

July 31, 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: MINIMUM TEMPERATURE FOR CRITICALITY  
(TAC NO. MC8765)

Dear Mr. Venable:

The Commission has issued the enclosed Amendment No. 205 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3 (Waterford 3). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated October 25, 2005.

The amendment modifies the Waterford 3 TS 3.1.1.4, "Minimum Temperature for Criticality," to raise the minimum temperature for criticality from the current value of 520 °F to 533 °F. Changes are also proposed to the associated Action statement to reflect the increase in temperature and to replace the current statement in Surveillance Requirement 4.1.1.4 with wording consistent with NUREG-1432, "Standard Technical Specifications - Combustion Engineering Plants."

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. 205 to NPF-38  
2. Safety Evaluation

cc w/encls: See next page

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ENERGY OPERATIONS, INC.

DOCKET NO. 50-382

WATERFORD STEAM ELECTRIC STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 205  
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

Date of Issuance: July 31, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 205

TO FACILITY OPERATING LICENSE NO. NPF-38

DOCKET NO. 50-382

Replace Page 4 of Facility Operating License No. NPF-38 with the attached 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 1-5

Insert

3/4 1-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 205 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. ML053040075), Entergy Operations, Inc. (the licensee), requested a change to the Technical Specifications (TSs) for Waterford Steam Electric Station, Unit 3 (Waterford 3).

The proposed changes would revise TS 3.1.1.4, "Minimum Temperature for Criticality." The request proposes to change the current Limiting Condition for Operation (LCO) for TS 3.1.1.4 by raising the minimum temperature for criticality from the current value of 520 °F to 533 °F, to change the current Action statement for LCO 3.1.1.4 to reflect this change, and to replace the current statement in Surveillance Requirement (SR) 4.1.1.4 with wording consistent with NUREG-1432, "Standard Technical Specifications - Combustion Engineering Plants." Changes will be made to the Waterford 3 TS Bases in accordance with the TS Bases Control Program (TS 6.16).

2.0 REGULATORY EVALUATION

The moderator temperature coefficient (MTC) relates changes in reactivity to uniform changes in moderator temperature, including the effects of moderator density changes as a result of 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.

Currently, the Waterford 3 TS requirement concerning the most positive MTC is confirmed for a given core design at the minimum temperature for criticality of 517 °F (520 °F minus 3 °F uncertainty) (TS LCO 3.1.1.4). This temperature is 23 °F below the nominal temperature for approaching critical (543 °F) and 16 °F below the low  $T_{cold}$ , of 536 °F (TS 3.2.6). Following approval of this proposed change, the analytical value used for determining the most positive MTC will be 530 °F (533 °F minus 3 °F).

There are no accident analyses that dictate the minimum temperature for criticality, but all low power safety analyses must assume an initial temperature limit. The Nuclear Regulatory

Commission's (NRC or the Commission) regulatory requirements related to the content of the TSs are set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, "Technical Specifications." This regulation 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. Additionally, 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 minimum temperature for criticality represents the limiting temperature at which the core design is verified to satisfy the limits on the most positive MTC specified in the TS and/or the core operating limits report. These MTC limits, specified in TS LCO 3.1.1.3, would not change as a result of the proposed change to the minimum temperature for criticality. The NRC staff concludes that because the proposed TS change of minimum temperature for criticality does not affect the NRC-approved analytical methods used to determine core operating limits, and because the MTC will continue to be verified over the appropriate temperature range, the current transient analyses' results are bounding and remain valid. Furthermore, the reactor protective instrumentation will continue to function within its normal operating range and accuracies, and the reactor pressure vessel will remain above the minimum required limits.

The change to the Action statement for LCO 3.1.1.4 affects only the value at which the action is initiated, namely at 533 °F rather than 520 °F. The action remains the same.

The current SR 4.1.1.4 does not require that the minimum temperature for criticality be monitored after criticality is achieved, unless the temperature drops below 530 °F. The proposed addition of a frequency to monitor the temperature after the reactor is critical is consistent with the frequency in SR 4.2.6, which requires reactor coolant system (RCS) cold-leg temperature to be monitored at least once per 12 hours. The 12-hour frequency takes into account the indications and alarms that are continuously available in the Control Room to the operators.

Therefore, the requirement in SR 4.1.1.4 to check temperature at least once per 30 minutes when the reactor is critical and the RCS  $T_{\text{cold}}$  is less than 530 °F is no longer applicable with the proposed change. If RCS  $T_{\text{cold}}$  were to fall below the TS limit of 533 °F, the Action statement would require restoration of the temperature to within its limit or a shutdown of the reactor.

Furthermore, the elimination of the requirement in SR 4.1.1.4 to monitor temperature within 15 minutes prior to achieving criticality is acceptable because it is a standard operating practice to verify TSs are satisfied prior to entering the Mode of applicability. The current Mode of applicability is Mode 1 and 2 with  $K_{\text{eff}}$  greater than or equal to 1.0 (i.e., the reactor is critical). Therefore, prior to entering Mode 2 and becoming critical, the minimum temperature for criticality limit (as now proposed, 533 °F) has to be met. In addition, administrative controls are currently in place to verify the temperature prior to achieving criticality. Reactivity changes and overall plant response are closely monitored by the Operations staff. In addition, the licensee reviewed the impact of this change on the Chapter 15 transients to ensure that all limits are still satisfied.

These three proposed changes to SR 4.1.1.4 are consistent with the Revised Standard TSs for Combustion Engineering Plants contained in NUREG-1432. The NRC staff, therefore, concludes it is acceptable to replace the current requirement of TS LCO 3.1.1.4 as proposed. Changes will be made to the Waterford 3 TS Bases in accordance with the TS Bases Control Program.

#### 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 and changes a surveillance requirement. 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 72672). 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 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: July 31, 2006



Waterford Steam Electric Station, Unit 3

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May 2006