

June 25, 1993

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford, Vice President
Technical Support
3B Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Dr. Medford:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M81384 AND M81385) (TS 91-09)

The Commission has issued the enclosed Amendment No. 168 to Facility Operating License No. DPR-77 and Amendment No. 158 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 August 27, 1991, which was supplemented by letter dated November 6, 1992.

The amendments incorporate various changes to the Technical Specifications related to the Containment Gas and Particulate Radiation Monitor System, the Containment Purge Air Radiation Monitor System, and the switches associated with a manual trip of the Containment Spray System and the Phase "B" Isolation System.

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

Sincerely,

ORIGINAL SIGNED BY:

David E. LaBarge, Senior Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 168 to License No. DPR-77
2. Amendment No. 158 to License No. DPR-79
3. Safety Evaluation

NRC FILE CENTER COPY

cc w/enclosures:
See next page

*previously concurred

OFC:	PDII-4/LA	PDII-4/PM	SPLB SCSB	PRPB*	OTSB
NAME:	MSanders <i>ms</i>	DLaBarge:as	CMCracken	LCunningham	CGrimes
DATE:	5/17/93	5/17/93	6/9/93	05/12/93	6/11/93
OFC:	OGC <i>CH</i>	PDII-4/PD			
NAME:	EHollen	FHebdon			
DATE:	6/11/93	6/25/93			

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AMENDMENT NO.168 FOR SEQUOYAH UNIT NO. 1 - DOCKET NO. 50-327 and
AMENDMENT NO.158 FOR SEQUOYAH UNIT NO. 2 - DOCKET NO. 50-328
DATED:

Distribution

Docket File	
NRC PDR	
Local PDR	
SQN Reading File	
S. Varga	14-E-4
G. Lainas	14-H-3
F. Hebdon	
B. Clayton	
D. LaBarge	
E. Merschoff	RII
B. Wilson	RII
P. Kellogg	RII
OGC	15-B-13
D. Hagan	MNBB-3302
E. Jordan	MNBB-3302
G. Hill	P1-130 (2 per docket)
Wanda Jones	MNBB-7103
J. Calvo	14-E-4
ACRS(10)	
OPA	2-G-5
OC/LFMB	MNBB-9112
C. McCracken	8-D-1
L. Cunningham	10-D-4
C. Grimes	11-E-22

Tennessee Valley Authority
ATTN: Dr. Mark O. Medford

cc:

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County Judge
Hamilton County Courthouse
Chattanooga, Tennessee 37402

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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. 168
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 August 27, 1991, and supplemented by letter dated November 6, 1992, 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. 168, 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, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 25, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 168

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.

REMOVE

3/4 3-16
3/4 3-17
3/4 3-22
3/4 3-26
3/4 3-32
3/4 3-35
3/4 3-36
3/4 3-40
3/4 3-41
3/4 3-42
B3/4 9-3

INSERT

3/4 3-16
3/4 3-17
3/4 3-22
3/4 3-26
3/4 3-32
3/4 3-35
3/4 3-36
3/4 3-40
3/4 3-41
3/4 3-42
B3/4 9-3

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
f. Steam Line Pressure- Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3 [#]	17*
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

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
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 Purge Air Exhaust Monitor Radioactivity-High	2	1	1	1, 2, 3, 4	19*

**Two switches must be operated simultaneously for actuation.

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 automatically blocked above P-11 and may be blocked below when Safety Injection on Steam Line Pressure-Low is not blocked.
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 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 4.3.2.1.1 provided the other channel is OPERABLE.
- ACTION 16 - Deleted.
- ACTION 17 - 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:
- The inoperable channel is placed in the tripped condition within 6 hours.
 - The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.
- 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 met; one additional channel may be bypassed for up to 4 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 purge supply and exhaust 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 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
3. Containment Purge Air Exhaust Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3} \mu\text{Ci/cc}$	$\leq 8.5 \times 10^{-3} \mu\text{Ci/cc}$
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq 2.81 \text{ psig}$	$\leq 2.9 \text{ psig}$
d. Steam Line Pressure--Low	$\geq 600 \text{ psig steam line pressure (Note 1)}$	$\geq 592.2 \text{ psig steam line pressure (Note 1)}$
e. Negative Steam Line Pressure Rate--High	$\leq 100.0 \text{ psi (Note 2)}$	$\leq 107.8 \text{ psi (Note 2)}$
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water level-- High-High	$< 81\%$ of narrow range Instrument span each steam generator	$< 81.7\%$ of narrow range Instrument span each steam generator
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
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 Purge Air Exhaust Monitor Radio- activity-High	S	R	M	1, 2, 3, 4

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
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 Line Pressure--Low	S	R	Q	1, 2, 3
e. Negative Steam Line Pressure Rate--High	S	R	Q	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 3.3-6
RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. AREA MONITOR					
a. Fuel Storage Pool Area	1	*	≤ 200 mR/hr	$10^{-1} - 10^4$ mR/hr	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	$\leq 8.5 \times 10^{-3}$ μ Ci/cc	$10 - 10^7$ cpm	28
b. Containment					
i. Gaseous Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	$10 - 10^7$ cpm	27
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	$10 - 10^7$ cpm	27
c. Control Room Isolation	1	ALL MODES	≤ 400 cpm**	$10 - 10^7$ cpm	29

* With fuel in the storage pool or building

** Equivalent to 1.0×10^{-5} μ Ci/cc.

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

- ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.
- ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specifications 3.9.9 (MODE 6) and 3.3.2.1 (MODES 1, 2, 3 and 4).
- ACTION 29 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

TABLE 4.3-3
RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
1. AREA MONITOR				
a. Fuel Storage Pool Area	S	R	M	*
2. PROCESS MONITORS				
a. Containment Purge Air Exhaust	S	R	M	1, 2, 3, 4 & 6
b. Containment				
i. Gaseous Activity RCS Leakage Detection	S	R	M	1, 2, 3, & 4
ii. Particulate Activity RCS Leakage Detection	S	R	M	1, 2, 3 & 4
c. Control Room Isolation	S	R	M	ALL MODES

*With fuel in the storage pool or building.

REFUELING OPERATIONS

BASES

3/4 9.9 CONTAINMENT VENTILATION SYSTEM

The OPERABILITY of this system ensures that the containment ventilation isolation penetrations will be automatically isolated upon detection of high radiation levels during containment purging operations. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 and 3/4.9.11 WATER LEVEL - REACTOR VESSEL AND SPENT FUEL PIT

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gas activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

The limitations on the auxiliary building gas treatment system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. Cumulative operation of the system with the heater on for 10 hours over a 31 day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the accident analyses. ANSI N510-1975 will be used as a procedural guide for surveillance testing.



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. 158
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 August 27, 1991, and supplemented by letter dated November 6, 1992, 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. 158, 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, to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebbon, Director
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 25, 1993

ATTACHMENT TO LICENSE AMENDMENT NO.158

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.

REMOVE

3/4 3-17
3/4 3-19
3/4 3-22
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3/4 3-42
3/4 3-43
B3/4 9-3

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
3. CONTAINMENT ISOLATION					
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 Purge Air Exhaust Monitor Radioactivity-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

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
5. TURBINE TRIP & FEEDWATER ISOLATION					
a. Steam Generator Water Level-- High-High	3/loop	2/loop in any oper- ating loop	2/loop in each oper- ating loop	1, 2, 3	17*
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 Steam Generator Water Level--Low-Low					
i. Start Motor- Driven Pumps					
a. Steam Gen. Water Level-- Low-Low (Adverse)	3/Stm. Gen.	2/Stm. Gen. in any operating Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen.	1, 2, 3	36*
b. Steam Gen. Water Level-- Low-Low (EAM)	3/Stm. Gen.	2/Stm. Gen. in any operating Stm. Gen.	2/Stm. Gen. in each operating Stm. Gen.	1, 2, 3	36*
c. RCS Loop ΔT	4(1/loop)	2	3	1, 2, 3	37*

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 automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.
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 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 4.3.2.1.1 provided the other channel is OPERABLE.
- ACTION 16 - Deleted.
- ACTION 17 - 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:
- The inoperable channel is placed in the tripped condition within 6 hours.
 - The Minimum Channels OPERABLE requirements is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.1.
- 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 met; one additional channel may be bypassed for up to 4 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 purge supply and exhaust 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 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
3. Containment Purge Air Exhaust Monitor Radioactivity-High	$\leq 8.5 \times 10^{-3} \mu\text{Ci/cc}$	$\leq 8.5 \times 10^{-3} \mu\text{Ci/cc}$
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq 2.81 \text{ psig}$	$\leq 2.9 \text{ psig}$
d. Steam Line Pressure--Low	$\geq 600 \text{ psig steam line pressure (Note 1)}$	$\geq 592.2 \text{ psig steam line pressure (Note 1)}$
e. Negative Steam Line Pressure Rate--High	$\leq 100.0 \text{ psi (Note 2)}$	$\leq 107.8 \text{ psi (Note 2)}$
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water level-- High-High	$< 81\%$ of narrow range Instrument span each steam generator	$< 81.7\%$ of narrow range Instrument span each steam generator
b. Automatic Actuation Logic	N.A.	N.A.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

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

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
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 Purge Air Exhaust Monitor Radio- activity-High	S	R	M	1, 2, 3, 4

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
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 Line Pressure--Low	S	R	Q	1, 2, 3
e. Negative Steam Line Pressure Rate--High	S	R	Q	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 3.3-6
RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. AREA MONITOR					
a. Fuel Storage Pool Area	1	*	≤ 200 mR/hr	$10^{-1} - 10^4$ mR/hr	26
2. PROCESS MONITORS					
a. Containment Purge Air	1	1, 2, 3, 4 & 6	$\leq 8.5 \times 10^{-3}$ μ Ci/cc	$10 - 10^7$ cpm	28
b. Containment					
i. Gaseous Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	$10 - 10^7$ cpm	27
ii. Particulate Activity					
RCS Leakage Detection	1	1, 2, 3 & 4	N/A	$10 - 10^7$ cpm	27
c. Control Room Isolation	1	ALL MODES	≤ 400 cpm**	$10 - 10^7$ cpm	29

* With fuel in the storage pool or building

** Equivalent to 1.0×10^{-5} μ Ci/cc.

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

- ACTION 26 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.
- ACTION 27 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 28 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specifications 3.9.9 (MODE 6) and 3.3.2 (MODES 1, 2, 3 and 4).
- ACTION 29 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

TABLE 4.3-3
RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
1. AREA MONITOR				
a. Fuel Storage Pool Area	S	R	M	*
2. PROCESS MONITORS				
a. Containment Purge Air Exhaust	S	R	M	1, 2, 3, 4 & 6
b. Containment				
i. Gaseous Activity				
RCS Leakage Detection	S	R	M	1, 2, 3, & 4
ii. Particulate Activity				
RCS Leakage Detection	S	R	M	1, 2, 3 & 4
c. Control Room Isolation	S	R	M	ALL MODES

*With fuel in the storage pool or building.

REFUELING OPERATIONS

BASES

3/4.9.9 CONTAINMENT VENTILATION SYSTEM

The OPERABILITY of this system ensures that the containment ventilation isolation penetrations will be automatically isolated upon detection of high radiation levels during containment purging operations. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 and 3/4.9.11 WATER LEVEL - REACTOR VESSEL AND SPENT FUEL PIT

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gas activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

3/4.9.12 AUXILIARY BUILDING GAS TREATMENT SYSTEM

The limitations on the auxiliary building gas treatment system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. Cumulative operation of the system with the heater on for 10 hours over a 31 day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the accident analyses. ANSI N510-1975 will be used as a procedural guide for surveillance testing.



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

ENCLOSURE 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO.168 TO FACILITY OPERATING LICENSE NO. DPR-77
AND AMENDMENT NO.158 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 August 27, 1991, the Tennessee Valley Authority (the licensee) submitted a request for changes to the Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications (TS). The requested changes would revise TS Tables 3.3-3, 3.3-4, 3.3-5, 4.3-2, 3.3-6, 4.3-3, and the Bases for Section 3.9.9 related to the Containment Gas and Particulate Radiation Monitors (also known as the upper and lower containment radiation monitoring system) and the Containment Purge Air Exhaust Radiation Monitors. As a result of the proposed changes: (1) the isolation signal generated by the Containment Gas and Particulate Radiation Monitors and the corresponding surveillance requirements would be deleted from Tables 3.3-3, 3.3-4, 3.3-5, 4.3-2, 3.3-6, and 4.3-3; (2) the exception to TS Section 3.0.4 would be applied to the Containment Purge Air Exhaust Monitor Radioactivity-High Isolation Signals and to the Manual Containment Ventilation Signals in Table 3.3-3; (3) Table 3.3-3, Action Statement 19, would be changed to specify that the containment purge supply and exhaust valves (not the containment ventilation isolation valves) must be maintained closed whenever there are less than the minimum number of operable channels available for either the manual isolation of the containment ventilation system or automatic containment ventilation isolation on a containment purge air exhaust monitor radioactivity high signal; (4) Table 3.3-6, Action Statement 28, would be changed to clarify the plant operating modes corresponding to the operability requirements for the Containment Air Purge Radiation Monitor; and (5) Table 3.3-3 and footnotes would be clarified to indicate that two switches must be operated simultaneously to initiate a manual trip of the Containment Spray Actuation System and the Phase "B" Isolation Actuation System. A supplemental letter dated November 6, 1992, supplied clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The Containment Gas and Particulate Radiation System indicates, records and annunciates the airborne radioactivity levels in the containment on a panel in the main control room. There are three channels that monitor the upper containment area and three that monitor the lower containment area (one channel per level measures particulate activity, one channel per level measures noble gas activity, and one channel per level measures radioiodine activity). A high radiation signal from any of the two particulate or two noble gas channels initiates isolation of the Containment Ventilation System, including the isolation valves associated with the Containment Gas and Particulate Radiation Monitoring System itself.

In the past these radiation monitors have been the source of frequent spurious isolations that were not required for plant conditions. When this occurs, the ability to monitor the particulate activity, noble gas activity, and radioiodine activity in the containment is lost until the condition can be analyzed and resolved, and the radiation monitor isolation valves reopened. During normal plant operation, the only ventilation system isolation valves that are normally open are the Containment Gas and Particulate Radiation Monitoring System valves. The only other containment ventilation isolation valves which could be opened are the purge system valves, which are opened only infrequently to allow the purge exhaust fans to operate. A radiation monitor connected to the suction of the purge exhaust fans, monitors activity in this airstream and causes isolation of the containment ventilation purge valves if high radiation is detected.

The Updated Final Safety Analysis Report (UFSAR) Section 12.2.4.1.2, "Airborne Monitoring Channels," states that, although containment ventilation isolation is a primary safety function, its initiation on high radiation by the Containment Gas and Particulate Radiation Monitoring System is not, having been incorporated into the design of the plant prior to the purge exhaust monitors. When the purge exhaust radiation monitors were installed, the isolation function of the Containment Gas and Particulate Radiation Monitoring System was retained, even though no credit would be needed for the isolation in the accident analysis. Therefore, the associated TS requirements were not changed in order to reflect the functions that were actually installed, rather than those that were required. The safety function of containment ventilation isolation on high radiation is performed by the containment purge exhaust monitors. Also, a high range radiation monitoring system is designed to monitor containment radioactivity during accident conditions and is not affected by the proposed change.

For plant conditions which require containment ventilation isolation, UFSAR Section 15.4.1 describes the bounding case for offsite dose considerations to be a large break loss of coolant accident. The release of radioactivity through the containment ventilation lines is assumed to be unfiltered with the lines fully open for five seconds. For the presence of high radiation, the qualified isolation signal to mitigate the consequences of the accident is

provided by the containment purge radiation monitors, not the containment gas and particulate radiation monitors.

Another important function served by the containment gas and particulate radiation monitors is the detection of abnormal leakage of radioactive water from equipment located within the containment, especially at low leakage rates. However, the UFSAR takes no credit for isolation of the ventilation system under this condition. The capability of detecting leakage would be enhanced by removal of the spurious and unnecessary isolations caused by the containment gas and particulate radiation monitor, since the isolation valve would be less susceptible to spurious and unnecessary isolation signals.

The other signals that cause isolation of the containment ventilation system (including the containment gas and particulate radiation monitor isolation valves) and that cause safety injection are low steam line pressure, low pressurizer pressure, high containment pressure, high containment purge exhaust radiation, and manual. The signals are diverse, and are designed to cause isolation for reactor coolant system breaks in the range from the smallest to the bounding loss of coolant accident. These signals and the valves isolated are not affected by the proposed change.

In summary, the proposed change will delete containment ventilation isolation caused by the containment particulate and noble gas radiation monitors, a signal which provides additional but unnecessary isolation capability, and which has been shown from past experience to be generated frequently and unnecessarily. The only valves normally affected by the isolation signal are the containment radiation monitor isolation valves themselves, which has resulted in reduced ability to monitor the radiological conditions in the containment and unnecessary challenges to the isolation safety system. In addition, implementation of the proposed change will not affect automatic isolation of the containment ventilation system when required under the design accident conditions. Based on this analysis, the staff finds the proposed change acceptable.

As a result of this change, reference to the Containment Gas Monitor Radioactivity High instrumentation and the Containment Particulate Activity High instrumentation will be removed from Table 3.3-3 (Engineered Safety Feature Actuation System Instrumentation), Table 3.3-4 (Engineered Safety Feature Actuation System Instrumentation Trip Setpoints), Table 3.3-5 (Engineered Safety Features Response Times), Table 4.3-2 (Engineered Safety Feature Actuation System Instrumentation Surveillance Requirements), Table 3.3-6 (Radiation Monitoring Instrumentation), and Table 4.3-3 (Radiation Monitoring Instrumentation Surveillance Requirements) and is acceptable.

The second proposed change would apply the exception to TS Section 3.0.4 (that is presently applied to other TS instruments) to the Containment Purge Air Exhaust Monitor Radioactivity-High Isolation signals and to the Manual Containment Ventilation Signals in Table 3.3-3. TS Section 3.0.4 prevents entry into an operational mode unless the Limiting Conditions For Operation (LCO) for the new mode are met without reliance on the Action Statements. Any

exceptions to these requirements must be stated in the individual Specifications.

Generic Letter (GL) 87-09, "Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirement," was issued on June 4, 1987 to clarify some provisions of the STS. One provision of the GL states that when an acceptable level of safety is provided for continued operation by the Action Statement, Specification 3.0.4 unduly restricts facility operation by not allowing changes to the mode of plant operation. For an LCO that has Action Statements permitting continued operation for an unlimited period of time, the GL indicates that entry into an operational mode should be permitted in accordance with those Action Statements. This is consistent with NRC's regulatory requirements for an LCO. The restrictions on a change in operational modes should apply only where the Action Requirements themselves establish a specified time interval in which the LCO must be met, or a shutdown of the facility would be required.

In effect, then, the change proposed by the licensee would implement the GL guidance that would allow operational mode changes when the containment purge supply and exhaust valves are closed due to a loss of the manual containment ventilation isolation capability or the containment purge air exhaust monitor radioactivity high instrumentation.

The staff has reviewed the proposed changes and determined that they comply with the guidance given in GL 87-09. They are, therefore, acceptable.

The third proposed change would revise Table 3.3-3, Action Statement 19, to specify that the Containment Purge Supply and Exhaust Valves (not the containment ventilation isolation valves) must be shut whenever the minimum number of operable channels are not available for manual isolation or containment purge air exhaust monitor radioactivity high isolation of the containment ventilation system. The present requirement to shut the containment ventilation isolation valves if the manual or the containment air purge exhaust monitor is inoperable results in isolation of the Containment Radiation Monitoring System in addition to the purge system. Therefore, the containment radiation system cannot monitor containment radioactivity and cannot function as a reactor coolant system leakage monitor.

The purpose of maintaining the containment ventilation isolation valves shut when less than the minimum channels are operable, is to ensure that no containment release paths to the outside are open when availability of the isolation is significantly degraded. The purge supply and exhaust lines are the only containment ventilation lines that communicate with the outside air, and are supplied with a radiation monitor that shuts the isolation valves should high radiation levels be detected when the system is operating. The containment radiation monitor is a closed system (air is returned to the containment) whose lines only penetrate the containment from the auxiliary building where the monitors are located and are designed for pressures up to

the containment design pressure. The auxiliary building has its own filtered ventilation system and isolation system (including isolation on high radiation). Therefore, any leakage from the containment radiation monitor would be small and contained within the Auxiliary Building. Hence, shutting the containment radiation monitor isolation valves when the containment ventilation isolation instrumentation is degraded serves no safety function.

When open, the containment purge air isolation valves (as well as the other containment ventilation isolation valves) will shut automatically if high radiation is detected by the containment purge air exhaust radiation monitors, or from any of the other isolation signals that would indicate a loss of coolant accident has occurred (low steam line pressure, low pressurizer pressure, high containment pressure), as well as manual. Also, the purge exhaust radiation monitor is required to be operable during plant operation in Modes 1, 2, 3, 4 and 6. Therefore, it would be available when needed.

In summary, the only containment ventilation isolation valves that would be open during plant operation are the purge supply and exhaust valves, and the containment radiation monitor isolation valves. It is undesirable to shut the containment radiation monitor valves during plant operation except when required by component problems. Therefore, the Action Statement that specifies the action that should be taken if the number of operable manual containment isolation channels or containment purge air exhaust monitor radioactivity high channels is less than that required, should be more appropriately applied to the Containment Purge and Exhaust Valves only, not to the containment ventilation isolation valves. Based on this analysis, the staff finds the proposed TS change acceptable.

The fourth proposed change would revise Table 3.3-6, Action Statement 28, to clarify the plant operating modes corresponding to the operability requirements for the Containment Air Purge Radiation Monitor. Table 3.3-6 (Radiation Monitoring Instrumentation), Action Statement 28, states that when the number of operable Containment Purge Air Process Radiation Monitor Instrumentation channels is less than the number required, the requirements of Specification 3.9.9 must be applied.

Specification 3.9.9 is an LCO that is applicable in the Refueling Mode only. Therefore, to clarify the plant conditions that would correspond to all applicable operating modes (not just the Refueling Mode), the licensee has proposed wording that clearly indicates that application of Specification 3.9.9 would apply to Mode 6, and that the requirements of Specification 3.3.2.1 for Unit 1 and Specification 3.3.2.2 for Unit 2 be applied for operation in Modes 1, 2, 3 and 4. These specifications already contain the appropriate requirements for the Containment Air Purge Radiation Monitor System when operating in Modes 1, 2, 3 and 4. Therefore, this change is administrative in nature and is acceptable.

The fifth proposed change would clarify the footnotes and Table 3.3-3 to indicate that two switches must be operated simultaneously to initiate a

manual trip of the Containment Spray Actuation System and the Phase "B" Isolation Actuation System. This is an administrative change that does not affect the application of the specification, nor any limits, and is consistent with other applications of the note. It is, therefore, acceptable.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change the Surveillance Requirements. The NRC 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 the amendments involve no significant hazards consideration, and there has been no public comment on such finding (56 FR 49928). 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 or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission 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 the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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