. LOSS OF POWER				
a. 6.9 kv Shutdown Board - Loss of Voltage				
1. Start Diesel Generators	S	R	M	1, 2, 3, 4
2. Load Shedding	S	R	N.A.	1, 2, 3, 4
b. 6.9 kv Shutdown Board - Degraded Voltage				
1. Voltage sensors	S	R	M	1, 2, 3, 4
2. Diesel Generators Start and Load Shedding Timer	N.A.	R	N.A.	1, 2, 3, 4
3. SI/Degraded Voltage Logic Timer	N.A.	R	N.A.	1, 2, 3, 4

*NOTE: This technical specification is to be implemented during the startup following the 1st refueling outage.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS				
a. Pressurizer Pressure, P-11	N.A.	R (2)	N.A.	1, 2, 3
b. T_{avg}, P-12	N.A	R (2)	N.A.	1, 2, 3
c. Steam Generator Level, P-14	N.A.	R (2)	N.A.	1, 2
9. AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP				
a. RSWT Level - Low	S	R	M	1, 2, 3, 4
COINCIDENT WITH				
Containment Sump Level - High	S	R	M	1, 2, 3, 4
AND				
Safety Injection	(See 1 above for all Safety Injection Surveillance Requirements)			
b. Automatic Actuation Logic	N.A.	N.A.	M(1)	1, 2, 3, 4

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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 55 TO FACILITY OPERATING LICENSE NO. DPR-79

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By letter dated May 22, 1987, Tennessee Valley Authority (TVA, the licensee) submitted proposed Sequoyah Nuclear Plant Units 1 and 2 Technical Specification (TS) changes revising various functions for the reactor protection system and engineered safety features actuation system instrumentation including the deletion of the channel calibration requirement for the P-4 function, clarification for manual actuation, a response time correction, and the addition of automatic actuation logic requirements.

2.0 EVALUATION

The licensee's proposed changes to the technical specification and staff's evaluation have been itemized below.

2.1 Reactor Trip, P-4 Function Deletion

The licensee proposes to remove the channel calibration requirement for the reactor trip, P-4 function, from Table 4.3-1, "Reactor Trip System Instrumentation Surveillance Requirements." The TS define the channel calibration as the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The channel calibration shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the channel functional test. The channel calibration may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated. The P-4 interlock performs its designated function when a 1 of 2 logic is present. Since no setpoint is involved, the channel output is not dependent on any range or accuracy. As soon as the P-4 contact senses a signal, the channel output is performed. The proposed TS change is also consistent with Standard Technical Specification (STS), NUREG-0452, Revision 4. Therefore, channel calibration is not applicable for the reactor trip, P-4 function from Table 4.3-1, and the staff finds this change acceptable.

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2.2 Channels to Trip for Manual Containment Spray

The licensee proposes to clarify the channels to trip for manual containment spray and Phase B isolation in Table 3.3-3, "Engineered Safety Feature Actuation System Instrumentation." A clarification footnote is added to state that two switches must be operated simultaneously in order to trip one channel. The staff finds that change acceptable because present requirements have not been changed and clarification only, has been added.

2.3 Reactor Trip on High-High Steam Generator Water Level

The licensee proposes to remove the response time requirement for reactor trip from Item 8, "Steam Generator Water Level -- High-High," of Table 3.3-5, "Engineered Safety Features (ESP) Response Times. The licensee's ESF system generates a turbine trip and feedwater isolation on high-high steam generator water level to prevent water from entering the steam lines and water carryover to the turbine. At operations above 50 percent of rated thermal power, once the turbine has been tripped, a reactor trip signal will be generated. Amendment 7, dated June 26, 1981 to the SQN Unit 1 facility operating license approved the deletion of a reactor trip on turbine trip for operation below 50 percent of rated thermal power. Since a reactor trip does not provide for protection from water carryover into the turbine, it should not be listed with the turbine trip in Table 3.3-5 as having a required ESF response time. The staff finds this request to be consistent with the response time requirements for a high-high steam generator water level as given in STS, NUREG-0452, Revision 4, (that is, for turbine trip only) and, therefore, this change is acceptable.

2.4 Automatic Logic Requirements for Turbine Trip, Feedwater Isolation and Containment Sump Functions

The licensee proposes to add automatic logic requirements to Table 3.3-3 for the "Turbine Trip and Feedwater Isolation" function and the "Automatic Switchover to Containment Sump" function. Also, the licensee proposes to extend the time allowed to perform associated surveillance testing from one hour to two hours.

The staff agrees that automatic actuation logic requirements must exist to verify the required logic output from various input combinations. Automatic Actuation Logic requirements exist for similar functional units of the same tables, such as "Steam Line Isolation." This equipment is required to have automatic isolation logic as described in Sections 7.2 and 7.3 of the Standard Review Plan, NUREG 0800, July 1981 and required by 10 CFR 50, Appendix A, General Design Criteria 20, Protection System Functions. This change is also consistent with STS, NUREG-0452, Revision 4, and, therefore, is acceptable.

The staff notes that adequate reliability and margin exists for the proposed increase for the associated surveillance testing in Action Statements 15 and 23. The change is also consistent with the basis for the current requirements and the current equivalent surveillance requirements in the STS NUREG-0452, Revision 4, and, therefore, is acceptable.

2.5 Miscellaneous Changes

The licensee proposes to delete a redundant listing of automatic switchover to containment sump. This is applicable to Unit 2 only. Table 4.3-2 of the Unit 2 TS, as it currently exists, has duplicate entries of Item 9, "Automatic Switchover to Containment Sump." The duplication of the two entries was verified by an item-by-item comparison of the two entries. Therefore, the deletion of the redundant entry of Item 9 in Table 4.3-2 as it appears on Page 38 of the Unit 2 TS will not alter the requirements for channel checks, channel calibrations, or channel functional tests; nor will it change the modes for which surveillance is required. The staff considers this change to be strictly administrative and, therefore, finds this change to be acceptable.

The licensee proposes to delete an associated footnote of Table 4.3-2, applicable to both units, concerning manual switchover of residual heat removal suction from the refueling water storage tank to the containment sump. The associated footnote provided temporary relief to the requirements of Item 9 of Table 4.3-2. The duration of the relief was to last for 30 days, extending from June 18, 1982, until July 18, 1982. The applicability of this footnote has long since expired and its deletion will provide for keeping the TS free from obsolete statements. The staff considers this change to be strictly administrative, and therefore, acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve 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 and changes to the surveillance requirements. The staff has determined that the amendments involve 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 these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet 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 nor environmental assessment need be prepared in connection with the issuance of the amendments.

4.0 CONCLUSION

The licensee's proposed TS changes remove redundant and outdated information, add clarification to existing requirements, delete inappropriate test requirements, and add missing operability and testing requirements in a manner consistent with STS, NUREG-0452, Revision 4. The staff finds the proposed changes enhance plant reliability and safety, and therefore finds them to be acceptable.

We also have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of these amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: T. Rotella

Dated: December 31, 1987