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April 4, 1990

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U. S. Nuclear Regulatory Commission  
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Subject: Arkansas Nuclear One - Unit 1  
Docket No. 50-313  
License No. DPR-51  
Response to NRC Reviewer's Question  
Regarding NPSH Issue (Effect on EQ)

Gentlemen:

During our weekly status telephone call between ANO and the NRC NRR Project Managers and Region IV staff on March 20, 1990, we reviewed ANO actions to address the ANO-1 NPSH issue, described in detail by LER 50-313/89-044, dated January 15, 1990 (1CAN019008). During those discussions, Mr. James C. Pulsipher of the NRC NRR Plant Systems Branch was interested in whether or not any of the corrective actions we had taken to address the problem had any impact on the reactor building (RB) temperature profile information that was submitted last year (AP&L letter dated July 19, 1989, 1CAN078909). Members of the AP&L Nuclear Engineering Design Department responded to this inquiry by indicating that we had re-evaluated the RB temperature profile, and that the information we had submitted in July was bounding for the current state of operations at ANO-1. They also indicated that it was our plan that the submitted information (temperature profile curve) would also bound the RB temperature profile that would result from modifications necessary to return ANO-1 to 100% power.

It was decided during the call that it would be appropriate for AP&L to formally submit documentation, specifically stating that we had evaluated the RB temperature profile for the current operating configuration and that the current temperature profile resulting from our actions to address the NPSH issue is bounded by the previously submitted data. This transmittal provides that documentation.

This evaluation was conducted using the COPATTA code, to determine the effects of throttled RB Spray and Low Pressure Injection flow post-recirculation on the ANO-1 post-LOCA RB temperature/pressure profile. The analysis conservatively used the DBA LOCA blowdown data based on 100% power for the first 300 seconds, and 80% decay heat after 300 seconds. The results of this calculation were compared to the RB temperature Environmental Qualification (EQ) profile, and it was determined that the present EQ profile is still bounding.

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The peak post-LOCA RB temperature and the RB temperature immediately after initiation of RB sump recirculation were slightly higher than the "EQ Base Case" curve (which was included in our July 19, 1989 submittal) shown on the attached Figure 1; however, these minor discrepancies were attributed to changes in the value for RB net free volume. ANO is presently processing a Technical Specification amendment request to reflect the more accurate calculation of RB net free volume. This slight increase in peak temperature is still enveloped by the "Integrated EQ Profile" (also shown in Figure 1) and is more than offset by the return of the RB temperature below the EQ value of 140°F in 3.2 days, as opposed to the greater than 7.8 days used in the EQ Base Case.

Should you have any further questions regarding this issue, please contact my office.

Very truly yours,

  
James J. Fisicaro  
Manager, Licensing

JJF/RBT  
Attachment

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