

May 10, 2000

Mr. Charles M. Dugger  
Vice President Operations  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF  
AMENDMENT RE: INCREASING THE PERFORMANCE REQUIREMENT FOR  
THE LOW PRESSURE SAFETY INJECTION PUMPS (TAC NO. MA6175)

Dear Mr. Dugger:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 162 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. The amendment consists of changes to the plant technical specifications (TS) in response to your application dated July 19, 1999.

The amendment modifies TS 4.5.2.f.2 by increasing the performance requirement for the low pressure safety injection (LPSI) pumps. The change revises the LPSI pump Surveillance Requirements to measure pump developed head, instead of pump discharge pressure. The associated changes to TS Bases are included.

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

Sincerely,  
/RA/  
N. Kalyanam, Project Manager, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 162 to NPF-38  
2. Safety Evaluation

cc w/encs: See next page

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**Waterford Generating Station 3**

cc:

Administrator  
Louisiana Department of Environmental Quality  
P. O. Box 82215  
Baton Rouge, LA 70884-2215

Vice President, Operations Support  
Entergy Operations, Inc.  
P. O. Box 31995  
Jackson, MS 39286

Director  
Nuclear Safety Assurance  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70066-0751

Wise, Carter, Child & Caraway  
P. O. Box 651  
Jackson, MS 39205

General Manager Plant Operations  
Waterford 3 SES  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70066-0751

Licensing Manager  
Entergy Operations, Inc.  
17265 River Road  
Killona, LA 70066-0751

Winston & Strawn  
1400 L Street, N.W.  
Washington, DC 20005-3502

Resident Inspector/Waterford NPS  
P. O. Box 822  
Killona, LA 70066-0751

Regional Administrator, Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

Parish President Council  
St. Charles Parish  
P. O. Box 302  
Hahnville, LA 70057

Executive Vice-President  
and Chief Operating Officer  
Entergy Operations, Inc.  
P. O. Box 31995  
Jackson, MS 39286-1995

Chairman  
Louisiana Public Services Commission  
Baton Rouge, LA 70825-1697



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

ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 162  
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 July 19, 1999, 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.

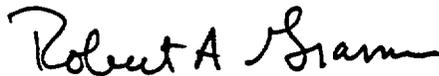
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. NPF-38 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 162 , 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 and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Gramm, Chief, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: May 10, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 162

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3/4 5-5  
B 3/4 5-2

Insert

3/4 5-5  
B 3/4 5-2

## EMERGENCY CORE COOLING SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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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 380 cubic feet of granular trisodium phosphate dodecahydrate (TSP) is contained within the TSP storage baskets.
  4. Verifying that when a representative sample of  $13.07 \pm 0.03$  grams of TSP from a TSP storage basket is submerged, without agitation, in  $4 \pm 0.1$  liters of  $120 \pm 10^\circ\text{F}$  water borated to  $3011 \pm 30$  ppm, 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 differential pressure greater than or equal to 168 psid.

## EMERGENCY CORE COOLING SYSTEMS

### BASES

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#### ECCS SUBSYSTEMS (Continued)

With the RCS temperature below 350°F, one OPERABLE ECCS subsystem is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements.

The trisodium phosphate dodecahydrate (TSP) stored in dissolving baskets located in the containment basement is provided to minimize the possibility of corrosion cracking of certain metal components during operation of the ECCS following a LOCA. The TSP provides this protection by dissolving in the sump water and causing its final pH to be raised to greater than or equal to 7.0. The requirement to dissolve a representative sample of TSP in a sample of water borated to be representative of post-LOCA sump conditions provides assurance that the stored TSP will dissolve in borated water at the postulated post-LOCA temperatures. A boron concentration of 3011 ppm boron is postulated to be representative of the highest post-LOCA sump boron concentration. Post LOCA sump pH will remain between 7.0 and 8.1 for the maximum (3011 ppm) and minimum (1504 ppm) boron concentrations calculated using the maximum and minimum post-LOCA sump volumes and conservatively assumed maximum and minimum source boron concentrations.

With the exception of systems in operation, the ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the ECCS pumps to the RCS full of water ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will prevent water hammer, pump cavitation, and pumping noncondensable gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SIAS or during SDC. The 31 day frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the adequacy of the procedural controls governing system operation.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensure that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

The requirement to verify the minimum pump differential pressure on recirculation flow ensures that the pump performance curve has not degraded below that used to show that the pump exceeds the design flow condition assumed in the safety analysis and is consistent with the requirements of ASME Section XI.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 162 TO

FACILITY OPERATING LICENSE NO. NPF-38

INCREASING PERFORMANCE REQUIREMENT FOR

LOW PRESSURE SAFETY INJECTION PUMPS

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By letter dated July 19, 1999, Entergy Operations, Inc., licensee for the Waterford Steam Electric Station, Unit 3, proposed to modify the surveillance requirement (SR) in Technical Specification (TS) 4.5.2.f.2 by increasing the performance requirement for the low pressure safety injection (LPSI) pumps. This change will revise the LPSI pumps SR to measure pump developed head, instead of LPSI pump discharge pressure. The proposed change will increase the minimum acceptable LPSI pump developed head requirement which is more restrictive than the current TS requirement. The TS Bases section is revised to incorporate this TS change.

2.0 EVALUATION

Presently, the SR in TS 4.5.2.f.2 prescribes a LPSI pump discharge pressure of greater than or equal to 177 pounds per square inch, gauge (psig). This value is dependent on pump developed head, as well as the pump suction head. The available suction head is nominally 20 psig (from reactor water storage pool level). Therefore, the LPSI pumps are currently required to develop only 157 psig in order to meet the TS requirement. The proposed TS change will require 168 psig developed head which is independent of pump suction pressure. This will provide a better assurance of pump performance and will increase the margin between the TS performance requirements and the analytical limit.

The LPSI system is primarily designed to mitigate the consequences of a large break loss-of-coolant accident (LOCA). This proposed change does not affect any of the assumptions used in the LOCA analysis nor plant operation. It only increases the existing equipment performance requirement.

The proposed TS change is more conservative than the current TS requirement and is also consistent with the guidelines of NUREG-1432, "Standard Technical Specifications - Combustion Engineering Plants." Thus, we find this proposal acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Louisiana State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding (65 FR 4277, dated January 26, 2000). 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 the amendment.

#### 6.0 CONCLUSION

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: K. Desai

Date: May 10, 2000