Docket No. 50-382 October 1, 1993

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. 86 TO FACILITY OPERATING LICENSE NPF-38 - WATERFORD STEAM ELECTRIC STATION, UNIT 3 (TAC NO. M87817)

The Commission has issued the enclosed Amendment No. 86 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 September 30, 1993, as corrected by letter dated October 1, 1993.

The amendment changes the Appendix A Technical Specifications by adding a footnote to the Containment Isolation Valves, 3/4 3.6.3, requirements that containment spray isolation valves, CS 125 A and/or B, may be left in the open position until starting (prior to Mode 4) following Refueling Outage 6.

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, Senior Project Manager
Project Directorate IV-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 86 to NPF-38
2. Safety Evaluation

cc w/enclosures:
See next page

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NAME	PNoonan	DWigginton	RBarrett	TSullivan	JNorberg
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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See next page

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

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 86
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 September 30, 1993, as corrected by letter dated October 1, 1993, 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. 86, 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

Elinor G. Adensam

Elinor G. Adensam, Assistant Director
for Region IV & V Reactors
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 1, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 86

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 contain vertical lines indicating the areas of change. The corresponding overleaf page is also provided to maintain document completeness.

REMOVE PAGE	INSERT PAGE
3/4 6-19	3/4 6-19

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 Each containment isolation valves shall be OPERABLE. * #

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

ACTION:

With one or more of the isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The provisions of Specification 3.0.4 do not apply.

*Locked or sealed closed valves may be opened on an intermittent basis under administrative control.

Containment Spray Valves CS-125 A and/or B may be left in the Open position until startup (prior to entering Mode 4) following Refueling Outage 6.

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each containment isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time.

SURVEILLANCE REQUIREMENTS (Continued)

4.6.3.2 Each containment isolation valve shall be demonstrated OPERABLE at least once per 18 months by:

a. Verifying that on a containment isolation test signal, each isolation valve actuates to its isolation position.

b. Verifying that on a containment Radiation-High test signal, each containment purge valve actuates to its isolation position.

4.6.3.3 The isolation time of each power-operated or automatic containment isolation valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 86 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By letter dated September 30, 1993, as corrected by letter dated October 1, 1993, Entergy Operations, Inc. (the licensee) requested an emergency Technical Specification (TS) change for its Waterford Steam Electric Station, Unit No. 3 facility (WSES). The proposed change would modify TS Limiting condition of Operation 3/4 3.6.3 by incorporating an interim provision to allow plant operation with either or both of containment spray valves CS-125A/B in a normally open position. The licensee's application included a safety analysis which the staff has reviewed.

WSES is a 3390 MWt Combustion-Engineering PWR with a "large dry" cylindrical steel containment.

2.0 DISCUSSION AND EVALUATION

The containment spray system at WSES is a redundant, safety-grade Engineered Safety Feature (ESF) which serves as a post-accident containment heat removal system and fission product removal system. The spray system is designed to be capable of reducing containment pressure to less than 50% of peak accident pressure within 24 hours, assuming loss of one train. The system is actuated by an CSAS signal which is a coincidence of a safety injection signal and containment high-high pressure signal (17.7 psi). WSES accident analyses assume one train of spray is initiated at 35.7-sec after a break and full flow is reached at 49.5-sec after the break.

On September 13, 1993, containment spray train A was declared inoperable when it was discovered that the spray header isolation valve CS-125A would not open with a high differential pressure across the valve. The discovery was made as a result of ESFAS relay testing which causes starting of the associated spray pump. Subsequently, a special test was conducted to determine the operability of the valve. Data gathered during the investigation indicate that presence of air in the system results in system overpressure. This overpressure is locked-in by an upstream check valve, disabling the header valve. The licensee's proposed TS change would add a statement to the TS specifically allowing operation with the valves being normally open, until the next refueling outage.

The spray header valves, CS-125A/B, are air-to-close, solenoid-controlled, normally-closed, fail-open (under spring force) gate valves. The containment spray system safety function requires that these valves be open during accident conditions. Though they are in the TS listing of isolation valves, they are not subject to the automatic closure criterion of GDC 56. The application states that they are defined as "remote manual valves." The design configuration and classification is consistent with Standard Review Plan (SRP) containment penetration isolation criteria.

The criteria of SRP Section 6.2.1.1.A "PWR DRY CONTAINMENTS," requires that the containment structure be capable of withstanding the maximum expected external pressure, or interlocks in the plant protection system and administrative controls to preclude inadvertent operation of the systems be provided. The staff has evaluated the licensee's application with respect to these criteria.

The WSES containment has an external design pressure of 0.65 psid. The design basis condition for external design pressure is inadvertent operation of both spray trains with all fan coolers in operation and failure of one of the two vacuum breakers. The calculated external pressure for this event is 0.49 psid (Ref: FSAR Table 6.2-11). Based on this information the staff concludes that the WSES containment is capable of withstanding the maximum expected external pressure.

The licensee has determined that operation of the facility with valves CS-125A/B as "normally open" will result in a higher probability of inadvertent containment spray due to (1) increased possibility of human error during maintenance and surveillance testing and (2) lack of spray header isolation in the event relay failure causes an spurious spray pump actuation during normal plant operation. The staff has considered these effects. The slight increase in the possibility of a containment negative pressure challenge is acceptable based on the redundant protection provided by safety related vacuum breakers and the fact that an inadvertent spray would not be expected to initiate an accident. The staff has evaluated the effects of inadvertent containment spray events. Based on that evaluation, the staff concluded that an inadvertent spray does not pose an immediate nuclear safety hazard and facilities may continue power operation should such an event occur (Ref: Staff Safety Evaluation dated February 5, 1991, Docket 50-361).

The staff has further considered the operational aspects of both CS-125A/B and are in agreement with the licensee that CS-125A is inoperable. The safety function can be performed with the valve open and the compensatory measures should provide added assurance against inadvertent containment spray. The licensee plans to test CS-125B after opening CS-125A and should carefully evaluate the CS-125B operability in light of the problems which made CS-125A inoperable.

Because of the pressure-locking effects and the thermal expansion of the valve stems when subjected to repeated cycling, the containment spray header isolation valve, CS-125B, may be more reliable if maintained in the open position. These valves are designed to be maintained closed by air pressure and to fail open. The function of the valves in the closed position is to

prevent or minimize the probability of spraying down containment in the event of inadvertent actuation of the containment spray system. The function of the valves in the open position is to allow flow from the containment spray pumps to the containment spray headers. The valves receive a signal to open concurrent with a signal to start the containment spray pumps. Once a signal to open has been received, the valves cannot be reclosed without resetting containment isolation.

Following the identification of the failure to close of CS-125A during September 1993, corrective actions included modifications to enlarge the air-bleed-off port on the valve pneumatic-actuator solenoid. To fail-safe open on loss of instrument air or on an ESAS actuation, the solenoid opens and air is bled off. Spring force then opens the valve. The bleed-off rate determines the rate of opening. By decreasing the bleed-off rate, the valve may open before the pump is up-to-speed, which would decrease the pressure effects which prevented opening of the valve. This modification on CS-125B may improve operation, however, the train B may also be susceptible to air ingress and any determination of operability should include this effect. The licensee must determine the extent of the effects on the continued operation of the valves or maintain the valves open, except during maintenance or surveillance. This will ensure that containment spray will be available in the event of a design-basis accident.

The staff has determined that the licensee's proposed TS change will not result in a condition of either degraded containment integrity or degraded ESF systems reliability. Further, the licensee will examine the CS-125B to ensure operability taking into account the conditions and operations which resulted in CS-125A being declared inoperable. Based on these findings, the proposed amendment is acceptable.

3.0 EMERGENCY CIRCUMSTANCES

On September 13, 1993, containment spray valve CS-125A was initially declared inoperable when it was discovered that it would not open with a high differential pressure across the valve. The licensee attempted to remove the source of the problem which was air entrapped in the piping. Efforts to remove the air were partially successful, however, the length of piping involved and the recirculation arrangement of the system made it impossible to remove all the air. During the latest period of valve inoperability the licensee conducted ultrasonic testing of the piping and discovered additional air, but the TS action time had almost expired. On September 28, 1993, the licensee requested Enforcement Discretion for an additional 72 hours to add another vent for the entrapped air and repeat the test on the valve. The Enforcement Discretion was granted by the Regional Administrator of Region IV with NRR concurrence.

In a parallel effort, the licensee began the preparation of a license amendment which would allow the valve to be open during normal plant operation. The licensee has cooperated fully with the NRC in their requests and has attempted to correct the valve problem without changing the TS. The

72 hour Enforcement Discretion is about to expire and without the amendment, the plant must be shutdown within the next 6 hours. The licensee has made a good faith effort to restore the valve but it has become clear that repair or replacement is required. Repair or replacement would also require a plant shutdown and the machining of parts which have not been available. The licensee has also made a good faith effort to provide the NRC with timely information and submittals to support the Enforcement Discretion and license amendment.

4.0 NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission's regulations in 10 CFR Part 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.

Maintaining CS-125 (A/B) in the open position will have no impact on accidents associated with isolating containment. The Safety Injection Actuation Signal/Containment Isolation Signal is generated on high containment pressure and/or low pressurizer pressure parameters which indicate a Loss of Coolant Accident (LOCA), Main Steam Line Break (MSLB) or Feedwater Line Break (FWLB) in containment. At a containment pressure of 17.7 psia the CSAS initiates the containment spray action to mitigate the effects of a LOCA, MSLB or FWLB. As indicated, those design bases accidents which would initiate containment isolation are the accidents that the CS system is designed to perform its safety related mitigating function. The Containment Spray System is designed for system pressures and temperatures that greatly exceed the maximum containment design pressure and temperature. However, should an event occur requiring containment isolation, but not requiring containment spray, then check valves CS-128 (A/B) would provide a containment isolation barrier and the CS system piping water seal would provide a second barrier.

With the establishment of administrative controls to close the CS-125A/B during testing or maintenance the slight increase in the probability of an inadvertent containment spray event is acceptable when compared to the safety benefit gained by opening CS-125(A and/or B). The current analysis for containment external pressurization events provides acceptable results with approximately 25% design margin.

This analysis assumes both CS trains inadvertently spraying containment with no operator action. An inadvertent containment spray resulting from this change is bounded by the existing FSAR analysis. In addition, inadvertent spray of the containment should not cause reactor transients or accidents.

Therefore, the proposed change will not involve a significant increase in the probability or consequences of any accident previously evaluated.

There are no new or different system interconnections or interactions associated with maintaining CS-125(A and/or B) open. There is no essential change in how any system is operated.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change will allow CS-125(A and/or B) to be maintained in the normally open position. This change will have no impact on any margin of safety. The inadvertent spray analysis is performed to demonstrate the acceptability of the containment to external pressurization events with a maximum allowed external pressurization of 0.65 psid. The analysis currently documented in the UFSAR predicts a maximum external pressurization of 0.49 psid, almost a 25% margin to the limit. An inadvertent containment spray due to CS pump relay failure would initiate containment spray for the effective train period. However, the consequences of this event are bounded by the current analysis.

Therefore, the proposed change will not involve a significant reduction in a margin of safety.

5.0 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.

6.0 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 and changes 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 exposure. The staff has made a determination that this amendment involves no significant hazards. 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.

7.0 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: W. Long
P. Campbell

Date: October 1, 1993