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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Supplemental Information Regarding ANO's November 3, 1999, Containment Uprate License Amendment Request

Gentlemen:

In a letter dated November 3, 1999, (2CAN119903), Entergy Operations, Inc. submitted a license amendment request for Arkansas Nuclear One, Unit 2 (ANO-2) regarding increasing the design pressure of the containment building from 54 to 59 psig. During a telephone call on August 8, 2000, the NRC staff asked three questions in regard to the emergency cooling pond temperature analysis. The purpose of this letter is to respond to the staff's questions and to withdraw the proposed change to Technical Specification 3/4.6.2, "Depressurization, Cooling and pH Control Systems," in regard to the allowable containment spray pump degradation. The allowable containment spray pump degradation was discussed in the original application and in a follow-up letter dated April 4, 2000 (2CAN040004).

The details are contained in the attachment to this letter. Should you have any questions or comments, please contact me.

Very truly yours,

Jimmy D. Vandergriff
Director, Nuclear Safety Assurance

JDV/dwb
Attachment

A001

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RESPONSE TO THREE NRC QUESTIONS REGARDING THE EMERGENCY COOLING POND TEMPERATURE ANALYSIS

NRC Question 1

Verify that Figure 6.2-3B in the November 3, 1999, application is identical to Figure 9.2-20 in the SAR.

ANO Response

The two figures were verified to be identical and represent the output of the design basis emergency cooling pond peak temperature analysis. The COPATTA input deck used in the loss of coolant accident (LOCA) containment analysis for the ANO-2 steam generator replacement and power uprate calculation was confirmed to contain the correct emergency cooling pond temperature data that is depicted in the figures.

NRC Question 2

Explain why Figure 6.2-3B remains bounding even though the ANO-2 power level is increased by 7.5%.

ANO Response

The design basis heat load rejected to the emergency cooling pond assumed in the existing emergency cooling pond peak temperature analysis was based upon a number of conservative assumptions that were modified to accommodate ANO-2's higher power level. The most significant changes were:

a) The emergency cooling pond is a shared pond for ANO-1 and ANO-2. The limiting condition for the emergency cooling pond design is a safe shutdown on ANO-1 and a design basis accident (DBA) on ANO-2. The original decay heat fractions used to develop the heat load rejected to the emergency cooling pond by the DBA Unit (ANO-2) are believed to be conservative. These were subsequently changed to the values in the revised COPATTA analysis that form the new basis for the heat load rejected to the emergency cooling pond by the DBA Unit. This set of decay heat values utilized in the LOCA containment pressure temperature analysis was presented in Enclosure 3 of our license amendment dated November 3, 1999, (2CAN119903).

b) The original heat load rejected to the emergency cooling pond by the DBA Unit was also based upon the assumption that service water supplied to the containment air coolers and shutdown cooling heat exchangers remained constant at 95°F. This happens to be the maximum temperature of Lake Dardanelle and slightly lower than the maximum <u>initial</u> emergency cooling pond temperature. This approach optimized

performance of the containment cooling equipment and thereby maximized the rate of heat rejection to the emergency cooling pond; however, it ignored the feedback between the resulting emergency cooling pond temperature and equipment performance or heat rejection rate. The emergency cooling pond cannot support the assumption that service water remains constant at 95°F under those meteorological conditions that result in peak emergency cooling pond temperatures. The revised COPATTA analysis that forms the new basis for the heat load rejected to the emergency cooling pond by the DBA Unit assumes that service water temperature varies according to the existing peak emergency cooling pond temperature profile. The resulting heat loads are bounded by those that were used to generate the existing temperature profile; therefore, use of the existing profile is conservative. If COPATTA and the emergency cooling pond analysis code were dynamically linked, the two would converge upon an emergency cooling pond temperature profile slightly lower than the existing curve. Although this effect would be of some benefit, ANO has decided to retain the existing profile as the analysis of record at this time.

c) The original analysis also contained a conservative error in the computation of heat load rejected to the emergency cooling pond by the Safe Shutdown Unit (ANO-1). Following alignment of the decay heat removal system, the analysis was accounting for the same portion of energy originating from decay heat in two separate terms. This error was subsequently corrected.

NRC Question 3

Describe how changes to the fan coolers affect the emergency cooling pond temperature analysis.

ANO Response

The COPATTA analysis that forms the new basis for the heat rejected to the emergency cooling pond by the DBA Unit conservatively assumes four (4) containment cooling fans and coolers are in operation. This assumption optimizes equipment performance thereby conservatively estimating the rate of heat rejection to the emergency cooling pond. The reduction in fan blade pitch during 2R14 will reduce actual cooler performance making the assumptions in the COPATTA analysis slightly more conservative with respect to the emergency cooling pond analysis. The technical specification change described in our letter dated June 29, 2000 (2CAN060003) requiring that two (2) fans/coolers per train be operable for train operability has no effect on the configuration already assumed in the analysis.

WITHDRAWAL OF PROPOSED REVISION TO CONTAINMENT SPRAY PUMP ALLOWABLE DEGRADATION

In a letter dated April 4, 2000 (2CAN040004), Entergy responded to questions from the NRC staff in regard to the proposed change to Technical Specification 3/4.6.2, "Depressurization, Cooling and pH Control Systems." NRC Question 1, part C asked what percent allowable degradation our analysis showed and whether the code allowable 10% operability requirement or the reanalyzed condition was bounding.

In the April 4, 2000, response to the NRC's request for additional information Entergy responded, "The analysis for allowable pump degradation demonstrates that the pumps could degrade by 11.7%. The 10% code allowable degradation is bounding." This information was based on a vendor-supplied calculation. Subsequent to the submittal of this information, the ANO engineering staff discovered an error in the pipe size used to model the containment spray system response. Our investigation revealed that an error in the piping isometric drawing takeoffs showed one of the header branches as 4" nominal diameter instead of the correct 3". With this correction, containment spray pump 2P35A could still degrade by as much as 11.7% and meet its performance requirements but 2P35B is limited to 9.8% degradation. Therefore, since the 9.8% value is less than the 10% code allowable value, we are withdrawing the proposed change to Surveillance Requirement 4.6.2.1b in order to expedite NRC review and approval of the remainder of the operating license amendment request. Neither the currently analyzed performance nor the cycle 15/16 performance requirements were affected by this discrepancy. The current performance requirements are assured by the technical specification requirement of no more than 6.3% degradation.

With the withdrawal of the proposed change to Surveillance Requirement 4.6.2.1.b, Technical Specification page 3/4 6-10 will remain as approved in Amendment 194. Please delete this page from the November 3, 1999, application. A return to 6.3% allowable degradation is a move in the conservative direction; therefore, the amendment is still within the scope of the original no significant hazards considerations.