

December 10, 1990

Docket No. 50-382

Mr. Ross P. Barkhurst
Vice President Operations
Entergy Operations, Inc.
Post Office Box B
Killona, Louisiana 70066

Dear Mr. Barkhurst:

SUBJECT: ISSUANCE OF AMENDMENT NO. 64 TO FACILITY OPERATING LICENSE
NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3
(TAC NO. 76065)

The Commission has issued the enclosed Amendment No. 64 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 February 12, 1990.

The amendment changes the Appendix A Technical Specifications to establish a single criterion for recirculation flow pump differential pressure and a single criterion for required high pressure safety injection pump flow during the recirculation surveillance test.

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

Sincerely,

ORIGINAL SIGNED BY:

David L. Wigginton, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 64 to NPF-38
2. Safety Evaluation

cc w/enclosures:
See next page

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Docket File	NRC/Local PDR	PD4-1 Reading	D. Wigginton(2)
M. Virgilio(MS13E4)	T. Quay	L. Berry	ACRS(10) (MSP315)
OGC(MS15B18)	D. Hagan(MNBB3206)	G. Hill(4)(P1-37)	
Wanda Jones(MS7103)	J. Calvo(MS11F22)	PD4-1 Plant File	
GPA/PA(MS2G5)	ARM/LFMB(MS4503)	T. Westerman,RIV	

OFC	: PD4-1/LA	: PD4-1/PM	: OGC	: PD4-1/D	:	:	:
NAME	: LBerry	: DWigginton	: TQuay	:	:	:	:
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Sincerely,

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

David L. Wigginton, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:

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2. Safety Evaluation

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See next page

Mr. Ross P. Barkhurst
Entergy Operations, Inc.

Waterford 3

cc:

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

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 64
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (the licensee) dated February 12, 1990, 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.

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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. 64, 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



Theodore R. Quay, Director
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 10, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 5

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.

REMOVE PAGES

3/4 5-5
3/4 5-6

INSERT PAGES

3/4 5-5
3/4 5-6

SURVEILLANCE REQUIREMENTS (Continued)

2. A visual inspection of the safety injection system sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.
 3. Verifying that a minimum total of 97.5 cubic feet of solid trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
 4. Verifying that when a representative sample of 4 ± 0.01 grams of TSP from a TSP storage basket is submerged, without agitation, in 4 ± 0.1 liters of 120 ± 10 °F water borated within RWSP boron concentration limits, the pH of the mixed solution is raised to greater than or equal to 7 within 3 hours.
- e. At least once per 18 months, during shutdown, by:
1. Verifying that each automatic valve in the flow path actuates to its correct position on SIAS and RAS test signals.
 2. Verifying that each of the following pumps start automatically upon receipt of a safety injection actuation test signal:
 - a. High pressure safety injection pump.
 - b. Low pressure safety injection pump.
 3. Verifying that on a recirculation actuation test signal, the low pressure safety injection pumps stop, the safety injection system sump isolation valves open.
- f. By verifying that each of the following pumps required to be OPERABLE performs as indicated on recirculation flow when tested pursuant to Specification 4.0.5:
1. High pressure safety injection pump differential pressure greater than or equal to 1429 psid.
 2. Low pressure safety injection pump discharge pressure greater than or equal to 177 psig.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- g. By verifying the correct position of each electrical and/or mechanical position stop for the following ECCS throttle valves by verifying that each ECCS throttle valve opens to the proper throttled position each time the valve is cycled:

<u>HPSI System</u>		<u>LPSI System</u>	
<u>Valve Number</u>		<u>Valve Number</u>	
a. SI-225A	e. SI-227A	a. SI-138A	
b. SI-225B	f. SI-227B	b. SI-138B	
c. SI-226A	g. SI-228A	c. SI-139A	
d. SI-226B	h. SI-228B	d. SI-139B	

- h. By performing a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying the following flow characteristics:

HPSI System - Single Pump (Cold leg injection mode)

The sum of the injection lines flow rates, excluding the highest flow rate, is greater than or equal to 675 gpm.

HPSI SYSTEM - Single Pump (Hot/cold leg injection mode)

With the system operating in the hot/cold leg injection mode, the hot leg flow must be greater than or equal to 436 gpm and within $\pm 10\%$ of the cold leg flow.

LPSI System - Single Pump

Flow for each pump is greater than or equal to 4810 with the total developed head greater than or equal to 268 feet but less than or equal to 292 feet.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 64 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By letter dated February 12, 1990, Louisiana Power and Light Company, the licensee for Waterford Unit 3, made application to revise Surveillance Requirements 4.5.2.f and 4.5.2.h of the Technical Specification (TS) for the High Pressure Safety Injection (HPSI) Pumps. The proposed TS 4.5.2.f eliminates the individual minimum differential pressure requirements for recirculation flow condition and establishes a single requirement applicable to each of the HPSI pumps. The proposed change to TS 4.5.2.h eliminates the maximum differential pressure criterion for all three HPSI pumps and increases the minimum flow rate criterion, thereby establishing a single, minimum flow rate criterion.

These two TSs are interrelated in that the TS for pump differential pressure, during pump recirculation conditions (4.5.2.f), establishes the maximum degradation in pump performance for which the pump performance still meets safety analysis assumptions. The minimum flow under full flow cold leg injection conditions (4.5.2.h) establishes the maximum system resistance, and thus the minimum required pump performance to meet safety analyses.

2.0 EVALUATION

In May 1989 the licensee replaced the B HPSI pump internals to correct problems caused by inboard bearing housing misalignment. The replacement was an exact change and was done while at power.

Once the replacement was installed, it was tested per Technical Specification (TS) 4.5.2.f and declared operable. At the next refueling outage, the licensee performed a full flow test on B HPSI pump as per TS 4.5.2.h and the result was a differential pressure of 497.2 psid at 740 gpm. The resulting replacement caused the flow under full flow conditions to improve, thus increasing the pump performance curve. This increase in differential pressure exceeded the TS limitations, therefore, B HPSI pump was declared inoperable.

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To avoid having to declare an improved HPSI pump inoperable, the licensee completed an analysis to justify removing the upper limits for the differential pressure and combining the minimum flow requirements to have a single minimum for all of the HPSI pumps. The TS 4.5.2.h flow requirement was based on the sum of the four injection line flow rates, excluding the highest flow rate. This ensured that adequate safety injection flow would be delivered to the RCS in the event of a Loss of Coolant Accident (LOCA).

Currently, the TS specifies 658 gpm for HPSI Pump A, 665 gpm for HPSI Pump B, and 650 gpm for HPSI A/B pump. The licensee proposed a minimum flow requirement of 675 gpm, allowing 25% spillage. This proposed minimum is adequate for two reasons. First, 1989 data indicates that all three HPSI pumps have a minimum of at least 715 gpm at full flow conditions. Secondly, based on the licensee's analysis, the 675 gpm corresponds to a 900 gpm pump flow (prior to spillage) which exceeds the 829 gpm (prior to spillage) used in the small break LOCA analysis. The 675 gpm is conservative, therefore, we find this acceptable.

The reason for having an upper limit for the differential pressure was to ensure that the system resistance did not increase above that used to determine the minimum pump performance required for safety analyses. Testing full flow directly eliminates the necessity to check resistance. We find this acceptable.

In meeting the TS 4.5.2.f requirement, the licensee completed an analysis to establish a single minimum pump differential pressure during recirculation conditions. The minimum differential pressure of 1429 psid was selected to ensure that pump performance would equal or exceed the performance required to deliver acceptable safety analysis flow.

To determine the acceptable differential pressure TS limits of 1429 psid, the licensee compared the safety analysis flow curve, based on FSAR Table 6.3-7, to the actual A/B swing HPSI pump performance curve that was developed during plant start-up tests. The A/B HPSI pump was selected because it had the lowest performance of the three Waterford 3 HPSI pumps, allowing for a conservative analysis. We find this acceptable.

3.0 SUMMARY

We have reviewed the bases for the proposed TS changes and have concluded that the changes are acceptable. We do note, however, that the FSAR HPSI pump data/specifications for maximum differential pressure should be updated to reflect compatibility with the proposed increased flows.

4.0 CONTACT WITH STATE OFFICIAL

The NRC staff has advised the Administrator, Radiation Protection Division Department of Environmental Quality, State of Louisiana of the proposed determination of no significant hazards consideration. No comments were received.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment involves a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. 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 exposures. The Commission has previously issued a proposed finding that the 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 Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 10, 1990

Principal Contributor: S. Brewer