

Arkansas Power & Light Company

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December 19, 1989

ØCAN1289Ø5

U. S. Nuclear Regulatory Commission Document Control Desk Mail Station P1-137 Washington, DC 20555

Subject: Arkansas Nuclear One - Units 1 & 2 Docket Nos. 50-313 and 50-368 License Nos. DPR-51 and NPF-6 NRC Bulletin 88-04; Potential Safety-Related Pump Loss

Gentlemen:

In our letter dated June 15, 1989 (ØCANØ68911), AP&L provided our response to Question 3 of NRC Bulletin 88-04; Potential Safety-Related Pump Loss. In that response we committed to perform various procedure changes and other activities involving certain safety-related centrifugal pumps. Attached is a status of the committed activities.

Very truly yours,

Juncono James J. Fisicaro

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PNU

Manager, Licensing

JJF/MCS/1w Attachment

PDR

AN0-1

P-34A & B, Decay Heat Removal/LPI

As stated in our previous response the testing on the DH/LPI pumps indicated pump vibrations slightly above the vendor's recommended limits when the pump is operated on minimum recirculation flow. Additional testing has been completed on the DH/LPI pumps and an evaluation was performed to determine the maximum vibration level the pumps can withstand. The present vibration levels are below the maximum allowable during minimum recirculation flow mode for both P34A and P34B. The cause of the high vibration level is the impeller vane passing frequency being near a resonance frequency of the pumps.

The DH/LPI pumps would operate on minimum recirculation flow only during a small break LOCA with ES actuation with RCS pressure above DH/LPI pump shut-off head. Operation in this mode is not expected to exceed 24 hours, after which decay heat system operation would begin.

The expected pump life during the minimum recirculation flow mode is 16,000 hours based on bearing life. This mode is the most severe condition with respect to pump vibration and life. Since the expected pump life exceeds the required operating time of 24 hours, the existing system flows and configuration are adequate to prevent pump damage and provide for long term pump operability after operation in the minimum recirculation flow mode.

Pump flows during other modes of DH/LPI operation exceed the minimum recirculation flow. Pump testing is performed at rated firs of 3000 gpm and is therefore acceptable.

In summary, the existing system configuration and flows are adequate to prevent pump damage and provide for long term reliability.

P-36A, B, & C, Makeup/HPI

As stated in our previous submittal the ANO-1 HPI/Makeup pumps minimum recirculation line MOV's, CV-1300 and CV-1301, close upon receipt of an ES signal. Operators are then required to rely upon the HPI flow instruments, FE-1209, 1210, 1228 and 1230, to maintain adequate pump flow. Due to instrument error during normal and post-accident conditions, adequate pump flow may not be maintained under current procedural guidance.

The most severe instrument error occurs during a letdown line break outside containment in the room containing the flow instruments. A calculation was performed and the environmental conditions which would be present should a letdown line break occur in this room were determined. In this case, the HPI/Makeup pump flow could be decreased below 55 gpm (pump manufacturer's recommended minimum flow), due to instrument error, without the operator's knowledge. Opening the recirculation line MOV's at an indicated pump flow of 100 gpm will account for the worst case instrument error and maintain adequate pump flow during all modes of pump operation.

Therefore, procedure changes will be made to include instructions to open the minimum recirculation line MOVs at HPI/Makeup pump flows of less than 100 gpm. Our plans called for the addition of venturis to the HPI system during the current midcycle outage, the HPI/Makeup procedures were to be revised to account for this modifiction. Therefore, in order to reduce the burden on the operating crews from training on two separate procedures changes during a relatively short period of time, it was decided to delay the implementation of the procedure changes involving minimum recirculation flow until the HPI modifications and the associated procedure changes were made. Appropriate procedure changes will implemented prior to restart from the current midcycle outage on ANO-1.

AN0-2

2P-7A & B, Emergency Feedwater

In our response dated June 15, 1989 (ØCANØ68911) we committed to revise procedures to reflect the new minimum recommended flows for the EFW pumps. A subsequent letter dated November 13, 1989 (ØCAN118911) provided additional information on the vendor recommended recirculation flows and the recirculation flows currently seen by the EFW pumps. When the original response was prepared, the recirculation flow was believed to be approximately 47 gpm. It was subsequently discovered that, due to an error in the sizing of the flow restricting orifice, the recirculation flow was actually 20-25 gpm. As stated in our November 13, 1989 letter, a lower recirculation flow of 20-25 gpm has been approved by the vendor. Based on this information the appropriate procedures were revised on December 15, 1989 to reflect the new minimum recirculation flows.

2P-60A & B, SDC/LPSI

In our previous response we committed to revise procedures to require that one LPSI pump be stopped three hours after an SIAS if both pumps are operating and have not yet injected into the RCS. These procedure changes were completed on November 3, 1989.

2P-89A, B, & C, HPSI

AP&L committed to revise procedures to incorporate the new minimum recommended flows for the HPSI pumps. These procedure changes were completed on November 3, 1989.