September 15, 1986

Docket Nos.: 50-413 and 50-414

> Mr. H. B. Tucker, Vice President Nuclear Production Department Duke Power Company 422 South Church Street Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Issuance of Amendment No.10 to Facility Operating License NPF-35 and Amendment No. 3 to Facility Operating License NPF-52

į.

The Nuclear Regulatory Commission has issued the enclosed Amendment No. ¹⁰ to Facility Operating License NPF-35 and Amendment No. ³ to Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications in response to your application dated March 24, 1886, and supplemented June 30, and July 28, 1986.

These amendments modify Technical Specifications related to testing requirements for the diesel generators as well as changes to diesel generators' fuel oil storage requirements. The amendments are effective as of their date of issuance. A copy of the related safety evaluation supporting Amendment No. 10 to Facility Operating License NPF-35 and Amendment No. ³ to Facility Operating License NPF-52 is enclosed.

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

Sincerely,

151

Kahtan Jabbour, Project Manager PWR Project Directorate #4 Division of PWR Licensing-A

8609190174 860915 PDR ADOCK 05000413 P PDR

Enclosures: 1. Amendment No. 10 to NPF-35

- 2. Amendment No. 3 to NPF-52
- 3. Safety Evaluation

cc w/encl:
See next page

DISTRIBUTION: See attached page PWR#4: DPWR-A 10 PWR#4/DPWR-A MDuncan/rad KJabbour 08/3 /86 15 /86

PWR#4/DPWR-A BJYoungblood 08/15/86

25

Mr. H. B. Tucker Duke Power Company

. -

cc: William L. Porter, Esq. Duke Power Company P.O. Box 33189 Charlotte, North Carolina 28242

J. Michael McGarry, III, Esq. Bishop, Liberman, Cook, Purcell and Reynolds 1200 Seventeenth Street, N.W. Washington, D. C. 20036

North Carolina MPA-1 Suite 600 3100 Smoketree Ct. P.O. Box 29513 Raleigh, North Carolina 27626-0513

Mr. C. D. Markham Power Systems Division Westinghouse Electric Corp. P.O. Box 355 Pittsburgh, Pennsylvania 15230

NUS Corporation 2536 Countryside Boulevard Clearwater, Florida 33515

County Manager of York County York County Courthouse York South Carolina 29745

Richard P. Wilson, Esq. Assistant Attorney General S.C. Attorney General's Office P.O. Box 11549 Columbia, South Carolina 29211

Piedmont Municipal Power Agency 100 Memorial Drive Greer, South Carolina 29651

Mark S. Calvert, Esq. Bishop, Liberman, Cook, Purcell & Reynolds 1200 17th Street, N.W. Washington, D. C. 20036

Brian P. Cassidy, Regional Counsel
Federal Emergency Management Agency, Region I
J. W. McCormach POCH
Boston, Massachusetts 02109 Catawba Nuclear Station

North Carolina Electric Membership Corp. 3333 North Boulevard P.O. Box 27306 Raleigh, North Carolina 27611 Saluda River Electric Cooperative,

Inc. P.O. Box 929 Laurens, South Carolina 29360

Senior Resident Inspector Route 2, Box 179N York, South Carolina 29745

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

Mr. Heyward G. Shealy, Chief Bureau of Radiological Health South Carolina Department of Health and Environmental Control 2600 Bull Street Columbia, South Carolina 29201

Karen E. Long Assistant Attorney General N.C. Department of Justice P.O. Box 629 Raleigh, North Carolina 27602

Spence Perry, Esquire Associate General Counsel Federal Emergency Management Agency Room 840 500 C Street Washington, D. C. 20472

Mr. Michael Hirsch Federal Emergency Management Agency Office of the General Counsel Room 840 500 C Street, S.W. Washington, D. C. 20472 AMENDMENT NO. 10 TO FACILITY OPERATING LICENSE NPF-35 -CATAWBA NUCLEAR POWER STATION, UNIT 1 AMENDMENT NO. 3 TO FACILITY OPERATING LICENSE NPF-52 -CATAWBA NUCLEAR POWER STATION, UNIT 2

DISTRIBUTION: w/enclosures: Docket File NRC PDR Local PDR NSIC PRC System PWR#4 R/F B. J. Youngblood K. Jabbour M. Duncan OGC/Bethesda R. Diggs, ADM T. Barnhart (8) E. L. Jordan L. J. Harmon B. Grimes J. Partlow ACRS (10) OPA N. Thompson E. Butcher J. Lazevnick

R. Giardina



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

DUKE POWER COMPANY

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

SALUDA RIVER ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 10 License No. NPF-35

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-35 filed by the Duke Power Company acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc., (licensees) dated March 24, 1986, as supplemented June 30 and July 28, 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 application, as amended, the provisions of the Act, and the 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 set forth in 10 CFR Chapter I;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - 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.

8609190181 860915 PDR ADOCK 05000413 PDR PDR

- 2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachments to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-35 is hereby amended to read as follows:
 - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 10 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Duke Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Kahtan Jabbour, Project Manager PWR Project Directorate No. 4 Division of PWR Licensing-A

Attachment: Technical Specification Changes

Date of Issuance: September 15, 1986

PWR#4:DPWR-A MDuncan/rad 08/3 /86

PWR#4'/DPWR-A KJabbour /86

06C-Beth JOHN Kor 08/10/85

PWR#4/DPWR BJYoungblood 04/15/86

- 2 -



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

DUKE POWER COMPANY

NORTH CAROLINA MUNICIPAL POWER AGENCY NO. 1

PIEDMONT MUNICIPAL POWER AGENCY

DOCKET NO. 50-414

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 3 License No. NPF-52

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 2 (the facility) Facility Operating License No. NPF-52 filed by the Duke Power Company acting for itself, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency (licensees) dated March 24, 1986, as supplemented June 30 and July 28, 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 application, as amended, the provisions of the Act, and the 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 set forth in 10 CFR Chapter I;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - 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 Technical Specifications as indicated in the attachments to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-52 is hereby amended to read as follows:
 - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No.3, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Duke Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

151

Kahtan Jabbour, Project Manager PWR Project Directorate No. 4 Division of PWR Licensing-A

Attachment: Technical Specification Changes

Date of Issuance: September 15, 1986

PWR#4/DPWR-A MDuncan/rad 08/3/86

PWR#4/DPWR-A KJabbour 0**6**/3/86

GC-Beth othiso 10/86

PWR#4/DPWR-A BJYoungblood

ATTACHMENT TO LICENSE AMENDMENT NO.

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

AND TO

LICENSE AMENDMENT NO.

FACILITY OPERATING LICENSE NO. NPF-52

DOCKET NO. 50-414

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. The corresponding overleaf pages are also provided to maintain document completeness.

Amended Page	Overleaf Page
3/4 8-1 3/4 8-2	
3/4 8-3	
3/4 8-4	
3/4 8-5	
3/4 8-6	
3/4 8-7	
3/4 8-8	
3/4 8-8a	
3/4 8-9	3/4 8-10
3/4 8-11	3/4 8-12
B 3/4 8-1	
B 3/4 8-2	

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System, and
- b. Two separate and independent diesel generators, each with:
 - A separate day tank containing a minimum volume of 470 gallons of fuel,
 - A separate Fuel Storage System containing a minimum volume of 77,100 gallons of fuel,
 - 3) A separate fuel transfer valve, and
 - 4) A separate 125 VDC battery and charger connected to the diesel generator control loads.

<u>APPLICABILITY</u>: MODES 1, 2, 3, and 4. ACTION:

- a. With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. source by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter. If either diesel generator has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirements 4.8.1.1.2a.4) and 4.8.1.1.2a.5) for each such diesel generator separately within 24 hours. Restore the offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter. If a diesel generator becomes inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2a.4) and 4.8.1.1.2a.5) within 8 hours* unless the diesel generator has been successfully tested within the past 24 hours. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits

CATAWBA - UNITS 1 & 2

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

and two diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With a diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter; and unless the inoperability of the diesel was due to preplanned testing or maintenance, demonstrate the operability of the remaining diesel generator by performing Surveillance Requirements 4.8.1.1.2a.4 and 4.8.1.1.2a.5 within 24 hours*; restore diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next-6 hours and in COLD SHUTDOWN within the following 30 hours. With one diesel generator inoperable in addition to ACTION b. (if applicable) above, verify that:
 - 1. All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and
 - 2. When in MODE 1, 2, or 3 with a steam pressure greater than 900 psig, the steam-driven auxiliary feedwater pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- d. With both of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of both diesel generators by performing Specfication 4.8.1.1.2a.4) and 4.8.1.1.2a.5) separately for each diesel generator within 8 hours unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. A successful test(s) of diesel generator OPERABILITY per Surveillance Requirements 4.8.1.1.2a.4) and 4.8.1.1.2a.5) performed under this ACTION statement for the OPERABLE diesel generators satisfies the diesel generator test requirements of ACTION statement a.
- e. With both of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within

^{*}This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY. The provisions of Specification 3.0.2 are not applicable.

LIMITING CONDITION FOR OPERATION

the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- f. With a diesel generator operating at greater than 5750 kW, within 1 hour reduce the diesel generator output to less than or equal to 5750 kW.
- g. With the Cathodic Protection System inoperable, restore the System to OPERABLE status within 10 days or prepare and submit a Special Report pursuant to Specification 6.9.2 outlining the cause of the inoperability and the plans for restoring the System to OPERABLE.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit.
- 4.8.1.1.2 Each diesel generator 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 day tank,
 - 2) Verifying the fuel level in the fuel storage tank,
 - Verifying the fuel transfer valve can be operated to allow fuel to be transferred from the storage system to the day tank,
 - 4) Verifying the diesel starts from ambient condition and accelerates to at least 441 rpm in less than or equal to 11 seconds.* The generator voltage and frequency shall be 4160 + 420 volts and 60 + 1.2 Hz within 11 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
 - a) Manual, or
 - b) Simulated loss of offsite power by itself, or
 - c) Simulated loss of offsite power in conjunction with an ESF Actuation test signal, or
 - d) An ESF Actuation test signal by itself.

Amendment No. (Unit 1) Amendment No. (Unit 2)

I

^{*}The diesel generator start (11 sec.) from ambient conditions shall be performed at least once per 184 days in these surveillance tests. All other engine starts for the purpose of this surveillance testing may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical stress and wear on the diesel engine is minimized.

SURVEILLANCE REQUIREMENTS (Continued)

- 5) Verifying the generator is synchronized, loaded to greater than or equal to 5600 kW but less than or equal to 5750 kW in less than or equal to 60 seconds, and operates for at least 60 minutes, and
- 6) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- 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 day tank;
- c. At least once per 31 days by checking for and removing accumulated water from the fuel oil storage tanks;
- d. By verifying that the Cathodic Protection System is OPERABLE by verifying:
 - 1) At least once per 60 days that cathodic protection rectifiers are OPERABLE and have been inspected in accordance with the manufacturer's inspection procedures, and
 - At least once per 12 months that adequate protection from corrosion is provided in accordance with manufacturer's inspection procedures.
- e. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:
 - By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:
 - a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate, or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;
 - b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes (alternatively, Saybolt viscosity, SUS at 100°F of greater than or equal to 32.6, but less than or equal to 40.1), if gravity was not determined by comparison with the supplier's certification;
 - c) A flash point equal to or greater than 125°F; and
 - d) A clear and bright appearance with proper color when tested in accordance with ASTM-D4176-82.
 - 2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that the analysis for sulfur may be performed in accordance with ASTM-D1552-79 or ASTM-D2622-82.

CATAWBA - UNITS 1 & 2

SURVEILLANCE REQUIREMENTS (Continued)

- f. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78, Method A;
- g. At least once per 18 months by:
 - Subjecting the diesel to an inspection, during shutdown, 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 825 kW while maintaining voltage at 4160 + 420 volts and frequency at 60 + 1.2 Hz;
 - 3) Verifying the generator capability to reject a load of greater than or equal to 5600 kW but less than or equal to 5750 kW without tripping. The generator speed shall not exceed 500 rpm during and following the load rejection;
 - 4) Simulating a loss-of-offsite power by itself,** during shutdown, and:
 - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 + 420 volts and 60 + 1.2 Hz during this test.
 - 5) Verifying that on an ESF Actuation test signal, without loss-ofoffsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be at 4160 ± 420 volts and 60 ± 1.2 Hz within 11 seconds after the auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test;
 - 6) Simulating a loss-of-offsite power in conjunction with an ESF Actuation test signal, during shutdown, and
 - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses;**

^{**}This surveillance need not be performed until prior to entering HOT SHUTDOWN following the Unit 1 first refueling.

SURVEILLANCE REQUIREMENTS (Continued)

- b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 11 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 + 420 volts and 60 + 1.2 Hz during this test;** and
- c) Verifying that all automatic diesel generator trips, except engine overspeed, low-low lube oil pressure, generator differential, and the 2 out of 3 voltage controlled overcurrent relay scheme, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a Safety Injection Actuation signal.
- 7) Verifying, during shutdown, the diesel generator operates for at least 24 hours. The diesel generator shall be loaded to greater than or equal to 5600 kW but less than or equal to 5750 kW. The generator voltage and frequency shall be 4160 + 420 volts and 60 + 1.2 Hz within 11 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 4.8.1.1.2g.6)b);* **
- Verifying, during shutdown, that the auto-connected loads to each diesel generator do not exceed 5750 kW;**
- 9) Verifying, during shutdown, the diesel generator's capability to:**
 - 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 standby status.
- 10) Verifying, during shutdown, that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;**

following the Unit 1 first refueling.

CATAWBA - UNITS 1 & 2

Amendment No. (Unit 1) Amendment No. (Unit 2) ŧ

^{*}If Specification 4.8.1.1.2g.6)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at greater than or equal to 5600 kW but less than or equal to 5750 kW for 1 hour or until operating temperature has stabilized. **This surveillance need not be performed until prior to entering HOT SHUTDOWN following the Whit 1 first methods.

SURVEILLANCE REQUIREMENTS (Continued)

- 11) Verifying that the fuel transfer valve transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines;
- 12) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within the tolerances given in Table 4.8-2;
- 13) Verifying that the voltage and diesel speed tolerances for the accelerated sequencer permissives are $92.5 \pm 1\%$ and 98 + 1%, respectively, with a minimum time delay of 2 ± 0.2 s; and
- 14) Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
 - a) Turning gear engaged, or
 - b) Maintenance mode.
- h. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 441 rpm in less than or equal to 11 seconds; and
- i. 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 or its equivalent, and
 - Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110% of the system design pressure.
 - 3) Performing tank wall thickness measurements. The resulting data shall be evaluated and any abnormal degradation will be justified or corrected. Any abnormal degradation will be documented in a report to the Commission.

4.8.1.1.3 <u>Reports</u> - All diesel generator failures, valid or non-valid, shall be reported in a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.4 <u>Diesel Generator Batteries</u> - Each diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 - 1) The electrolyte level of each battery is at or above the low mark and at or below the high mark,
 - 2) The overall battery voltage is greater than or equal to 125 volts on float charge, and
 - 3) The individual cell voltage is greater than or equal to 1.36 volts on float charge.*
- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:
 - 1) There is no visible corrosion at either terminals or connectors, and
 - The average electrolyte temperature of six connected cells is above 60°F.
- c. At least once per 18 months by verifying that:
 - 1) The batteries, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,
 - The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anticorrosion material in accordance with manufacturer's recommendations,
 - 3) The cell-to-cell pole screws torque setting is 14.5 ± 0.5 ft-lbs,
 - 4) The battery charger will supply at least 75 amperes at a minimum of 125 volts for at least 8 hours, and
 - 5) The battery capacity is adequate to supply and maintain in OPERABLE status its emergency loads when subjected to a battery service test. The battery shall supply a current of greater than or equal to 171.6 amps for the first minute and a current of greater than or equal to 42.5 amps for the remaining 119 minutes, while maintaining a terminal voltage of greater than or equal to 105 volts.
- d. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test.**

*Two different cells shall be tested each month.

**First	test to	be conducted	within 60 months fol	lowing OL issuance date).
CATAWBA	- UNITS	1 & 2	3/4 8-8	Amendment No. ((Unit 1)
				Amendment No. (Unit 2)

SURVEILLANCE REQUIREMENTS (Continued)

e. At least once per 18 months, during shutdown, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

NUMBER OF FAILURES IN LAST 20 VALID TESTS*	NUMBER OF FAILURES IN LAST 100 VALID TESTS*	TEST FREQUENCY	
<u><</u> 1	<u>< 4</u>	At least once per 31 days	
<u>></u> 2**	<u>></u> 5	At least once per 7 days	

*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, but determined on a per diesel generator basis. For purposes of this schedule, only valid tests conducted after the completion of the preoperational test requirements of Regulatory Guide 1.108, Revision 1, August 1977, shall be included in the computation of the "last 20/100 valid tests."

For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul to like-new condition is completed, provided that the overhaul, including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirement 4.8.1.1.a 4) and 4.8.1.1.2.a 5), four tests, in accordance with the 184-day testing requirement of Surveillance Requirements 4.8.1.1.a 5). If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

**The associated test frequency shall be maintained until seven consecutive failure-free demands have been performed <u>and</u> the number of failures in the last 20 valid demands has been reduced to less than or equal to one.

CATAWBA - UNITS 1 & 2

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the Onsite Essential Auxiliary Power System, and
- b. One diesel generator with:
 - 1) A day tank containing a minimum volume of 470 gallons of fuel,
 - A fuel storage system containing a minimum volume of 77,100 gallons of fuel,
 - 3) A fuel transfer valve, and
 - 4) A 125 VDC battery and charger connected to the diesel generator control loads.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel, or crane operation with loads over the fuel storage pool, and within 8 hours, depressurize and vent the Reactor Coolant System through at least a 4.5 square inch vent. In addition, when in MODE 5 with the Reactor Coolant loops not filled, or in MODE 6 with the water level less than 23 feet above the reactor vessel flange, immediately initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specification 4.8.1.1.2a.5), 4.8.1.1.3, and 4.8.1.1.4.

CATAWBA - UNITS 1 & 2

BASES

3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION

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 Criterion 17 of Appendix A to 10 CFR Part 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 safety 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. The A.C. and D.C. source allowable out-ofservice times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE, and that the steam-driven auxiliary feedwater pump is OPERABLE. This requirement is intended to provide assurance that a loss-of-offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term, verify, as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the Surveillance Requirements needed to demonstrate the OPERABILITY of the component. The ACTION requirements for diesel generator testing in the event of the inoperability of other electric power sources also reflect the potential for degradation of the diesel generator due to excessive testing. This concern has developed concurrently with increased industry experience with diesel generators and has been acknowledged by the NRC staff in Generic Letter 84-15.

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 Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979, the NRC Staff Evaluation Report concerning the Reliability of Diesel Generators at Catawba, August 14, 1984, and Generic

CATAWBA - UNITS 1 & 2

BASES

A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION (Continued)

Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." If any other metallic structures (building, new or modified piping systems, conduits) are placed in the ground near the Fuel Oil Storage System or if the original system is modified, the adequacy and frequency of inspections for the Cathodic Protection System shall be reevaluated and adjusted in accordance with the manufacturer's recommendations.

The Surveillance Requirements 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."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8-3 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-3 is permitted for up to 7 days. During this 7-day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

CATAWBA - UNITS 1 & 2



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO AMENDMENT NO. 10 TO FACILITY OPERATING LICENSE NPF-35 AND AMENDMENT NO. 3 TO FACILITY OPERATING LICENSE NPF-52

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DUKE POWER COMPANY, ET AL.

INTRODUCTION

By letter dated March 24, 1986, Duke Power Company, et al., (the licensee) proposed changes to the Technical Specifications (TS) for the diesel generators (DGs) at Catawba Nuclear Station, Units 1 and 2. Supplemental letters dated June 30, 1986, and July 28, 1986, provided clarification to some of the changes requested in the March 24, 1986, letter. The proposed changes are related to the testing requirements for the DGs as well as changes to the DGs' fuel oil storage requirements. The licensee's request is in accordance with the staff's guidance outlined in Generic Letter 84-15. The licensee has also used the technical specifications approved for the North Anna and Perry Nuclear Plants as a basis for the proposed changes to TS 3/4.8.1,"A. C. Sources," and its associated bases.

EVALUATION

(a) The amendments change TS 3.8.1.1b.1), b.2), 3.8.1.2b.1) and b.2) to reflect new fuel oil storage requirements based upon the 5750 kw rating for the DGs. The previous fuel oil volumes were calculated based upon the DG original rating of 7000 kw. The NRC Staff's Supplement 4 to the Catawba SER evaluated the change in the rating of the DGs. The new limit of 5750 kw for each diesel was found acceptable to cover all necessary LOCA and blackout loads. There are no current plans to return the diesels' rating back up to 7000 kw since the lower rating is adequate and also causes less wear during testing. The staff has evaluated the fuel consumption rate for the lower DG rating in light of the guidance provided in Section 5.4 of ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators", and finds the reduced fuel oil volumes acceptable.

(b) The amendments change action statements 3.8.1.1a., b., c., and d. to require that the operability of a DG be demonstrated by both starting it and running it loaded on the offsite power system. The previous TS required that is only be started. The proposed change to load the DG is made to reduce the amount of diesel generator operating time under detrimental no-load or lightload conditions. The staff finds this change to be a factor in reducing operation of the DG under conditions which are known to produce detrimental effects and is, therefore, acceptable. This change is also in accordance with previously approved TS for North Anna and Perry Nuclear Plants.

8609190184 860915 PDR ADOCK 05000413

(c) The amendments change action statements 3.8.1.1a. and b. to delete the previous requirement to demonstrate that one DG is operable for loss of an offsite circuit or loss of an offsite circuit and the other diesel generator provided it has been successfully tested within the past 24 hours. The staff finds that this change reduces unnecessary testing and the associated detrimental effects of frequent starts and is, therefore, acceptable. This change is also in accordance with previously approved TS for North Anna and Perry Nuclear Plants.

(d) The amendments change action statements 3.8.1.1a., b., c., and d. to extend the length of time allowed to demonstrate that a diesel generator is operable from 1 hour in all cases to 8 hours for the loss of two power sources (offsite or onsite) and 24 hours for the loss of one power source. The previous requirement to retest at least once per 8 hours is also eliminated. The staff finds that these changes provide sufficient time to perform an orderly start and loading test on the DGs, reduce unnecessary testing and the associated detrimental effects of frequent starts and are, therefore, acceptable. This change is also in accordance with the guidance provided in Generic Letter 84-15 and with previously approved TS for North Anna and Perry Nuclear Plants.

(e) The amendments change action statement 3.8.1.1b. and c. to eliminate the need to demonstrate the operability of a diesel generator when its redundant counterpart is inoperable due to preplanned testing or maintenance. The staff finds that this change reduces unnecessary testing and the associated detrimental effects of frequent starts and is, therefore, acceptable. This change is also in accordance with previously approved TS for North Anna and Perry Nuclear Plants.

(f) The amendments change action statements 3.8.1.1b. and c. to add a footnote that requires that surveillance testing on a redundant diesel generator be completed regardless of when the inoperable diesel generator is restored to operability. The staff finds that this change ensures that both diesel generators are tested for common-mode failures which may have caused the initial inoperability of the first DG and is, therefore, acceptable. This change is also in accordance with previously approved TS for North Anna and Perry Nuclear Plants.

(g) The amendments change action statement 3.8.1.1c. to combine the statement for the loss of one diesel generator with the action statement requiring that components powered from the redundant diesel generator be determined operable. This change is editorial and does not result in any changes to the actions required by the operator. Therefore, it is acceptable.

(h) With regard to the changes made in Table 4.8-1, titled "Diesel Generator Test Schedule," the first specific proposal is to change the basis for the testing schedule from "a per nuclear unit basis" to "a per diesel generator basis." The second proposal is to reduce the test frequency for an individual diesel generator based on the number of failures from the present minimum interval of once per three days to a minimum of once per seven 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 DGs' availability during the periods between tests. Therefore, the existing and the previous DG testing concepts are that the above assurance has to be demonstrated with more frequent testing as the number of DG failures increases. Thus, the existing and the previous TS require 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 previous 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.

Past experience has shown that many licensees have been frequently testing their good DGs mainly to quickly get out of the frequent test cycles imposed by the TS. The staff and industry agree that current requirements for testing of good DGs do not improve reliability of the good DGs and may be a factor in potentially degrading them. Also, excessive testing may have negative effects on the overall expected life of the DGs and, hence, such testing is not warranted. Therefore, the staff agrees with the licensee's proposal to count 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 the number of its own failures. This is consistent with the guidance provided in Generic Letter 84-15 on DG reliability. Thus, the staff finds that these proposed changes are acceptable because they improve DG reliability and are not detrimental to the health and safety of the public.

In addition, the staff has for sometime 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, the staff finds that 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 once per three days to a minimum of once per seven days is acceptable. This is consistent with the guidance provided in Generic Letter 84-15 on DG reliability.

. -

The final change proposed in Table 4.8-1 would provide an explicit direct incentive if the licensee performs a thorough and comprehensive complete overhaul (the DG would be rebuilt to like-new conditions) of the DG that is approved by the DG manufacturer. Following such an overhaul and the onetime satisfaction of the appropriate surveillance tests, the licensee would not be required to count previous failures of that DG if an acceptable reliability can be demonstrated. With "no previous failures" in the past 20 or 100 tests, the DG would re-enter the test schedule at the monthly test frequency. Accelerated testing (weekly) would not become required until either 2 failures in 20 tests or 5 failures in 100 tests occur. The staff finds that this change is acceptable because a thorough and complete overhaul of a DG, that has experienced excessive number of failures, would potentially provide for better reliability.

The proposed reliability criterion for the rebuilt DG is the successful completion of 14 consecutive tests, at least 4 of which would be "fast cold" starts. Statistically, the probability that a DG with an actual reliability of less than 0.90 demand will satisfy this 14-test criterion is no greater than 20% and decreases rapidly with the actual reliability. The probability that a DG with an actual reliability of less than 0.95 will satisfy the 14test criterion is 42% or less. Said in the converse, if the rebuilt DG passes the 14-test criterion, the statistics would indicate that the probability that the actual reliability of the DG is 0.95 or better is about 50% and that the probability that the actual reliability is 0.90 or better is about 90%. The staff, therefore, finds the proposed 14-test criterion to be acceptable. A note of caution should be added regarding repeated attempts to satisfy the 14-test criterion because in such a case the statistical situation changes. If a DG passes the criterion on a second attempt, the probability that the actual reliability is 0.95 would be reduced to only about 25%. Therefore, if the 14-test criterion is not passed on the first attempt, the previous test failures remain in effect. This is specifically required as part of the reliability test criterion in the current Table 4.8-1 and is, therefore, acceptable.

(i) The amendments change TS 4.8.1.1.1b. and 4.8.1.1.2g. to allow certain surveillances to be conducted during unit operations. TS 4.8.1.1.1b. previously required that both of the offsite circuits be demonstrated operable at least once per 18 months during shutdown by transferring (manually and automatically) unit power supply from the normal circuit to the alternate circuit. The licensee proposed to delete the words "during shutdown" from the requirement. TS 4.8.1.1.2g. previously required that all the diesel generator surveillances listed underneath it (1 thru 14) be performed at least once per 18 months during shutdown. The licensee proposed to delete the words "during shutdown" from the general requirement in TS 4.8.1.1.2g. and has added them only to the specific surveillances in 4.8.1.1.2g.1), .4), .6), .7), .8), .9), and .10). In the March 24, 1986, letter, the licensee stated that an override signal would be generated and the diesels would be capable of carrying out their intended functions during all the surveillances that now may be conducted during unit operation. The staff, therefore, finds these changes acceptable.

(j) The amendments delete the footnote from TS 4.8.1.1.2.d regarding the operability of the cathodic protection system. The required date for the system operability has passed and the system is now operable. Thus, the footnote is no longer needed.

- -

The amendments revise Bases Sections 3/4.8.1, 3/4.8.2, and 3/4.8.3 to include a discussion regarding the industry's increased experience with DG degradation due to excessive testing and to reference Generic Letter 84-15 titled "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability." We find the revised bases, as proposed in the licensee's letter of March 24, 1986, to be equivalent to those in Generic Letter 84-15. Therefore, the revised bases are acceptable.

ENVIRONMENTAL CONSIDERATION

The amendments involve a change in use of facility 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 exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there have been no public comments on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Section 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 (51 FR 22233) on June 18, 1986, and consulted with the state of South Carolina. No public comments were received, and the state of South Carolina 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 the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Kahtan Jabbour, PWR#4/DPWR-A James Lazevnick, EICSB/DPWR-A Robert Giardina, PSB/DPWR-A

Dated: September 15, 1986