

November 29, 1993

Docket Nos. 50-327
and 50-328

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

Dear Sir:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M87800 AND M87801) (TS 93-13)

The Commission has issued the enclosed Amendment No. 173 to Facility Operating License No. DPR-77 and Amendment No. 164 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 September 27, 1993.

The amendments revise the technical specification loading requirements specified for the emergency diesel generator surveillance tests.

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, Sr. Project Manager
Project Directorate II-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 173 to License No. DPR-77
- 2. Amendment No. 164 to License No. DPR-79
- 3. Safety Evaluation

cc w/enclosures:
See next page

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|---------|------------|-----------|------------|----------|----------|
| NAME: | PDII-4/LA | PDII-4/PM | EELB | OGC | PDII-4/D |
| OFFICE: | BC Clayton | DLaBarge | CBerlinger | | FHebdon |
| DATE: | 11/11/93 | 11/11/93 | 11/18/93 | 11/10/93 | 12/26/93 |

DOCUMENT NAME: 87800.AMM

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Tennessee Valley Authority
ATTN: Dr. Mark O. Medford

cc:

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SEQUOYAH NUCLEAR PLANT

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 173
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 September 27, 1993, 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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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. 173, 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 for the next scheduled appropriate test of each emergency diesel generator.

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: 11/29/93

ATTACHMENT TO LICENSE AMENDMENT NO. 173

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 8-3
3/4 8-5
B3/4 8-1

INSERT
3/4 8-3
3/4 8-5
B3/4 8-1
B3/4 8-1a

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the engine-mounted day tanks.
 2. Verifying the fuel level in the 7 day tank.
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the engine mounted fuel tanks.
 4. *Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 6900 ± 690 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:
 - a) Manual.
 - b) Simulated loss of offsite power by itself.
 - c) An ESF actuation test signal by itself.
 5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks.
- c. At least once per 92 days and from new fuel oil prior to addition to the 7-day tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 100°F of greater than or equal to 1.8 but less than or equal to 5.8 centi-stokes when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

*The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (900 rpm), synchronization, and gradual loading.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the shutdown board and/or safety injection actuation signal.
7. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours to 2.25 hours of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.
- The generator voltage and frequency shall be 6900 ± 690 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test. Within 5 minutes after completing this 24 hour test, perform Specification 4.8.1.1.2.d.4.b.
8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kw.
9. Verifying the diesel generator's capability to:
- a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its shutdown status.
10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within ± 5 percent of its design setpoint.
11. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
- a) Engine overspeed
 - b) 86 GA lockout relay
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1 and 3/4.8.2 A.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

Additional ACTION requirements are specified for performance of the chemical cleaning required by Surveillance Requirement 4.8.1.1.2.f.1. The motor-driven fuel pumps for the diesel generator set with the tanks being cleaned will be temporarily connected to the underground storage tanks for the other diesel generator set with the same train designation. An additional fuel-oil inventory of approximately 68,000 gallons will be available in one of the yard storage tanks prior to the start of the chemical cleaning of any underground storage tank. Within practical limits, the chemical cleaning of an underground storage tank will be performed during a refueling or other scheduled outage for the associated unit.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137 "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979. The surveillance requirements for the diesel generator load-run test and the 24-hour endurance and margin test are in accordance with Regulatory Guide 1.9, Revision 3, July 1993, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants." During the diesel generator endurance and margin surveillance test, momentary transients outside the kw and kvar load ranges do not invalidate the test results. Similarly, during the diesel generator load-run test, momentary transients outside the kw load range do not invalidate the test results.

ELECTRICAL POWER SYSTEMS

BASES

A.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY
DOCKET NO. 50-328
SEQUOYAH NUCLEAR PLANT, UNIT 2
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 164
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 September 27, 1993, 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. 164, 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 for the next scheduled appropriate test of each emergency diesel generator.

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: November 29, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 164

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 8-3
3/4 8-5
B3/4 8-1

INSERT
3/4 8-3
3/4 8-5
B3/4 8-1
B3/4 8-1a

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the engine-mounted day tanks.
 2. Verifying the fuel level in the 7 day tank.
 3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the engine mounted fuel tanks.
 4. *Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 6900 ± 690 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified at least once per 124 days:
 - a) Manual.
 - b) Simulated loss of offsite power by itself.
 - c) An ESF actuation test signal by itself.
 5. *Verifying the generator is synchronized, loaded between 3960 kw and 4400 kw in less than or equal to 60 seconds, and operates for greater than or equal to 60 minutes, and
 6. Verifying the diesel generator is aligned to provide standby power to the associated shutdown boards.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted fuel tanks.
- c. At least once per 92 days and from new fuel oil prior to addition to the 7-day tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 100°F of greater than or equal to 1.8 but less than or equal to 5.8 centistokes when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.

*The diesel generator start (10 sec) and load (60 sec) from standby conditions shall be performed at least once per 184 days in these surveillance tests. All other diesel generator engine starts and loading for the purpose of this surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed (900 rpm), synchronization, and gradual loading.

SURVEILLANCE REQUIREMENTS (Continued)

- c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the shutdown board and/or safety injection actuation signal.
7. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours to 2.25 hours of this test, the diesel generator shall be loaded between 4620 kw and 4840 kw and between 2380 kvar and 2600 kvar and during the remaining hours of this test, the diesel generator shall be loaded between 3960 kw and 4400 kw and between 2140 kvar and 2370 kvar.
- The generator voltage and frequency shall be 6900 ± 690 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test. Within 5 minutes after completing this 24 hour test, perform Specification 4.8.1.1.2.d.4.b.
8. Verifying that the auto-connected loads to each diesel generator do not exceed the continuous rating of 4400 kw.
9. Verifying the diesel generator's capability to:
- a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
 - b) Transfer its loads to the offsite power source, and
 - c) Be restored to its shutdown status.
10. Verifying that the automatic load sequence timers are OPERABLE with the setpoint for each sequence timer within ± 5 percent of its design setpoint.
11. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
- a) Engine overspeed
 - b) 86 GA lockout relay
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

3/4.8 ELECTRICAL POWER SYSTEMS

BASES

3/4.8.1 and 3/4.8.2 A.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one redundant set of onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

Additional ACTION requirements are specified for performance of the chemical cleaning required by Surveillance Requirement 4.8.1.1.2.f.1. The motor-driven fuel pumps for the diesel generator set with the tanks being cleaned will be temporarily connected to the underground storage tanks for the other diesel generator set with the same train designation. An additional fuel-oil inventory of approximately 68,000 gallons will be available in one of the yard storage tanks prior to the start of the chemical cleaning of any underground storage tank. Within practical limits, the chemical cleaning of an underground storage tank will be performed during a refueling or other scheduled outage for the associated unit.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, and 1.137 "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979. The surveillance requirements for the diesel generator load-run test and the 24-hour endurance and margin test are in accordance with Regulatory Guide 1.9, Revision 3, July 1993, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants." During the diesel generator endurance and margin surveillance test, momentary transients outside the kw and kvar load ranges do not invalidate the test results. Similarly, during the diesel generator load-run test, momentary transients outside the kw load range do not invalidate the test results.

ELECTRICAL POWER SYSTEMS

BASES

A.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555-0001

ENCLOSURE 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-77
AND AMENDMENT NO. 164 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 application dated September 27, 1993, the Tennessee Valley Authority (TVA or the licensee) proposed amendments to the Technical Specifications (TS) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The changes would revise the emergency diesel generator (EDG) surveillance test requirement specified in Section 4.8.1.1.2.a.5 and Section 4.8.1.1.2.d.7, and the combined Basis Section for Specification 3/4.8.1 and 3/4.8.2.

Surveillance Requirement 4.8.1.1.2.a.5 presently requires that the EDG be loaded to greater than or equal to 4400 kw for 60 minutes; whereas, the proposed change would specify that the load is between 3960 kw and 4400 kw.

Surveillance Requirement 4.8.1.1.2.d.7 (the 24-hour EDG test) presently requires that the EDG be loaded to greater than or equal to 4840 kw during the first 2 hours of the test, and to greater than or equal to 4400 kw during the remaining 22 hours of the test. The proposed amendment would: (1) change the initial time specification of 2 hours to a time span of 2 to 2.25 hours; (2) change the initial load requirement from 4840 kw to a span of 4620 kw to 4840 kw and add a reactive load span of 2380 kvar to 2600 kvar; and (3) change the load requirement for the remainder of the 24-hour test from 4400 kw to a span of 3960 kw to 4400 kw and add a reactive load span of 2140 kvar to 2370 kvar. Thus, the time and kw load requirements would be changed to spans and reactive load specifications would be added.

A proposed change to the Bases Sections for Specifications 3/4.8.1 and 3/4.8.2 would add the reference for the load-run and the 24-hour endurance tests, which is Regulatory Guide (RG) 1.9, Revision 3, dated July 1993. Also, the licensee has proposed including a statement that would allow momentary transients outside the kw and kvar load ranges to occur without invalidating the test.

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2.0 EVALUATION

The present TS requirements for short-term EDG loading (4840 kw) and continuous EDG loading (4400 kw) surveillance tests were approved in Unit 1 and Unit 2 TS amendments issued on January 7, 1988. The values were based on guidance given in RG 1.108, Revision 1, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," the Institute of Electronics Engineers Standard 387-1972, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations," and earlier versions of the Standard Technical Specifications. The limits were designed to ensure that the EDGs are capable of operating at the design maximum short-term and continuous load ratings. However, at the time that the changes were being incorporated, the test guidance did not provide guidance to ensure that the maximum EDG loads were not exceeded during the tests; i.e., no consideration was given to the maximum EDG load.

During an Operational Readiness Assessment Team inspection conducted in August 1993, the team expressed a concern that the EDGs had been subjected to loads higher than their design rating during surveillance tests. It was determined that the EDGs had been subjected to loads as high as 5000 kw. A subsequent review of data for tests conducted since February 1993, identified four tests that were performed with loads between 4800 kw and 4900 kw for periods ranging from 47 minutes to 2 hours.

New guidance related to EDG testing is contained in RG 1.9, Revision 3 and the revised Standard TS (NUREG-1431). Using this guidance, and based on the continuous duty rating of 4400 kw, the licensee has determined that the lower value for testing the EDGs should be 3960 kw (90 percent of the continuous rating). Thus, the load range for the 60-minute test and the long-term test proposed by the licensee is 3960 to 4400 kw. Also, in accordance with the guidance, the range for the short-term rating proposed by the licensee is 4620 kw (105 percent of the continuous rating) and 4840 kw (110 percent of the continuous rating).

Based on the new guidance in RG 1.9 and NUREG-1431 that require the 24-hour EDG test be conducted at a power factor range between 0.8 to 0.9, the ranges of excitation reactive (kvar) loads corresponding to the diesel generator output load (kw) ranges specified above have been calculated by the licensee and submitted with this TS amendment for inclusion into the appropriate specifications. The licensee has chosen to specify a range of reactive loads, rather than the power factor range, because the reactive load (and not the power factor) is a direct readout in the control room. This will simplify performance of the surveillance tests. The staff has verified that when the EDG load and the exciter load is between the respective kw and kvar values specified in the submittal for the 24-hour test, the EDG will be operating at a power factor between 0.8 and 0.9. The licensee has determined that the load ranges specified are representative of the actual design basis inductive loading that the EDG would experience under accident conditions. Therefore, the EDG tests will verify operability of the generator excitation circuits as well as operability of the engine.

The proposal to change the length of time that the initial short-term portion of the 24-hour test is conducted from 2 hours to a time span of 2 to 2.25 hours is designed to clarify the length of time that the EDG is required to operate at the maximum load. The change is designed to incorporate the NUREG-1431 guidance (which states that the test should be conducted for greater than or equal to 2 hours) and the RG 1.9 criteria that recommends only that the test duration be 2 hours. This length of time has been verified by the licensee to be within the EDG rating.

As a result of these calculations, the following limits would be established for the 24-hour test:

| <u>EDG LOAD</u> | <u>EXCITER LOAD</u> | <u>TEST PERIOD</u> |
|-------------------|-----------------------|-----------------------|
| 4620 kw - 4840 kw | 2380 kvar - 2600 kvar | Initial 2 - 2.25 hrs. |
| 3960 kw - 4400 kw | 2140 kvar - 2370 kvar | Remainder of 24 hrs. |

The changes to the Bases sections have been proposed to indicate that the EDG surveillance tests are in accordance with RG 1.9, Revision 3. Another proposed change to the Bases would indicate that transients that cause the kw and kvar to momentarily go outside of the specified load ranges would not invalidate the test. Since the new load ranges are small, momentary swings outside of the respective bands are not unexpected. This is consistent with the guidance given in NUREG-1431.

The proposed changes were generated using the guidance provided in RG 1.9, Revision 3 and NUREG-1431. In addition, they are consistent with the guidance provided in NRC Information Notice 91-13, "Inadequate Testing of Emergency Diesel Generators (EDGs)." The method used to determine that the EDG is operating at the proper power factor during the test by specifying reactive load limits is consistent with the intent of the guidance. The ranges of EDG load and excitation load provide assurance that the EDGs will be tested within the capabilities of the generator and exciter, and within the constraints of the manufacturer's capability curves to ensure that the ratings are not exceeded. Based on this information, the staff has determined that the proposed changes are satisfactory.

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. 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 (58 FR 57858). 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.

Principal Contributor: D. LaBarge

Dated: November 29, 1993

AMENDMENT NO. 173 FOR SEQUOYAH UNIT NO. 1 - DOCKET NO. 50-327 and
AMENDMENT NO. 164 FOR SEQUOYAH UNIT NO. 2 - DOCKET NO. 50-328
DATED: November 29, 1993

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