

August 29, 2006

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: MODERATOR TEMPERATURE COEFFICIENT  
(TAC NO. MC8766)

Dear Mr. Venable:

The Commission has issued the enclosed Amendment No. 206 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated October 25, 2005.

The amendment modifies the Surveillance Requirements related to TS 3.1.1.3, "Moderator Temperature Coefficient," to permit use of the Startup Test Activity Reduction Program (WCAP-16011-P-A).

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/

Mel B. Fields, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosures: 1. Amendment No. 206 to NPF-38  
2. Safety Evaluation

cc w/encls: See next page

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Accession No.: ML061940248

TS Page: ML062420153

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ENTERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 206  
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 October 25, 2005, 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.
3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

David Terao, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications and Facility Operating  
License No. NPF-38

Date of Issuance: August 29, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 206

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace page 4 of Operating License No. NPF-38 with the attached revised page 4.

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by an amendment number and contains marginal lines indicating the areas of change.

REMOVE

3/4 1-4

INSERT

3/4 1-4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 206 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 October 25, 2005 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML053040097), Entergy Operations, Inc. (the licensee), requested a change to the Technical Specifications (TSs) for Waterford Steam Electric Station, Unit 3 (Waterford 3).

Specifically, the licensee proposes to revise Surveillance Requirement (SR) 4.1.1.3.1 and SR 4.1.1.3.2.a by adding the following note as note (3) and renumbering the existing note (3) to note (4):

For fuel cycles that meet the applicability requirements given in WCAP-16011-P-A, the verification prior to entering MODE 1 may be made using the predicted MTC [moderator temperature coefficient] as adjusted for the measured boron concentration.

The existing note (3), which is associated with SR 4.1.1.3.2.c, will be designated as note (4) and will be appended with the following:

For cycles that meet the applicability requirements given in WCAP-16011-P-A, the MTC determination of surveillance 4.1.1.3.2.c is not required if the result of the test required in surveillance 4.1.1.3.2.b is within a tolerance of  $\pm 0.16 \times 10^{-4}$  delta k/k/°F from the corresponding design value.

The TS Bases will also be changed in accordance with the Waterford 3 TS Bases Control Program (TS 6.16).

The proposed amendment will allow the MTC determination to be made by using the predicted MTC as adjusted for the measured boron concentration when the applicability requirements are in accordance with those given in WCAP-16011-P-A. In addition, this proposed amendment will also allow the elimination of the end of cycle MTC measurement when the applicability requirements given in WCAP-16011-P-A are met and the result of the MTC determination performed at greater

than 15 percent of Rated Thermal Power prior to reaching 40 effective full power days is within a tolerance of  $\pm 0.16 \times 10^{-4} \Delta k/k/^\circ F$  from the corresponding design value.

## 2.0 REGULATORY EVALUATION

The MTC relates changes in reactivity to uniform changes in moderator temperature, including the effects of moderator density changes with changes in moderator temperature. Typically, an increase in the moderator temperature causes a decrease in the core moderator density and, therefore, a reduction in the number of neutrons that are slowed to thermal energy and a reduction in the core reactivity.

The regulations (Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50) do not explicitly prescribe specific post-refueling startup testing. However, the genesis for post-refueling startup testing can be traced to the preoperational testing required to be specified in the Final Safety Analysis Report by 10 CFR 50.34. In addition, 10 CFR 50.36, "Technical specifications," requires that the TSs include items in five specific categories. These categories include: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. Furthermore, Criterion 2 of 10 CFR 50.36(c)(2)(ii) requires an LCO to be established for a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

## 3.0 TECHNICAL EVALUATION

The Westinghouse Topical Report WCAP-16011-P-A (ADAMS Accession No. ML050660118) was submitted to permit the use of the Startup Test Activity Reduction (STAR) program.

WCAP-16011-P-A describes methods to reduce the time required for startup testing. To this end, WCAP-16011-P-A proposes methods to eliminate the control element assembly (CEA) worth and isothermal temperature coefficient (ITC) measurements at hot zero power (HZP).

WCAP-16011-P-A includes a method to substitute the measured value of the MTC at HZP with an alternate MTC value consisting of the predicted (calculated) MTC and measured critical boron concentration at HZP. WCAP-16011-P-A adds an ITC measurement at intermediate to hot full power, and applicability requirements for core design, fabrication, refueling, startup testing, and CEA lifetime viability requirements. WCAP-16011-P-A methods can only be applied to cores that are well characterized by an existing database.

The Nuclear Regulatory Commission (NRC) staff found WCAP-16011-P-A acceptable in its final Safety Evaluation Report (SER) dated January 14, 2005 (included with the accepted version of the WCAP - ADAMS Accession No. ML050660118). In this SER, the NRC staff identified three conditions and limitations for the application of WCAP-16011-P-A to individual licensees.

1. The STAR program is applicable only to the participating plants as defined in Table 3-1 of WCAP-16011-P-A.
2. Should any of the STAR test results fall outside of the test criteria, either ascertain that the safety analysis and STAR applicability requirements are satisfied, or discontinue use of the STAR program for that fuel cycle.

3. The Staff requires each licensee using STAR to submit a summary report following the first application, either successful or not, of STAR to its plant. The report should (a) identify the core design method used, (b) compare the measured and calculated values and the differences between these values to the corresponding core design method uncertainties, and (c) show compliance with the STAR applicability requirements. If the application of STAR is unsuccessful, identify the reasons why the STAR application failed.

With respect to these conditions and limitations, the licensee meets the first as Waterford 3 is included in Table 3-1 of WCAP-16011-P-A. The licensee meets the second and third items as regulatory commitments (see next section). Therefore, the NRC staff concludes that WCAP-16011-P-A is applicable to Waterford 3 and that WCAP-16011-P-A is being implemented appropriately.

The NRC staff finds acceptable the proposed changes to SR 4.1.1.3.1 and SR 4.1.1.3.2.a because the licensee has satisfied the limitations and conditions described in WCAP-16011-P-A .

#### 4.0 REGULATORY COMMITMENTS

The licensee will implement the following commitments as contained in Attachment 4 to the October 25, 2005, application:

1. Entergy will include verification of the applicability requirements in appropriate site startup testing procedures. Entergy will include guidance in the procedures to ensure that the safety analysis and STAR applicability requirements are satisfied. If the safety analysis or STAR applicability requirements are not satisfied, the STAR program for the affected fuel cycle will not be used.
2. Entergy will submit a summary report following the first application of STAR at Waterford 3 that will: (a) identify the core design method used, (b) compare the measured and calculated values and the differences between these values to the corresponding core design method uncertainties and (c) show compliance with the STAR applicability requirements. If the application of STAR is unsuccessful, Entergy will identify the reasons why the STAR application failed.

The above compensatory measures have been entered as regulatory commitments in the licensee's Commitment Management System, which complies with Nuclear Energy Institute's Document 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes." The NRC staff has reviewed the compensatory measures and how they will be controlled, and finds that the licensee's commitments provide adequate assurance that the conditions and limitations for the application of WCAP-16011-P-A to individual licensees will be met for Waterford 3.

#### 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. 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 published December 6, 2005 (70 FR 72673). 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 amendments.

## 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Attard

Date: August 29, 2006

Waterford Steam Electric Station, Unit 3

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May 2006