



ARKANSAS POWER & LIGHT COMPANY  
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September 15, 1986

1CAN098606

Mr. John F. Stolz, Director  
 PWR Project Directorate No. 6  
 Division of PWR Licensing - B  
 U. S. Nuclear Regulatory Commission  
 Washington, DC 20555

SUBJECT: Arkansas Nuclear One - Unit 1  
 Docket No. 50-313  
 License No. DPR-51  
Reactor Coolant Pump Shaft Integrity Issue

Dear Mr. Stolz:

We have received your letter dated July 25, 1986 (1CNA078607) requesting additional information to supplement what was provided in our response to your 10CFR50.54(f) letter dated April 23, 1986 (1CNA048603) regarding NRC concerns over Reactor Coolant Pump shaft integrity at ANO-1 AP&L, along with the other affected utilities, has committed significant resources to evaluations of the RCP rotating assembly structural integrity issue. This was noted in our response dated May 13, 1986 (1CAN058605). These evaluation efforts are ongoing and will include tests and inspections planned for the 1R7 refueling outage which began September 5, 1986. Our original response was as complete and responsive as the then available information would permit.

You have requested specific additional information that is required to complete your review. The following information is provided as specific responses to the items in your July 25, 1986 letter.

Item 1 Destructive and nondestructive examinations performed on shafts removed from both Davis Besse and Crystal River-3 have failed to confirm the earlier in situ UT indications. This has lead to concerns regarding the validity of the UT technique in this application. In an effort to resolve these concerns, Toledo Edison and AP&L have funded a B&W development program for an enhanced UT technique. Recently, B&W used the new technique at Davis Besse. The enhanced technique showed indications similar to those originally found with the old technique. It is now believed that these anomalous, unconfirmed crack indications can be

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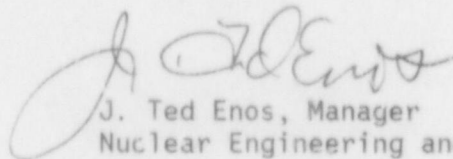
characterized as being specifically associated with the shrunk-fit journal bearing sleeve and are probably geometric in nature. They may not be indicative of cracks. B&W is working to confirm this at the present time. UT examination of all four ANO-1 Reactor Coolant Pumps will be conducted during 1R7 prior to disassembly of one pump for radiographic examination of the pump case circumferential weld. The shaft, capscrews and drive pins of this pump will be visually inspected at that time.

- Item 2 At the present time, pump disassembly is the only means available for the examination of the pump capscrews and drive pins. However, AP&L has contracted with General Electric for the co-development of an examination technique that will characterize the integrity (stiffness) of the shaft-to-impeller joint. With this information, the condition of the capscrews and drive pins can be inferred with a high level of confidence. This examination will be performed on all four pumps prior to disassembly of one pump for radiography as noted under Item 1. The results of this examination, the UT examinations, and the evaluation of the as-found condition of the disassembled pump will be used to determine the need for further diagnostic or repair efforts.
- Item 3. As a result of the sheared shaft event, Crystal River-3 tripped on nuclear overpower based on RCS flow and axial power imbalance. This is a "calculated" reactor protection system trip. The ANO-1 reactor protection system has the same feature. Although no specific analysis was conducted to determine the likelihood of this at the then present power (~ 85%), it was judged prudent to alert the operations staff to the possibility of this as a result of a sheared shaft event. There is no direct specific reactor trip input associated with this event. The operators would use the pump vibration monitor, RCP seal staging pressure indications and RCS flow indication to diagnose a sheared shaft.

A manual or automatic reactor trip subjects the NSSS to a thermal-hydraulic transient. For this reason, if given a choice, an orderly shutdown is judged to be the most prudent course of action.

We hope this satisfies your request for additional information.

Very truly yours,



J. Ted Enos, Manager  
Nuclear Engineering and Licensing

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