July 30, 2004

Mr. Joseph E. Venable
Vice President Operations
Entergy Operations, Inc.
17265 River Road
Killona, LA 70066-0751

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 - ISSUANCE OF AMENDMENT RE: REACTOR COOLANT SYSTEM LEAKAGE DETECTION (TAC NO. MC3085)

Dear Mr. Venable:

The Commission has issued the enclosed Amendment No. 197 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 7, 2004, as supplemented by letters dated July 8 and 16, 2004.

The amendment clarifies the actions of TS 3/4.4.5.1, Reactor Coolant System (RCS) Leakage; revises the surveillance requirements (SRs) of TS 3/4.4.5.2, RCS Operational Leakage; and deletes duplication in TS 3/4.3.3.1, Radiation Monitoring Instrumentation. Also, the amendment deletes the containment atmosphere gaseous radioactivity monitoring system from TS 3/4.4.5.1. The amendment is based on NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Revision 2, dated April 30, 2001.

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/

Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 197 to NPF-38
2. Safety Evaluation

cc w/encls: See next page

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ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 197
License No. NPF-38

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (EOI) dated May 7, 2004, as supplemented by letters dated July 8 and 16, 2004, 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. 197, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. EOI 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

/RA/

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

Attachment: Changes to the Technical Specifications

Date of Issuance: July 30, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 197

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	Insert
3/4 3-29	3/4 3-29
3/4 3-31	3/4 3-31
3/4 3-32	3/4 3-32
3/4 4-17	3/4 4-17
---	3/4 4-17a
---	3/4 4-17b
3/4 4-18	3/4 4-18
3/4 4-19	3/4 4-19

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 197 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated May 7, 2004 (Accession No. ML041320215), as supplemented by letters dated July 8 (Accession No. ML041970378) and 16, 2004 (Accession No. ML042020391), Entergy Operations, Inc. (the licensee), requested changes to the Technical Specifications (TSs) for Waterford Steam Electric Station, Unit 3. The supplemental letters dated July 8 and 16, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 25, 2004 (69 FR 20765).

The proposed change would revise the TSs related to reactor coolant system leakage detection. Specifically, the proposed change would clarify the actions of TS 3/4.4.5.1, Reactor Coolant System (RCS) Leakage; revise the surveillance requirements (SRs) of TS 3/4.4.5.2, RCS Operational Leakage; and delete duplication in TS 3/4.3.3.1, Radiation Monitoring Instrumentation. Also, the proposed change would delete the containment atmosphere gaseous radioactivity monitoring system from TS 3/4.4.5.1. The proposed change is based on NUREG-1432, "Standard Technical Specifications Combustion Engineering Plants," Revision 2, dated April 30, 2001.

2.0 REGULATORY EVALUATION

General Design Criterion 30, "Quality of reactor coolant pressure boundary," of Appendix A to 10 CFR Part 50, requires in part that, means be provided for detecting, and to the extent practical, identifying the location of the source of reactor coolant leakage. Regulatory Guide (RG) 1.45, "Reactor Coolant Pressure Boundary Leakage Detection System," describes acceptable methods of implementing this requirement with regard to the selection of leakage detection systems for the reactor coolant boundary. The position of RG 1.45 is that at least three different detection methods should be employed. Two of these methods should be: (1) sump level and flow monitoring, and (2) airborne particulate radioactivity monitoring. The third method may involve either monitoring of condensate flow rate from air coolers or monitoring of gaseous radioactivity. The RG recommends that the sensitivity and response time of each

leakage detection system employed for unidentified leakage should be adequate to detect a leakage rate, or its equivalent, of one gallon-per-minute (gpm) in less than one hour.

The licensee states in Section 5.1 of its May 7, 2004, submittal and reaffirms in Section 5.1 of its July 16, 2004, supplement, that the proposed change does not affect the Waterford 3 ability to meet the requirements of 10 CFR Part 50, Appendix A and RG 1.45, Revision 0 (dated May 1973) requirements for detecting RCS leakage.

The current leakage detection requirements for Waterford 3 are given in TS 3.4.5.1. It requires the following reactor coolant system (RCS) leakage detection systems be operable:

- A containment atmosphere particulate radioactive monitoring system,
- The containment sump level and flow monitoring system, and
- Either the containment air cooler condensate flow switches on at least three coolers or a containment atmosphere gaseous radioactive monitoring system.

3.0 TECHNICAL EVALUATION

TS 3.4.5.1 currently requires that either the containment air cooler condensate flow switches on at least three coolers or a containment atmosphere gaseous radioactivity monitoring system be operable. The licensee has indicated that due to improved fuel integrity and resultant reduced RCS radioactivity levels, the gaseous radioactivity monitor has become less effective for RCS leakage detection. The current normal radioactivity concentration levels observed during typical operating cycles are now several orders of magnitude lower than those given in Updated Final Safety Analysis Report Table 11.1-3, on which the particulate and gaseous radioactivity monitors setpoint were originally based. The licensee has performed evaluations on the particulate and gaseous monitors to determine if they meet the detection capability of 1 gpm in 1 hour specified in RG 1.45 based on the current RCS radioactivity concentration levels. The result of the evaluation indicates that the particulate monitor remains capable of detecting a one gpm leak within one hour, but due to the reduced RCS activity, the gaseous detector may not detect a one gpm leak within one hour. The licensee is requesting that the containment atmospheric gaseous radioactivity monitor be deleted from TS 3/4.3.3.1, TS 3/4.4.5.1 and TS 3/4.4.5.2.

The proposed changes to the TSs related to the removal of the containment gaseous radioactivity monitor from the TSs include:

1. Deleting table entries 2.a.1, 2.a.2 and ACTION 23 from Table 3.3-6 for the containment atmosphere gaseous activity RCS leakage detection process monitor and containment atmosphere particulate activity RCS leakage detection process monitor.

2. Deleting table entries 2.a.1 and 2.a.2 from Table 4.3-3 and revising TS 4.4.5.1a to address the containment atmosphere particulate radiation monitor SRs.

3. Deleting the reference to the gaseous monitor in TS 3/4.4.5.1 and TS 4.4.5.2.1b.

As stated earlier, the position of RG 1.45 is that at least three separate detection methods should be employed and two of these methods should be: (1) sump level and flow monitoring, and (2) airborne particulate radioactivity monitoring. The third method may involve either

monitoring of condensate flow rate from air coolers or monitoring of gaseous radioactivity. The Waterford 3 leakage detection system contains both particulate radioactivity and containment sump monitors as primary means of detecting RCS leakage. As a third method of RCS leakage detection, Waterford 3 currently monitors both containment air cooler condensate and containment atmosphere gaseous radioactivity. The licensee is requesting the deletion of the gaseous monitor from the TSs because it may not be capable of detecting a one gpm leak within one hour, due to reduced RCS activity. Since the TSs currently allow for either use of the containment air cooler condensate or the gaseous radioactivity monitor as the third diverse RCS leak detection method, the gaseous monitoring option can be removed and the system will continue to employ at least three different detection methods and remain consistent with the guidance of RG 1.45. Based on the above, the staff finds the deletion of the gaseous monitor from the TSs and the above proposed TS changes acceptable.

In addition to having the containment atmospheric gaseous radioactivity monitor removed from the TSs, the licensee is also proposing to allow the crediting of either the containment sump level instrumentation or the containment sump flow monitoring instrumentation (weir) as the "one containment sump monitor" as required by LCO 3.4.5.1. Containment sump monitoring of RCS leakage is currently being performed using the containment sump flow monitoring instrumentation, which contains a leak detection tank with a triangular weir for in-leakage measurement and alarm. Drains that are monitored for leak detection enter the sump via the leak detection tank. Discharge from the leak detection tank to the containment sump flows through a triangular weir. The flow through the weir causes the level of the measurement tank to correspond to the flow of water into the tank. Level transmitters send signals proportional to the tank level into the plant computer and annunciator, which has an alarm set at one gpm leakage flow above normal to satisfy the detection requirements of RG 1.45.

The licensee is proposing as a second method of containment sump monitoring of RCS leakage, use of the containment sump level instrumentation to formulate in-flow leakage rates. With the containment sump system operating in automatic, the sump level is maintained in the deep level pit. The deep pit of the containment sump has a constant cross sectional area, thus volume varies with level. In this range the containment sump level transmitters can be utilized to calculate the sump in-flow leakage by converting the level change in the sump to a change in volume over time which is then used to calculate the in-leakage flow rate. The calculation of the in-flow leakage will be performed on the plant computer. A 1 gpm leak would cause a change of 60 gallons in 1 hour, which would equate to a level change of 2.7 inches in the containment sump deep pit. By letter dated July 16, 2004, the licensee committed to establishing a new plant monitoring computer point that uses the data from one of the level transmitters to calculate the level change in the sump over a specified time. The plant monitoring computer along with the existing instrumentation is sufficient to detect a one gpm containment inflow rate within one hour. The licensee states that the containment sump level transmitter to be used is safety-related, seismic qualified and environmentally qualified.

The staff has reviewed the information the licensee has provided concerning the containment sump level instrumentation leak detection capability and has concluded that the proposed monitor will be capable of detecting a one gpm leak within one hour. Therefore, the staff finds that crediting of the containment sump level monitoring instrumentation as a redundant containment sump monitor as required by LCO 3.4.5.1 acceptable.

The following are the remaining TS revisions proposed by the licensee, which include the allowance of redundant containment sump monitors:

1. Replace the word "A" at the beginning of the sentence for LCO 3.4.5.1a with the word "One."

2. Replace the term "containment sump level and flow monitoring system" with the term "containment sump monitor" in TS LCO 3.4.5.1b and add the word "One" at the beginning of the sentence.

3. Replace the current action in LCO 3.4.5.1 with multiple actions that address single and multiple leakage detection instrument inoperabilty.

4. Change the current requirement to have the condensate air switches on at least three coolers to require only one containment fan cooler (CFC) condensate flow switch, making it consistent with NUREG-1432, and delete the requirement for the gaseous radioactivity monitor in LCO 3.4.5.1c.

5. Editorial changes that clarify TS 4.4.5.1a, b and c.

6. Delete TS 3/4.4.5.2 SRs 4.4.5.2.1a, 4.4.5.2.1b, and 4.4.5.2.1e and relocate SR 4.4.5.2.1c to SR 4.4.5.1b for consistency with NUREG-1432. SR 4.4.5.2.1d will be renumbered.

The proposed changes in items 1, 2 and 5 are editorial in nature and do not result in any technical change. Therefore, the changes are acceptable to the staff.

The proposed changes in item 3 are concerned with the "Actions" and are addressed in the section below.

Item 4 changes the requirements on the number of CFC flow switches required to be operable from requiring flow switches on at least three CFCs be operable to requiring only one CFC flow switch be operable. The licensee states that the containment flow switches are only effective when they are associated with an operating CFC and that TS 3.6.2.2 requires two independent trains of containment cooling to be operable with one fan cooler operable in each train. Because only containment flow switches associated with operating CFCs are effective, the containment flow switch credited for RCS leakage detection is the one associated with an operating CFC. The proposed change will require at least one CFC to be operating at all times. Since this change will not affect the ability of the RCS leakage detection system to meet its requirements for the detection of RCS leakage, the staff finds this change acceptable.

The deletions and relocation identified in item 6 have been reviewed by the staff and found acceptable based on the revisions made to the "Actions" in LCO 3.4.5.1 and SR 4.4.5.1.

As stated above, the licensee is proposing to replace the current action in LCO 3.4.5.1 with multiple actions that address single and multiple leakage detection instrument inoperability. The staff review of the proposed actions is provided below.

<u>Action a - containment atmospheric particulate radioactivity monitor inoperable</u>

The action proposes that when the containment atmosphere radiation monitor is inoperable, an RCS inventory balance or a grab sample be performed versus just taking a grab sample. A requirement is also added which allows verifying one CFC flow switch is operable within 30 days if the radiation monitor cannot be restored to operable status, provided the RCS inventory balance or the grab samples are obtained every 24 hours. The requirement of taking grab samples is consistent with NUREG-1432. Since appropriate leakage detection information will be obtained through the use of grab samples or from RCS inventory balances, the staff finds that the proposed change will not affect the systems capability to detect RCS leakage and, therefore, is acceptable.

Action b - containment sump monitor inoperable

The action proposes to add a requirement to perform an RCS inventory balance once per 24 hours to the current requirement to restore the containment sump monitor to operable status within 30 days. A note is also added to all actions requiring an RCS inventory balance, which delays the RCS inventory balance up to 12 hours to establish steady-state conditions. The proposed change is consistent with NUREG-1432. The staff has reviewed this change and has determined that it will not adversely affect the RCS leakage detection capability. Therefore, the staff finds the change acceptable. The proposed action will still provide an adequate means for detecting RCS leakage.

Action c - containment fan cooler condensate flow switch inoperable

When the CFC switch is inoperable, the proposed change replaces the action to restore the CFC flow switch to operable status within 30 days and will require either a channel check to be performed on the containment atmosphere particulate monitor once per 8 hours or an RCS inventory balance to be performed once per 24 hours. The proposed change is consistent with NUREG-1432. The staff finds that the proposed change will provide an adequate means for detecting RCS leakage and, therefore, is acceptable.

Action d - required containment atmosphere particulate radioactivity monitor inoperable and required containment fan cooler condensate flow switch inoperable

This action proposes to allow 30 days to restore either the containment atmosphere particulate radiation monitor or the containment fan cooler condensate flow switch to operable status. In this condition the only means to detect RCS leakage is the containment sump monitoring instrumentation. The proposed change is consistent with NUREG-1432. The staff finds the proposed action acceptable because it will ensure that the plant will not be operated in a reduced configuration for a lengthy period of time.

Action e - required containment sump monitor inoperable and either containment atmosphere particulate radioactivity monitor inoperable or the required containment fan cooler condensate flow switch inoperable

This action proposes that the containment sump monitor be restored to operable status within 1 hour, or the containment atmosphere particulate radioactivity monitor or the required containment fan cooler condensate flow switch be restored to operable status within 1 hour, or to be in Mode 3 within the next 6 hours and Mode 5 in the following 30 hours. Adding this action, which is consistent with TS 3.0.3, versus an implied entry in TS 3.0.3 when there is no

specific action, will not adversely affect the ability of the RCS leakage detection instrumentation to detect RCS leakage. The proposed change is consistent with NUREG-1432. This change is administrative in nature and the staff finds it to be acceptable.

Action f - all required RCS leakage detection instrumentation inoperable

The proposed action specifies to initiate action within 1 hour to be in Mode 3 within the next 6 hours and Mode 5 in the following 30 hours. Adding this action, which is consistent with TS 3.0.3, versus an implied entry in TS 3.0.3 when there is no specific action, will not adversely affect the ability of the RCS leakage detection instrumentation to detect RCS leakage. The proposed change is consistent with NUREG-1432. This change is administrative in nature and the staff finds it to be acceptable.

Note - TS 3.0.4 exclusion

The LCO is revised to provide for a TS 3.0.4 exclusion. TS 3.0.4, in part, prohibits entry into an operational mode when the conditions of the LCO are not met. This exclusion is acceptable because with one or two leakage detection instrumentation inoperable, there will be at least one RCS leakage monitor available to monitor RCS leakage. In addition, the action statements provide alternative means to detect RCS leakage. If all monitors are inoperable, the LCO requires that action is initiated within 1 hour to be in Mode 3 within the next 6 hours and in Mode 5 in the following 30 hours. The proposed change is consistent with NUREG-1432 and the staff finds it to be acceptable.

4.0 REGULATORY COMMITMENT

The licensee's letter dated July 16, 2004, contained one regulatory commitment, to be completed by August 6, 2004.

Commitment: A new plant monitoring computer point will be available that uses the data from one of the level transmitters to calculate the level change in the sump over a specified period of time.

The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitment is best provided by the licensee's administrative processes, including its commitment management program. The above regulatory commitment does not warrant the creation of a regulatory requirement (item requiring prior NRC approval of subsequent changes).

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 NRC 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 (69 FR 29765, dated May 25, 2004). 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: A. Stubbs

Date: July 30, 2004

Waterford Steam Electric Station, Unit 3

cc:

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