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September 22, 1980

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2-090-29

Mr. K. V. Seyfrit, Director  
Office of Inspection & Enforcement  
U. S. Nuclear Regulatory Comm.  
Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011

SUBJECT: Arkansas Nuclear One - Units 1 & 2  
Docket Nos. 50-313 and 50-368  
License Nos. DPR-51 and NPF-6  
Response to IE Bulletin 80-18  
(File: 1510.1, 2-1510.1)

Gentlemen:

The referenced Bulletin requested information on the ANO - 1 & 2 high pressure injection systems. The attached information is provided in response to that requested, in the order in which it was presented.

In summary, both ANO - 1 & 2 have been adequately designed to maintain high pressure injection pump cooling during worst case RCS system pressure and flow pressure drop assumptions.

QUESTION 1: In a quantitative manner similar to 1 above, determine whether or not minimum cooling is provided to centrifugal pumps used for high pressure injection, for all conditions requiring SI, prior to satisfying SI termination criteria. If a "minimum flow bypass" line is present which remains open during high pressure injection, and if that line guarantees that minimum cooling flow will be provided to the pumps under such conditions, then no further calculations are required if all safety related analyses (Item 2.d above) assumed presence of the open line.

RESPONSE: On ANO-1, a quantitative evaluation was done based on actual measured pump data and the system pressure drop to confirm acceptability. This is presented in detail under the Response to Item #3.

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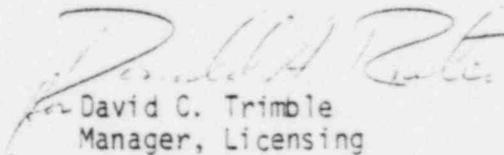
MEMBER MIDDLE SOUTH UTILITIES SYSTEM

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pressurizer code safety setting of 2500 psig and a worse case system pressure drop of  $\leq 100$  psig assures 110 psig remaining before a zero flow dead head condition occurs. The Makeup Pumps require approximately 90 GPM to assure continued operation without overheating. From the pump curve a flow of approximately 250 GPM would be maintained at 2600 psig pump discharge. This indicates a large margin of safety for adequate pump cooling under the maximum RCS system pressure and conservative system pressure drop assumptions. Therefore, no modifications are necessary on either ANO-1 or 2 to respond to the concerns addressed in Bulletin 80-18.

Very truly yours,



for David C. Trimble  
Manager, Licensing

DCT:LDY:1p

On ANO-2, a minimum flow bypass is provided on the high pressure safety injection pumps that remains open until a Recirculation Actuation Signal is present. Since the RCS will be depressurized at this point, no minimum by-pass flow will be required above the pump discharge flow rate. Therefore, no quantitative analysis was done on ANO-2 as the design basis has already taken the minimum flow into account.

- QUESTION 2: If availability of minimum cooling flow for the CCPs is not assured for all conditions by the calculations in 1:
- a) Make modifications to equipment and/or procedures, such as those suggested in the enclosure, to insure availability of adequate minimum flow under all conditions. If modifications are made as described in the attachment for interim modification II, verify that the Volume Control Tank Relief Valve is operable and will actuate at its design setpoint.
  - b) Justify that any manual actions necessary to assure adequate minimum flow for any transient or accident requiring SI can and will be accomplished in the time necessary.
  - c) Verify that any manipulations required (valve opening or closing, along with the instrumentation necessary to indicate need for the action or accomplishment of the action, etc.) can be accomplished without offsite power available.
  - d) Justify that flow available from the CCPs with the modifications in place will be sufficient to justify continued applicability of any safety related analyses which take credit for flow from the CCPs (LOCA, HELB, etc.).
  - e) Justify that all Technical Specifications based on the Item 2.d analyses remain valid.

RESPONSE: For all cases on ANO-1 & 2, the minimum cooling flow was determined to be adequate. Therefore, no additional response is needed on Item #2.

QUESTION 3: Provide the results of calculations performed under Item 1, and describe any modifications made as a result of Item 2 (include the justifications requested).

RESPONSE: On ANO-1, as discussed previously, the analysis performed indicated the existing situation on the high pressure injection system is acceptable. This review shows that the lowest actual discharge pressure on the three Makeup Pumps (HPI Pumps) is 2710 psig, which, when combined with a