TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 7
License No. DPR-77

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

   A. The application for amendment to the Sequoyah Nuclear Plant, Unit 1 (the facility) Facility Operating License No. DPR-77 filed by the Tennessee Valley Authority (licensee), dated May 13 and 14, 1981 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;

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

   C. There is reasonable assuance (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 amended license is hereby amended by page changes to the Appendix A Technical Specifications as indicated in the attachments to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-077 is hereby amended to read as follows:

OFFICE ▶							
SURNAME ▶	8107070516 810626 PDR ADOCK 05000327 PDR						
DATE ▶	P						

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 7, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/S/

Elinor G. Adensam, Acting Chief
Licensing Branch #4
Division of Licensing

Attachment:
Appendix A Technical
Specification Changes

Date of Issuance: June 26, 1981

OFFICE	DL:LB #4	LA:DL:LB#4	OELD	DL:LB #4			
SURNAME	TJKenyon/hmc	MService	McGurren	EAdensam			
DATE	6/25/81	6/ /81	6/25/81	6/ /81			

ATTACHMENT TO LICENSE AMENDMENT NO. 7

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contains vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Overleaf Page	Amended Page
2-8	2-7
3/4 3-3	B2-7
3/4 3-8	3/4 3-4
	3/4 3-7

OFFICE							
SURNAME							
DATE							

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
21. Turbine Impulse Chamber Pressure - (P-13) Input to Low Power Reactor Trips Block P-7	$\leq$ 10% Turbine Impulse Pressure Equivalent	$\leq$ 11% Turbine Impulse Pressure Equivalent
22. Power Range Neutron Flux - (P-8) Low Reactor Coolant Loop Flow, and Reactor Coolant Pump Breaker Position	$\leq$ 35% of RATED THERMAL POWER	$\leq$ 36% of RATED THERMAL POWER
23. Power Range Neutron Flux - (P-10) - Enable block of Source, Intermediate, and Power Range (low setpoint) reactor Trips	$\geq$ 10% of RATED THERMAL POWER	$\geq$ 9% of RATED THERMAL POWER
24. Reactor Trip P-4	Not Applicable	Not Applicable
25. Power Range Neutron Flux - (P-9) - Blocks Reactor Trip for Turbine Trip Below 50% Rated Power	$\leq$ 50% of RATED THERMAL POWER	$\leq$ 51% of RATED THERMAL POWER

NOTATION

NOTE 1: Overtemperature $\Delta T \left(\frac{1}{1 + \tau_1 S}\right) \leq \Delta T_o \{K_1 - K_2 \left(\frac{1 + \tau_2 S}{1 + \tau_3 S}\right)[T(\frac{1}{1 + \tau_4 S}) - T'] + K_3(P-P') - f_1(\Delta I)\}$

where: $\frac{1}{1 + \tau_1}$ = Lag compensator on measured ΔT

τ_1 = Time constants utilized in the lag compensator for $\Delta T_3 \tau_1$ = 2 secs.

ΔT_o = Indicated ΔT at RATED THERMAL POWER

K_1 $\leq$ 1.14

K_2 = 0.009

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

NOTE 1: (Continued)

$\frac{1 + \tau_2 S}{1 + \tau_3 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation

τ_2, & τ_3 = Time constants utilized in the lead-lag controller for T_{avg}, τ_2 = 33 secs., τ_3 = 4 secs.

T = Average temperature °F

$\frac{1}{1 + \tau_4 S}$ = Lag compensator on measured T_{avg}

τ_4 = Time constant utilized in the measured T_{avg} lag compensator, τ_4 = 2 secs.

T' $\leq$ 578.2°F (Nominal T_{avg} at RATED THERMAL POWER)

K_3 = 0.00043

P = Pressurizer pressure, psig

P' = 2235 psig (Nominal RCS operating pressure)

S = Laplace transform operator (sec^{-1})

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) for $q_t - q_b$ between - 30 percent and + 4 percent $f_1(\Delta I) = 0$ (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

Turbine Trip

A Turbine Trip causes a direct reactor trip when operating above P-7. Each of the turbine trips provide turbine protection and reduce the severity of the ensuing transient. No credit was taken in the accident analyses for operation of these trips. Their functional capability at the specified trip settings is required to enhance the overall reliability of the Reactor Protection System.

Safety Injection Input from ESF

If a reactor trip has not already been generated by the reactor protective instrumentation, the ESF automatic actuation logic channels will initiate a reactor trip upon any signal which initiates a safety injection. This trip is provided to protect the core in the event of a LOCA. The ESF instrumentation channels which initiate a safety injection signal are shown in Table 3.3-3.

Reactor Trip System Interlocks

The Reactor Trip System Interlocks perform the following functions on increasing power:

P-6 Enables the manual block of the source range reactor trip (i.e., prevents premature block of source range trip).

P-7 Defeats the automatic block of reactor trip on: Low flow in more
P-13 than one primary coolant loop, reactor coolant pump undervoltage and underfrequency, pressurizer low pressure, and pressurizer high level.

P-8 Defeats the automatic block of reactor trip on low RCS coolant flow in a single loop.

P-9 Defeats the automatic block of Reactor Trip on Turbine Trip.

P-10 Enables the manual block of reactor trip on power range (low setpoint), intermediate range, as a backup block for source range, and intermediate range rod stops (i.e., prevents premature block of the noted functions).

On decreasing power, the opposite function is performed at reset setpoints.

P-4 Reactor tripped - Actuates turbine trip, closes main feedwater valves on T_{avg} below setpoint, prevents the opening of the main feedwater valves which were closed by a safety injection or high steam generator water level signal, allows manual block of the automatic reactuation of safety injection.

Reactor not tripped - defeats manual block preventing automatic reactuation of safety injection.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
12. Loss of Flow - Single Loop (Above P-8)	3/loop	2/loop in any operating loop	2/loop in each operating loop	1	7#
13. Loss of Flow - Two Loops (Above P-7 and below P-8)	3/loop	2/loop in two operating loops	2/loop each operating loop	1	7#
14. Main Steam Generator Water Level--Low-Low	3/loop	2/loop in any operating loop	2/loop in each operating loop	1, 2	7#
15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	2/loop-level and 2/loop-flow mismatch in same loop	1/loop-level coincident with 1/loop-flow mismatch in same loop	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1, 2	7#
16. Undervoltage-Reactor Coolant Pumps	4-1/bus	2	3	1	6#
17. Underfrequency-Reactor Coolant Pumps	4-1/bus	2	3	1	6#
18. Turbine Trip					
A. Low Fluid Oil Pressure	3	2	2	1	7#
B. Turbine Stop Valve Closure	4	4	4	1	13

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
19. Safety Injection Input from ESF	2	1	2	1, 2	1
20. Reactor Trip Breakers	2	1	2	1, 2, and *	1
21. Automatic Trip Logic	2	1	2	1, 2, and *	1
22. Reactor Trip System Interlocks					
A. Intermediate Range Neutron Flux P-6	2	1	2	2, and*	8a
B. Power Range Neutron Flux - P-7	4	2	3	1	8b
C. Turbine Impulse Chamber Pressure - P-13	2	1	2	1	8b
D. Power Range Neutron Flux - P-8	4	2	3	1	8c
E. Power Range Neutron Flux - P-10	4	2	3	1, 2	8d
F. Power Range Neutron Flux - P-9	4	2	3	1	8e
G. Reactor Trip - P-4	2	1	2	1, 2, and*	14

TABLE 3.3-1 (Continued)

ACTION 8 - With less than the Minimum Number of Channels OPERAB! declare the interlock and all affected channels of the funct s listed below inoperable and apply the appropriate ACTION statement(s). Functions to be evaluated are:

a. Source Range Reactor Trip.

b. Reactor Trip

Low Reactor Coolant Loop Flow (2 loops)
Undervoltage
Underfrequency
Pressurizer Low Pressure
Pressurizer High Level

c. Reactor Trip

Low Reactor Coolant Loop Flow (1 loop)

d. Reactor Trip

Intermediate Range
Low Power Range
Source Range

e. Reactor Trip

Turbine Trip

ACTION 9 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in HOT STANDBY within the next 6 hours; however, one channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.1.

ACTION 10 - With one channel inoperable, restore the inoperable channel to OPERABLE status within 2 hours or reduce THERMAL POWER to below the P-8 (Block Low Reactor Coolant Pump Flow) setpoint breaker within the next 2 hours. Operation below the P-8 (Block of Low Reactor Coolant Pump Flow) setpoint breaker may continue pursuant to ACTION 11.

ACTION 11 - With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 12 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in HOT STANDBY within the next 6 hours and/or open the reactor trip breakers.

TABLE 3.3-1 (Continued)

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels and with the THERMAL POWER level above the P-7 (Block of Low Power Reactor Trips) setpoint, place the inoperable channel in the tripped condition within 1 hour, operation may continue until performance of the next required CHANNEL FUNCTIONAL TEST.

ACTION 14 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours.