

APPENDIX B
U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Reports: 50-313/81-35
50-368/81-35

Licenses: DPR-51
NPF-6

Licensee: Arkansas Power and Light Company

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

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: November 22 - December 31, 1981

Inspectors: *for D M Hunnicutt* 2/2/82
W. D. Johnson, Senior Resident Reactor Inspector Date

for D M Hunnicutt 2/2/82
L. J. Callan, Resident Reactor Inspector Date

Approved: *D M Hunnicutt* 2/2/82
D. M. Hunnicutt, Chief, Reactor Projects Section 2 Date

Inspection Summary

Inspection conducted during period of November 22 through December 31, 1981
(Report 50-313/81-35)

Areas Inspected: Routine, announced inspection including operational safety verification, surveillance, maintenance, and follow up on TMI Action Plan Items.

The inspection involved 113 inspector-hours on site by two NRC inspectors.

Results: Within the four areas inspected, one apparent violation was identified in one area (failure to follow emergency diesel generator operating procedure, paragraph 2).

Inspection conducted during period of November 22 through December 31, 1981
(Report 50-368/81-35)

Areas Inspected: Routine, announced inspection including operational safety verification, surveillance, maintenance, and follow up on TMI Action Plan Items.

The inspection involved 100 inspector-hours on site by two NPC inspectors.

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

DETAILS

1. Persons Contacted

J. P. O'Hanlon, ANO General Manager
J. Levine, Engineering & Technical Support Manager
B. A. Baker, Operations Manager
T. N. Cogburn, Plant Analysis Superintendent
E. C. Ewing, Plant Engineering Superintendent
L. Sanders, Maintenance Manager
J. McWilliams, Unit 1 Operations Superintendent
J. Albers, Planning and Scheduling Supervisor
M. J. Bolanis, Health Physics Superintendent
R. Wewers, Unit 2 Operations Superintendent
L. Taylor, Operations Technical Engineer
C. Burchard, Health Physics Supervisor
R. Green, Health Physics Supervisor
C. Shively, Plant Performance Supervisor
R. Turner, Electrical Engineering Supervisor
L. J. Dugger, Special Projects Manager
L. W. Schempp, Manager, Nuclear QC
M. Stroud, Electrical Engineer
D. Shehada, Electrical Engineer
R. Tucker, Electrical Maintenance Superintendent
T. Baker, Technical Analysis Superintendent
S. Lueders, Radioactive Waste Coordinator

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

2. 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 vibrations and to verify 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 observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The NRC inspectors walked down the accessible portions of the Unit 2 Electrical Penetration Nitrogen Pressurization, Unit 1 and 2 Emergency Diesel Generator Starting Air, Unit 1 B Train of Reactor Building Spray, and Unit 1 A Train Low Pressure Injection systems to verify operability. The inspector also 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.

Findings in this area are detailed below.

A. Unit 1 Emergency Diesel Generator Operation

Through review of the Unit 1 Station Log, the NRC inspector found that on December 12, 1981, the two emergency diesel generators were run concurrently for testing and that the number one diesel was shutdown about 23 minutes following the shutdown of the number two diesel. This is an apparent violation of Operating Procedure 1104.36, "Emergency Diesel Generator Operations," which requires that the second diesel be kept running for at least three hours following the shutdown of the first diesel when both have been run concurrently. This procedural requirement stems from a manufacturer's recommendation as discussed in Licensee Event Report 313/79-006/01T. The purpose of the recommendation was to reduce the possibility of turbo-charger thrust bearing damage during repeat start operating modes. (313/8135-01)

B. Security Doors

The NRC inspector identified a security door which could be unlatched without causing an alarm. Licensee contractor personnel conducted an inspection to determine whether other security doors had similar problems. This item is open pending completion of the necessary repairs or modifications found to be necessary by the licensee. (313/8135-02; 368/8135-02)

C. Unit 2 Containment Electrical Penetrations

The NRC inspector found on December 3, 1981, that penetration 2E43 was not pressurized with nitrogen. The licensee subsequently found that the nitrogen supply isolation valve for this penetration was shut. The licensee had no program for periodic inspection of these penetrations to assure proper pressurization other than weekly nitrogen header pressure checks. This item is open pending implementation of more effective checks or controls on this system. (368/8135-01)

D. Unit 1 Emergency Diesel Generator High Speed Differential Relays

Through review of the Unit 1 Station Log on November 23, 1981, and through subsequent discussions with licensee representatives, the NRC inspector determined that the Unit 1 No. 1 Emergency Diesel Generator, while in the "standby" mode, was rendered inoperable on November 19, 1981, when its lockout relay tripped due to spurious operation of one of the three High Speed Differential Relays in its control circuit. The NRC inspector further noted that the licensee attributed the spurious operation of this particular relay to its sensitivity to mechanical shock, since the relay had tripped after the door to the control cubicle which houses the relays

was slammed shut. The licensee had attached caution cards to the control cubicles for both of the Unit 1 Emergency Diesel Generators warning personnel against mechanical shock to the cubicles, but had taken no further action. When questioned by the NRC inspector about the seismic qualification of these High Speed Differential Relays (General Electric Model 12 CFD12B1A Relays), the licensee was unable to produce any records indicating that the relays were qualified, so on November 27, 1981, the licensee disabled the High Speed Differential Relays associated with both Emergency Diesel Generators to preclude further spurious trips due to mechanical shock.

On December 9, 1981, after review of seismic qualification data provided by General Electric, the licensee determined that the High Speed Differential Relays were seismically qualified only in the energized state, which was the case when the Emergency Diesel Generators were running. However, when the Emergency Diesel Generators were in "standby" and not running, the relays were de-energized and therefore susceptible to spurious operation if subjected to mechanical vibration or shock. The licensee's data indicated that the de-energized High Speed Differential Relays were not seismically qualified to withstand the effects of either a Safe Shutdown Earthquake (2.025g) or an Operating Basis Earthquake (1.125g). The effect of the spurious operation of one of these relays when the Emergency Diesel Generator is not running is to cause the lockout relay to trip which then prevents the Diesel Generator from starting until an operator goes to the Emergency Diesel Generator enclosure (372 ft. elevation in the Unit 1 Auxiliary Building) and manually resets the relays. This item is an apparent violation of Criterion 2 of Appendix A to 10 CFR 50 and Paragraphs VI(a)(1) and VI(a)(2) of Appendix A to 10 CFR 100 which require that the Emergency Diesel Generators be able to withstand both a Safe Shutdown Earthquake and an Operating Basis Earthquake and still be able to perform their safety functions. (313/8135-03)

On December 16, 1981, the licensee submitted Licensee Event Report (LER) 81-014 as a written followup to the prompt notification of this issue made to the Commission by telephone on December 9, 1981. LER 81-014 appears to be incomplete, however, as it does not clearly state the fundamental cause of concern: namely, that both Unit 1 Emergency Diesel Generators apparently were not seismically qualified to withstand the design basis seismic events when in their normal, "standby" mode. The licensee states in the LER that a "potential exists" for a delay in Diesel Generator availability if "mechanical agitation" precedes Diesel Generator energization, but the licensee does not relate this "potential" to the design basis seismic criteria for Unit 1. The licensee has agreed to submit a revised LER to remove the present ambiguity from LER 81-014. This item will remain open pending the NRC inspector's review of the revised LER. (313/8135-04)

E. Leaking Containers in the Radwaste Building

During a tour of the Radwaste Building on December 22, 1981, the NRC inspector noted that two out of approximately twelve 1000 gallon fiberglass storage casks were leaking at the rate of about 100 cc per minute. These casks each contained about 800 gallons of contaminated resin slurry from the Unit 1 condensate polisher system. The licensee had previously identified this leakage and had taken steps to contain it. The NRC inspector expressed concern, however, that since the leakage was from cracks around the drain connections at the bottom of the two casks, a danger existed that the drain connections could fail further, leading to an uncontained spill of the contents into the radwaste building. This potential is increased by the fact that the radwaste building is unheated, and, therefore, the contents of these fiberglass casks have experienced a number of freezing/thawing cycles which can lead to propagation of the existing cracks. This item will remain open pending the licensee's solution to the leaking resin storage casks. (313/8135-05; 368/8135-03).

3. Monthly Surveillance Observation (Units 1 and 2)

The NRC inspector observed the Technical Specification required surveillance testing on the Unit 2 Boric Acid Makeup Pump 2P39B (Procedure 2104.03 Supplement 2) 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:

- . Unit 1 RPS Channel D Monthly Test (Procedure 1304.40)
- . Unit 1 Hydrogen Purge Lead System Test (Procedure 1104.33 Supplement 1)
- . Unit 2 Plant Protective System Channel C Test (Procedure 2304.39)
- . Unit 1 Reactor Building Spray Pump (P-35B) Monthly Test (Procedure 1104.05 Supplement 5)
- . Unit 1 Reactor Building Ventilation Coolers VCC-2C and 2D Test (Procedure 1104.33 Supplement VII)

No violations or deviations were identified.

4. 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 operations 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:

- . Repair of Core Protection Calculator Channel "C", Unit 2 (J.O. 20599 and 20567)
- . Investigation of excessive fuel consumption and sooting for No. 2 Emergency Diesel Generator, Unit 2 (J.O. 20638). Following completion of maintenance on the Unit 2 No.2 Emergency Diesel Generator, the NRC inspector verified that this system had been returned to service properly.
- . Installation of Design Change Package (DCP) 81-2018 that upgrades freeze protection for the level transmitters associated with the Unit 2 Refueling Water Tank (RWT).

While observing the activities relating to the installation of DCP 81-2018 in the vicinity of the Unit 2 RWT, the NRC inspector made the following observations:

- . Two unmarked "hot spots," each providing radiation levels of about 1 rem per hour on contact, were identified on the level transmitters mounted on the Unit 1 Borated Water Storage Tank (BWST). Although the general area radiation levels were less than 100 millirems per hour and the area was correctly posted as a RADIATION AREA, the inspector was concerned that insufficient information existed to maintain personnel radiation exposure to levels as low as reasonably achievable without the added information of identifying such "hot spots."
- . The personnel working on DCP 81-2018 adjacent to the Unit 2 RWT were not following the requirements of their Radiation Work Permit. Specifically, they were not wearing rubber gloves when working on a

potentially contaminated system and they were not taking measures to prevent the spread of contamination from potentially contaminated water. A health physics technician who was accompanying the NRC inspector at the time of this observation took immediate and appropriate action after identifying the problem himself.

- . Due to inclement weather, the health physics and security personnel who were responsible for monitoring and controlling access to the RWT and BWST area were in a heated shack located at the access point. Due to the design of this shack and to the paper and tape that obstructed the existing windows, the inspector noted the security and health physics personnel inside had inadequate visibility of both personnel inside the controlled access area and personnel entering and leaving the area to properly control access and monitor maintenance activities.

When appraised of the above concerns, the licensee took prompt and appropriate corrective action. The NRC inspector verified during subsequent tours of this area that similar problems did not re-occur.

No violations or deviations were identified.

5. Followup on Three Mile Island Action Plan Requirements (Units 1 and 2)

The NRC's Office of Nuclear Reactor Regulation issued NUREG-0737 entitled, "Clarification of TMI Action Plan Requirements," to the licensee as a letter dated October 31, 1980. This document incorporated all TMI-related items approved for implementation by the NRC as of October 31, 1980, and includes a listing of requirements and implementation schedules.

The NRC inspector is reviewing, on a continuing basis, the licensee actions in response to the requirements of NUREG-0737. The inspector's review of certain of the licensee's actions in this regard is summarized below. The numbering system and short titles correspond to those used in Enclosure 1 of NUREG-0737.

II.E.4.2.7 Containment Isolation Dependability - Radiation Signal on Purge Valves (Unit 2)

The requirement that the purge valves close on a high radiation signal is not applicable to ANO-2 since Technical Specification 3.6.1.6 requires that these valves be closed during MODES 1, 2, 3 and 4. This item is considered closed for ANO-2 as stated in a letter to the licensee from the NRC's Office of Nuclear Reactor Regulation (NRR) dated December 14, 1981.

II.K.2.17 Voiding in RCS (Unit 1)

This item has been resolved for ANO-1 as stated in a letter and Safety Evaluation Report from the NRC (NRR) to the licensee dated December 9, 1981.

6. Exit Interview

The NRC inspectors met with Mr. J. P. O'Hanlon (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.