

February 3, 1987

Docket Nos.: 50-327  
and 50-328

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: Issuance of Amendment No. 52 to Facility Operating License  
No. DPR-77 and Amendment No. 44 to Facility Operating  
License No. DPR-79 - Sequoyah Nuclear Plant, Units 1 and 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 52 to Facility Operating License No. DPR-77 and Amendment No. 44 to Facility Operating License No. DPR-79. These amendments are in response to your request dated February 1, 1985, and supplemented August 8, 1986. Other changes requested in that letter will be addressed in a future amendment.

The amendments change the Technical Specifications to delete a surveillance requirement, add a footnote to allow a reduction in fast start/fast load surveillance testing and change the reporting requirements of the Emergency Diesel Generators, and correct an editorial mistake. The amendments are effective as of their date of issuance. This letter should not be construed as an authorization to commence operations prior to the Tennessee Valley Authority appropriately addressing the concerns identified in the 50.54(f) letter dated September 17, 1985.

A copy of the related safety evaluation supporting Amendment No. 52 to Facility Operating License DPR-77 and Amendment No. 44 to Facility Operating License DPR-79 is enclosed.

Notice of issuance will be included in the Commission's next bi-weekly Federal Register notice.

Sincerely, \5\

Joseph J. Holonich, Project Manager  
PWR Project Directorate #4  
Division of PWR Licensing-A

Enclosures:

1. Amendment No. 52 to DPR-77
2. Amendment No. 44 to DPR-79
3. Safety Evaluation

\*See Previous Concurrences

cc w/enclosures: See next page

PWR#4/DPWR-A  
\* MDuncan/mac  
01/ 9 /87

PWR#4/DPWR-A  
\* JHolonich  
01/ 12/87

PWR#4/DPWR-A  
\* BJYoungblood  
02/ 3 /87

8702130413 870203  
PDR ADOCK 05000327  
P PDR

Mr. S. A. White  
Tennessee Valley Authority

Sequoyah Nuclear Plant

cc:  
Tennessee Department of Public  
Health  
ATTN: Director, Bureau of  
Environmental Health Services  
Cordell Hull Building  
Nashville, Tennessee 37219

Regional Administrator, Region II  
U.S. Nuclear Regulatory Commission,  
101 Marietta Street, N.W., Suite 2900  
Atlanta, Georgia 30323

R. W. Cantrell  
ATTN: D. L. Williams  
Tennessee Valley Authority  
400 West Summit Hill Drive, W12 A12  
Knoxville, Tennessee 37902

Mr. Michael H. Mobley, Director  
Division of Radiological Health  
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Mr. Bob Faas  
Westinghouse Electric Corp.  
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County Judge  
Hamilton County Courthouse  
Chattanooga, Tennessee 37402

R. L. Gridley  
Tennessee Valley Authority  
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M. R. Harding  
Tennessee Valley Authority  
Sequoyah Nuclear Plant  
P.O. Box 2000  
Soddy Daisy, Tennessee 37379

Resident Inspector/Sequoyah NPS  
c/o U.S. Nuclear Regulatory Commission  
2600 Igoe Ferry Road  
Soddy Daisy, Tennessee 37379

H. L. Abercrombie  
Tennessee Valley Authority  
Sequoyah Nuclear Plant  
P. O. Box 2000  
Soddy Daisy, Tennessee 37379



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. 52  
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Sequoyah Nuclear Plant, Unit 1 (the facility) Facility Operating License No. DPR-77 filed by the Tennessee Valley Authority (licensee), dated February 1, 1985, and supplemented August 8, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the license, as amended, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable 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 hereby amended by page changes to the Appendix A 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:

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PDR

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.44 are hereby incorporated into 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

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B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment  
Appendix A Technical  
Specification Changes

Date of Issuance: February 3, 1987

PWR#4/DPWR-A  
MDunCan/mac  
10/21/86

118  
PWR#4/DPWR-A  
JHolonich  
10/ /86  
01/12/87

1113/87  
PWR#4/DPWR-A  
CStable  
10/ /86

OGC/BETH  
10/ /86

123/87  
PWR#4/DPWR-A  
BJYoungblood  
10/ /86

Wahab 2/3/87  
1/14/87

ATTACHMENT TO LICENSE AMENDMENT NO. 52

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Amended  
Pages

3/4 8-3  
3/4 8-5  
3/4 8-6  
3/4 8-7  
3/4 8-7b  
6-22  
6-22a

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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  $6900 \pm 690$  volts and  $60 \pm 1.2$  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 to greater than or equal to 4000 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.
- d. At least once per 18 months during shutdown by:
  1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service,
  2. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at  $6900 \pm 690$  volts and frequency at  $60 \pm 1.2$  Hz.
  3. Verifying the generator capability to reject a load of 4000 kw without tripping. The generator voltage shall not exceed 7866 volts during and following the load rejection.

\*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)

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Within 5 minutes after completing this 24 hour test, perform Specification 4.8.1.1.2.d.4. The generator voltage and frequency shall be  $6900 \pm 690$  volts and  $60 \pm 1.2$  Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.

8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 4000 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  $\pm 5$  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.
- f. At least once per 10 years\* by:
  1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution, and
  2. Performing a pressure test of those portions of the diesel fuel oil system design to Section III, subsection ND of the ASME Code at a test pressure equal to 110 percent of the system design pressure.

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\*These requirements are waived for the initial surveillance.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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4.8.1.1.3 The 125-volt D.C. distribution panel, 125-volt D.C. battery bank and associated charger for each diesel generator shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying:
  1. That the parameters in Table 4.8-1a meet the Category A limits.
  2. That the total battery terminal voltage is greater than or equal to 124-volts on float charge.
- b. At least once per 92 days by:
  1. Verifying that the parameters in Table 4.8-1a meet the Category B limits,
  2. Verifying there is no visible corrosion at either terminals or connectors, or the cell to terminal connection resistance of these items is less than  $150 \times 10^{-6}$  ohms, and
  3. Verifying that the average electrolyte temperature of 6 connected cells is above 60 F.
- c. At least once per 18 months by verifying that:
  1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
  2. The battery to battery and terminal connections are clean, tight and coated with anti-corrosion material.
  3. The resistance of each cell to terminal connection is less than or equal to  $150 \times 10^{-6}$  ohms.

4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.2.2.



TABLE 4.8-1

DIESEL GENERATOR RELIABILITY

<u>No. of Failures in last 20 valid tests*</u>	<u>No. of Failures in last 100 valid tests*</u>	<u>Reliability Actions</u>
$\leq 1$	-	Test at least once per 31 days
$\geq 2$	-	Test at least once per 7 days**
3	6	Within 30 days prepare a report for NRC audit, in accordance with Section 6.9.2.2.
5	11	Declare the diesel generator inoperable and perform a re-qualification test for the affected diesel generator pursuant to the attachment to this table.

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures are determined on a per diesel generator unit basis. For the purposes of this test schedule only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 20 valid tests." Entry into this test schedule shall be made at the 31-day test frequency.

\*\*This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

ATTACHMENT TO TABLE 4.8-1

DIESEL GENERATOR REQUALIFICATION PROGRAM

- (1) Perform seven consecutive successful demands without a failure within 30 days of diesel generator being restored to operable status and 14 consecutive successful demands without a failure within 75 days of diesel generator being restored to operable status.
- (2) If a failure occurs during the first seven tests in the requalification test program, perform seven successful demands without an additional failure within 30 days of diesel generator of being restored to operable status and 14 consecutive successful demands without a failure within 75 days of being restored to operable status.
- (3) If a failure occurs during the second seven tests (tests 8 through 14) of (1) above, perform 14 consecutive successful demands without an additional failure within 75 days of the failure which occurred during the requalification testing.
- (4) Following the second failure during the requalification test program, be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- (5) During requalification testing the diesel generator should not be tested more frequently than at 24-hour intervals.

After a diesel generator has been successfully requalified, subsequent repeated requalification tests will not be required for that diesel generator under the following conditions:

- (a) The number of failures in the last 20 valid demands is less than 5.
- (b) The number of failures in the last 100 valid demands is less than 11.
- (c) In the event that following successful requalification of a diesel generator, the number of failures is still in excess of the remedial action criteria (a and/or b above) the following exception will be allowed until the diesel generator is no longer in violation of the remedial action criteria (a and/or b above).

Requalification testing will not be required provided that after each valid demand the number of failures in the last 20 and/or 100 valid demands has not increased. Once the diesel generator is no longer in violation of the remedial action criteria above the provisions of those criteria alone will prevail.

## ADMINISTRATIVE CONTROLS

### RADIAL PEAKING FACTOR LIMIT REPORT

6.9.1.14 The  $W(z)$  function for normal operation shall be provided to the Director, Nuclear Reactor Regulation, Attention, Chief of the Core Performance Branch, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 at least 60 days prior to cycle initial criticality. In the event that these values would be submitted at some other time during core life, it will be submitted 60 days prior to the date the values would become effective unless otherwise exempted by the Commission.

Any information needed to support  $W(z)$  will be by request from the NRC and need not be included in this report.

### SPECIAL REPORTS

6.9.2.1 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office within the time period specified for each report.

#### 6.9.2.2 Diesel Generator Reliability Improvement Program

As a minimum the Reliability Improvement Program report for NRC audit, required by LCO 3.8.1.1, Table 4.8-1, shall include:

- (a) a summary of all tests (valid and invalid) that occurred within the time period over which the last 20/100 valid tests were performed
- (b) analysis of failures and determination of root causes of failures
- (c) evaluation of each of the recommendations of NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability in Operating Reactors," with respect to their application to the Plant
- (d) identification of all actions taken or to be taken to 1) correct the root causes of failures defined in b) above and 2) achieve a general improvement of diesel generator reliability
- (e) the schedule for implementation of each action from d) above
- (f) an assessment of the existing reliability of electric power to engineered-safety-feature equipment

A supplemental report shall be prepared within 30 days after each subsequent failure during a valid demand for so long as the affected diesel generator unit continues to violate the criteria (3/20 or 6/100) for the reliability improvement program remedial action. The supplemental report need only update the failure/demand history for the affected diesel generator unit since the last report for that diesel generator. The supplemental report shall also present an analysis of the failure(s) with a root cause determination, if possible, and shall delineate any further procedural, hardware or operational changes to be incorporated into the diesel generator improvement program and the schedule for implementation of those changes.

## ADMINISTRATIVE CONTROLS

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### Diesel Generator Reliability Improvement Program (Continued)

In addition to the above, submit a yearly data report on the diesel generator reliability.

#### 6.10 RECORD RETENTION

In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.1 The following records shall be retained for at least five years:

- a. Records and logs of unit operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
- c. All REPORTABLE EVENTS submitted to the Commission.
- d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.
- e. Records of changes made to the procedures required by Specification 6.8.1 and 6.8.4.
- f. Records of radioactive shipments.
- g. Records of sealed source and fission detector leak tests and results.
- h. Records of annual physical inventory of all sealed source material of record.



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. 44  
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Sequoyah Nuclear Plant, Unit 2 (the facility) Facility Operating License No. DPR-79 filed by the Tennessee Valley Authority (licensee), dated February 1, 1985, and supplemented August 8, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the license, as amended, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable 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 hereby amended by page changes to the Appendix A 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 Appendix A, as revised through Amendment No.52 are hereby incorporated into 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

151

B. J. Youngblood, Director  
PWR Project Directorate #4  
Division of PWR Licensing-A

Attachment"  
Appendix A Technical  
Specification Changes

Date of Issuance: February 3, 1987

PWR#4/DPWR-A  
MDuncan/mac  
10/21/86

PWR#4/DPWR-A  
JHortonich  
10/21/86

PWR#4/DPWR-A  
CStahle  
10/21/86

SE Turk  
1/23/87  
OGC/BETH  
10/21/86

PWR#4/DPWR-A  
BJYoungblood  
10/21/86

1/12/87 7/14/87

ATTACHMENT TO LICENSE AMENDMENT NO. 44

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Amended  
Page

3/4 8-3  
3/4 8-7  
3/4 8-8  
3/4 8-8b  
6-27  
6-27a

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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  $6900 \pm 690$  volts and  $60 \pm 1.2$  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 to greater than or equal to 4000 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.
  - d. At least once per 18 months during shutdown by:
    1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service,
    2. Verifying the generator capability to reject a load of greater than or equal to 600 kw while maintaining voltage at  $6900 \pm 690$  volts and frequency at  $60 \pm 1.2$  Hz.
    3. Verifying the generator capability to reject a load of 4000 kw without tripping. The generator voltage shall not exceed 7866 volts during and following the load rejection.

\*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)

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4.8.1.1.4 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.2.2.

TABLE 4.8-1

DIESEL GENERATOR RELIABILITY

<u>No. of Failures in last 20 valid tests*</u>	<u>No. of Failures in last 100 valid tests*</u>	<u>Reliability Actions</u>
$\leq 1$	-	Test at least once per 31 days
$\geq 2$	-	Test at least once per 7 days**
3	6	Within 30 days prepare a report for NRC audit, in accordance with Section 6.9.2.2.
5	11	Declare the diesel generator inoperable and perform a re-qualification test for the affected diesel generator pursuant to the attachment to this table.

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures are determined on a per diesel generator unit basis. For the purposes of this test schedule only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 20 valid tests." Entry into this test schedule shall be made at the 31-day test frequency.

\*\*This test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

ATTACHMENT TO TABLE 4.8-1

DIESEL GENERATOR REQUALIFICATION PROGRAM

- (1) Perform seven consecutive successful demands without a failure within 30 days of diesel generator being restored to operable status and 14 consecutive successful demands without a failure within 75 days of diesel generator being restored to operable status.
- (2) If a failure occurs during the first seven tests in the requalification test program, perform seven successful demands without an additional failure within 30 days of diesel generator of being restored to operable status and 14 consecutive successful demands without a failure within 75 days of being restored to operable status.
- (3) If a failure occurs during the second seven tests (tests 8 through 14) of (1) above, perform 14 consecutive successful demands without an additional failure within 75 days of the failure which occurred during the requalification testing.
- (4) Following the second failure during the requalification test program, be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.
- (5) During requalification testing the diesel generator should not be tested more frequently than at 24-hour intervals.

After a diesel generator has been successfully requalified, subsequent repeated requalification tests will not be required for that diesel generator under the following conditions:

- (a) The number of failures in the last 20 valid demands is less than 5.
- (b) The number of failures in the last 100 valid demands is less than 11.
- (c) In the event that following successful requalification of a diesel generator, the number of failures is still in excess of the remedial action criteria (a and/or b above) the following exception will be allowed until the diesel generator is no longer in violation of the remedial action criteria (a and/or b above).

Requalification testing will not be required provided that after each valid demand the number of failures in the last 20 and/or 100 valid demands has not increased. Once the diesel generator is no longer in violation of the remedial action criteria above the provisions of those criteria alone will prevail.

## ADMINISTRATIVE CONTROLS

### RADIAL PEAKING FACTOR LIMIT REPORT

6.9.1.14 The  $W(z)$  function for normal operation shall be provided to the Director, Nuclear Reactor Regulation, Attention, Chief of the Core Performance Branch, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 at least 60 days prior to cycle initial criticality. In the event that these values would be submitted at some other time during core life, it will be submitted 60 days prior to the date the values would become effective unless otherwise exempted by the Commission.

Any information needed to support  $W(z)$  will be by request from the NRC and need not be included in this report.

### SPECIAL REPORTS

6.9.2.1 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office within the time period specified for each report.

#### 6.9.2.2 Diesel Generator Reliability Improvement Program

As a minimum the Reliability Improvement Program report for NRC audit, required by LCO 3.8.1.1, Table 4.8-1, shall include:

- (a) a summary of all tests (valid and invalid) that occurred within the time period over which the last 20/100 valid tests were performed
- (b) analysis of failures and determination of root causes of failures
- (c) evaluation of each of the recommendations of NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability in Operating Reactors," with respect to their application to the Plant
- (d) identification of all actions taken or to be taken to 1) correct the root causes of failures defined in b) above and 2) achieve a general improvement of diesel generator reliability
- (e) the schedule for implementation of each action from d) above
- (f) an assessment of the existing reliability of electric power to engineered-safety-feature equipment

A supplemental report shall be prepared within 30 days after each subsequent failure during a valid demand for so long as the affected diesel generator unit continues to violate the criteria (3/20 or 6/100) for the reliability improvement program remedial action. The supplemental report need only update the failure/demand history for the affected diesel generator unit since the last report for that diesel generator. The supplemental report shall also present an analysis of the failure(s) with a root cause determination, if possible, and shall delineate any further procedural, hardware or operational changes to be incorporated into the diesel generator improvement program and the schedule for implementation of those changes.

## ADMINISTRATIVE CONTROLS

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### Diesel Generator Reliability Improvement Program (Continued)

In addition to the above, submit a yearly data report on the diesel generator reliability.

#### 6.10 RECORD RETENTION

In addition to the applicable record retention requirements of Title 10, Code of Federal Regulations, the following records shall be retained for at least the minimum period indicated.

6.10.1 The following records shall be retained for at least five years:

- a. Records and logs of unit operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
- c. All REPORTABLE EVENTS submitted to the Commission.
- d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.
- e. Records of changes made to the procedures required by Specification 6.8.1 and 6.8.4.
- f. Records of radioactive shipments.
- g. Records of sealed source and fission detector leak tests and results.
- h. Records of annual physical inventory of all sealed source material of record.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO.52 TO FACILITY OPERATING LICENSE DPR-77  
AND AMENDMENT NO.44 TO FACILITY OPERATING LICENSE DPR-79  
TENNESSEE VALLEY AUTHORITY

INTRODUCTION

By letter dated August 8, 1986, the Tennessee Valley Authority (TVA) requested changes to the Technical Specifications on diesel generators at Sequoyah Nuclear Plant, Units 1 and 2. This submittal was a supplement to the original TVA submittal dated February 1, 1985. The proposed changes will delete a surveillance requirement, add a footnote to allow a reduction in fast start/fast load surveillance testing of Emergency Diesel Generators, and correct an editorial mistake. The remainder of the changes are intended to meet the guidelines for the Reliability Improvement Program as presented by Generic Letter 84-15.

EVALUATION

The first proposed change deletes Surveillance Requirement 4.8.1.1.2.a.4.c which requires verification of diesel generator start by injection of an Engineered Safety Feature (ESF) signal coincident with a simulated loss of offsite power signal. The applicant's justification for the change explained that the loss of offsite power signal is two series relay contacts in series with a third contact which is associated with the actuation of the ESF signal. These contacts change position in order to operate relay ES1AY which causes the correct alignment of its associated contacts in the remote auto-start circuitry for starting the diesel generator. The licensee states that due to the electronics of the circuit it would be extremely difficult (if not impossible) to facilitate simultaneous operation of these contacts. Because opening of any one of the three series contacts deenergizes relay ES1AY and starts the diesel generator, the staff concludes there is no additional safety benefit to be gained by insuring that simultaneous operation of these contacts during the subject surveillance also starts the diesel. The starting of the diesel through operation of the loss of offsite power contacts and the ESF contact is assured by existing Surveillance Requirements 4.8.1.1.2.a.4.b and d which require that the diesel be started by a simulated loss of offsite power by itself and an ESF actuation test signal by itself, respectively. The staff, therefore, considers this change acceptable.

There is a change to Surveillance Requirement 4.8.1.1.2.d.8 in the Unit 1 technical specification which is strictly editorial. As currently present in the technical specifications this surveillance requirement refers to a non-existent surveillance requirement. The licensee has made the proper correction. This is acceptable.

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The licensee has also added a footnote to Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 whose purpose is to reduce the number of cold fast start surveillance tests on the diesel generators from at least once per 31 days to at least once per 184 days. All other engine starts and loading for the purpose of surveillance testing may be preceded by an engine idle start, followed by gradual acceleration to synchronous speed, synchronization, and gradual loading. The staff concluded in Generic Letter 84-15 that the frequency of fast start tests from ambient conditions of diesel generators should be reduced. This proposed technical specification change follows that guidance and is, therefore, acceptable.

The remaining changes deal with TVA's Reliability Improvement Program on the diesel generators. The licensee has revised the presently existing Table 4.8-1, "Diesel Generator Test Schedule," by replacing it with a new Table 4.8-1 entitled "Diesel Generator Reliability." The new table incorporates into one table the particulars provided by the staff in Tables 4.8-1 and 4.8-2 which are contained in the example performance specifications provided in Generic Letter 84-15. The primary feature of the new table is that it changes the basis for the testing schedule from "a per nuclear unit" basis to "a per diesel generator" basis, and the frequency of diesel generator testing has been reduced from a minimum interval of 3 days to a minimum interval of 7 days.

The objective of testing the diesels on a regular basis is to ensure the DGs' operability by timely failure detection and necessary corrective action. Such testing provides a degree of assurance of the availability of the DGs during the periods between tests. Therefore, the existing DG testing concept is that the above assurance has to be demonstrated with more frequent testing as the number of DG failures increases. Thus, the current TS requires that diesels be tested so that the interval depends on the demonstrated DG performance, i.e., the interval shortens as the number of failures increases. Furthermore, the test interval is established conservatively on a per nuclear unit basis, rather than on a per diesel basis. Thus, improper diagnosis of a DG failure could potentially result in more frequent testing of all the DGs. Also, test intervals that are too short could have an adverse impact on DG reliability.

Our past experience has shown that many licensees have been testing their good DGs mainly to quickly get out of the frequent test cycles imposed by the standard TS. The staff and industry consensus is that current requirements for testing of good DGs do not improve reliability of the good DGs and may be a factor in potential degradation of the good DGs and may have negative effects on their overall expected life and hence such testing is not warranted. Therefore, we concur with the licensee's proposal to limit DG failures on a per DG basis rather than on a per nuclear unit basis and that the frequency of testing a DG will be based on its own failures. This is consistent with Generic Letter 84-15 (Generic Issue B-56) guideline on DG reliability. We find these changes are not detrimental to the health and safety of the public and, therefore, the TS change request should be granted.

In addition, the staff has for some time been evaluating the frequency of DG testing and the associated potential for severe degradation of engine parts due to frequent fast start testing. The staff concludes that the test frequency can be reduced to minimize this potential without affecting the overall DG reliability.

Therefore, we concur with the licensee's proposal to reduce the test frequency for an individual diesel generator based on the number of failures from the present minimum interval of every three days to a minimum of seven days. This is consistent with Generic Letter 84-15 (Generic Issue P-56) guideline on DG reliability.

Table 4.8-1 also requires that additional reliability actions be taken when the number of diesel generator failures in the last 20 or 100 valid tests reaches a given number. These reliability actions include a reportability requirement to the NRC and a requalification test requirement for a DG which has had an excessive number of failures. 30 days is given in Table 4.8-1 to prepare a report for NRC audit. The sample technical specification provided in Generic Letter 84-15, however, only allowed 14 days for this reportability requirement. The Standard Technical Specifications currently being used in recently licensed plants on the other hand allow 30 days to report DG failures. The staff concludes this is not a safety significant issue, and the 30-day reporting requirement is acceptable. The details of the reporting requirements have been provided in a new section numbered 6.9.2.2, and the details of the requalification test requirements have been added as an attachment to Table 4.8-1. With the exception of the 30-day reporting requirement, the staff concludes that these sections and Table 4.8-1 are consistent with Generic Letter 84-15 guideline on DG reliability. We find these changes are not detrimental to the health and safety of the public and, therefore, the TS change request should be granted.

#### ENVIRONMENTAL CONSIDERATION

These amendments involve changes to the installation or use of the facilities' components located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

#### CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register on June 4, 1985 (50 FR 23554) and consulted with the state of Tennessee. No public comments were received, and the state of Tennessee did not have any comments.



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 or to the health and safety of the public.

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AMENDMENT NO.52 TO FACILITY OPERATING LICENSE NO. DPR-77 - Sequoyah Nuclear Plant  
Unit 1  
AMENDMENT NO.44 TO FACILITY OPERATING LICENSE NO. DPR-79 - Sequoyah Nuclear Plant  
Unit 2

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