September 22, 1987

Docket No. 50-382

Mr. J. G. Dewease
Senior Vice President - Nuclear Operations
Louisiana Power and Light Company
317 Baronne Street, Mail Unit 17
New Orleans, Louisiana 70160

Dear Mr. Dewease:

SUBJECT: ISSUANCE OF AMENDMENT NO. 23 TO FACILITY OPERATING LICENSE NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3 (TAC NO. 64991)

The Commission has issued the enclosed Amendment No. 23 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated March 26, 1987, as supplemented by letters dated May 15, July 24 and August 24, 1987.

The amendment changes the Appendix A Technical Specifications by revising the surveillance requirements associated with demonstrating operability of the emergency diesel generators in order to minimize engine stress and wear in response to Generic Letter 84-15.

A copy of the Safety Evaluation supporting the amendment is also enclosed. Notice of Issuance will be included in the Commission's next Bi-weekly Federal Register notice.

Sincerely,

/s/

James H. Wilson, Project Manager
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 23 to NPF-38
2. Safety Evaluation

cc w/enclosures:
See next page

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LTR NAME: WATERFORD 3 AMENDMENT 23

PD4/LA	PD4/PE	PD4/PM	SELB/BC	OGC-Bethesda	PD4/D
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9/2/87	9/2/87	9/2/87	9/14/87	9/18/87	9/22/87

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

LOUISIANA POWER AND LIGHT COMPANY

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 23
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Louisiana Power and Light Company (the licensee) dated March 26, 1987, as supplemented by letters dated May 15, July 24, and August 24, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

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

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

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-38 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. 23, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee 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

Walter A. Paulson for

Jose A. Calvo, Director
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 22, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 23

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace the following pages of the Appendix A Technical Specifications with the attached 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.

Remove	Insert
XXII	XXII
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 8-6a
-	3/4 6-6b
3/4 8-7	3/4 8-7
-	3/4 8-7a
-	3/4 8-7b
3/4 8-8	3/4 8-8 (No change)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

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 Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. Diesel oil feed tanks containing a minimum volume of 337 gallons of fuel, and

2. A separate diesel generator fuel oil storage tank containing a minimum volume of 38,760 gallons of fuel, and

3. A separate fuel transfer pump.

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

ACTION:

a. With one offsite circuit of 3.8.1.1a inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 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 Requirement 4.8.1.1.2a.4 separately for each diesel generator (unless it is already operating) within 24 hours. Restore the offsite A.C. 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 diesel generator of 3.8.1.1b inoperable, demonstrate the OPERABILITY of the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1a (separately for each offsite A.C. circuit) within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours) by performing Surveillance Requirement 4.8.1.1.2a.4 within 24 hours. Restore the diesel generator 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.

c. With one offsite A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter; and, if the diesel generator became inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2a.4 within 8 hours (unless it is already operating). Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in

ACTION (Continued)

at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite A.C. circuit or diesel generator) to OPERABLE status in accordance with the provisions of ACTION statement a or b, as appropriate, with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2a.4 performed under this ACTION statement satisfies the diesel generator test requirement of ACTION statement a or b.

d. With one diesel generator inoperable, in addition to ACTION b. or c. 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, the steam-driven emergency feed 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.

e. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2a.4 separately for each diesel generator within 8 hours unless the diesel generators are already operating; restore one of the inoperable offsite A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite A.C. circuit, follow ACTION statement a with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable offsite A.C. circuit. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2a.4 performed under this ACTION statement satisfies the diesel generator test requirement of ACTION statement a.

f. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter; restore 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. Following restoration of one diesel generator, follow ACTION statement b with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable diesel generator.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availablity, 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 diesel oil feed tank,

2. Verifying the fuel level in the diesel generator fuel oil storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the diesel oil feed tank,

4. Verifying the diesel starts and accelerates to at least 600 rpm (60 ± 1.2 Hz) in less than or equal to 10 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:

a) Manual.

b) Simulated loss-of-offsite power by itself.

c) Simulated loss-of-offsite power in conjunction with an ESF actuation test signal.

d) An ESF actuation test signal by itself.

*All planned starts for the purpose of surveillance in this section may be preceded by a prelube period as recommended by the manufacturer.

5. Verifying the generator is synchronized (10 seconds), subsequently loaded to an indicated 4200-4400 Kw* in less than or equal to 176 seconds,** and operates for at least an additional 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 diesel oil feed tanks.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks, by obtaining a sample of fuel oil in accordance with ASTM-D270-1975, and by verifying that the sample meets the following minimum requirements and is tested within the specified time limits:

1. As soon as sample is taken (or prior to adding new fuel to the storage tank) verify in accordance with the test specified in ASTM-D975-77 that the sample has:

a) A water and sediment content of less or equal to 0.05 volume percent.

b) A kinematic viscosity @ 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes.

c) A specific gravity as specified by the manufacturer @ 60/60°F of greater than or equal to 0.80 but less than or equal to 0.99 or an API gravity @ 60°F of greater than or equal to 11 degrees but less than or equal to 47 degrees.

2. Verify an impurity level of less than 2 mg of insolubles per 100 ml when tested in accordance with ASTM-D2274-70; analysis shall be completed within 7 days after obtaining the sample but may be performed after the addition of new fuel oil; and

*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

**The diesel generator fast loading requirement (176 sec) shall be performed at least once per 184 days in these surveillance tests. For all other surveillance tests, load the diesel generator at a rate consistent with the manufacturer's recommendations.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verify the other properties specified in Table 1 of ASTM-D975-1977 and Regulatory Guide 1.137, Revision 1, October 1979, Position 2.a., when tested in accordance with ASTM-D975-1977; analysis shall be completed within 14 days after obtaining the sample but may be performed after the addition of new fuel oil. Failure to meet this requirement shall not affect diesel generator OPERABILITY; however, corrective action shall be initiated within 72 hours to return the fuel oil supply to within acceptable limits.

d. At least once per 18 months during shutdown by:

1. Verifying the generator capability to reject a load of greater than or equal to 498 kW (HPSI pump) while maintaining voltage at 4160 $\pm$ 420 volts and frequency at 60 +4.5, -1.2 Hz.

2. Verifying the generator capability to reject a load of 4400 kW without tripping. The generator voltage shall not exceed 4784 volts during and following the load rejection.

3. Simulating a loss-of-offsite power by itself, 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 10 seconds after the auto-start signal, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 + 1.2, -0.3 Hz during this test.

4. Verifying that on an SIAS 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 steady-state generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

SURVEILLANCE REQUIREMENTS (Continued)

5. Simulating a loss-of-offsite power in conjunction with an SIAS actuation test signal, 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 10 seconds after the auto-start signal, energizes the auto-connected emergency loads through the load sequencer and operates for greater than or equal to 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 + 1.2, -0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal.

6. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 4700 to 4900 Kw* and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 4200 to 4400 Kw.* The generator voltage and freqency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady-state generator voltage and frequency shall be 4160 ± 420 volts and 60 + 1.2, -0.3 Hz during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.3b.**

7. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4400 kW.

*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

**If Surveillance Requirement 4.8.1.1.2d.3b is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at an indicated 4200-4400 kw* for 1 hour or until internal operating temperatures have stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

8. Verifying the diesel generator's capability to:

   a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

   b) Transfer its loads to the offsite power source, and

   c) Be restored to its standby status.

9. Verifying 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 energizes the emergency loads with offsite power.

10. Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the diesel oil feed tank of each diesel via the installed cross connection lines.

11. Verifying that the automatic load sequence timer is OPERABLE with the time of each load block within ±10% of the sequenced load block time.

12. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

    a) turning gear engaged
    b) emergency stop
    c) loss of D.C. control power
    d) governor fuel oil linkage tripped

e. At the first refueling outage, and thereafter, at intervals not to exceed 24 months, subject the diesels to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

f. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 600 rpm (60 ± 1.2 Hz) in less than or equal to 10 seconds.

g. At least once per 10 years by:

   1. Draining each diesel generator fuel oil storage tank, removing the accumulated sediment, and cleaning the tank using a sodium hypochlorite solution or equivalent, and

SURVEILLANCE REQUIREMENTS (Continued)

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.

h. By performing a visual inspection of the interior of the diesel generator fuel oil storage tanks each time the tank is drained and, if necessary, clean the tank with a sodium hypochlorite solution, or equivalent.

4.8.1.1.3 Reports - All diesel generator failures, valid or nonvalid, 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 20 or 100 starts (on a per diesel generator basis) exceeds the criteria in Table 4.8-1, take the appropriate action specified in Table 4.8-1a and attachments thereto.

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***
≤ 1	≤ 4	At least once per 31 days
≥ 2	≥ 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, Revision 1, August 1977, where the last 20 and 100 tests are determined on a per diesel generator basis. For the purposes of this test schedule, only valid tests conducted after the Operating License issuance date shall be included in the computation of the "last 100 valid tests". Entry into this test schedule shall be made at the 31 day test frequency. Increased test frequency for one diesel generator shall not affect the test frequency for the remaining diesel generator, even under the STAGGERED TEST BASIS criteria.

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

***For 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 conditions 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 successful completion of 14 consecutive tests in a single series; 10 of these tests shall be in accordance with Surveillance Requirement 4.8.1.1.2a.4,5 and 4 of these tests shall include the fast loading requirement described in the double-asterisked (**) note to surveillance requirement 4.8.1.1.2a.5. If this criterion is not satisfied during the first series of tests, any alternate criterion used to trans-value the failure count to zero may only be implemented with prior approval by the NRC.

TABLE 4.8-1a

ADDITIONAL RELIABILITY ACTIONS

No. of failures in last 20 valid tests	No. of failures in last 100 valid tests	Action
3	6	Within 14 days prepare and maintain a report for NRC audit describing the diesel generator reliability improvement program implemented at the site (see Note 1).
5	11	Declare the diesel generator inoperable. Perform a requalification test program for the affected diesel generator (see Note 2).

TABLE 4.8-1a (Continued)

TABLE NOTATIONS

(1) As a minimum the Reliability Improvement Program report for NRC audit shall include:

a) a summary of all tests (valid and invalid) that occurred within the time period over which the last 20/100 valid tests were performed

b) analysis of failures and determination of root causes of failures

c) evaluation of each of the recommendations of NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability in Operating Reactors," with respect to their application to the Plant

d) identification of all actions taken or to be taken to 1) correct the root causes of failures defined in b) above and 2) achieve a general improvement of diesel generator reliability

e) the schedule for implementation of each action from d) above

f) an assessment of the existing reliability of electric power to engineered safety feature equipment

Once the initial report has been prepared detailing the diesel generator reliability improvement program, as defined above, only a supplemental report is required within 14 days after each failure during a valid demand for so long as the affected diesel generator unit continues to violate the criteria (3/20 or 6/100) for the reliability improvement program remedial action. The supplemental report need only update the failure/demand history for the affected diesel generator unit since the last report for that diesel generator. The supplemental report shall also present an analysis of the failure(s) with a root cause determination, if possible, and shall delineate any further procedural, hardware or operational changes to be incorporated into the site diesel generator improvement program and the schedule for implementation of those changes.

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

(2) The diesel generator requalification program shall consist of the following:

(a) Perform seven consecutive successful demands without a failure within 30 days of the diesel generator being restored to operable status and fourteen consecutive successful demands without a failure within 75 days of the diesel generator of being restored to operable status.

(b) If a failure occurs during the first seven tests in the requalification test program, perform seven consecutive successful demands without an additional failure within 30 days of the diesel generator being restored to operable status and fourteen consecutive successful demands without a failure within 75 days of the diesel generator (see 2a) being restored to operable status.

TABLE 4.8-1a (Continued)

TABLE NOTATIONS

(c) If a failure occurs during the second seven tests (tests 8 through 14) of (a) above, perform fourteen consecutive successful demands without an additional failure within 75 days of the failure which occurred during the requalification testing.

(d) Following the second failure during the requalification test program, be in as least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

(e) During requalification testing the diesel generator should not be tested more frequently than at 24-hour intervals.

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

(f) The number of failures in the last 20 valid demands is less than 5.

(g) The number of failures in the last 100 valid demands is less than 11.

(h) In the event that following successful requalification of a diesel generator, the number of failures is still in excess of the remedial action criteria (f and/or g above) the following exception will be allowed until the diesel generator is no longer in violation of the remedial action criteria (f and/or g above).

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

ELECTRICAL POWER SYSTEMS

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 Class 1E distribution system, and

b. One diesel generator with:

1. A diesel oil feed tank containing a minimum volume of 337 gallons of fuel,

2. The diesel fuel oil storage tanks containing a minimum volume of 38,760 gallons of fuel, and

3. A fuel transfer pump.

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. 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 Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, (except for Surveillance Requirement 4.8.1.1.2a.5.) and 4.8.1.1.3.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 23 TO

FACILITY OPERATING LICENSE NO. NPF-38

LOUISIANA POWER AND LIGHT COMPANY

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated March 26, 1987, as supplemented by letters dated May 15, July 24 and August 24, 1987, Louisiana Power and Light Company (LP&L or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-38) for Waterford Steam Electric Station, Unit 3. The proposed changes would revise the surveillance requirements associated with demonstrating operability of the emergency diesel generators (EDGs) in order to minimize engine stress and wear in response to Generic Letter 84-15.

2.0 DISCUSSION

On July 2, 1984, the staff issued Generic Letter (GL) 84-15 entitled, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," which seeks to attain and maintain high reliability of diesel generators. The licensee's response for GL 84-15 is contained in the above-referenced letters. The changes proposed by the licensee are in 3 major catagories, as follows: 1) changes to reduce the number of EDG starts required under specific conditions; 2) changes in the methodology of EDG testing to minimize engine wear; and 3) revision to Table 4.8-1 to reduce the frequency of EDG testing as a function of the number of EDG failures. The staff evaluation of the changes requested by the licensee is included in this report. The staff evaluation is keyed to the specific sections of the Waterford TS for which changes have been requested.

3.0 EVALUATION

This evaluation covers changes to Section 3/4.8.1," A.C. Sources" of the Waterford TS requested by the licensee. Each change is identified by the appropriate paragraph number and/or title, and is evaluated individually.

3.8.1.1 Action a. and b.

In this change, the orginal Action a. is expanded to become Action a. and b. In the existing TS, Action a. covers the loss of either an offsite power source or the loss of an EDG. The proposed Action a. covers inoperability of an offsite power source, only, and the proposed Action b. covers inoperability of one EDG, only. In addition to separating the two operating conditions, the requirement to test the EDG(s) "within 1 hour and at least once per 8 hours thereafter" is deleted. For both proposed Actions a. and b., the new requirement is to test the EDG(s) separately within 24 hours. There is no requirement for additional testing within the 72-hour LCO period, and the testing requirement in proposed Action b. is further qualified to be required only if the EDG inoperability was due to any cause other than preplanned preventive maintenance.

The changes proposed by the licensee regarding EDG testing during a LCO are identical to those proposed and approved for use at North Anna Unit 2. The basis for staff acceptance is contained in Section 3.3.1 and 3.3.2 of the staff safety evaluation in support of Amendment No. 48 to the North Anna TS which was forwarded to the utility as an enclosure to a staff letter dated April 25, 1985. In addition, the proposed changes are consistent with the objective of Generic Letter 84-15 with regard to reducing the number of starts experienced by EDGs. For the preceding reasons, the staff therefore concludes that the proposed changes to existing Action a. are acceptable.

3.8.1.1 Action c

In this change, existing Action b. becomes Action c. which covers the condition of one offsite A.C. circuit and one EDG inoperable. This action is further modified to delete the requirement to test the remaining EDG "within one hour and at least once per 8 hours thereafter" and substitutes the requirement to test the remaining EDG within 8 hours. The proposed change also qualifies the EDG testing requirement such that testing need only be done if EDG inoperability was due to any cause other than preplanned preventive maintenance. A third change covers the situation where either the inoperable offsite A.C. circuit or EDG is restored to operable status within the requisite 12 hours. At this point, the appropriate Action (a. or b.) becomes dominant, and the time to restore the remaining A.C. source (offsite A.C. circuit or EDG) is based on the time of the initial loss of the remaining inoperable A.C. source. The final change to this Action adds the clarification that a successful test of an EDG in Action c satisfies the same requirement for an EDG test in Action a. or b.

Deletion of the requirement to test EDGs "within one hour and at least once per 8 hours thereafter" was addressed in the discussion for Action a. and b., above, and is acceptable for the reason stated. Substitution of the requirement to test the remaining EDG within 8 hours is consistent with the recommendations in GL 84-15 and is also acceptable. The proposed change regarding reversion to Action a. or b.

following restoration of an A.C. source in Action c. is considered by the staff to be a clarification of the intent of the existing TS and is therefore acceptable. The staff also agrees that a successful test of an EDG under Action c. satisfies the EDG test requirement in Action a. and b. This proposed change is, therefore, also acceptable.

3.8.1.1 Action d.

Existing Action c. becomes Action d., and references to Action a. or b. is changed to Action b. or c. These are editorial changes necessary to be consistent with the preceding changes and are, therefore, acceptable.

3.8.1.1 Action e.

In this change, existing Action d. becomes Action e., and the requirement to test the EDG's "within one hour and once per 8 hours thereafter" is deleted. A requirement to test the EDG's within 8 hours is substituted for the existing test requirement. This change also includes a statement regarding reverting to Action a. upon restoration of an offsite A.C. circuit, and that Action a. be based on the time of initial loss of the remaining inoperable offsite A.C. circuit. The final change includes a statement to the effect that successful testing of the EDGs under Action e. satisfies the requirement for EDG testing in Action a.

The above change to the EDG testing requirement is consistent with the objectives of GL 84-15 and is, therefore, acceptable. The statement regarding reverting to Action a. is, in the staff's view, a clarification of the intent of the existing TS and is, therefore, acceptable. This includes using the time of the initial loss of the remaining inoperable offsite A.C. circuit as the base for Action a. The staff agrees with the licensee that successful EDG testing under Action e. satisfies the requirements for EDG testing in Action a. Therefore, this last change in Action e. is also acceptable.

3.8.1.1 Action f.

In this change, existing Action e. becomes Action f. The change also includes a statement regarding reverting to Action b. following restoration to operable status of one EDG, and that Action b. be based on the time of initial loss of the remaining inoperable EDG.

The statement regarding reverting to Action b. is, in the staff's view, a clarification of the intent of the existing TS and is, therefore, acceptable. This includes using the time of the initial loss of the remaining inoperable EDG as the base for Action b.

4.8.1.1.2

A footnote is added to this surveillance which allows prelubing the EDG in accordance with manufacturer's recommendations prior to all planned starts. This change is consistent with the objectives of GL 84-15 and current staff thinking with regard to reducing engine wear as a consequence of testing. The proposed change is, therefore, acceptable.

4.8.1.1.2.a.5

Two changes are proposed for this survellance. The first change deletes the requirement to load the EDG to "greater than or equal to 4400 KW" and substitutes "an indicated 4200-4400 KW". A footnote explaining the rationale for the change is also added. The footnote also states that loads in excess of the 4200-4400 KW band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads will not invalidate a test under this surveillance. The second change adds another footnote which allows the EDG to be loaded in accordance with manufacturer's recommendations except that at least once per 184 days the EDG will be loaded in 176 seconds.

The staff has recognized that requiring EDGs to be loaded to "greater than or equal to ____ KW" has probably caused EDGs to be routinely overloaded, possibly with detrimental effects. By establishing an operating band, EDGs can be tested adequately without overloading and without concern for violating applicable TS. The staff considers the elimination of routine overloading to be consistent with the objectives of GL 84-15 with regard to minimizing stress and wear on EDGs. The proposed operating band for the purpose of this surveillance is, therefore, acceptable. The staff recognizes the potential for load variations due to changes on the bus. The staff agrees that momentary variations due to changing bus conditions shall not invalidate the test. Therefore, the portion of the footnote pertaining to load variations is also acceptable.

Rapid loading of EDGs can cause thermal stresses which, in turn, can be detrimental to the EDGs. By taking a longer time to load the EDGs, these stresses can be substantially reduced. Therefore, the licensee's proposal to load the EDGs in accordance with manufacturer's recommendations is consistent with the objectives of GL 84-15 with regard to minimizing stress and wear on EDGs. The licensee's proposal is, therefore, acceptable.

4.8.1.1.2.C.3

The licensee has proposed an addition to this surveillance which states that EDG operability will not be affected by failure of the fuel properties to meet the guidelines in ASTM-D975-1977. The licensee's proposal is based on corrective action to return the fuel oil supply to within acceptable limits being initiated within 72 hours.

The fuel oil properties covered by this surveillance do not have an immediate impact on EDG operability. These properties, which include such things as sulphur, ash content, and copper corrosion will affect long term life and efficiency of a diesel engine, but will have negligible affect in the short term. Corrective action to return the fuel oil supply to within acceptable limits, if initiated within 72 hours, would be more than adequate to preclude any EDG degradation. The licensee's proposed change is, therefore, acceptable.

4.8.1.1.2.d.6

There are three changes proposed for this surveillance. The first change deletes the requirement to load the EDG's "to greater than or equal to 4840 KW" and substitutes "to an indicated 4700-4900 KW". The second change adds a footnote which explains the rationale for the change and is identical to the footnote proposed in TS Surveillance 4.8.1.1.2.a.5. These two changes are acceptable for the same reasons presented in the evaluation of the changes to 4.8.1.1.2.a.5, above.

The third change in this surveillance adds a footnote pertaining to the requirement to perform surveillance 4.8.1.1.2.d.3b within 5 minutes after completing this surveillance. The footnote states that if surveillance 4.8.1.1.2.d.2b is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the EDG may be operated at an indicated 4200-4400 KW for one hour or until internal operating temperatures have stabilized. At this point, 4.8.1.1.2.d.3b would be attempted again and, if successfully completed, would be a valid test.

The purpose of surveillance 4.8.1.1.2.d.3b is to demonstrate the ability of EDGs to start and accept load from a hot condition. This ability can be demonstrated whenever the EDG operating temperatures have reached their normal values for full load operation and have stabilized. The length of operating time required to reach this point is of no importance with regard to this surveillance. The staff agrees with the licensee that the 24-hour test need not be repeated, and the proposed change is therefore acceptable.

4.8.1.1.3

Reference to Regulatory Position e.3.b of Regulatory Guide 1.108 is deleted from this section of the TS, and reference to Table 4.8-1, Table 4.8-1a, and attachments to Table 4.8-1a is added. Tables 4.8-1 and 4.8-1a include specific actions to be followed when EDG failures for the last 20 and/or last 100 valid start attempts exceed a specified value.

Table 4.8-1, Table 4.8-1a, and attachments to Table 4.8-1a are included as part of GL 84-15. The purpose of these tables and attachments is to eliminate excessive EDG testing as a function of the number of failures, and to implement some definitive criteria regarding actions to be taken with respect to unreliable EDGs. The inclusion of these tables and attachments in the Waterford TS is consistent with the objectives of GL 84-15 and is, therefore, acceptable.

The TS changes proposed by the licensee will result in the reduction of both the number of fast starts and the total number of tests experienced by the EDGs at Waterford 3. These reductions, in turn, will reduce wear and stress on the EDGs, which is consistent with the objectives of GL 84-15. The TS changes proposed by the licensee are, therefore, acceptable.

4.0 CONTACT WITH STATE OFFICIAL

The NRC staff has advised the Administrator, Nuclear Energy Division, Office of Environmental Affairs, State of Louisiana of the proposed determination of no significant hazards consideration. No comments were received.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment relates to changes in installation or use of a facility component located within the restricted area. The staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

Based upon its evaluation of the proposed changes to the Waterford 3 Technical Specifications, the staff has concluded that: there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. The staff, therefore, concludes that the proposed changes are acceptable, and they are hereby incorporated into the Waterford 3 Technical Specifications.

Dated: September 22, 1987

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