

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-313/83-32
50-368/83-32

Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

Licensee: Arkansas Power and Light Company
Post Office Box 551
Little Rock, Arkansas 72203

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

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: November 5 - 30, 1983

Inspectors:

L. J. Callan
L. J. Callan, Senior Resident Reactor Inspector
(Paragraphs 1, 2, 3, 4, 5, 6, 7, 8, 9)

12/9/83
Date

W. D. Johnson
J. E. Cummins, Resident Reactor Inspector
(Paragraphs 1, 5, 6, 7, 8, 9)

12/17/83
Date

Approved:

W. D. Johnson
W. D. Johnson, Chief, Reactor Project Section C

12/17/83
Date

Inspection Summary

Inspection Conducted November 5 - 30, 1983 (Report: 50-313/83-32)

Areas Inspected: Routine, announced inspection of operational safety verification, followup on previously identified items, Licensee Event Report followup, surveillance, maintenance, cold weather preparation, and security guard force strike. The inspection involved 57 inspector-hours onsite by two NRC inspectors.

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

Inspection Summary

Inspection Conducted November 5 - 30, 1983 (Report: 50-368/23-32)

Areas Inspected: Routine, announced inspection of operational safety verification, followup on previously identified items, surveillance, maintenance, cold weather preparation, resin solidification, and security guard force strike. The inspection involved 115 inspector-hours onsite by two NRC inspectors.

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

DETAILS SECTION

1. Persons Contacted

*J. M. Levine, ANO General Manager
*E. C. Ewing, Engineering & Technical Support Manager
B. A. Baker, Operations Manager
*L. Sanders, Maintenance Manager
*J. McWilliams, Unit 1 Operations Superintendent
G. Helmick, Planning and Scheduling Supervisor
M. J. Bolanis, Health Physics Superintendent
R. Tucker, Electrical Maintenance Superintendent
R. Wewers, Unit 2 Operations Superintendent
D. Wagner, Health Physics Supervisor
L. Humphrey, Administrative Manager
I. Baker, Technical Analysis Superintendent
C. Fellhauer, Radwaste Coordinator
R. Gillespie, Chemical and Environmental Supervisor
H. Hollis, Security Coordinator
P. Jones, Instrumentation and Controls Superintendent
V. Pectus, Mechanical Maintenance Superintendent
C. Burchard, Health Physics Supervisor
D. Helm, Health Physics Specialist
P. Rogers, Special Projects Coordinator
*D. Moeggenberg, Acting Special Projects Manager

*Present at exit interviews.

The 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 313/8302-05; 368/8302-02: Technical Specification (TS) changes for modifications to the licensee's plant organization.

The NRC inspector reviewed the licensee's TS change request dated April 18, 1983, and verified that the proposed revised management organization is consistent with the organization described by Plant Administrative Procedure 1000.01, Revision 10, "Organization and Responsibilities."

(Closed) Open Item 313/8306-03; 368/8306-01: Instructions to radiation workers.

The NRC inspector has observed that the licensee's health physics personnel appear to have improved the quality of their routine, on-the-job instructions to radiation workers during the current Unit 2 refueling outage as compared to the previous Unit 1 refueling outage. The inspector further noted that the requirement of 10 CFR 19.12 for health physics personnel to provide adequate instructions to radiation workers has received increased emphasis in the licensee's health physics technician training program.

- (Closed) Severity Level V Violation 313/8310-01: Failure to follow procedures for proper labeling of radioactive waste.

The NRC inspector reviewed Procedure 1622.017, "Operation of a Control Point," and Procedure 162.008, "Marking and Handling of Radioactive Material and Equipment," and verified that they were technically and administratively adequate. Additionally, the inspector verified the proper implementation of these procedures during the current Unit 2 refueling outage.

- (Closed) Severity Level V Violation 368/8110-04: Failure to update drawings to reflect design changes.

Plant Engineering Administrative Procedure 1032.13, "Design Drawing Preparation, Review and Approval," requires, as a minimum, that all piping and instrumentation diagrams (P&IDs), electrical schematic diagrams, and connection diagrams be "bubbled" as "rapidly as possible" to reflect pending design changes. For the most recent refueling outages for Units 1 and 2, the licensee has ensured that those P&IDs important to the safe operation of the plant were "bubbled" to reflect pending design changes prior to plant startup.

- (Closed) Unresolved Item 313/8131-01; 368/8130-01: Inadequate design change safety evaluations.

The NRC inspector reviewed the August 5, 1983, revision to the licensee's Form 202F9, titled "Safety or Environmental Determination Form." In addition, the inspector reviewed Attachment 7, titled "Guidance for Preparation of a Safety and Environmental Determination Form 202F9," to Procedure 1032.01, Revision 5. The inspector determined that the above procedural guidance appears to ensure that adequate design change safety evaluations will be performed and recorded. The implementation of this procedural guidance will be monitored during followup NRC inspections.

- (Closed) Open Item 368/8124-06: Calibration of containment building hydrogen analyzers.

In a letter to NRR dated September 27, 1983, the licensee has requested a Technical Specification change to allow the calibration of the hydrogen analyzers using a sample gas containing ten volume percent (nominal) hydrogen with the balance being nitrogen.

- (Closed) Severity Level V Violation 368/8226-05: Failure to adhere to requirements of refueling shuffle procedure.

The licensee has revised Procedure 2502.01, "Refueling Shuffle," to require an upender operator only when operating the transfer machine in the manual mode. The NRC inspector observed fuel shuffling activities during the current Unit 2 outage and noted that Procedure 2502.01 was being properly implemented.

- (Closed) Open Item 368/8229-02: Water depth indicators for the spent fuel pool and refueling transfer canal.

The licensee has installed water depth indicators for both the refueling transfer canal and the spent fuel pool.

- (Closed) Open Item 363/8310-02: Inadequate lighting in the Unit 2 auxiliary building.

The licensee corrected the immediate lighting deficiencies identified by the NRC inspector. In addition, the licensee has actively encouraged operations personnel to report any instances of defective lighting, and licensee management personnel have been more effective in identifying defective lighting while making their routine inspections of plant areas.

No violations or deviations were identified.

3. Cold Weather Preparations (Units 1 and 2)

The NRC inspector reviewed Procedure 1307.37, "Plant Freeze Protection Testing," for technical accuracy and completeness. The inspector verified that the procedure ensured the operability of the necessary heat tracing, space heaters, and/or heater strips on systems susceptible to freezing. This operability verification includes checking the proper setting of thermostats and ensuring that all heater circuits are energized. In particular, the NRC inspector verified that the freeze protection for the systems

identified in the licensee's responses of October 31, 1979, and January 14, 1980, to IE Bulletin 79-24, titled "Frozen Lines," were adequately tested.

However, the NRC inspector noted that although Procedure 1307.37 appeared to be comprehensive and adequately ensured operability of essential freeze protection systems, the procedure was performed only on an annual basis, typically during the month of October as it was this year. In other words, the licensee has established no ongoing measures to verify the operability of essential freeze protection during the winter months. The NRC inspector discussed this matter with licensee management representatives and emphasized the importance of establishing an ongoing surveillance program for freeze protection systems, particularly in light of the history of freeze protection problems experienced by the licensee (see Unit 2 Licensee Event Reports 79-101, 80-091, and 81-09). Licensee management representatives agreed that it would be prudent to implement such a surveillance program and indicated that one would be developed. This item will remain open (313/8332-01; 368/8332-01).

No violations or deviations were identified.

4. Radioactive Resin Solidification (Unit 2)

During the period of November 11-28, 1983, four 200 ft³ liners of Unit 2 resin were solidified and transported to the radwaste burial site at Barnwell, South Carolina. Included in this volume of resin was the approximately 100 ft³ of resin that underwent an apparent exothermic chemical reaction while being dewatered on January 15, 1983. This event is discussed in detail in IE Information Notice No. 83-14. The remainder of the resin that was solidified was taken from the Unit 2 spent resin holding tank (2T13 tank) at the same time as the batch that underwent the chemical reaction, and was therefore considered to be susceptible to the same exothermic chemical reaction.

The NRC inspector observed portions of the licensee's solidification process for this affected resin. On November 11, 1983, during the inspector's initial review of the licensee's procedures governing this activity, it was determined that no procedures existed beyond the "generic" solidification procedures used by the licensee's contractor, Chem-Nuclear Systems Inc. The licensee had developed no procedures to cover the unique risks associated with solidifying this resin that had previously undergone an exothermic chemical reaction. When the NRC inspector raised this issue, licensee management representatives emphasized the fact that the extensive laboratory analysis and empirical testing that were performed on the affected resin had assured them that the solidification process could proceed with minimal risk. However, as a result of the

NRC inspector's concerns, the licensee developed Procedure 2409.85, "Resin Solidification Work Plan," which was subsequently approved by the Plant Safety Committee and implemented prior to the commencement of any actual resin solidification activity. This procedure adequately covered the safety precautions and immediate actions associated with any abnormal reaction from the resin during the solidification process. It also defined the minimum actions required to monitor the temperature of the resin during the process.

No violations or deviations were identified.

5. Monthly Surveillance Observation (Units 1 and 2)

The NRC inspector observed the Technical Specification required surveillance testing on the Unit 1 reactor protection system channel 'B' (Procedure 1304.38) and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with Technical Specifications and procedure requirements, that test results were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector also witnessed portions of the following test activities:

- . Process radiation monitoring system monthly test, Unit 1 (Procedure 1304.26)
- . Electrical penetration local leak rate testing, Unit 2 (Procedure 2304.15)
- . Station battery 2D12 tests, Unit 2 (Procedure 2405.01)
- . Reactor trip breaker monthly test, Unit 1 (Procedure 1304.101)

No violations or deviations were identified.

6. Monthly Maintenance Observation (Units 1 and 2)

Station maintenance activities of safety-related systems and components listed below were observed/reviewed to ascertain 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; radiological controls were implemented; and fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

- . Troubleshooting of Unit 1 process radiation monitor RE-3814 (J.O. 53924)
- . Replacement of Unit 2 valve operators on 2CV-1025-1 and 2CV-1075-1 (Design Change Package (DCP) 83-2056)
- . Preventive maintenance on Unit 2 emergency diesel generator No. 2 (mechanical J.O. 53856; electrical J.O. 53883) Procedure 2306.05
- . Replacement of Unit 2 Rosemount RTDs with Weed type (DCP 82-2059)
- . Reactor trip breaker in-service inspection, Unit 1 (Procedure 1405.17)
- . Installation of Unit 2 alternate shutdown indicators (DCP 83-2080)

No violations or deviations were identified.

7. Security Guard Force Strike (Units 1 and 2)

By observation of security guard force activities and discussions with appropriate licensee management representatives, the NRC inspectors determined that the actions taken by the licensee's security guard force subcontractor have been effective in maintaining security at the ANO plant during a strike of the security guard force which began on October 30, 1983.

Activities at the initiation of the strike were discussed in NRC Inspection Report 50-313/8327; 50-368/8327. When the strike started, the security guard force contractor undertook intensive hiring and training programs to replace the striking guards. By the end of November 1983, enough security guards had been hired and trained to accomplish the following:

- . By November 30, 1983, all of the security guards that had been brought in from other nuclear sites to assist during the strike had been replaced with permanent security guard force personnel.
- . On November 25, 1983, the security guard force personnel work hours were changed from twelve-hour shifts to the normal prestrike five shift rotation.

A training class is presently being conducted for 14 additional security personnel. This training class is scheduled to be completed on December 14, 1983.

No violations or deviations were identified.

8. Followup On Licensee Event Report LER 83-21 (Unit 1)

The NRC inspector reviewed Unit 1 LER 83-21 which was issued on October 18, 1983. This LER described the inoperable condition of the reactor building fire sprinkler system that was discovered by the licensee on September 9, 1983.

During the followup to this LER, the NRC inspector identified two areas of concern:

- a. Some licensed control room operators appear to have a poor understanding of how the reactor building fire sprinkler system works. The poor technical knowledge exhibited by three operators on the fire sprinkler system appears to be the major contributing factor for the difficulty they experienced in attempting to "walk through" the immediate actions required by Procedure 1203.09 for a fire alarm in the reactor building. Specifically, these operators seemed to be confused with respect to whether the zone sprinkler actuation valves inside containment had to be opened locally by manually actuating them, or whether they would open automatically on the receipt of a smoke detector signal. During

discussions with the NRC inspector, licensee management representatives committed to ensure that the current year's operator requalification training cycle would include a training session on the operation of the reactor building fire sprinkler system (313/8332-02).

- b. The immediate actions of Abnormal Operating Procedure 1203.09, "Fire Protection System Annunciator Corrective Action," for a fire alarm in the reactor building appear to the NRC inspector to be confusing. The initial step of the immediate actions requires that an operator enter the reactor building to confirm the existence of a fire and then to manually actuate the appropriate zone sprinkler actuation valves. This procedural requirement appears to contribute to the operators' confusion regarding the operation of the reactor building fire sprinkler system that was referred to in subparagraph (a) above. The procedural requirement to manually actuate the zone sprinkler valves was necessary prior to a design change implemented during 1979 - 1980 that made the valves open automatically on a fire alarm. Such a requirement with the current modified system appears to be unnecessary and may subject operators to excessive personal hazard. Licensee management representatives agreed to review the basis for this procedural requirement and to make procedural changes accordingly. This item will remain open (313/8332-03).

No violations or deviations were identified.

9. 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, and verified proper return-to-service of affected components. Tours of accessible areas of the units were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibration. In addition, the inspectors 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 NRC inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The NRC inspectors walked down the accessible portions of the Unit 1 emergency diesel generator automatic start systems, the Unit 1 service water system,

the flow paths for the four Unit 2 safety injection tanks, and the Unit 2 containment cooling system to verify operability. The inspectors witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

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.

During a tour of the Unit 2 containment building, the NRC inspector noted extensive surface corrosion (red rust) on the electrical conduits, piping, valve operators, and instrumentation in the immediate vicinity of the south piping penetration area. The cause of this corrosion appears to have been boric acid spray from body to bonnet leaks on 2SI-13C, a check valve in the high pressure safety injection line to reactor coolant loop C cold leg. This valve had developed leaks on at least two occasions over the last three years, the most recent being during the past operating cycle. In each instance, the leakage was allowed to continue for long periods of time (weeks) since the leakrate was less than the maximum allowed by Technical Specification 3.4.6.2.d. The NRC inspector expressed concern to licensee management representatives relative to the extensive rust covering the many safety-related electrical, mechanical, and instrumentation components in the south piping penetration area of the containment building. In particular, the inspector noted the apparent lack of effort or intention to clean up the area and to perform some type of engineering analysis to determine if there was any potential degradation in the reliability of the affected components due to their long exposure to a harsh environment. Licensee management representatives agreed to thoroughly clean up this area and to inspect all affected equipment prior to Unit 2 startup. This item will remain open (368/8332-02).

No violations or deviations were identified.

10. Exit Interview

The NRC inspectors met with Mr. J. M. Levine (Plant General Manager) and other members of the AP&L staff at the end of various segments of this inspection. At these meetings, the inspectors summarized the scope of the inspection and the findings.