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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555  
NOV 23 1978

Docket No. 50-368

Mr. William Cavanaugh, III  
Executive Director of Generation  
and Construction  
Arkansas Power & Light Company  
P. O. Box 551  
Little Rock, Arkansas 72203

Dear Mr. Cavanaugh:

SUBJECT: CORE PROTECTION CALCULATOR SYSTEM STARTUP TEST AUDIT  
(Arkansas Nuclear One - Unit 2)

The resolution of core protection calculator system staff positions numbered 1, 5 and 12 is discussed in our Safety Evaluation Report for ANO-2, Supplements No. 1 and 2, thereto, and Amendment No. 1 to License No. NPF-6. This resolution will require the Arkansas Power and Light Company to gather and analyze start-up test data. The staff plans to conduct an audit of the start-up test data for the purpose of evaluating the progress of the testing. The enclosure to this letter defines specific staff concerns that you should be prepared to address during our audit.

Please keep us advised with respect to your schedule for conducting these tests.

Sincerely,

A handwritten signature in cursive script that reads "John F. Stolz".

John F. Stolz, Chief  
Light Water Reactors Branch No. 1  
Division of Project Management

Enclosure:  
Start-up Test Audit

cc: See page 2

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A small, handwritten mark or symbol, possibly a stylized letter or a checkmark, located in the bottom right corner of the page.

cc: Mr. Daniel H. Williams  
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Arkansas Power & Light Company  
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ENCLOSURE  
START-UP TEST AUDIT

The purpose of the Start-up Test Audit is to evaluate the applicant's progress in resolving safety positions 1, 5, and 12. These positions are defined and discussed in our Safety Evaluation Report /1, 2/. In order that the applicant may prepare for and support the audit, the staff has defined specific items that they wish to evaluate during the audit. In terms of the positions, the specific items are:

1 Uncertainty Associated with the Algorithm

The start-up tests of interest are:

- Induced Xenon Oscillation,
- Verification of CPC Temperature Shadowing Factor,
- Verification of the Rod Shadowing Factor in the CPC,
- Verification of the CPC Radial Peaking Factors,
- Verification of the CPC Boundary Point Power Correlation Constants,
- Verification of the CPC Shape Annealing Matrix at various flux shapes and power levels.

To review the adequacy of these tests, the staff will need the following information:

- Completed data sheets (samples)
- Completed calculation sheets (samples)
- A summary of test results and a description of how the test results conform to the acceptance criteria.

- A demonstration that "sufficient information" has been recorded and analyzed to achieve test objectives.
- A summary of resolution of discrepancies between anticipated results and measured results encountered in the above tests.

#### 5 CABLE SEPARATION

- Results of the on-site EMI measurements:
  - a. Frequencies
  - b. Amplitudes
- A comparison of on-site EMI test results to the baseline graph established during EMI testing at SANDERS ASSOCIATES.

#### 12 ELECTRICAL NOISE AND ISOLATION QUALIFICATION

- A physical audit of the Core Protection Calculator System in steady state operations to witness and evaluate:
  - Noise on input signals to the system,
  - The impact of noise upon the DNBR calculations.
- A summary of what impact noise has had upon the operation of the system to date. This is to include a comparison among on-site results, pre-startup predictions of noise impact upon system operation and the noise encountered during Phase II Qualification Testing.

#### REFERENCES

1. NUREG 0308, Supplement Number 1, Arkansas Nuclear One Unit Two, Docket No. 50-368, June 1978
2. NUREG 0308, Supplement Number 2, Arkansas Nuclear One Unit Two, Docket No. 50-368, September 1978