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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

March 23, 1981

Docket No. 50-368



Mr. William Cavanaugh III  
Senior Vice President  
Energy Supply Department  
Arkansas Power & Light Company  
P. O. Box 551  
Little Rock, Arkansas 72203

Dear Mr. Cavanaugh:

The Reactor Physics Section of the Core Performance Branch has reviewed your February 20, 1981 submittal on the ANO-2 Cycle 2 reload and has identified a need for additional information as set forth in the enclosure.

Please contact us if you have questions regarding the items noted in the enclosure.

Sincerely,

Robert A. Clark, Chief  
Operating Reactors Branch  
Division of Licensing

Enclosure:  
As stated

cc: See next page

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Arkansas Power & Light Company

cc:

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U.S. Environmental Protection Agency  
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Director, Bureau of Environmental  
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4815 West Markham Street  
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REQUEST FOR ADDITIONAL INFORMATION  
ARKANSAS NUCLEAR ONE, UNIT 2, CYCLE 2 RELOAD

MAR 19 1981

(TACS 12078)

Review of the applicant's submittal dated February 20, 1981 on the Arkansas Nuclear One, Unit 2, (ANO-2) Cycle 2 reload analysis report showed that more information is required for an adequate safety evaluation. The subject report deals, among other things, with fuel system design, nuclear design, reactor protection and monitoring system, and the design and effect of DOE test assemblies. Transient analysis and Technical Specification changes will be reviewed at a later date. The following general comments can be made:

- (a) The Cycle 2 reload was designed similar to Cycle 1, hence, the analysis relies heavily on a comparison of two cycles.
- (b) In numerous instances adequate detail or justification of conclusions is missing.

A number of specific questions have been brought forth in the review and the following additional information is required:

1. (Paragraph 5.2.2) For the limiting dropped CEA show the actual Cycle 2 calculated values of the reactivity worth and radial peaking factor shown in Table 5-5.
2. (Paragraph 5.3.3.1) Regarding the use of the ROCS coarse mesh neutronics code give some typical examples of how and where it was used and the results obtained.
3. (Paragraph 5.3.3.2) DIT cross sections reportedly "substantially improved" the ROCS calculational result agreement with measurement on reactivity, power distribution, rod worths and reactivity coefficients. Provide some examples of the improvements mentioned in the cited paragraph.

4. (Paragraph 10.3) It is not intuitively obvious that the annular pellets will have lower local peaking factors or that they will not impact neighboring rods. Provide explicit physics calculations to prove the assertions of this paragraph.
5. (Paragraph 10.3) Provide typical values of the impact on power peaking caused by the presence of the non-fuel region of the segmented fuel rods.
6. Fuel misloading analysis has not been presented.
  - (a) When such analysis is submitted include analysis for position and orientation misloading.
  - (b) Has ANO-2 developed procedures to avoid misloading and misorientation?