

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-313/85-16  
50-368/85-17

Licenses: DPR-51  
NPF-6

Dockets: 50-313  
50-368

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

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

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: June 1-30, 1985

Inspectors:

*W.D. Johnson*  
W. D. Johnson, Senior Resident Reactor Inspector  
(par. 5)

*7/24/85*  
Date

*P.H. Harrell*  
P. H. Harrell, Resident Reactor Inspector  
(pars. 2, 3, 4, 5, 6, 7, 8, 10)

*7/24/85*  
Date

*M.E. Murphy*  
M. E. Murphy, Reactor Inspector  
(pars. 5, 9)

*7/24/85*  
Date

Approved:

*L.E. Martin*  
L. E. Martin, Chief, Project Section B  
Reactor Project Branch

*7/24/85*  
Date

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Inspection SummaryInspection Conducted June 1-30, 1985 (Report 50-313/85-16)

Areas Inspected: Routine, unannounced inspection including operational safety verification, maintenance, surveillance, followup on previously identified items, followup on IE Information Notice 83-75, followup on licensee event reports, procedures review, and regulatory effectiveness review.

The inspection involved 53 inspector-hours (including 7 backshift hours) onsite by three NRC inspectors.

Results: Within the eight areas inspected, no violations were identified.

Inspection SummaryInspection Conducted June 1-30, 1985 (Report 50-368/85-17)

Areas Inspected: Routine, unannounced inspection including operational safety verification, maintenance, surveillance, followup on previously identified items, followup on IE Information Notice 83-75, followup on licensee event reports, startup test after refueling, procedures review, and regulatory effectiveness review.

The inspection involved 63 inspector-hours (including 6 backshift hours) onsite by three NRC inspectors.

Results: Within the nine areas inspected, one violation was identified (failure to adhere to the requirements of a valve lineup procedure, paragraph 5).

DETAILS1. Persons Contacted

J. Levine, ANO General Manager  
 B. Baker, Operations Manager  
 \*T. Baker, Technical Analysis Superintendent  
 R. Blankenship, Nuclear Engineer  
 M. Bolanis, Health Physics (HP) Superintendent  
 \*P. Campbell, Licensing Engineer  
 B. Converse, Plant Performance Supervisor  
 L. Dugger, Acting I&C Maintenance Superintendent  
 \*E. Ewing, Engineering & Technical Support Manager  
 \*B. Garrison, Operations Technical Support  
 L. Gulick, Unit 2 Operations Superintendent  
 D. Harrison, Plant Performance Engineer  
 H. Hollis, Security Coordinator  
 \*L. Humphrey, Administrative Manager  
 J. Lamb, Safety and Fire Protection Coordinator  
 \*D. Lomax, Licensing Supervisor  
 J. McWilliams, Unit 1 Operations Superintendent  
 J. Montgomery, Human Resources Supervisor  
 \*M. Pendergrass, Acting Engineering & Technical Support Manager  
 V. Pettus, Mechanical Maintenance Superintendent  
 D. Provencher, Quality Engineering Supervisor  
 P. Rogers, Plant Licensing Engineer  
 \*L. Sanders, Maintenance Manager  
 \*L. Schempp, Nuclear Quality Control Manager  
 C. Shively, Plant Engineering Superintendent  
 M. Smith, Nuclear Support Supervisor  
 G. Storey, Safety and Fire Protection Coordinator  
 \*L. Taylor, Special Projects Coordinator  
 B. Terwilliger, Operations Assessment Supervisor  
 R. Tucker, Electrical Maintenance Superintendent  
 D. Wagner, HP Supervisor  
 \*R. Wewers, Work Control Center Manager

\*Present at exit interview.

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

2. Followup on Previously Identified Items (Units 1 and 2)

(Closed) Open Item 313/8125-04; 368/8124-07: Heat tracing channel alarms.

The licensee has performed repairs and modifications to the heat tracing systems in the recent past. These actions have cleared unnecessary and nuisance alarms in the control room. The systems now seem to be operating correctly.

- (Closed) Open Item 313/8307-01; 368/8307-01: Programmatic guidance related to tests and experiments.

The licensee has changed the appropriate procedures to provide programmatic guidance related to tests and experiments. Clarification was provided to assist the procedure user in determining whether or not a safety evaluation is required. In addition, the responsibilities of the plant safety committee were more clearly specified as to its review and approval responsibilities with respect to the safety evaluation of tests and experiments.

- (Closed) Violation 313/8429-05: Loose items on the fuel handling bridge.

Due to this procedural violation, all Unit 1 operators were required to read a copy of the procedure to reinforce the requirement to keep loose items off the fuel handling bridge. The Unit 2 procedure was revised prior to the recent refueling outage to strengthen this requirement. During the Units 1 and 2 refueling outages, the NRC inspectors frequently checked for recurrence of problems in this area. No additional problems were noted.

- (Closed) Violation 313/8501-03: Design change completion and system turnover.

The licensee has revised the Units 1 and 2 plant preheatup and precritical checklists to require authorization from each plant department prior to initiating plant heatup or criticality. This authorization will ensure that each department has reviewed all outstanding job orders and that all job orders affecting system operability have been signed off as completed. For those job orders affecting system operability that have not been completed, a method for conditional acceptance by operations has been established.

The NRC inspector reviewed the status of job orders in the Units 1 and 2 control rooms. No problems were noted where an incomplete job order affected system operability. The NRC inspectors have noted only a few instances to date where the operations department has conditionally accepted any system turnovers.

3. Licensee Event Report (LER) Followup (Units 1 and 2)

Through direct observation, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence has been accomplished in accordance with Technical Specifications.

Unit 1

85-003-00 Reactor trip due to high reactor coolant system pressure

Unit 2

84-013-00 Reactor trip due to dropped control element assembly (CEA)

84-019-00 Reactor trip due to inverter switching by operator

84-024-00 Reactor trip due to dropped CEA

84-026-00 Reactor trip due to dropped CEA

85-004-00 Reactor trip due to loss of main generator excitation

For each of the LERs listed above, the licensee has taken preventive and corrective action. This action includes repair or replacement of system components, revision of procedures for greater clarity, or increased individualized training, as appropriate. The actions taken by the licensee should decrease the number of reactor trips in the areas listed above.

No violations or deviations were identified.

4. Followup on IE Information Notice 83-75 (Units 1 and 2)

IE Information Notice 83-75, "Improper Control Rod Manipulation," was issued on November 3, 1983. The NRC inspector reviewed the licensee's actions to this issue in more detail in response to a request from the NRC Office of Inspection and Enforcement.

The NRC inspector verified the following:

- . Licensee procedures define the steps necessary for recovery from a mispositioned control rod.
- . Procedures are implemented for verifying rod position when one form of normal indication is lost.
- . Training has been provided for operators in the above areas.

No violations or deviations were identified.



5. Operational Safety Verification (Units 1 and 2)

The NRC inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators. The inspectors verified the operability of selected emergency systems, reviewed tagout records, verified proper return to service of affected components, and ensured that maintenance requests had been initiated for equipment in need of maintenance. The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan. The inspectors verified implementation of radiation protection controls during plant activities.

The NRC inspectors toured accessible areas of the units to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibration. The inspectors also observed plant housekeeping and cleanliness conditions during the tour. No housekeeping problems were noted during the tours by the inspectors.

The NRC inspector walked down the accessible portions of the Unit 1 penetration room ventilation system. The walkdown was performed using Procedure 1104.43 and Drawing M-264. During the walkdown, no discrepancies were noted by the NRC inspector between the procedure, drawing, and plant as-built conditions.

The NRC inspectors also walked down portions of the Unit 2 containment spray system. This walkdown was a continuation of the walkdown initiated during the previous month's inspection. During the walkdown, the NRC inspectors noted that a valve was not positioned as required by the Category E valve lineup sheet in Procedure 2102.01, "Plant Pre-heatup and Pre-critical Checklist." Category E valves are valves that are normally locked open or shut and are in a required position to ensure safety systems will fulfill their intended function. If a valve is in a position other than the position stated in the Category E lineup, the valve is required to be listed on an exception sheet (Form 1015.01C) which is maintained in the control room.

The valve found mispositioned by the NRC inspectors was 2BS-32. This is the suction valve for the sodium hydroxide tank recirculation pump. Even though the valve was mispositioned, it did not cause any safety-related component or system to be inoperable. The NRC inspectors checked Form 1015.01C to verify that 2BS-32 had been entered. There was no entry for this valve. The Unit 2 operator immediately entered 2BS-32 on the valve exception list. Subsequent review revealed that the Unit 2 operators had failed to transfer the valve number from the valve lineup list to the exception list. This is an apparent violation. (368/8517-01)

On June 18, 1985, the Unit 2 core operating limit supervisory system (COLSS) was declared inoperable due to licensee identified problems. The COLSS provides direct on-line reactor core status monitoring information to the plant operator. The information provided includes the departure from nucleate boiling ratio (DNBR) limit, licensed core average power limit, peak linear heat rate limit, azimuthal flux tilt limits, and axial shape index upper and lower limits.

While reviewing COLSS output data, a licensee representative noted that the DNBR limit was listed as 145-percent power. Due to this relatively large value, a review was performed to determine the cause of the error. The licensee found that an error had been made in the format used for the computer input data. Even though the input was checked by two different individuals, the error was not detected. The licensee also found that the output data had been reviewed but the output error went undetected.

The licensee performed separate calculations to determine the correct DNBR limit value. The results indicated that the value should have been approximately 105-percent power. At no time during the period since the data was input did reactor power exceed 105 percent. The licensee corrected the input error, reverified the code, and declared the COLSS operable. The licensee plans to submit a 30-day written report to the NRC.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under Technical Specifications, 10 CFR, and administrative procedures.

6. Monthly Surveillance Observation (Units 1 and 2)

The NRC inspector observed the Technical Specification required surveillance testing on the Unit 2 emergency diesel generator (Procedure 2104.36) and verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were accomplished, test results conformed with Technical Specifications and procedure requirements, test results were reviewed by personnel other than the individual directing the test, and any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

No violations or deviations were identified.

7. Monthly Maintenance Observation (Units 1 and 2)

Station maintenance activities of safety-related systems and components listed below were observed to verify that they were conducted in

accordance with approved procedures, Regulatory Guides, and industry codes or standards; and in conformance with Technical Specifications. The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; and radiological and fire prevention controls were implemented.

Job orders (JO) were reviewed to determine status of outstanding jobs and to ensure that priority is assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activities were observed:

- . Replacement of a fan in the Unit 2 inverter 2Y13 (JO 87443)
- . Repair of the fuel oil vault fire detectors power supply (JO 88819)
- . Adjustment of level switches for Unit 2 emergency diesel generator fuel oil day tank (JO 83174)

No violations or deviations were identified.

#### 8. Startup Testing After Refueling (Unit 2)

The NRC inspector reviewed the data from the following completed core physics tests associated with the startup after the fourth refueling of Unit 2, and verified that the results met the acceptance criteria and that all deficiencies were resolved.

<u>Procedure</u>	<u>Title</u>
2103.16	Heat Balance Calculation
2302.01	Incore Detector Channel Check
2302.06	RTD Response Time Testing
2302.09	Moderator Temperature Coefficient at Power
2302.16	RCS Calorimetric Flowrate Calibration
2302.21	Sequence for Low Power Physics Testing Following Refueling
2302.23	Low Power Physics Base Power Level Determination
2302.24	CEA Symmetry Check
2302.38	Linear Power Subchannel Calibration

No violations or deviations were identified.



9. Procedures Review (Units 1 and 2)

This inspection was conducted to verify that the licensee's overall plant procedures are in accordance with regulatory requirements, temporary procedures and procedure changes are made in accordance with Technical Specification requirements, and the technical adequacy of the reviewed procedures is consistent with desired actions and modes of operation. The NRC inspector reviewed the following procedures:

<u>Number</u>	<u>Title</u>
<u>Unit 1</u>	
1000.04	Procedural Program Requirements
1000.05	Procedure Format and Content
1000.06	Procedure Review, Approval, and Revision Control
1102.04	Power Operation
1102.06	Reactor Trip Recovery
1104.02	Makeup and Purification System Operating Procedure
1104.04	Decay Heat Removal Operating Procedure
1106.16	Condensate Feedwater and Steam System Operations
1203.28	Loss of Decay Heat Removal System
<u>Unit 2</u>	
2102.04	Power Operation
2102.06	Reactor Trip Recovery
2104.02	Chemical and Volume Control System Operation
2104.04	Shutdown Cooling System
2106.16	Condensate Feedwater and Steam System Operations
2202.32	Loss of Shutdown Cooling
2202.24	Steam Supply System Rupture

In this review, the NRC inspector verified that review and approval of procedures is performed in accordance with issued administrative procedures and Technical Specifications, the method of incorporating temporary procedure changes into procedures for emergencies and other significant events does not preclude proper and timely operator action during abnormal plant conditions, and overall procedure content is consistent with Technical Specifications and adequate to control safety-related operations within applicable regulatory requirements. The NRC inspector also verified that the procedures reviewed, including checklists and related forms, in selected plant areas are current with respect to revisions and temporary changes.

The NRC inspector also verified that procedure changes had been made to reflect Technical Specification or license revisions, except in one case recently identified by the licensee. This case involved the timely issue

of a procedure implementing the monthly surveillance tests of the recently installed containment high-range radiation monitors invoked by Amendment 94 to the Unit 1 Technical Specifications. This amendment was issued January 31, 1985, but due to an administrative error, the procedure was not issued until June 12, 1985. Upon identification of the error, the radiation monitors were declared inoperable by the licensee. The licensee issued Procedure 1304.143, "High Range Containment Radiation Monitor Test," and the surveillance was performed. The surveillance results indicated that no problems existed with the monitors; therefore, the monitors were declared operable. The licensee could not establish a definite root cause for the oversight. The licensee plans to submit a 30-day written report to the NRC.

No violations or deviations were noted.

10. Regulatory Effectiveness Review (Units 1 and 2)

The NRC inspector participated as a team member in the Regulatory Effectiveness Review performed by the NRC Office of Nuclear Material Safety and Safeguards (NMSS). This review was conducted to evaluate the effectiveness of the ANO safeguards program and to determine if the security systems meet regulatory requirements. A detailed discussion of the results of the review will be provided in a report issued by NMSS.

11. Exit Interview

The NRC inspectors met with Mr. E. Ewing (ANO Acting General Manager) and other members of the AP&L staff at the end of this inspection. At this meeting, the inspectors summarized the scope of the inspection and the findings.