APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

Report: 50-313/82-13
50-368/82-10

Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

Licensee: Arkansas Power and Light Company

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

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: June 1-30, 1982

Inspectors: W D Johnson 7/9/82
W. D. Johnson, Senior Resident Reactor Inspector Date
(Paragraphs 1, 2, 3, 4, 5, 6, 7, 8, 9)

L J Callan 7/9/82
L. J. Callan, Resident Reactor Inspector Date
(Paragraphs 1, 2, 3, 4, 5, 6, 9)

Approved: R E Hall 7/15/82
R. E. Hall, Chief, Reactor Project Section C Date

Inspection Summary

Inspection conducted during period of June 1-30, 1982 (Report 50-313/82-13)

Areas Inspected: Routine, announced inspection including operational safety verification, surveillance, maintenance, followup on previously identified items, review of plant operations, review of Licensee Event Reports, followup on IE Bulletin 82-01, and followup on IE Circular 81-14.

The inspection involved 115 inspector-hours onsite by two NRC inspectors.

Results: Within the 8 areas inspected, four apparent violations were identified in two areas (failure to perform an adequate survey for beta radiation and ALARA Committee review not performed as required, paragraph 6; failure to adhere to the requirements of the jumper and lifted lead procedure and failure to control access to the security key issue room, paragraph 4).

Inspection conducted during period of June 1-30, 1982 (Report 50-368/82-10)

Areas Inspected: Routine, announced inspection including operational safety verification, surveillance, maintenance, followup on previously identified items, review of plant operations, review of Licensee Event Reports, followup on IE Bulletin 82-01, and followup on IE Circular 81-14.

The inspection involved 126 inspector-hours onsite by two NRC inspectors.

Results: Within the 8 areas inspected, one violation was identified in one area (failure to control access to the security key issue room, paragraph 4).

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. Dugger, Special Projects Manager
L. Humphrey, Administrative Manager
J. Lamb, Safety and Fire Prevention Coordinator
T. Baker, Technical Analysis Superintendent
S. Lueders, Radwaste Coordinator
R. Gillespie, Chemical and Environmental Supervisor
H. Hollis, Security Coordinator
P. Jones, Instrumentation and Controls Superintendent
V. Pettus, Mechanical Maintenance Superintendent
C. Burchard, Health Physics Supervisor
D. Helm, Health Physics Specialist
J. Ray, Quality Control Engineer
P. Rogers, Special Projects Coordinator
H. Carpenter, Instrumentation and Controls Supervisor
C. Cole, Planning and Scheduling Coordinator
J. C. Garret, Materials Management Supervisor
B. Hampton, Stores Supervisor
J. Vandergrift, Training Superintendent

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

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

(Closed) Infraction 368/7906-05: Procedures to prevent degradation of Class 1E equipment.

The licensee has adopted a policy involving attachment of test equipment to Class 1E equipment such that the Class 1E equipment will be considered inoperable if the attached test equipment could cause Class 1E equipment failure. In addition, Revision 3 of Procedure 1000.28, "Jumper and Lifted Lead Control," requires consideration of possible equipment degradation due to the installation of jumpers or lifted leads.

(Closed) Deviation 313/8129-01; 368/8128-01: Training in mitigating core damage.

The licensee has provided the required training to plant employees.

(Closed) Severity Level V Violation 313/8135-01: Emergency diesel generator operation.

Procedure 1104.36, Supplement I, has been revised to include a requirement to keep the second diesel running for at least three hours following the shutdown of the first when both have been run concurrently. This should preclude a recurrence of this violation.

(Closed) Open Item 313/8135-02; 368/8135-02: Security door problem.

The identified security door problem was promptly corrected. Other security doors were checked for similar problems. All security doors are periodically checked.

(Closed) Severity Level IV Violation 313/8204-01: Seismic support pipe strap missing.

The missing pipe strap was promptly replaced. Detailed inspections of diesel generator systems were conducted to identify any other pipe support discrepancies. Biweekly inspections are being conducted during May, June, and July 1982, to assure that seismic support integrity is maintained. Appropriate training has been conducted, stressing individual responsibility and accountability.

(Closed) Open Item 368/8205-03: Lifted leads in the Unit 2 CPC cabinets.

A standard practice for handling of leads lifted during a design change has been developed and documented as a revision to form ENG-004. This form is attached to all design change packages prior to issuance. Job Order 24663 has been performed to determine the continued applicability of the lifted lead tags on OTB 3 and to apply the standard practice to the lifted leads in the CPC cabinets.

(Closed) Level VI Violation 313/8117-01; 368/8115-01: Failure to collect and analyze food crop samples during 1980.

The licensee's Annual Environmental Monitoring Report for 1981, forwarded to the NRC by a letter dated April 28, 1982, documents that food samples were taken and analyzed during 1981 as required by Environmental Technical Specification 4.2.11.

(Closed) Open Item 313/8117-03; 368/8115-03: Failure to obtain monthly pasturage samples.

A new milk sampling station (station number 29) was established in June 1981, at Steuber's Dairy to replace the sampling station at Harm's Dairy. As a result, monthly pasturage samples will no longer be required at Harm's Dairy.

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

Through direct observations, 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	Unit 2	
81-013	80-033	81-030
82-001	80-064	81-031
82-004	81-022	81-035
82-007	81-023	81-037
	81-024	
	81-028	
	81-029	

The following subparagraphs provided additional information on certain of the above LER's.

Unit 1 Reactor Protective System (RPS) Bypass Setpoints

LER 82-007 reported that a licensee procedure review had revealed that the bypass reset setpoints for the anticipatory reactor trip for loss of main feedwater pumps or main turbine trip were not set in accordance with Technical Specifications. The licensee revised the affected RPS surveillance procedures and the NRC inspector witnessed the performance of the revised procedures which inserted the proper setpoints. The Plant Safety Committee (PSC) chairman has established a system for review of revised Technical Specifications. Responsibility for individual action required in response to Technical Specification revision is assigned and tracked by the PSC.

Unit 2 Plant Protective System (PPS) Failures

LER's 80-033, 80-033 Revision 1, 80-064, 80-064 Revision 1, and 80-064 Revision 2 reported component failures within the PPS cabinets. The licensee's failure investigation concluded that the failures were caused

by high temperatures within the PPS cabinets. Modifications were performed to improve air distribution and cooling in the cabinets.

No violations or deviations were identified.

4. 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 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 2 emergency feedwater system, the Unit 1 and 2 emergency diesel generator starting air systems, the Unit 2 boron injection path via the charging pumps, and the Unit 2 "red" and "green" 120VAC and 125VDC electrical distribution systems to the reactor protective system and engineered safety features channels to verify operability. The inspectors 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.

a. Jumper and Lifted Lead Control (Unit 1)

On June 21, 1982, the NRC inspector reviewed the Unit 1 temporary modification log which contained the active jumper and lifted lead log sheets. Active log sheets with the following serial numbers were present in the log:

602	605-1	607
603	606	608
604-1		

The jumpers controlled by these log sheets had been installed on April 14, 1982, to bypass certain trips while conducting Surveillance Test 1304.38 on the Channel B reactor protective system.

The NRC inspector, with an instrumentation and controls supervisor and the acting operations superintendent, verified that the jumpers were not still installed on June 21, 1982. The record of Surveillance Test 1304.38 showed that the jumpers had been removed and signed off at the conclusion of the test on April 14, 1982.

The NRC inspector reviewed the licensee's actions with respect to the requirements of Administrative Procedure 1000.28, "Jumper and Lifted Lead Control," and identified the following discrepancies.

- Sections 6.7.1 and 6.7.2 require a monthly status check of outstanding temporary modifications. This check is to include a review of each log sheet for completeness and continued applicability and a check of correct installation by comparing the temporary modification card, the log sheet, and the item on which the card is installed. This monthly status check had not been properly performed between April 14 and June 21, 1982. Discussions with licensee personnel revealed that the monthly check had consisted of only a review of the most recent log sheets, including no checks for proper installation.

- Sections 6.7.1 and 6.7.2 further require performance of a status check, similar to the monthly check, prior to a plant startup following a maintenance period. Although two startups from maintenance periods were conducted between April 14 and June 21, 1982, the NRC inspector could find no evidence that the required temporary modification status checks were performed.

- Section 6.1.4 requires that temporary modifications which must exist for greater than three months be evaluated quarterly by the Plant Safety Committee (PSC). As of June 30, 1982, the most recent documented PSC quarterly review of Unit 1 temporary modifications was performed on March 17, 1982.

- Section 6.5 requires that upon removal of the temporary modification and restoration of the component to its normal configuration, the individual who removed the temporary modification and the individual who independently verified the removal both sign the appropriate blank on the jumper and lifted lead log sheet. Although the jumpers listed on the log sheets listed above had been removed on April 14, 1982, the restoration sections of the log sheets were blank on June 21, 1982.

This is an apparent violation. (313/8213-03)

b. Vital Instrument Inverter Operation (Unit 2)

The NRC inspector noted that frequently during the course of normal operations the Unit 2 vital instrument inverters automatically shift

from their normal source of power, the 480 VAC Engineered Safety Features (ESF) buses, to their standby source of power, the 125VDC buses. These vital instrument inverters provide regulated 120VAC power to the Reactor Protective System (RPS) channels and to the ESF instrumentation channels.

The licensee had identified the cause of this shifting of power sources for the inverters to be voltage transients on the ESF electrical buses induced by starting large electrical motors (e.g., condensate pumps, charging pumps, high pressure safety injection pumps, etc.). When the voltage of the normal power source to the inverters is reduced below a set value, a logic circuit in the inverter causes the inverter to automatically shift to its standby 125VDC power supply. Each time this occurs, operators are dispatched to the inverters to manually cycle the breakers supplying 125VDC power to the inverters, thus forcing the inverters to shift back to their normal 480VAC ESF bus power source. This action is required in order to avoid discharging the station batteries and to avoid excessive loading of the battery chargers.

However, after a review of the technical manual and electrical schematics for these inverters, the NRC inspector noted that the inverters appear to be designed to shift automatically back to their normal power supply once voltage is restored above a set value. The inspector discussed this matter with licensee representatives and emphasized the improvement to plant operations of not having to manually shift the inverters back to their normal power source. The licensee representatives indicated that they would investigate this automatic feature with the vendor to determine its applicability to ANO Unit 2. This item will remain open. (368/8210-02)

c. Security Key Issue Room (Units 1 and 2)

At 1930 on June 22, 1982, the NRC inspector noted that the security key issue room, located adjacent to the Unit 1 control room, was unattended with the door locked. However, the sliding glass window through which the keys are issued was not secured and would have allowed undetected access into the key room. This key room contains keys to the various locks that control access to protected and vital areas. The licensee's failure to provide a means of securing the sliding glass window to the security key issue room is an apparent violation of 10 CFR 73.55(d)(9) which states, in part, "all keys, locks, combinations, and related equipment used to control access to protected and vital areas shall be controlled to reduce the probability of compromise." (313/8213-06; 368/8210-03)

This matter was discussed with licensee representatives, and immediate corrective action was implemented, consisting of the provision of wooden blocking devices to prevent opening the sliding glass window and the modification of security procedures to require continuous manning of the key room.

5. Monthly Surveillance Observation (Units 1 and 2)

The NRC inspector observed the Technical Specification required surveillance testing on the Unit 2 "A" Charging Pump (Monthly Test 2104.02 Supplement A) 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:

- Engineered Safeguards Actuation System Digital Subsystem Number 1 Test (1304.45)
- Hydrogen Purge Standby System Test (1104.33 Supplement II)
- Fire Detection Instrumentation Operability Test (2307.12)
- Hydrogen Purge Lead System Test (1104.33 Supplement I)
- Channel D Reactor Protective System Monthly Test (1304.10)
- Vibration and Loose Parts Monitoring System Test (1304.74)
- Security System Battery Bank Biannual Inspection (1307.17)

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:

- Unit 1 Job Orders 27439 and 27437 - Removal and replacement of steam generator primary manway
- Unit 2 Job Order 31962 - Adjust packing on "C" service water pump
- Replacement of Unit 2 "C" reactor coolant pump shaft seal (Maintenance Procedures 2402.018 and 2402.019)
- Disassembly and reassembly of spare Unit 2 reactor coolant pump shaft seal (Maintenance Procedure 2402.021)
- Plugging of degraded Unit 1 "A" steam generator tubes (Maintenance Procedure 1401.004)

a. Failure to Perform an Adequate Survey for Beta Radiation

During the review of the licensee's health physics controls in effect for the plugging of the degraded Unit 1 "A" steam generator tubes, the NRC inspector noted that the radiation survey map for the lower primary manway area indicated that the beta radiation dose rate next to the lower tubesheet exceeded the highest scale of the available survey instrument (a RO-2A beta-gamma survey meter). The NRC inspector further noted that the licensee had allowed access to this area by maintenance personnel on May 31, 1982, without making further efforts to measure and analyze the beta radiation dose rate next to the lower tubesheet. The inspector verified by review of the dosimetry records for the affected maintenance personnel that no abnormal beta radiation exposures were received. The licensee's failure to adequately survey the lower primary manway area of "A" steam generator for beta radiation is contrary to 10 CFR 20.201 which requires that the licensee make the necessary surveys to measure and evaluate the existing radiation hazards. This is an apparent violation. (313/8213-01)

b. ALARA Committee Review Not Performed as Required

During the review of the licensee's health physics controls in effect for the plugging of the degraded Unit 1 "A" steam generator tubes, the NRC inspector also noted that the plant ALARA committee had not performed the appropriate formal ALARA review for this maintenance activity that is required by Station Administrative Procedure 1000.33, "ANO ALARA Manual." Specifically, Procedure 1000.33 requires, in part,

that an ALARA Committee, with specified membership, review the work package and radioactive work permit associated with any job that is estimated to involve over 10 man-rem total exposure. This review is to be a Category III review, which entails a higher degree of preplanning than either a Category I or Category II review, involves a formal ALARA Committee meeting, and requires an additonal ALARA checklist (Form 1000.33C) be used as an agenda for the review and to serve as formal documentation of the completed Category III review. The licensee, however, had performed only a Category II review because the preliminary estimate for total exposure, based upon estimated radiation levels and the projected scope of the work involving plugging only one steam generator tube, was 2.5 man-rem. This review was not revised to a Category III review when the actual measured radiation levels inside the steam generators were determined to be significantly higher than the estimated levels and the actual scope of the work was increased to plugging 10 steam generator tubes, both factors causing the estimated total exposure to increase to approximately 50 man-rem. This is an apparent violation. (313/8213-02)

7. Followup on IE Bulletin 82-01 (Units 1 and 2)

This bulletin, entitled "Alteration of Radiographs of Welds in Piping Subassemblies," was issued on March 31, 1982. Revision 1 was issued on May 11, 1982. The NRC inspector verified that the licensee received the bulletin and revision and reviewed them for applicability to ANO. The Arkansas Power and Light Company was not required to provide a written response to this bulletin.

8. Followup on IE Circular 81-14 (Units 1 and 2)

The NRC inspector verified that this circular, entitled "Main Steam Isolation Valve Failures to Close," was received by the licensee and reviewed for applicability to ANO. Appropriate revisions to the main steam isolation valve maintenance procedures have been incorporated.

9. Review of Plant Operations (Units 1 and 2)

a. Procurement and Storage

The NRC inspector toured the licensee's Q materials storage areas. Items inspected during this tour included receipt inspection procedures, segregation and tagging on nonconforming items, performance of preventive maintenance on stored equipment, housekeeping conditions, and shelf-life control. The inspector found that preventive maintenance is limited to electric motor shaft rotation monthly. The licensee is developing a preventive maintenance program in response to Nonconformance Report (NRC) 82-093-0.

The NRC inspector will review this item during a future inspection. (Open item 313/8213-04; 368/8210-01). Several items in the old Q storeroom were not properly protected from dust and damage at the time of the tour. These items included valve internals and gaskets. Upon identification, the licensee took prompt action to provide protective wrappings for the items.

The NRC inspector selected several safety-related items in storage and reviewed records to verify that the required documentation was available. Documentation reviewed included purchase orders, receipt records, records of issuance, and Quality Assurance records such as certificates of compliance and material certifications. One discrepancy was identified in the review of Purchase Order 37045, under which electrical cable was purchased from Anaconda. The certificate of compliance for item number 25 referenced Bechtel Specification 6600-E-2025 Revision 2, but the purchase order specified compliance with Bechtel Specification 6600-E-2026, Revision 6. NCR 82-108-1 was written by licensee personnel to resolve the discrepancy. The NRC inspector will review the resolution of this NCR during a future inspection. (Open item 313/8213-05)

b. Environmental Protection

The NRC inspector reviewed the licensee's Annual Environmental Monitoring Report that was prepared in accordance with Environmental Technical Specification 5.6.1. This report was forwarded to the NRC by a letter dated April 28, 1982.

The NRC inspector verified that the Annual Environmental Monitoring Report included the various summaries, analyses, interpretations, and statistical evaluations of the results of the environmental monitoring program during 1981 that are required by Environmental Technical Specification 5.6.1. In particular, the inspector reviewed the data provided concerning the air sampling (for particulate, Iodine-131, and direct radiation), water sampling, terrestrial sampling (including milk and vegetation), and soil sampling programs. The inspector verified that the above sampling programs appeared to meet all of the requirements defined by Tables 4-1 and 4-2 to the Environmental Technical Specifications with respect to radioanalysis type, location, and frequency.

c. Security

The NRC inspector observed the weapons requalification testing of one security officer at the firing range on June 16, 1982.

No violations or deviations were identified. This inspection effort will be continued in the next inspection period.

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.