October 30, 1996

Mr. William R. McCollum
Site Vice President
Catawba Nuclear Station
Duke Power Company
4800 Concord Road
York, South Carolina 29745-9635

SUBJECT: ISSUANCE OF AMENDMENTS - CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (TAC NOS. M94276 AND M94277)

Dear Mr. McCollum:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 155 to Facility Operating License NPF-35 and Amendment No. 147 to Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated December 14, 1995, as supplemented by letters dated May 16 and August 29, 1996.

The amendments modify the Technical Specifications for diesel generators to incorporate guidance and recommendations contained in NRC Generic Letter (GL) 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," GL 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," NUREG-1431, "Revised Standard Technical Specifications for Westinghouse PWRs," and NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements.

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

Sincerely,

(original signed by)
Peter S. Tam, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:
1. Amendment No. 155 to NPF-35
2. Amendment No. 147 to NPF-52
3. Safety Evaluation

cc w/encl: See next page

NRC FILE CENTER COPY

Distribution
[redacted]
PUBLIC
PDII-2 RF
S.Varga
C.Grimes, O-11E22
R.Crlenjak,RII
ACRS T-2 E26
OGC, O-15 B18
G.Hill(4), T-5 C3
E.Merschoff,RII

OFFICE	DRPE/PD22/PM	DRPE/PD22/LA	OGC	DRPM/PDI/R/D	DRPE/PD/D
NAME	P.TAM:cdw	L.BERRY	C.Barth	S.Newberry	H.Berkow
DATE	10/4/96	10/7/96	10/10/96	/96	10/29/96

OFFICIAL RECORD COPY

DOCUMENT NAME:G:\CATAWBA\CAT94276.AMD

9611060178 961030
PDR ADOCK 05000413
P PDR

060067

DF01

CP-1

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

October 30, 1996

Mr. William R. McCollum
Site Vice President
Catawba Nuclear Station
Duke Power Company
4800 Concord Road
York, South Carolina 29745-9635

SUBJECT: ISSUANCE OF AMENDMENTS - CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (TAC NOS. M94276 AND M94277)

Dear Mr. McCollum:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 155 to Facility Operating License NPF-35 and Amendment No. 147 to Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated December 14, 1995, as supplemented by letters dated May 16 and August 29, 1996.

The amendments modify the Technical Specifications for diesel generators to incorporate guidance and recommendations contained in NRC Generic Letter (GL) 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," GL 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," NUREG-1431, "Revised Standard Technical Specifications for Westinghouse PWRs," and NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements."

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

Sincerely,

Peter S. Tam

Peter S. Tam, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:
1. Amendment No. 155 to NPF-35
2. Amendment No. 147 to NPF-52
3. Safety Evaluation

cc w/encl: See next page

Mr. W. R. McCollum
Duke Power Company

Catawba Nuclear Station

cc:
Mr. M. S. Kitlan
Regulatory Compliance Manager
Duke Power Company
4800 Concord Road
York, South Carolina 29745

Mr. Paul R. Newton
Legal Department (PB05E)
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242-0001

J. Michael McGarry, III, Esquire
Winston and Strawn
1400 L Street, NW
Washington, DC 20005

North Carolina Municipal Power
Agency Number 1
1427 Meadowwood Boulevard
P. O. Box 29513
Raleigh, North Carolina 27626-0513

Mr. Peter R. Harden, IV
Account Sales Manager
Westinghouse Electric Corporation
Power Systems Field Sales
P. O. Box 7288
Charlotte, North Carolina 28241

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

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

Piedmont Municipal Power Agency
121 Village Drive
Greer, South Carolina 29651

Mr. T. Richard Puryear
Owners Group (NCEMC)
Duke Power Company
4800 Concord Road
York, South Carolina 29745

North Carolina Electric Membership
Corporation
P. O. Box 27306
Raleigh, North Carolina 27611

Senior Resident Inspector
4830 Concord Road
York, South Carolina 29745

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

Max Batavia, Chief
Bureau of Radiological Health
South Carolina Department of
Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Mr. G. A. Copp
Licensing - EC050
Duke Power Company
526 South Church Street
Charlotte, North Carolina 28242-0001

Saluda River Electric
P. O. Box 929
Laurens, South Carolina 29360

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

Elaine Wathen, Lead REP Planner
Division of Emergency Management
116 West Jones Street
Raleigh, North Carolina 27603-1335

Dayne H. Brown, Director
Division of Radiation Protection
N.C. Department of Environment,
Health and Natural Resources
P. O. Box 27687
Raleigh, North Carolina 27611-7687

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

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. 155
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 December 14, 1995, and supplemented by letters dated May 16 and August 29, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   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.

9611060215 961030
PDR ADOCK 05000413
P PDR

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

   Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 155 which are attached hereto, are hereby incorporated into this license. Duke Power Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specifications
Changes

Date of Issuance: October 30, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 155

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

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.

Remove	Insert
XI	XI
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-3	3/4 8-3
3/4 8-4	3/4 8-4
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6*
3/4 8-7	3/4 8-7
3/4 8-8	3/4 8-8
3/4 8-9	3/4 8-9
3/4 8-10	3/4 8-10 *
3/4 8-11	3/4 8-11
3/4 8-13	3/4 8-13
B 3/4 8-1	B 3/4 8-1
B 3/4 8-2	B 3/4 8-2

* overflow page - no change

SECTION PAGE

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

Operating 3/4 8-1

TABLE 4.8-1 DIESEL GENERATOR TEST SCHEDULE (NOT USED) 3/4 8-11

TABLE 4.8-2 LOAD SEQUENCING TIMES 3/4 8-12

Shutdown 3/4 8-13

3/4.8.2 D.C. SOURCES

Operating 3/4 8-14

TABLE 4.8-3 BATTERY SURVEILLANCE REQUIREMENTS 3/4 8-17

Shutdown 3/4 8-18

3/4.8.3 ONSITE POWER DISTRIBUTION

Operating 3/4 8-19

Shutdown 3/4 8-21

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment Penetration Conductor Overcurrent Protective Devices 3/4 8-22

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION 3/4 9-1

3/4.9.2 INSTRUMENTATION 3/4 9-2

3/4.9.3 DECAY TIME 3/4 9-4

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS 3/4 9-5

3/4.9.5 COMMUNICATIONS 3/4 9-8

3/4.9.6 MANIPULATOR CRANE 3/4 9-9

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING 3/4 9-10

3/4.8 ELECTRICAL POWER SYSTEMS

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:

   1) A separate day tank containing a minimum volume of 470 gallons of fuel,

   2) 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.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With an offsite circuit of the above required A.C. electrical power sources inoperable:

   1. Demonstrate the OPERABILITY of the remaining required offsite circuit by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and

   2. 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.

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable: (also refer to ACTION c)

   1. Demonstrate the OPERABILITY of the remaining required offsite circuit by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and

   2. Demonstrate* the OPERABILITY of the remaining diesel generator by either:

      a. Performing Surveillance Requirements 4.8.1.1.2a.4 and 4.8.1.1.2a.5 within 8 hours, or

      b. Verifying within 8 hours that no potential common mode failure for the remaining diesel exists;

   3. 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; with the diesel generator restored to OPERABLE status, follow ACTION a; with the offsite circuit restored to OPERABLE status, follow ACTION d.

c. With one diesel generator inoperable in addition to ACTION b or d, 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.

---

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

d. With a diesel generator of the above required A.C. electrical power sources inoperable: (also refer to ACTION c)

   1. 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

   2. Demonstrate* the OPERABILITY of the remaining diesel generator by either:

      a. Performing Surveillance Requirements 4.8.1.1.2a.4 and 4.8.1.1.2a.5 within 24 hours, or

      b. Verifying within 24 hours that no potential common mode failure for the remaining diesel exists;

   3. 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.

e. With both of the above required offsite A.C. circuits inoperable, 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 and in COLD SHUTDOWN within the following 30 hours. With only one offsite source restored, follow ACTION a.

f. With both of the above required diesel generators inoperable:

   1. 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; and

   2. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 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 restored, follow ACTION d.

---

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.

LIMITING CONDITION FOR OPERATION

g. 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.

h. 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. At least once per 31 days 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,

3) 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 standby (prelube) condition and maintains the steady-state generator voltage and frequency at 4160 $\pm$ 420 volts and 60 $\pm$ 1.2 Hz, respectively. 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.

** Once per 184 days, start the engine from standby (prelube) condition, and verify generator reaches $\geq$ 3740 volts and $\geq$ 57 Hz in $\leq$ 11 seconds.

SURVEILLANCE REQUIREMENTS (Continued)

5) Verifying the generator is synchronized, loaded and operates at 5600 - 5750 kW*** 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

2) 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:

1) 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;

*** Diesel generator loadings may be done in accordance with the manufacturer's recommendations. The purpose of the load range is to prevent overloading the engine, and momentary excursions outside of the load range shall not invalidate the test.

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.

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:

1) 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.

SURVEILLANCE REQUIREMENTS (Continued)

5) Verifying that on an ESF Actuation test signal, without loss-of-offsite 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;

   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.

8) (Deleted)

SURVEILLANCE REQUIREMENTS (Continued)

9) Verifying, during shutdown, 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 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;

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 ± 1% and 98 + 1%, respectively, with a time delay of 2 ± 0.2 s;

14) Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

   a) Turning gear engaged, or

   b) Maintenance mode; and

15) Operating at greater than or equal to 5600 KW but less than or equal to 5750 KW for one hour or until operating temperature has stabilized. Within 5 minutes after shutting down the diesel generator, restart the diesel generator and verify that the generator voltage and frequency reaches at least 3740 volts and 57 Hz within 11 seconds.

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

SURVEILLANCE REQUIREMENTS (Continued)

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

2) 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 Reports - (Not Used)

4.8.1.1.4 Diesel Generator Batteries - 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

2) The average electrolyte temperature of six connected cells is above 60°F.

* Two different cells shall be tested each month.

SURVEILLANCE REQUIREMENTS (Continued)

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,

2) 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.

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 - (Not Used)

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,

   2) 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), and 4.8.1.1.4.

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-of-service 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 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, Regulatory Guide 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, Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," Generic Letter 93-05, "Line-Item Technical

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

Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," and Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators." 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.

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

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. 147
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 December 14, 1995, and supplemented by letters dated May 16 and August 29, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   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 Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-52 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No.147 which are attached hereto, are hereby incorporated into this license. Duke Power Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specifications
Changes

Date of Issuance: October 30, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 147

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.

Remove	Insert
XI	XI
3/4 8-1	3/4 8-1
3/4 8-2	3/4 8-2
3/4 8-3	3/4 8-3
3/4 8-4	3/4 8-4
3/4 8-5	3/4 8-5
3/4 8-6	3/4 8-6 *
3/4 8-7	3/4 8-7
3/4 8-8	3/4 8-8
3/4 8-9	3/4 8-9
3/4 8-10	3/4 8-10 *
3/4 8-11	3/4 8-11
3/4 8-13	3/4 8-13
B 3/4 8-1	B 3/4 8-1
B 3/4 8-2	B 3/4 8-2

* overflow page - no change

SECTION PAGE

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

Operating 3/4 8-1

TABLE 4.8-1 DIESEL GENERATOR TEST SCHEDULE (NOT USED) 3/4 8-11

TABLE 4.8-2 LOAD SEQUENCING TIMES 3/4 8-12

Shutdown 3/4 8-13

3/4.8.2 D.C. SOURCES

Operating 3/4 8-14

TABLE 4.8-3 BATTERY SURVEILLANCE REQUIREMENTS 3/4 8-17

Shutdown 3/4 8-18

3/4.8.3 ONSITE POWER DISTRIBUTION

Operating 3/4 8-19

Shutdown 3/4 8-21

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Containment Penetration Conductor Overcurrent Protective Devices 3/4 8-22

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION 3/4 9-1

3/4.9.2 INSTRUMENTATION 3/4 9-2

3/4.9.3 DECAY TIME 3/4 9-4

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS 3/4 9-5

3/4.9.5 COMMUNICATIONS 3/4 9-8

3/4.9.6 MANIPULATOR CRANE 3/4 9-9

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING 3/4 9-10

3/4.8 ELECTRICAL POWER SYSTEMS

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:

   1) A separate day tank containing a minimum volume of 470 gallons of fuel,

   2) 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.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With an offsite circuit of the above required A.C. electrical power sources inoperable:

   1. Demonstrate the OPERABILITY of the remaining required offsite circuit by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and

   2. 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.

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable: (also refer to ACTION c)

   1. Demonstrate the OPERABILITY of the remaining required offsite circuit by performing Specification 4.8.1.1.1a. within 1 hour and at least once per 8 hours thereafter; and

   2. Demonstrate* the OPERABILITY of the remaining diesel generator by either:

      a. Performing Surveillance Requirements 4.8.1.1.2a.4 and 4.8.1.1.2a.5 within 8 hours, or

      b. Verifying within 8 hours that no potential common mode failure for the remaining diesel exists;

   3. 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; with the diesel generator restored to OPERABLE status, follow ACTION a; with the offsite circuit restored to OPERABLE status, follow ACTION d.

c. With one diesel generator inoperable in addition to ACTION b or d, 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.

---

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.

LIMITING CONDITION FOR OPERATION

ACTION (Continued)

d. With a diesel generator of the above required A.C. electrical power sources inoperable: (also refer to ACTION c)

   1. 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

   2. Demonstrate* the OPERABILITY of the remaining diesel generator by either:

      a. Performing Surveillance Requirements 4.8.1.1.2a.4 and 4.8.1.1.2a.5 within 24 hours, or

      b. Verifying within 24 hours that no potential common mode failure for the remaining diesel exists;

   3. 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.

e. With both of the above required offsite A.C. circuits inoperable, 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 and in COLD SHUTDOWN within the following 30 hours. With only one offsite source restored, follow ACTION a.

f. With both of the above required diesel generators inoperable:

   1. 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; and

   2. Restore at least one of the inoperable diesel generators to OPERABLE status within 2 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 restored, follow ACTION d.

---

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.

LIMITING CONDITION FOR OPERATION

g. 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.

h. 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. At least once per 31 days 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,

3) 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 standby (prelube) condition and maintains the steady-state generator voltage and frequency at 4160 $\pm$ 420 volts and 60 $\pm$ 1.2 Hz, respectively. 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.

** Once per 184 days, start the engine from standby (prelube) condition, and verify generator reaches $\geq$ 3740 volts and $\geq$ 57 Hz in $\leq$ 11 seconds.

5) Verifying the generator is synchronized, loaded and operates at 5600 - 5750 kW*** 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

2) 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:

1) 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;

*** Diesel generator loadings may be done in accordance with the manufacturer's recommendations. The purpose of the load range is to prevent overloading the engine, and momentary excursions outside of the load range shall not invalidate the test.

SURVEILLANCE REQUIREMENTS (Continued)

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.

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:

1) 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.

SURVEILLANCE REQUIREMENTS (Continued)

5) Verifying that on an ESF Actuation test signal, without loss-of-offsite 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;

   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.

8) (Deleted)

SURVEILLANCE REQUIREMENTS (Continued)

9) Verifying, during shutdown, 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 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;

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 ± 1% and 98 + 1%, respectively, with a time delay of 2 ± 0.2 s;

14) Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

   a) Turning gear engaged, or

   b) Maintenance mode; and

15) Operating at greater than or equal to 5600 KW but less than or equal to 5750 KW for one hour or until operating temperature has stabilized. Within 5 minutes after shutting down the diesel generator, restart the diesel generator and verify that the generator voltage and frequency reaches at least 3740 volts and 57 Hz within 11 seconds.

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

SURVEILLANCE REQUIREMENTS (Continued)

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

2) 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 Reports - (Not Used)

4.8.1.1.4 Diesel Generator Batteries - 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

2) The average electrolyte temperature of six connected cells is above 60°F.

*Two different cells shall be tested each month.

SURVEILLANCE REQUIREMENTS (Continued)

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,

2) 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.

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 - (Not Used)

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,

2) 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), and 4.8.1.1.4.

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-of-service 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 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, Regulatory Guide 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, Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," Generic Letter 93-05, "Line-Item Technical

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

Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," and Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators." 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.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 155 TO FACILITY OPERATING LICENSE NPF-35

AND AMENDMENT NO. 147 TO FACILITY OPERATING LICENSE NPF-52

DUKE POWER COMPANY, ET AL.

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated December 14, 1995, as supplemented by letters dated May 16 and August 29, 1996, Duke Power Company, et al. (the licensee) proposed changes to the Catawba Nuclear Station, Units 1 and 2, Technical Specifications (TS) for diesel generators to incorporate guidance and recommendations contained in NRC Generic Letter (GL) 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," GL 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators," NUREG-1431, "Revised Standard Technical Specifications for Westinghouse PWRs," and NUREG-1366, Improvements to Technical Specifications Surveillance Requirements."

The August 29, 1996, submittal provided additional information that did not change the scope of the December 14, 1995, application and the initial proposed no significant hazards consideration determination.

The NRC staff has previously completed a comprehensive examination of surveillance requirements (SRs) in plant TS that require testing at power. The evaluation is documented in NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements." The staff found that although most testing at power is important, safety can be improved, equipment degradation decreased, and an unnecessary burden on personnel resources eliminated by reducing the amount of testing at power that is required by plants TS. Subsequently, the staff issued GL 93-05. Additionally, in response to the NRC's decision on SECY-93-044, Resolution of Generic Safety Issue B-56, "Diesel Generator Reliability," the staff issued GL 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators." In this GL, the staff recommended that the licensees be allowed to voluntarily adopt the accelerated testing provisions of the Improved Standard TS upon the implementation of the provisions of the "Maintenance Rule" for the emergency diesel generators (EDGs), including the applicable regulatory guidance, which will provide a program to ensure EDG performance. Duke Power Company proposed to modify the Catawba Units 1 and 2 TS to

9611060220 961030
PDR ADOCK 05000413
P PDR

incorporate recommendations and guidance in the above GLs. Additionally, Duke Power Company will be using guidance in NUREG-1431, "Revised Standard Technical Specifications for Westinghouse PWRs," in its effort to improve the Catawba TS.

2.0 EVALUATION

The proposed changes to the Catawba TS are being made to improve the current TS action statements and surveillance requirements for the EDGs at Catawba Units 1 and 2. The following changes will incorporate the guidance and recommendations contained in the above GLs.

2.1 Propose TS Changes

Duke Power Company proposed the following additions and deletions to Catawba TS Section 3/4.8.1 "A.C. Sources." The strikeouts represent the deletions and the shaded text represents the additions or replacements:

Limiting Condition for Operation 3.8.1.1, Action Statement a.

> With an offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining ~~A.C. Source~~ (required offsite circuit) by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. ~~If either diesel generators has not been successfully tested within the past 24 hours, demonstrate its OPERABILITY by performing Surveillance Requirement 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5 with 24 hours unless this surveillance requirement was performed within the previous 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.

The above changes are consistent with the following recommendations in GL 93-05:

> with the offsite circuit of the above required A.C. electrical power sources inoperable...
>
> (Delete the following requirement to test EDGs: If either generator has not been successfully tested within the past 24 hours, demonstrate the operability by performing Surveillance Requirement 4.8.1.1.2.a.5 and 4.8.1.1.2.a.6 for each such diesel generator, separately, within 24 hours.)

Additionally, the wording "A.C. Sources" will be replaced by "required offsite source." This is being done because there will no longer be a requirement to test the remaining EDGs for this action statement; the only A.C. source to test would be the remaining offsite circuit. Therefore, this is considered to be an administrative change.

Limiting Condition for Operation 3.8.1.1, Action Statement b.

b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable~~,~~: (also refer to ACTION c) demonstrate the OPERABILITY of the remaining ~~A.C. source~~ (required offsite circuit) by performing Specification 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. ~~If a diesel generator becomes inoperable due to any cause other than preplanned preventative 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.~~ or verifying within 8 hours that no potential common mode failure for the remaining diesel exists; 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 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.~~ with the diesel generator restored to OPERABLE status, follow ACTION a; with the offsite circuit restored to OPERABLE status, follow ACTION d.

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.)

The above changes are consistent with the following recommendations in GL 93-05 and NUREG-1431:

> ...If the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.5 and 4.8.1.1.2.a.6 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated.
>
> With one [required] offsite circuit inoperable <u>AND</u> one [required] DG inoperable restore [required] offsite circuit to <u>OPERABLE</u> status in 12 hours <u>OR</u> restore [required] DG to <u>OPERABLE</u> status within 12 hours.

The deletion of "A.C. Sources" and the addition of "required offsite source" is being done because there will no longer be a requirement to test the remaining EDGs for this action statement. Therefore, the only A.C. Source to test would be the remaining offsite circuit. Additionally, the licensee is

also proposing to delete, from the TS Bases, any reference to testing the remaining EDGs when an offsite source becomes unavailable. This is acceptable because this requirement has been eliminated from NUREG-1431, in accordance with the guidance and recommendations of GL 93-05.

Limiting Condition for Operation 3.8.1.1, First Half of Action Statement c.

~~c~~d. With a diesel generator of the above required A.C. electrical power sources inoperable~~,~~: (also refer to ACTION c) 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 *(or verifying within 24 hours that no potential common mode failure for the remaining diesel exists; 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.

* This action is not required if the inoperability of the diesel was due to an inoperable support system, an independently testable component, or preplanned testing or maintenance. If required, this action is to be completed regardless of when the inoperable diesel generator is restored to OPERABLE status. The provisions of Specification 3.0.2 are not applicable.)

The above changes are consistent with NUREG-1431 and the following recommendations in GL 93-05:

> ...If the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventative maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirements 4.8.1.1.2.a.5 and 4.8.1.1.2.a.6 within 8 hours, unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated.

Limiting Condition for Operation 3.8.1.1, Second Half of Action Statement c.

c. With one diesel generator inoperable in addition to ACTION b. or d ~~(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.