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W3F1-2004-0014

March 15, 2004

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT:** License Amendment Request NPF-38-253  
Deletion of Pressurizer Heatup and Cooldown Limits  
Waterford Steam Electric Station, Unit 3  
Docket No. 50-382  
License No. NPF-38

**REFERENCES:** Entergy letter to the NRC dated November 13, 2003, License Amendment Request NPF-38-249 Extended Power Uprate (W3F1-2003-0074)

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Waterford Steam Electric Station, Unit 3 (Waterford 3). Entergy proposes to relocate the pressurizer heatup and cooldown limits, Waterford 3 Technical Specification (TS) 3.4.8.2 and the associated surveillance requirements and bases, to the Technical Requirements Manual. The proposed amendment is consistent with the NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432).

Waterford 3 submitted to the NRC, by letter dated November 13, 2003 (Reference 1), a proposed change for an extended power uprate, which in part included the deletion of TS 3.4.8.2.c, associated Action b, Table 5.7-1, and SRs 4.4.8.2.2 and 4.4.8.2.3. The approval of the proposed extended power uprate along with the approval of the proposed change in this letter will result in the complete deletion of TS 3.4.8.2.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that this change involves no significant hazards consideration. The bases for these determinations are included in the attached submittal.

The proposed change includes a new commitment as summarized in Attachment 4.

Entergy requests approval of the proposed amendment by December 15, 2004. Once approved, the amendment shall be implemented within 60 days. Although this request is neither exigent nor emergency, your prompt review is requested.

A001

If you have any questions or require additional information, please contact Dana Millar at 601-368-5445.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 15, 2004.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Venak", with a long horizontal flourish extending to the right.

JEV/DM/cbh

Attachments:

1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Changes (mark-up)
3. Changes to Technical Specification Bases Pages – For Information Only
4. List of Regulatory Commitments

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**Attachment 1**

**W3F1-2004-0014**

**Analysis of Proposed Technical Specification Change**

## 1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-38 for Waterford Steam Electric Station, Unit 3 (Waterford 3).

The proposed change will revise the Operating License as follows:

Technical Specification (TS) 3.4.8.2, "Pressurizer Heatup/Cooldown" will be re-titled "Pressurizer."

TS 3.4.8.2 Limiting Condition for Operation (LCO), a., the maximum heatup rate, and b., the maximum cooldown rate, will be deleted and moved to the Technical Requirements Manual (TRM).

TS 3.4.8.2 Action a. will be deleted and moved to the TRM.

TS Surveillance Requirement (SR) 4.4.8.2.1 will be deleted and moved to the TRM.

Index page VI will be revised to reflect the revised title for TS 3.4.8.2.

The proposed amendment is consistent with the NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432).

TS 3.4.8.2 LCO c., the maximum spray nozzle usage factor, Action b. and SRs 4.4.8.2.2 and 4.4.8.2.3 are proposed for deletion by letter to the NRC dated November 13, 2003, License Amendment Request NPF-38-249, Extended Power Uprate. The combination of the approval of the power uprate along with this proposed amendment will result in the complete deletion of TS 3/4.4.8.2.

## 2.0 PROPOSED CHANGE

The proposed change will delete TS 3.4.8.2 LCO a. and b., the pressurizer temperature maximum heatup and cooldown rate limits. The associated Action a, SR 4.4.8.2.1 and related TS bases will also be deleted. The pressurizer heatup and cooldown rates will be placed in the TRM which is maintained in accordance with the 10 CFR 50.59 review process. This approach provides an effective level of regulatory control and provides an appropriate change control process.

## 3.0 BACKGROUND

The pressurizer is a cylindrical carbon steel vessel with stainless steel internal surfaces. A spray nozzle on the top of the head is used in conjunction with heaters in the bottom head to provide level and pressure control. Overpressure protection is provided by two safety valves. The pressurizer is supported by a cylindrical skirt welded to the bottom head.

The pressurizer is designed and fabricated in accordance with the ASME Code requirements. Final Safety Analysis Report (FSAR) Table 5.2-2 provides a listing of the applicable code requirements. The interior surface of the cylindrical shell and upper head is clad with weld deposited stainless steel. The lower head is clad with a Ni-Cr-Fe alloy to facilitate welding of the Ni-Cr-Fe alloy heater sleeves to the shell. A stainless steel safe end is provided on the pressurizer nozzles, after vessel final stress relief, to facilitate field welds to the stainless steel piping. The structural integrity of the pressurizer is assessed by performing inservice inspections in accordance with the ASME Code, Section XI requirements.

Five hundred heatup and cooldown cycles were considered in the fatigue analysis during the design life of the components in the reactor coolant system with heating and cooling at a rate of 200°F/hour between 70°F and 653°F for the pressurizer. The heatup and cooldown rate of the system is administratively limited to assure that these limits will not be exceeded. This is based on consideration of both historical plant transient history and projections of transient lifetime occurrences for the components.

A detailed description of the operation of the pressurizer is included in section 5.4.10 of the Waterford 3, FSAR.

## **Chapter 15 Accident Analysis Review**

A review of the FSAR Chapter 15 accident analysis concluded that the pressurizer heatup and cooldown rates are not credited in the mitigation or prevention of any accidents and therefore, do not meet the criteria set forth in 10 CFR 50.36 (c) (2) (ii) for inclusion in the TSs. The pressurizer pressure high and low trips are included as reactor trip set points. The trip set points have been selected to ensure that the reactor core and reactor coolant system are prevented from exceeding their safety limits during normal operation and design basis anticipated operational occurrences and to assist the engineered safety features actuation system in mitigating the consequences of accidents. The pressurizer heatup and cooldown limits do not affect the pressurizer high and low pressure reactor trip set points.

### **4.0 TECHNICAL ANALYSIS**

The proposed amendment is consistent with the NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432). The pressurizer heatup and cooldown rates are placed on the pressurizer to prevent non-ductile failure and assure compatibility of operation with the fatigue analysis performed. An engineering evaluation of the continued structural integrity of the pressurizer is required if these limits are exceeded.

The following provides a review of the criteria set forth in 10 CFR 50.36 for TS limiting condition for operations to justify the removal of the TS.

**Criterion 1** – Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

The pressurizer heatup and cooldown rates are not used as an instrumentation system used to detect a significant abnormal degradation of the reactor coolant pressure boundary.

**Criterion 2** – 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.

Pressurizer heatup and cooldown rates are not 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 challenge to the integrity of a fission product barrier.

**Criterion 3** – A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Pressurizer heatup and cooldown rates are not a structure, system, or component that is part of the primary success path which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

**Criterion 4** – A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The pressurizer heatup and cooldown rates are considered to be non-risk contributors to the core damage frequency and offsite dose assessment models and as such are not part of the Waterford 3 probabilistic risk assessment.

## 5.0 REGULATORY ANALYSIS

### 5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the Technical Specifications, and do not affect conformance with any General Design Criterion differently than described in the Final Safety Analysis Report.

### 5.2 No Significant Hazards Consideration

Entergy Operations, Inc. (Entergy) proposes to move the Waterford Steam Electric Station, Unit 3 (Waterford 3) Technical Specification (TS) 3.4.8.2, Pressurizer, maximum heatup and cooldown limits to the Technical Requirements Manual (TRM), which is reviewed in accordance with 10 CFR 50.59, "Changes, Test, and Experiments." The associated action statement, surveillance requirement and bases are also proposed for relocation.

Entergy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The probability of an accident is unchanged as a result of the proposed change to delete the Waterford 3 pressurizer heatup and cooldown rates and associated action, surveillance requirement, and bases from the TS. The cooldown and heatup rates are not initiators to any accidents or pressurizer transients discussed in the Waterford 3 Final Safety Analysis Report (FSAR). Therefore, the probability of an accident is not changed.

The purpose of the pressurizer heatup and cooldown limits is to ensure that given transient events will not negatively affect the pressurizer structural integrity beyond Code allowables. These limits will be maintained within ASME Code allowables in the

TRM in accordance with 10 CFR 50.59. Therefore, the consequences of an accident are not increased.

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

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The limitations imposed on the pressurizer heatup and cooldown rates are provided to assure that the pressurizer is operated within the design criteria assumed for the flaw evaluation and fatigue analysis performed in accordance with the ASME Code Section XI, subsection IWB-3600 requirements. The Waterford 3 FSAR has analyzed the conditions that would result from a thermal or pressurization transient on the Waterford 3 pressurizer. The proposed deletion of the pressurizer heatup and cooldown rates and relocation of the limits to the TRM does not change the way that the pressurizer is designed or operated.

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

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The margin of safety is established by the rules contained in the ASME Section III Code. Any future changes to the cooldown or heatup rates will be evaluated using 10 CFR 50.59 and are required to meet the ASME Code margins.

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

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

### 5.3 Environmental Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

**Attachment 2**

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**Proposed Technical Specification Changes (mark-up)**

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REACTOR COOLANT SYSTEM

PRESSURIZER HEATUP/COOLDOWN

LIMITING CONDITION FOR OPERATION

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3.4.8.2 The pressurizer shall be limited to:

- a. ~~A maximum heatup rate of 200°F per hour~~deleted,
- b. ~~A maximum cooldown rate of 200°F per hour~~deleted, and
- c. A maximum spray nozzle usage factor of 0.65.

APPLICABILITY: At all times.

ACTION:

- a. ~~With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours~~deleted.
- b. With the spray nozzle usage factor > 0.65, comply with requirements of Table 5.7-1.

SURVEILLANCE REQUIREMENTS

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~~4.4.8.2.1 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown~~deleted.

4.4.8.2.2 The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation.

4.4.8.2.3 Each spray cycle and the corresponding  $\Delta T$  (water temperature differential) shall be recorded whenever main spray is initiated with a  $\Delta T$  (water temperature differential) of > 130°F and whenever auxiliary spray is initiated with a  $\Delta T$  (water temperature differential) of > 140°F.

**Attachment 3**

**W3F1-2004-0014**

**Changes to Technical Specification Bases Pages  
For Information Only**

## REACTOR COOLANT SYSTEM

### BASES

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#### PRESSURE/TEMPERATURE LIMITS (Continued)

The maximum  $RT_{NDT}$  for all Reactor Coolant System pressure-retaining materials, with the exception of the reactor pressure vessel, has been determined to be 90°F. The Lowest Service Temperature limit line shown on Figures 3.4-2 and 3.4-3 is based upon this  $RT_{NDT}$  since Article NB-2332 of Section III of the ASME Boiler and Pressure Vessel Code requires the Lowest Service Temperature to be  $RT_{NDT} + 100^\circ\text{F}$  for piping, pumps, and valves. Below this temperature, the system pressure must be limited to a maximum of 20% of the system's hydrostatic test pressure of 3125 psia (as corrected for elevation and instrument error).

The limitations imposed on the pressurizer heatup and cooldown rates and spray water temperature differential are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code requirements.

The OPERABILITY of the shutdown cooling system relief valve or an RCS vent opening of greater than 5.6 square inches ensures that the RCS will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the RCS cold legs are less than or equal to 272°F. Each shutdown cooling system relief valve has adequate relieving capability to protect the RCS from overpressurization when the transient is either (1) the start of an idle RCP with the secondary water temperature of the steam generator less than or equal to 100°F above the RCS cold leg temperatures or (2) inadvertent safety injection actuation with injection into a water-solid RCS. The limiting transient includes simultaneous, inadvertent operation of three HPSI pumps, three charging pumps, and all pressurizer backup heaters in operation. Since SIAS starts only two HPSI pumps, a 20% margin is realized.

The restrictions on starting a reactor coolant pump in MODE 4 and with the reactor coolant loops filled in MODE 5, with one or more RCS cold legs less than or equal to 272°F, are provided in Specification 3.4.1.3 and 3.4.1.4 to prevent RCS pressure transients caused by energy additions from the secondary system which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 100°F above each of the RCS cold leg temperatures. Maintaining the steam generator less than 100°F above each of the Reactor Coolant System cold leg temperatures (even with the RCS filled solid) or maintaining a large surge volume in the pressurizer ensures that this transient is less severe than the limiting transient considered above.

**Attachment 4**

**W3F1-2004-0014**

**List of Regulatory Commitments**

**List of Regulatory Commitments**

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE TIME ACTION	CONTINUING COMPLIANCE	
Technical Specification (TS) 3.4.8.2, Pressurizer, item a., the maximum heatup rate, and b., the maximum cooldown rate, will be deleted and moved to the Technical Requirements Manual (TRM). TS 3.4.8.2 Action a. will be deleted and moved to the TRM. TS Surveillance Requirement (SR) 4.4.8.2.1 will be deleted and moved to the TRM.	X		Upon Implementation