

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

IE Inspection Report No. 50-313/76-08

Docket No. 50-313

Licensee: Arkansas Power and Light Company
Sixth and Pine Streets
Pine Bluff, Arkansas 71601

License No. DLR 51

Category C

Facility: Arkansas Nuclear One (ANO-1)

Location: Russellville, Arkansas

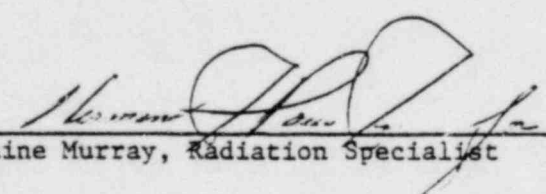
Type of Licensee: PWR, Power Reactor, 2568 Mw(t)

Type of Inspection: Routine, Unannounced, Radioactive Waste Systems,
and Analytical Measurements

Dates of Inspection: July 21-23, 1976

Dates of Previous Radiological Inspection and Environmental
Protection Inspection: March 3 and 5, 1976

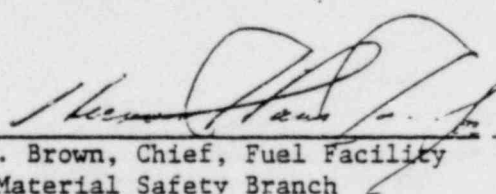
Inspector


Blaine Murray, Radiation Specialist


Date

Accompanying Personnel: None

Reviewed by:


Glen D. Brown, Chief, Fuel Facility
and Material Safety Branch


Date

8004160391

SUMMARY OF FINDINGS

I. Enforcement Action

A. Items of Noncompliance Identified by the Inspector

B. Noncompliance Identified by the Licensee

None.

II. Licensee Action on Previously Identified Enforcement Matters

No outstanding items.

III. New Unresolved Items

76-08/1, Radiochemistry QC Program

The radiochemistry QC program has not been completed. This item is considered open. (See DETAILS, paragraph F.2.)

IV. Status of Previously Identified Unresolved Items

A. 76/04-1, Stack Monitor

The status of this item was not reviewed during this inspection. This item remains open. (See DETAILS, paragraph C.1.a.)

B. 74/14-03, Radiation Levels in Reactor Containment

Corrective action related to radiation levels inside containment which exceeds design basis has not been completed. This item remains open. (See DETAILS, paragraph C.1.f.)

C. 75/01-1, Effluent Correlation Tests

Tests have been completed that compared laboratory and effluent monitor results. This item is considered closed. (See DETAILS, Item C.1.e.)

D. 75/05-2, Air Sampler Flow Rates

Air sampler flow rates have not been verified. This item remains open. (See DETAILS, Item C.1.b.)

E. 75/09-3, Whole Body Counter Calibration Procedures

Calibration procedures have not been completed for the whole body counting system. This item remains open. (See DETAILS, paragraph C.1.c.)

F. 75/05-5, Laboratory Counting Equipment Calibration Procedures

Calibration procedures have not been completed for laboratory counting equipment used to analyze Health Physics air and contamination surveys. This item remains open. (See DETAILS, paragraph C.1.d.)

V. Unusual Occurrences

Approximately 9,500 gallons of borated water containing 262 milli-curies was inadvertently released. (See DETAILS, paragraph G.1.)

VI. Other Significant Findings

None.

VII. Management Interview

At the conclusion of the inspection, the inspection findings were discussed with the following AP&L personnel:

Mr. H. Miller, Assistant Plant Superintendent
Mr. C. H. Halbert, Technical Support Engineer
Mr. J. L. Bates, Radiochemistry Supervisor
Mr. L. Alexander, QC Engineer

The items discussed and the licensee's position with respect to these items, as applicable, follow:

A. Scope of Inspection

The inspector outlined the areas covered during the inspection.

B. Items of Noncompliance

The inspector stated that no items of noncompliance were identified.

C. Status of Previously Reported Unresolved Items

The licensee provided a status report on outstanding unresolved items. (See DETAILS, paragraph C.)

D. Radiochemistry Quality Control Program

A licensee representative stated that the present radiochemistry QC program will be improved. This will include obtaining calibration sources traceable to NBS and reviewing current calibration procedures. (See DETAILS, paragraph F.2.)

DETAILS

A. Persons Contacted

AP&L

Mr. H. Miller, Assistant Plant Superintendent
Mr. C. H. Halbert, Technical Support Engineer
Mr. L. Alexander, QC Engineer
Mr. J. L. Bates, Radiochemistry Supervisor
Mr. R. T. Elder, Assistant I&C Supervisor
Mr. R. G. Carrol, Health Physics Supervisor

B. Scope of Inspection

The purpose of this inspection was to review the licensee's radioactive waste systems and analytical measurements.

C. Licensee Action on Previously Reported Items

1. Items of Noncompliance

No outstanding items.

2. Unresolved Items

a. 76/04-1, Stack Monitor

This item was reported in IE Inspection Report No. 50-313/76-04 and involved designating which stack monitor system is to be used during emergency situations. The status of this item was not examined during this inspection. This item remains open.

b. 75/05-2, Air Samplers Flow Rates

This item was reported in IE Inspection Report Nos. 50-313/75-05 and 50-313/76-04 and involved the measuring of flow rates of various air samplers. A licensee representative stated flow rate measurements have not been completed. This item remains open.

c. 75/05-3, Calibration Procedure For Whole Body Counter

This item was reported in IE Inspection Report Nos. 50-313/75-05 and 50-313/76-04 and involved the

development of a written procedure for calibration of the whole body counting system. A licensee representative stated that the procedure has not been completed. This item remains open.

d. 75/05-5, Calibration Procedure For Laboratory Counting Equipment

This item was reported in IE Inspection Report Nos. 50-313/75-05 and 50-313/76-04 and involved the development of a written procedure for calibration of laboratory counting equipment used to analyze health physics air and contamination surveys. A licensee representative stated that the procedure has not been completed. This item remains open.

e. 75/01-1, Effluent Monitoring System Tests

This item was reported in IE Inspection Report Nos. 50-313/74-14 and 50-313/76-04 and involved the correlation of laboratory analyses versus corresponding liquid and gaseous monitors indications.

This study has been completed.

Data indicated a close agreement between liquid values. However, the study revealed that gaseous measurements did not fall within established acceptance limits. A licensee representative stated that additional work is planned in order to attain better agreement for gaseous releases.

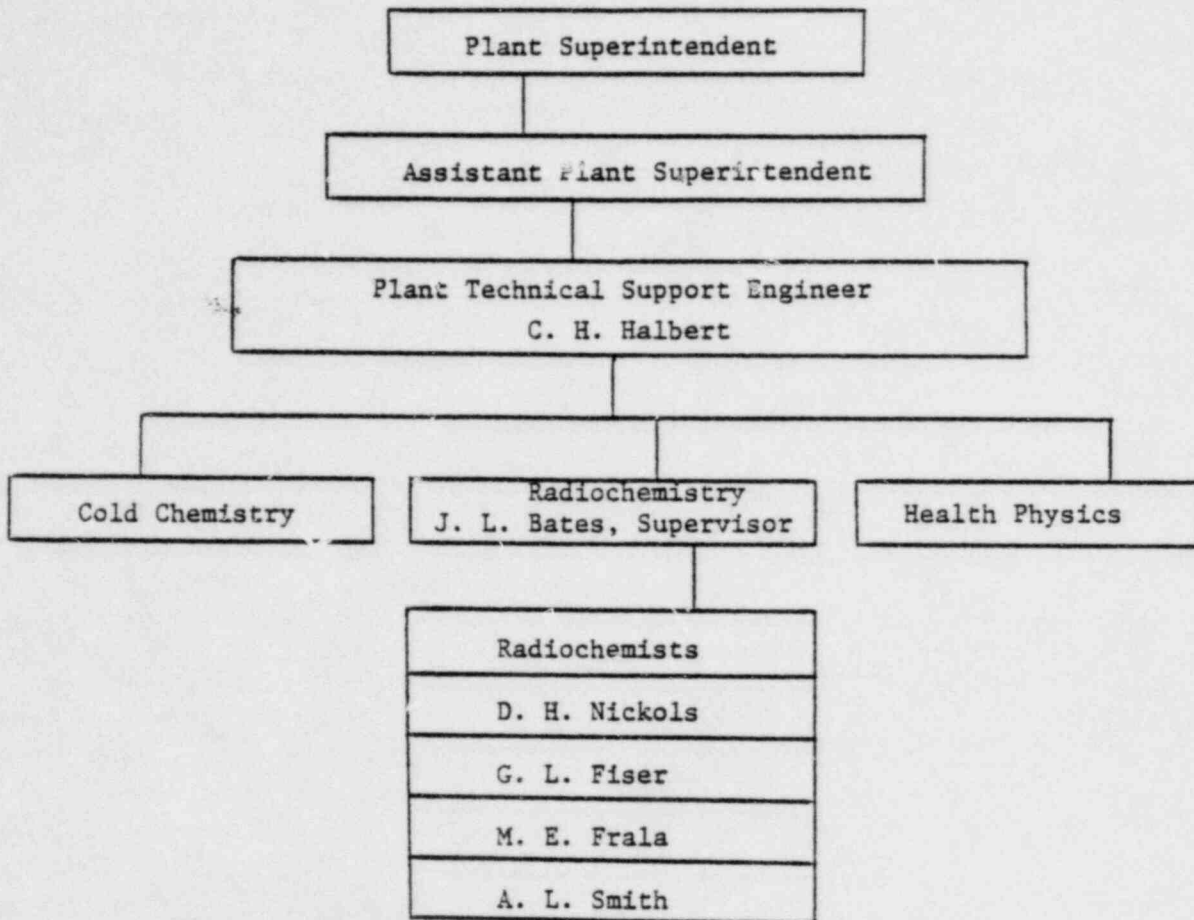
The correlation portion of this item is considered closed.

f. 74/14-3, Radiation Levels Inside Reactor Containment

This item was reported in RO Inspection Report No. 50-313/74-14 and involved radiation levels in containment that exceeded design basis. The status of this item is unchanged from that previously reported. This item remains open.

D. Organization

The following chart shows the radiochemistry organization.



E. Radioactive Waste Systems

1. Radioactive Effluent Release

The licensee's records were examined to determine compliance with the following:

- Limits on release rates, concentrations, and total quantities
- Monitoring of specific release points
- Analysis for specific radionuclides
- Limits on activity contained in hold-up tanks

a. Liquids

Section 2.4.1 of the Environmental Technical Specifications (ETS) contains release and storage limits. Selected release records for the period January 1, 1975, through July 20, 1976, were examined. No discrepancies were noted.

b. Gaseous

Gaseous release limits appear in ETS 2.4.2. Selected records were examined. No discrepancies were noted.

2. Radioactive Effluent Reports

The 1975 semiannual reports and a draft copy of the first 1976 semiannual reports were reviewed to determine compliance with ETS 5.6.1. No discrepancies were noted.

3. Radioactive Effluent Sampling and Analyses

a. Liquid

The sampling and analyses requirements of ETS 2.4.1. and Table 2-2 were reviewed on the following forms:

- HP 9830 Computer print-out, "Preliminary Report"
- Form Chem. 024-00
- Form chem. 032-01

No discrepancies were noted.

b. Gaseous

The sampling and analyses requirements of ETS 2.4.2 and Table 2-2 were examined. Gaseous laboratory results are recorded on the following forms:

- HP 9830 Computer print-out "Preliminary Report"
- Form chem. 019-01
- Form chem. 021-01
- Form chem. 020-01
- Form chem. 018-01
- Form chem. 017-02

No discrepancies were noted.

4. Effluent Control Instrumentation

The various monitors used to monitor and control liquid and gaseous releases were reviewed. The monitor systems were examined to determine compliance with technical specifications for:

- Calibration and functional tests
- Alarm and trip setting
- Correlation between monitor reading and radiochemistry laboratory results

ETS 2.4.2.1 and ETS 2.4.2.2 (Monitoring Requirements) and Table 4.1-1 of Appendix A requires that the liquid and gaseous monitors be calibrated quarterly, tested monthly, and checked daily.

Monitors RE-4642 and RE-4830 have control functions associated with liquid and gaseous releases. In addition to the above mentioned monitors, the calibration and test records for all of the following monitors were examined:

<u>Monitor</u>	<u>Location</u>
RE-1237	Fail Fuel
RE-2120	North Penetration Room Ventilation
RE-2130	South Penetration Room Ventilation
RE-2236	Intermediate Cooling Water Loop No. 2
RE-2237	Intermediate Cooling Water Loop No. 1
RE-2400	Reactor Coolant Leak
RE-3618	Discharge Flumes
RE-3632	Main Condenser
RE-3809	Decay Heat Loop No. 1
RE-3810	Decay Heat Loop No. 2
RE-3814	Service Water Loop No. 1
RE-3815	Service Water Loop No. 2
RE-4642	Liquid Rad. Waste
RE-4830	Gaseous Rad. Waste
RE-7400	Gross Stack Monitor
RE-7400(S)	¹³¹ I Stack Monitor
RE-7441	H ₂ Purge

Calibration and test results were included as part of the following procedures:

Procedure 1304.26 "Process Radiation Monitoring System Quarterly Calibration"

Procedure 1304.27 "Process Radiation Monitoring System
Annual Calibration"
Procedure 1602.30 "Daily Checks"

A few minor discrepancies were noted with some of the calibration data. These items were reviewed with the licensee. No major problems were identified.

The inspector visited the control room to observe the various monitor read-outs and chart recorders. All systems appeared to be operating properly.

5. Procedures For Controlling the Release of Effluents

The procedures used for controlling planned releases of liquid and gaseous effluents were examined.

a. Liquid

The following liquid release procedures were reviewed:

Procedure 1604.17 "Analysis of Liquid Waste"
Form Chem. 026-03 "Liquid Radwaste Release Permit"
Procedure 1607.07 "Sampling the Laundry Drain Tank"
Procedure 1607.08 "Sampling the Filter Waste Monitor Tank"
Procedure 1607.09 "Sampling the Treated Waste Monitor Tank"

The licensee's procedures require that prior to each liquid releases, the form titled: Liquid Radioactive Waste Release Permit be processed. The form contains information regarding:

- Tank Identification
- Radiochemistry Analysis Results
- Technical Specification Limits
- Valve line-up
- Monitor tested
- Authorized release rate
- Total volume discharged
- Total activity discharged
- Approval signature
- Alarm set point

Selected release permits were reviewed. In 1977, a total of 637 liquid releases were made. As of July 21, 1976, 564 release permits have been processed. No discrepancies were noted.

b. Gaseous

(1) Decay Tanks

Gas decay release data are recorded on the form titled: Gaseous Release Permit. The form provides the following information:

Tank identification
Tank pressure
Decay time
Radiochemistry analysis
Technical specification analysis
Monitor tests
Authorized release rate
Approval signature
Alarm set point

Gaseous release records indicated the following release data:

<u>Date</u>	<u>Type of Release</u>	<u>Total</u>
1975	Decay Tank	20
1976	Decay Tank	17

No discrepancies were noted.

(2) Purge

ETS 2.4.2.7 lists requirements for purging the reactor building. The licensee's records indicated that four purges occurred in 1975 and five so far in 1976 for the period ending July 20. Purge release procedures require that the form titled: Reactor Building Purge - Gaseous Waste Release Permit be processed prior to each purge. The release form provides for recording:

Discharge flow rates
Radiochemistry analyses results
Technical specification
Filter system status
Alarm setting
Total activity discharged
Approval signature

Selected purge releases were examined. No discrepancies were noted.

6. Air Cleaning Systems

Technical Specifications 3.9, 3.13, 3.14, 3.5, 4.10, 4.11, 4.12 and 4.17 contain the test requirements for the various HEPA filters and charcoal adsorber banks. These systems include:

- Control Room Emergency Ventilation Systems
- Penetration Room Ventilation Systems
- Hydrogen Purge System

The licensee's records indicated that the required in-place tests for the HEPA and charcoal systems and laboratory analyses of charcoal samples were performed in April and May, 1976. These tests were performed by an off-site contractor.

The contractor's test results were reviewed. No discrepancies were noted.

In addition to the in-placing tests and laboratory analysis performed by the off-site contractor, certain other tests (e.g. automatic initiation, heater power verification, routine heater runs, etc.) are performed by the licensee. The results of these tests were recorded on the following forms:

Procedure OP 1104.33 "H₂ Purge System Test-Lead System"
Procedure OP 1104.34 "Control Room Ventilation Test"
Procedure OP 1104.43 "Penetration Room Ventilation Test"
Procedure OP 1304.8 "Safeguards System Test"

No discrepancies were noted.

7. Reactor Coolant

Technical Specifications 3.1, 4.1, 3.1, 5.1, 3.10 and Table 4.1-3 contain the sampling and analyses requirements for reactor coolant. Analyses results are recorded on the form titled: Form Chem. 002-02, "Hot Lab Technical Specification Surveillance Report." Selected results were reviewed. No discrepancies were noted.

8. Solid Radioactive Waste

The licensee's solid waste program was reviewed to determine compliance with DOT regulations, 10 CFR 71, and Technical Specification 6.11.1g. Shipping procedures and records are contained in procedure 1602.13 titled: "Shipment of Radioactive Materials." The licensee's records indicated that 13 shipments

were made in 1975. As of July 21, twelve (12) shipments have been made in 1976. No discrepancies were noted.

F. Analytical Measurements

1. Quality Control Procedures

The licensee's program related to radiochemistry quality control activities were examined. The following procedures contain counting equipment operation and calibration instructions:

Chem. 1604.1 "Gross Alpha Measurements"

Chem. 1604.04 "Liquid Scintillation Counting For Gross Beta and Tritium Measurements"

Chem. 1604.19 "Daily Counting Room Instrumentation Setup"

Chem. 1604.20 "ND-4420 Gamma Spectroscopy Procedure"

In reviewing the licensee's inventory of calibration sources, it was noted that their alpha and tritium standards were not certified as traceable to NBS. A licensee representative stated that they have both an ^{241}Am and a tritium NBS solution in stock. According to a licensee representative, new calibration sources will be made from their NBS solutions. It was noted that in certain calibration procedures, the procedures did not include calibration frequencies, acceptance limits, or detailed techniques. A licensee representative stated that present procedures will be reviewed and updated as necessary.

2. QA-QC Audits

Audits of radiochemistry activities were reviewed. The licensee's records indicated that radiochemistry audits were performed by the Safety Review Committee on July 31, 1975 and January 28 and 29, 1976. The audit reports did not reveal any serious problems.

3. Confirmatory Measurements

The results of the latest confirmatory measurements were reported in IE Inspection Report No. 76-54.

G. Licensee Event Reports

1. Reportable Occurrence No. 50-313/76-11

On June 12, 1976, approximately 9,500 gallons of water from the Borated Water Storage Tank (BWST) was inadvertently released.

The release contained 262 millicuries. The events and subsequent action surrounding the release are contained in the licensee's Reportable Occurrence No. 50-313/76-11, dated June 24, 1976. Sample results indicated that concentrations at the restricted area boundary did not exceed 10 CFR 20 limits. This item remains open pending completion of the proposed corrective action.

2. Lost $^{89-90}\text{Sr}$ Sample

The licensee reported on April 9, 1976, that the quarterly liquid waste composite sample was lost during a chemical analysis procedure. The events concerning this matter were documented in the Abnormal Plant Condition, dated April 8, 1976.