

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-313/88-14  
50-368/88-14

Operating Licenses: DPR-51  
NPF-6

Dockets: 50-313  
50-368

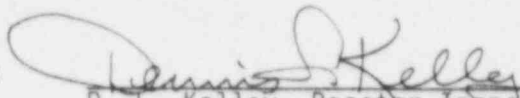
Licensee: Arkansas Power & Light Company (AP&L)  
P.O. Box 551  
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspector At: ANO, Russelville, Arkansas

Inspection Conducted: May 2-6, 1988

Inspector:


  
D. L. Kelley, Reactor Inspector, Test Programs  
Section, Division of Reactor Safety

5/31/88  
Date

Accompanying  
Personnel:

R. A. Azua, Reactor Inspector, Test Programs  
Section, Division of Reactor Safety

Approved:

  
W. C. Seidle, Chief, Test Programs Section  
Division of Reactor Safety

5/21/88  
Date

Inspection Summary

Inspection Conducted May 2-6, 1988 (Report 50-313/88-14)

Areas Inspected: No inspection of Unit 1 was conducted

Results: Not applicable.

Inspection Conducted May 2-6, 1988 (Report 50-368/88-14)

Areas Inspected: Routine, unannounced inspection of the ANO, Unit 2 startup testing from Refueling Outage 2R6.

Results: Within the area inspected, no violations or deviations were identified.

DETAILS1. Persons ContactedAP&L

- \*S. M. Quennoz, Plant General Manager
- \*D. R. Howard, Licensing Manager
- \*R. Lane, Engineering Manager
- \*M. Smith, Superintendent, Reactor Engineer
- \*L. W. Humphrey, General Manager, Nuclear Quality
- \*P. Michalk, Licensing Specialist
- \*D. Lomax, Plant Licensing Supervisor

NRC

- \*W. Johnson, Senior Resident Inspector

\*Denotes those present at the exit interview.

The NRC inspectors also contacted other plant personnel, including operators, technicians, and administrative personnel.

2. Startup Testing - Refueling Outage 2R6 (72700)

In preparation for the startup of ANO 2 from the present refueling outage, the NRC inspectors performed reviews of prestartup procedures and test results, and post-startup test procedures. These reviews were conducted in conjunction with other reviews conducted by the resident inspectors in preparation for Unit 2 startup. The review and evaluation of the post-startup testing results will be documented in a subsequent NRC inspection report due to a delay in the Unit 2 startup. A brief discussion of the delay appears in paragraph 4 of this report.

The prestartup activities fall into two categories; RTD calibration, and rod drive and rod position indication verification. The procedures were reviewed for methodology, technical accuracy and adherence to requirements and commitments of Technical Specifications (TS) and license conditions, and to verify that the purpose and acceptance criteria were clearly defined. In addition, the procedural steps were reviewed to verify that when performed, the procedure would yield valid and verifiable results. The procedures were also examined for signoffs and quality assurance/quality control (QA/QC) hold points where required.

The completed RTD test procedures, listed below, were reviewed for completeness and the calculations were examined to verify accuracy. Additional reviews were conducted to determine if any procedural deficiencies or deviations were identified, and if so, that the resolutions were accurately documented and technically correct.

OP-2302.006, RTD Response Time Penalty Calculation  
 OP-2304.045, Response Time Testing of RC RTD  
 OP-2304.041, Plant Protection System Channel A (B, C, D)  
     Calibration (-.105, -.106, -.107)  
 OP-2312.008, Calibration of RTD Transmitters for CPC (-.009, -.014, -.015)

The results of completed Test Procedure OP-2304.002, "Control Element Assembly Repatch & Verification," were examined for completeness and to determine if any discrepancies or procedural deviations were identified, and if so, that their resolution were documented and technically accurate.

The procedure was also examined to verify that the intent of the testing had been accomplished which was to ensure that the cabling was attached to the correct connector and the control element assemblies would indicate correct position when moved.

Procedure OP-2302.021, "Sequence for Low Power Physics Testing Following Refueling," was also reviewed. This procedure is the controlling document for the conduct of low power physics testing. The review consisted of verifying that the proper testing procedures were included, the correct sequence of testing was identified and any hold points were specified.

No violations or deviations were identified.

### 3. Procedure Review - Post-Critically

The post-critical procedures are core physics/core performance test procedures. Criticality was not achieved during the time frame of this report. The data for these core physics/core performance tests will be examined and evaluated during a subsequent NRC inspection.

In preparation for the post-critical testing, the NRC inspectors performed detailed review of the core physics/core performance test procedures. The specific categories and associated test procedures are listed below. The procedures were reviewed for methodology, technical accuracy and to verify that they addressed the requirements of the TS, applicable ANSI standards, core reload analysis reports and license commitments.

#### a. Surveillance of Core Power Distribution Limits (61702)

OP-2302.039, Core Power Distribution Following Refueling

#### b. Nuclear Instrumentation Calibration (61705)

OP-2302.001, Incore Detector Channel Check  
 OP-2302.100, Excore Instrument Channel A (B, C, D) Test (-.101, -.102, -.103)  
 OP-2304.104, Excore Instrument Channel A (B, C, D) Calibration (-.105, -.106, -.107)

OP-2304.032, Power Range Linear Amplifier Calculation at Power  
 OP-2304.146, Startup Channels 1 and 2 Calibration

c. Core Thermal Power Evaluation (61706)

OP-2302.023, Low Power Physics Base Power Level Determination  
 CP-2302.035, Nuclear Thermal Power Calculation

d. Determination of Reactor Shutdown Margin (61707)

OP-2302.028, Determination of Critical Boron Concentration and  
 Inverse Boron Worth  
 CP-2103.015, Reactivity Balance Calculation

e. Isothermal and Moderator Temperature Coefficient Determination  
 (61708)

OP-2302.026, Isothermal Temperature Coefficient Measurement

f. Total Power Coefficient of Reactivity at Pressurized Water  
 Reactors (61709)

OP-2302.009, MTC Power

g. Control Rod Worth Measurements (PWR) (61710)

OP-2302.003, Determination of CEA Group Worth by Exchange  
 OP-2302.024, Control Element Assembly Symmetry Test  
 OP-2302.025, Determination of CEA 6-1 Worth  
 OP-2302.017, Determination of Group P Integral Worth  
 OP-2302.029, Determination of Regulating CEA Group Worth Nonoverlap  
 OP-2302.030, Sequential Worth Measurement of CEA Regulating Group

No violations or deviation were identified.

4. Startup Delay (93702)

During the performance of the precritical rod drop time test, the licensee discovered that 11 rods did not meet the minimum TS drop time of 3000 milliseconds. Preliminary investigation suggests that the new test method of dropping all the rods simultaneously, "ice one at a time as the previous testing specified, had increased the holding coil decay time. The details of the licensee's investigation were still in progress at the conclusion of this inspection and will be documented in the next resident inspector's monthly report.

5. Exit Interview (30703)

The Region IV reactor inspectors conducted an exit interview on May 6, 1988, with licensee representatives identified in paragraph 1. The NRC

inspectors summarized the scope and findings of the inspection. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the NRC inspectors.