June 2, 1988

Docket No. 50-382

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Mr. J. G. Dewease
Senior Vice President - Nuclear Operations
Louisiana Power and Light Company
317 Baronne Street, Mail Unit 17
New Orleans, Louisiana 70112

Dear Mr. Dewease:

SUBJECT: ISSUANCE OF AMENDMENT NO. 39 TO FACILITY OPERATING LICENSE NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3 (TAC NO. 68281)

The Commission has issued the enclosed Amendment No. 39 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 May 31, 1988 as supplemented by letter dated June 1, 1988.

The amendment changes the Appendix A Technical Specifications by reducing from two to one the number of Containment Cooling Fans required to be operable in each train of the Containment Cooling System.

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/
David L. Wigginton, Project Manager
Project Directorate - IV
Division of Reactor Projects - III, IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 39 to NPF-38
2. Safety Evaluation

cc w/enclosures:
See next page

LTR NAME: EMERG AMEND

NO CONCURRENCE
NSHC UNNECESSARY
NRC 6/2/88

PD4/LA	PD4/PM	OGC-Rockville	PD4/D
PNoonan	DWigginton:kab	ACKNOWLEDGE	JCalvo
06/9/88	06/2/88	06/2/88	06/2/88

for S. CRAIG PSB 6/2/88

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P PDR

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

Docket No. 50-382 June 2, 1988

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Senior Vice President - Nuclear Operations
Louisiana Power and Light Company
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The amendment changes the Appendix A Technical Specifications by reducing from two to one the number of Containment Cooling Fans required to be operable in each train of the Containment Cooling System.

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.

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David L. Wigginton, Project Manager
Project Directorate - IV
Division of Reactor Projects - III, IV, V and Special Projects
Office of Nuclear Reactor Regulation

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cc w/enclosures:
See next page

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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. 39
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 May 31, 1988 supplemented by letter dated June 1, 1988, 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. 39, 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

José A. Calvo for

Lester S. Rubenstein, Assistant Director
for Region IV and Special Projects
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 2, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 39

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by Amendment number and contains vertical lines indicating the areas of change. The corresponding overleaf page is also provided to maintain document completeness.

Remove	Insert
3/4 6-18	3/4 6-18

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that upon a recirculation actuation test signal, the safety injection system sump isolation valves open and that a recirculation mode flow path via an OPERABLE shutdown cooling heat exchanger is established.

3. Verifying that each spray pump starts automatically on a CSAS test signal.

e. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

CONTAINMENT COOLING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.2 Two independent groups of containment cooling fans shall be OPERABLE with one fan system to each group.

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

ACTION:

With one group of the above required containment cooling fans inoperable, restore the inoperable cooling fan to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable containment cooling fan to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.2 Each group of containment cooling fans shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Starting each fan group not already running from the control room and verifying that each fan group operates for at least 15 minutes.

2. Verifying a cooling water flow rate of greater than or equal to 625 gpm to each cooler.

b. At least once per 18 months by:

1. Verifying that each fan group starts automatically on an SIAS test signal.

2. Verifying a cooling water flow rate of greater than or equal to 1325 gpm to each cooler.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 39 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 May 31, 1988 as supplemented by letter dated June 1, 1988, 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 reduce from two to one the number of Containment Cooling Fans required to be operable in each train of the Containment Cooling System. The need for this emergency change to the Technical Specifications (TS) stems from a sudden failure of the motor windings in one fan which caused the containment cooling fan to be inoperable. The inoperability of a cooling fan would have required a plant cooldown within 72 hours because a replacement was not immediately available.

2.0 DISCUSSION

On May 28, 1988, when the reactor was in the process of entering Mode 2 to perform low power physics testing following a refueling outage, the containment fan was found inoperable because of motor failure. The licensee immediately contacted vendors and utilities throughout the country to search for an alternative motor but failed to find a substitute for the damaged motor. In order to avoid plant shutdown, the licensee performed a reanalysis of the limiting design basis accidents to determine the effect on long term post accident containment pressure.

The Waterford 3 containment cooling system consists of two independent trains with two fans per train (four containment fan coolers total). Each fan has two banks of cooling coils, casing, vane axial two-speed fan and motor. During normal operation, three of the four fan coolers are operated to maintain the pressure, temperature and humidity in the containment within design limits. In the event of a postulated loss-of-coolant accident (LOCA) or main steam line break (MSLB), the current FSAR design basis analysis assumes one containment spray train and one containment cooling train (two cooling fans) of the containment heat removal system will function for containment heat removal. This was determined by the licensee to be the most limiting single active failure under design basis accident conditions. The licensee performed a reanalysis of these limiting events assuming the same limiting single failure with the proposed technical specification in place which results in one operable containment cooling fan.

3.0 EVALUATION

The most limiting condition for peak containment consideration for the plant is a MSLB at 75% power. The system is also designed for long term containment pressure reduction following a LOCA from 100% power. The licensee performed a reanalysis of these limiting events using the same computer code (Contemp Lt-26) and models described in the FSAR which were previously approved by the staff. The analysis assumed operation of one containment cooling train, and an initial containment pressure of 1.0 psig as allowed by TS 3.6.1.4. The analysis showed that the peak containment pressure remained within the containment design pressure for the limiting MSLB. Similarly, for the 75% power MSLB with a main steam isolation valve failure to close as the assumed single failure (two cooling fans operate instead of four), the peak containment pressure was within the design limit. The licensee also assessed the long term post accident containment pressure reduction capability by analyzing the limiting 100% power LOCA. The analysis showed that the containment pressure can be reduced by a factor of 2 within 24 hours after the accident. Based on these analyses, the licensee proposed to revise the TS to allow a minimum of one containment cooling fan per train to be operable in modes 1, 2, 3, and 4.

The licensee also confirmed in a subsequent letter dated June 1, 1988 that no credit for containment cooling fans was assumed for radioactivity removal, and therefore the proposed change will not affect post-accident offsite dose assumptions. Further, the licensee confirmed that while the peak containment temperature increases slightly, the short duration of the peak and thermal lag of exposed equipment will preclude an adverse impact on equipment qualification. In addition, the licensee evaluated the long term effect on equipment qualification of higher temperatures, and confirmed that the revised accident profile is below the equipment qualification reference temperature and thus, equipment qualification remains unchanged.

Since the licensee has demonstrated that the containment design pressure and equipment qualification envelop will not be exceeded with one operating containment cooling fan based on its reanalysis which employed methods and assumptions in accordance with the previously approved design basis, the staff finds the licensee's reanalysis acceptable. However, as discussed with the licensee, the staff encourages the licensee to maintain all four containment cooling fans operable to the extent possible even though only one per train is governed by the technical specification. This will provide the greatest defense in depth and operating flexibility. The licensee agreed with this philosophy and committed to continue to limit the down time of the fans including those not covered by the newly proposed TS LCO.

The staff has reviewed the licensee's submittal and related documents concerning the change to TS 3.6.2.2 regarding containment cooling fan operability. Based on its review, the staff finds that the licensee's

reanalysis of containment performance for MSLB and LOCA events assuming a single failure to be acceptable. The staff further concludes that the requirements of General Design Criteria (GDC) 38 concerning the design of containment heat removal systems are met and the proposed TS change is, therefore, acceptable.

4.0 EMERGENCY CIRCUMSTANCES

On May 28, 1988, Waterford plant personnel discovered the C Containment Cooling Fan was inoperable due to the sudden failure of the fan motor windings. This type of failure characterized as a phase-to-phase short in the winding can occur when wiring insulation breaks down or is damaged for some reason and is most often unpredicted and unexpected. The result of such a short is severe damage to the winding such that immediate repair is not possible without a qualified replacement on hand or a replacement readily available. The licensee has sought a replacement and has been unsuccessful in the attempt. The fans are required operable in the startup and operation modes and without a fan motor, Waterford would be required to shutdown to cold conditions. The licensee could not have foreseen the failure and did not realize the difficulty in finding a replacement motor prior to the failure. Repair of the motor could take weeks and with the present technical specification, the plant would remain shutdown. The technical specification change will allow the plant to continue startup and to operate with only one fan required in each train. The licensee has made a good effort to locate a replacement motor and failing there, the licensee has also made a good effort to show by acceptable analysis that two fans in each train are not needed to meet acceptance criteria.

5.0 NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if the operation of the facility in accordance with the amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
(3) Involve a significant reduction in a margin of safety.

The original analysis of the LOCA and MSLB events for Waterford 3 started with the assumption of two fans in each of two trains and the results of the analyses were within the limiting acceptance criteria and were acceptable. The original technical specifications reflected this assumption and required two fans in each train to be operable. The reanalysis using the same codes and methods, as was found originally to be acceptable, now starts with the assumption of only one fan in each of two trains. The results of the reanalysis is also acceptable. It can be

concluded that the original requirement was overly conservative and that the reduction of the required number of fans in each train, since it meets the acceptance criteria for containment design, does not involve a significant increase in the probability or consequences of an accident previously evaluated. The operation of the required number of fans has not changed nor has their function; they change does not create the possiblity of a new or different kind of accident from any accident evaluated. The small increase in the peak pressure as a result of the analysis starting with the assumption of only one fan operable in each train is still within the acceptable design pressure of the containment. This small increase does not represent a significant reduction in a margin of safety since by analysis the containment will remain intact and functional following the postulated accidents. On the basis of the above, the change to require one fan operable in each of two trains does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, consultation was held with the State of Louisiana by telephone. The State expressed no concern from both the standpoint of safety and the standpoint of the no significant hazards consideration determination.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment relates to changes in installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. 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.

8.0 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 are hereby incorporated into the Waterford 3 Technical Specifications.

Dated: June 2, 1988

Principal Contributors: J. Wermiel
D. Wigginton