

September 18, 1987

Posted
Amolt. 59
to DPR-77

Docket Nos. 50-327/328

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: LOADING SEQUENCE DELAY INCREASE FOR THE CONTAINMENT SPRAY PUMPS
(TAC 64411, 64412)

Re: Sequoyah Nuclear Plant, Units 1 and 2

The Commission has issued the enclosed Amendment No. 59 to Facility Operating License No. DPR-77 and Amendment No. 51 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 December 17, 1986.

The Technical Specification (TS) amendments increase the loading sequence delay of the containment spray pumps onto the Emergency Diesel Generator power supply by 150 seconds over the value currently listed in the TS.

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

John A. Zwolinski, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Enclosures:

1. Amendment No. 59 to License No. DPR-77
2. Amendment No. 51 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures:
See next page

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

September 18, 1987

Docket Nos. 50-327/328

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Sincerely,

A handwritten signature in black ink, appearing to read "John A. Zwolinski".

John A. Zwolinski, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

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2. Amendment No. 51 to License No. DPR-79
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cc w/enclosures:
See next page

Mr. S. A. White
Tennessee Valley Authority

Sequoyah Nuclear Plant

cc:
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E11 B33
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Sequoyah Nuclear Plant
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Knoxville, Tennessee 37902

Mr. Michael H. Mobley, Director
Division of Radiological Health
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150 9th Avenue North
Nashville, Tennessee 37203

County Judge
Hamilton County Courthouse
Chattanooga, Tennessee 37402



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. 59
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 December 17, 1986, 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.

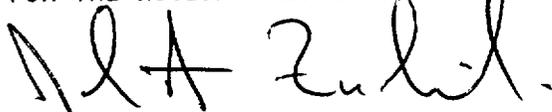
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 59, 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



John A. Zwolinski, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 59

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

3-31
3-32

INSERT

3-31
3-32*

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
6. <u>Steam Flow in Two Steam Lines-High</u> <u>Coincident with Steam Line Pressure-Low</u>	
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. <u>Containment Pressure--High-High</u>	
a. Containment Spray	≤ 208 ⁽⁹⁾
b. Containment Isolation-Phase "B"	≤ 65 ⁽⁸⁾ /75 ⁽⁹⁾
c. Steam Line Isolation	≤ 7.0
d. Containment Air Return Fan	≥ 540.0 and ≤ 660
8. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip-Reactor Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0 ⁽²⁾
9. <u>Main Steam Generator Water Level -</u> <u>Low-Low</u>	
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

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
10. <u>Station Blackout</u>	
a. Auxiliary Feedwater Pumps	≤ 60
11. <u>Trip of Main Feedwater Pumps</u>	
a. Auxiliary Feedwater Pumps	≤ 60
*12. <u>Loss of Power</u>	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	≤ 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	≤ 10 ⁽⁶⁾
15. <u>Containment Gas Monitor Radioactivity High</u>	
a. Containment Ventilation Isolation	≤ 10 ⁽⁶⁾
16. <u>Containment Particulate Activity High</u>	
a. Containment Ventilation Isolation	≤ 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.



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. 51
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 December 17, 1986, 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.

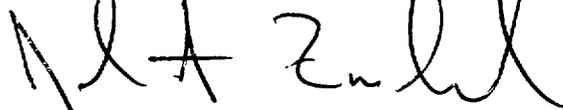
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 51, 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



John A. Zwolinski, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 51

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

3-31
3-32

INSERT

3-31
3-32*

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
6. <u>Steam Flow in Two Steam Lines-High</u> <u>Coincident with Steam Line Pressure-Low</u>	
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. <u>Containment Pressure--High-High</u>	
a. Containment Spray	≤ 208 ⁽⁹⁾
b. Containment Isolation-Phase "B"	≤ 65 ⁽⁸⁾ /75 ⁽⁹⁾
c. Steam Line Isolation	≤ 7.0
d. Containment Air Return Fan	≥ 540.0 and ≤ 660
8. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip-Reactor Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0 ⁽²⁾
9. <u>Main Steam Generator Water Level -</u> <u>Low-Low</u>	
a. Motor-driven Auxiliary Feedwater Pumps ⁽⁴⁾	≤ 60.0
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TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

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*12. <u>Loss of Power</u>	
a. 6.9 kv Shutdown Board - Degraded Voltage or Loss of Voltage	≤ 10 ⁽¹⁰⁾
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a. Automatic Switchover to Containment Sump	≤ 250
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15. <u>Containment Gas Monitor Radioactivity High</u>	
a. Containment Ventilation Isolation	≤ 10 ⁽⁶⁾
16. <u>Containment Particulate Activity High</u>	
a. Containment Ventilation Isolation	≤ 10 ⁽⁶⁾

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



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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 59 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 51 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 December 17, 1986, Tennessee Valley Authority (the licensee) proposed a Technical Specification change to Table 3.3-5 to increase the allowable delay time for containment spray initiation during an accident; the allowable delay time would be increased from 58 seconds to 208 seconds. This change is being proposed in order to provide margin in sequencing safeguard loads onto the diesel generator. The load margin is necessary to take into account the time for the diesel-generator power to increase as a result of the turbocharger being run by hot exhaust gases as opposed to the gear drive. The switchover from the gear drive to the hot exhaust gas drive occurs no later than 180 seconds after diesel generator starts. The time required for the diesel generator to start is no more than 28 seconds after the accident; therefore, the diesel generator is capable of supplying emergency power to the containment sprays 208 seconds after the accident. The licensee's submittal addresses the effect of this change on the Final Safety Analysis Report analysis.

2.0 EVALUATION

As detailed in the licensee's submittal, the ice condenser removes heat from steam passing through the ice from the lower containment compartment into the upper containment compartment during an accident. Except for the heat produced by the steam that may bypass the ice condenser, the containment sprays, in the upper compartment, do not remove any additional heat from the atmosphere as long as ice remains in the ice condenser. Therefore, the containment sprays do not remove a significant amount of heat from the containment prior to melting of all the ice in the ice condenser during a postulated high-energy line break inside containment. Melting of all the containment ice requires approximately 3000 seconds.

The plant is designed assuming an ice condenser bypass area of five square feet. The containment sprays act to condense and cool the steam that bypasses the ice condenser flowing directly from the lower to the upper containment compartment. In analyzing the proposed delay in containment spray start time, the licensee has accounted for an increase in steam bypass volume due to the delay by quadrupling the bypass resulting from the original 58 second start time. This assumption results in a conservative upper bound on the bypass, since the

pressure between the lower and upper compartments equalizes at 28 seconds after the accident and the main force driving the steam after 28 seconds is convection. Convection between the upper and lower compartments bypasses much less steam than the pressure differential causes during the first 28 seconds.

Quadrupling of the bypass volume increases the limiting accident containment pressure by approximately 1.4 psig which would result in a peak accident containment pressure of 9.7 psig; well below the containment design pressure of 12 psig. The staff, therefore, finds this change 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. 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 the 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

We 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: P. Hearn

Dated: September 18, 1987