

October 19, 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. 44 TO FACILITY OPERATING LICENSE  
 NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3  
 (TAC NO. 69003)

The Commission has issued the enclosed Amendment No. 44 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 July 18, 1988.

The amendment changes the Appendix A Technical Specifications to allow 4.10 weight percent U-235 enriched fuel to be stored in the spent fuel pool, new fuel storage vault, and containment temporary storage rack.

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. 44 to NPF-38
2. Safety Evaluation

cc w/enclosures:

See next page

LTR NAME: WATERFORD AMEND 69003

PD4/LA PNoonan 10/17/88	PD4/PM DWigginton: 10/17/88
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

October 19, 1988

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

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Sincerely,

A handwritten signature in cursive script, appearing to read "D. Wigginton".

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

Mr. Jerrold G. Dewease  
Louisiana Power & Light Company

Waterford 3

cc:

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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. 44  
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 July 18, 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. , 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: October 19, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 44  
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 a vertical line indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Remove

5-5

Insert

5-5

## DESIGN FEATURES

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### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 217 fuel assemblies with each fuel assembly containing a maximum of 236 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 150 inches and contain a nominal total weight of 1807 grams uranium. The initial core loading shall have a maximum enrichment of 2.91 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.1 weight percent U-235.

#### CONTROL ELEMENT ASSEMBLIES

5.3.2 The reactor core shall contain 83 full-length and 8 part-length control element assemblies.

### 5.4 REACTOR COOLANT SYSTEM

#### DESIGN PRESSURE AND TEMPERATURE

- 5.4.1 The Reactor Coolant System is designed and shall be maintained:
- a. In accordance with the code requirements specified in Section 5.2 of the FSAR with allowance for normal degradation pursuant of the applicable Surveillance Requirements,
  - b. For a pressure of 2500 psia, and
  - c. For a temperature of 650°F, except for the pressurizer and surge line which is 700°F.

#### VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is 11,800 +600, -0 cubic feet at a nominal  $T_{avg}$  of 582.1°F.

### 5.5 METEOROLOGICAL TOWERS LOCATION

5.5.1 The primary and backup meteorological towers shall be located as shown on Figure 5.1-1.

## DESIGN FEATURES

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### 5.6 FUEL STORAGE

#### CRITICALITY

5.6.1 The spent fuel storage racks are designed and shall be maintained with:

- a. A  $k_{eff}$  equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance for uncertainties.
- b. A nominal 10.38 inch center-to-center distance between fuel assemblies placed in the spent fuel storage racks.

5.6.2 The  $k_{eff}$  for new fuel for the first core loading stored dry in the spent fuel storage racks shall not exceed 0.98 when aqueous foam moderation is assumed.

#### DRAINAGE

5.6.3 The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation +40.0 MSL.

#### CAPACITY

5.6.4 The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1088 fuel assemblies.

### 5.7 COMPONENT CYCLIC OR TRANSIENT LIMITS

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.



## DESIGN FEATURES

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 44 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 July 18, 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 allow 4.10 weight percent U-235 enriched fuel to be stored in the spent fuel pool, new fuel storage vault, and containment temporary storage rack.

2.0 DISCUSSION

In License Amendment No. 7 dated October 16, 1986, the NRC evaluated the licensee's request to increase the enrichment to 4.10 weight percent U-235 and for all safety considerations, except the fuel handling accident, the staff found the 4.10 weight percent analysis to be acceptable. At that time the licensee's immediate need was limited to 4.00 weight percent and it was decided to await ongoing regulation considerations before extending the enrichment approval to 4.10 weight percent. The NRC has now progressed to the point where extended burnups and higher enrichments can be considered and the licensee now requests approval to 4.10 weight percent for the next fuel cycle. The Safety Evaluation for License Amendment No. 7 is still applicable and directly applies here. This evaluation addresses the fuel handling accident and together with the safety evaluation with License Amendment No. 7 constitutes the findings by the staff for 4.10 weight percent U-235 enriched fuel.

3.0 EVALUATION

LP&L has requested authorization for an increase of fuel enrichment to 4.10 weight percent of U-235 (from 4.0%) and to continue to allow fuel burnup up to 60,000 megawatt days per metric ton (MWD/MT). The staff and licensee evaluated the potential impact of the change on the radiological assessment of design basis accidents (DBAs) which were previously analyzed in the licensing of the Waterford Unit 3 nuclear power plant.

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The staff reviewed the licensee's submittal and also reviewed a publication which was prepared for the NRC entitled, "Assessment of the Use of Extended Burnup Fuel in Light Water Reactors," NUREG/CR 5009, February 1988, which included the consideration of higher enrichments. The NRC contractor, the Pacific Northwest Laboratory (PNL) of Battelle Memorial Institute examined the changes that could result in the NRC Design Basis Accident (DBA) assumptions, described in the various appropriate sections of Standard Review Plans (SRPs) and/or Regulatory Guides, that could result from the use of extended burnup fuel (up to 60,000 MWD/MT). The staff finds that the only DBA that could be affected by the use of the higher enrichment and extended burnup fuel, even in a minor way, would be the potential thyroid doses that could result from a fuel handling accident. PNL estimates that I-131 fuel gap activity in the peak fuel rod with 60,000 MWD/MT burnup could be as high as 12%. This value is 20% higher than the value normally used by the staff in evaluating fuel handling accidents (Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facilities for Boiling and Pressurized Water Reactors").

The staff, therefore, reevaluated the fuel handling accidents for the Waterford Unit 3 facility with an increase in iodine gap activity in the fuel damaged in a postulated fuel handling accident. Table 1 presents the fuel handling accident thyroid doses presented in the operating licensing Safety Evaluation Report dated July 1981 (NUREG-0787) and the increased (by 20%) thyroid doses resulting from the higher enrichment. The revised doses are "well within" the exposure guidelines values of 10 CFR Part 100, Paragraph 11. Well within means 25% or less of the 10 CFR Part 100 exposure guideline thyroid value, i.e., less than or equal to 75 rem to the thyroid and 6 rem whole body.

The Commission published a proposal determination of no significant hazards consideration on August 10, 1988 (53 FR 30137). No comments were received.

#### 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 NRC staff has considered the environmental impact of the proposed changes to the Technical Specifications. A separate environmental assessment has been prepared pursuant to 10 CFR Part 51. The Notice of Issuance of Environmental Assessment and Finding of No Significant Impact was published in the Federal Register on September 30, 1988 (53 FR 38380).

Accordingly, based upon the environmental assessment, the Commission has determined that issuance of this amendment will not have a significant effect on the quality of the human environment.

#### 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 are hereby incorporated into the Waterford 3 Technical Specifications.

Dated: October 19, 1988

Principal Contributor: James Martin, NRR

Table 1

Thyroid Doses\* as a Consequence of DBA Fuel Handling Accidents  
(Waterford Unit 3)

	<u>Exclusion Area</u>	<u>Low Population Zone</u>
	Thyroid Dose (Rem)	Thyroid Dose (Rem)
4.0% Enrichment (NUREG-0787)	1.1	< 1.0
4.1% Enrichment	1.3	< 1.2

\*Whole body doses remain < 1.0 rem at both boundaries.

September 22, 1988