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2CAN020401

February 9, 2004

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

SUBJECT: License Amendment Request  
To Remove the Pressurizer Heatup and Cooldown Limits  
Arkansas Nuclear One, Unit 2  
Docket No. 50-368  
License No. NPF-6

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Arkansas Nuclear One, Unit 2 (ANO-2). Entergy proposes to remove the pressurizer heatup and cooldown limits, ANO-2 Technical Specification (TS) 3.4.9.2, and the associated surveillance requirements and bases, from the current TSs to a licensee controlled document. The proposed amendment is consistent with the NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432).

The ANO-2 Safety Analysis Report (SAR) Chapter 15 events have been reviewed to determine if the pressurizer heatup and cooldown rates contained in TS 3.4.9.2 are required to mitigate any of these events. These evaluations 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. A review of each of the criteria is included in the attached submittal.

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.

ADD

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 February 9, 2004.

Sincerely,



JSF/dm

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

cc: Dr. Bruce S. Mallett  
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**Attachment 1**

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**Analysis of Proposed Technical Specification Change**

## 1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2).

The proposed change will revise the Operating License to remove Technical Specification (TS) 3.4.9.2, Pressurizer, to a licensee controlled document. The associated surveillance requirement (SR) and bases are also proposed for deletion.

## 2.0 PROPOSED CHANGE

The proposed change will delete TS 3.4.9.2, the pressurizer temperature maximum heatup and cooldown rate limits. The associated actions, SR 4.4.9.2, and related TS bases will also be deleted. The pressurizer heatup and cooldown rates, action and surveillance requirement will be placed in a licensee controlled document that 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. The proposed amendment is consistent with the NRC approved Standard Technical Specifications, Combustion Engineering Plants (NUREG-1432).

An update to the Table of Contents is included to reflect the deletion of this specification. In addition, administrative changes are included to remove page 3/4 4-25, which currently reflects "Table Deleted This page is intentionally blank" and to add a statement at the bottom of page 3/4 4-23b that says "Next page is 3/4 4-26." No additional discussion is included on these changes.

## 3.0 BACKGROUND

The pressurizer is a cylindrical carbon steel vessel with stainless steel or Ni-Cr-Fe clad internal surfaces. A spray nozzle on the top of the head is used in conjunction with heaters in the bottom head to provide pressure control. Overpressure protection is provided by two safety valves. The pressurizer is supported by a cylindrical skirt welded to the bottom head. A surge line connects the pressurizer to the reactor coolant piping.

The pressurizer is designed and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, Section III, 1968 Edition through Summer 1970 addenda. The interior surface of the cylindrical shell and upper head is clad with weld deposited stainless steel. The lower head is clad with 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 surge line piping. The structural integrity of the pressurizer is assessed by performing inservice inspections in accordance with the ASME Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components (qualification and certification of ultrasonic examination personnel performing inservice inspections shall be as required by the NRC, 1995 edition with addenda through 1996).

Five hundred heatup and cooldown cycles (350 for the replacement steam generator) 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 100 °F/hour between 70 °F and 545 °F

(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 5.5.10 of the ANO-2, Safety Analysis Report (SAR).

### **Chapter 15 Accident Analysis Review**

A review of the SAR 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 (ESFAS) 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 ANO-2 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 (TS), and do not affect conformance with any General Design Criterion (GDC) differently than described in the Safety Analysis Report (SAR).

### 5.2 No Significant Hazards Consideration

Entergy proposes to delete the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specification (TS) 3.4.9.2, Pressurizer, and place it in a licensee controlled document, which is reviewed in accordance with 10 CFR 50.59. The associated action statement, surveillance requirement, and bases are also proposed for deletion.

Entergy Operations, Inc. 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 ANO-2 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 ANO-2 SAR. 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 a licensee controlled document 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 ANO-2 SAR has analyzed the conditions that would result from a thermal or pressurization transient on the ANO-2 pressurizer. The proposed deletion of the pressurizer heatup and cooldown rates and relocation of the limits to a licensee controlled document 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, "Changes, Tests and Experiments," 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**

**2CAN020401**

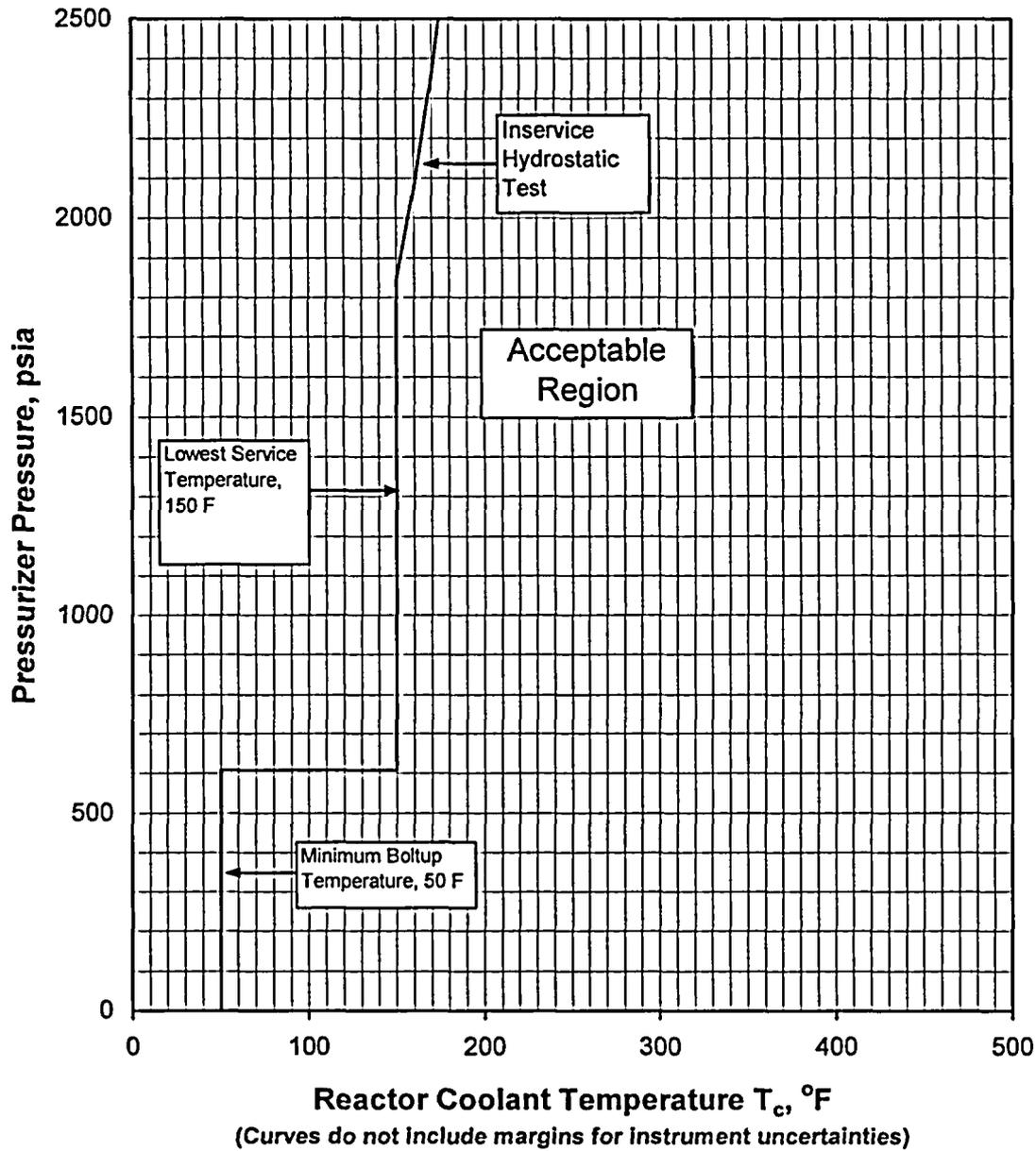
**Proposed Technical Specification Changes (mark-up)**

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

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3/4.4.12 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM	3/4 4-28
<u>3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)</u>	
3/4.5.1 SAFETY INJECTION TANKS .....	3/4 5-1

Figure 3.4-2C

**INSERVICE HYDROSTATIC TEST CURVE - 32 EPFY  
REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE LIMITS**



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REACTOR-COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

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3.4.9.2—The pressurizer temperature shall be limited to:

- a.—A maximum heatup of 200°F in any one hour period, and
- b.—A maximum cooldown of 200°F in any one hour period.

APPLICABILITY:—At all times.

ACTION:

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 fracture toughness properties 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.

SURVEILLANCE REQUIREMENTS

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4.4.9.2—The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cool-down.

**Attachment 3**

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

## REACTOR COOLANT SYSTEM

### BASES

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The Lowest Service Temperature is the minimum allowable temperature at pressures above 20% of the pre-operational system hydrostatic test pressure (624 psia). This temperature is defined as equal to the most limiting  $RT_{NDT}$  for the balance of the Reactor Coolant System component (conservatively estimated as 50°F) plus 100°F, per Article NB 2332 of Section III of the ASME Boiler and Pressure Vessel Code.

The horizontal line between the minimum boltup temperature and the Lowest Service Temperature is defined by the ASME Boiler and Pressure Vessel Code as 20% of the pre-operational hydrostatic test pressure.

The minimum boltup temperature is the minimum allowable temperature at pressures below 20% of the pre-operational system hydrostatic test pressure. The minimum is defined as the initial  $RT_{NDT}$  for the material of the higher stressed region of the reactor vessel plus any effects for irradiation per Article G-2222 of Section III of the ASME Boiler and Pressure Vessel Code. The initial reference temperature of the reactor vessel and closure head flanges was determined using the certified material test reports and Branch Technical Position MTEB 5-2. The maximum initial  $RT_{NDT}$  associated with the stressed region of the vessel flange is 30°F. The minimum boltup temperature of 30°F plus a 20°F conservatism is 50°F.

The number of reactor vessel irradiation surveillance specimens and the frequencies for removing and testing these specimens are provided SAR Table 5.2-12 to assure compliance with the requirements of Appendix H to 10 CFR Part 50.

~~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 fatigue analysis performed in accordance with the ASME Code requirements.~~

**Attachment 4**

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**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	
Upon approval of the proposed change Technical Specification 3.4.9.2, the associated action, surveillance requirement, and bases will be relocated to a licensee controlled document that is governed by 10 CFR 50.59.	x		