

APPENDIX C

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-313/87-06
50-368/87-06

Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

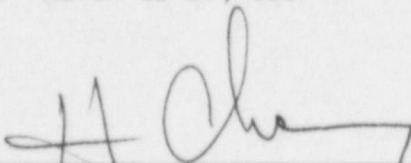
Licensee: Arkansas Power and Light Company (AP&L)
P.O. Box 551
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO)

Inspection At: ANO Site, Russellville, Pope County, Arkansas

Inspection Conducted: March 22-27, 1987

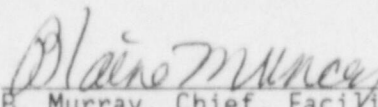
Inspector:



H. Chaney, Radiation Specialist, Facilities
Radiological Protection Section

5/15/87
Date

Approved:



B. Murray, Chief, Facilities Radiological
Protection Section

5/19/87
Date

Inspection Summary

Inspection Conducted March 22-27, 1987 (Report 50-313/87-06; 50-368/87-06)

Areas Inspected: Routine, unannounced inspection of the licensee's solid radioactive waste management program and radioactive materials transportation activities.

Results: Within the areas inspected, two violations were identified (failure to comply with Technical Specifications (TS) for monitoring of radioactive effluents and failure to perform appropriate airborne radioactive measurements, see paragraph 5) and one deviation was identified (failure to comply with Final Safety Analysis Report commitments, see paragraph 6).

8706090320 870601
PDR ADOCK 05000313
Q PDR

DETAILS1. Persons ContactedAP&L

- *S. M. Quennoz, General Manager Plant Operations
- *E. C. Ewing, General Manager Plant Support
- *T. C. Baker, Technical Support Manager
- *B. Baker, Operations Manager
- *E. E. Bickel, Health Physics (HP) Superintendent
- *D. Howard, Special Projects Manager
- *D. B. Lomax, Plant Licensing Supervisor
- *L. A. Taylor, Licensing Engineer
- P. Rogers, Licensing Engineer
- *G. D. Provencher, Quality Assurance (QA) Supervisor
- B. L. Bata, QA Engineer
- *D. B. Lomax, Plant Licensing Supervisor
- J. S. Fancher, HP Technician
- B. C. Burchard, HP Supervisor
- *D. W. Akins, Radioactive Waste (Radwaste) Supervisor
- H. N. Bishop, Assistant Radwaste Supervisor
- W. L. Hada, HP Supervisor
- D. L. Helm, HP Specialist (ALARA Coordinator)
- J. Waid, Supervisor, Technical Specialist Training
- S. Burnett, HP Technician
- J. Cheatham, Radwaste Technician
- D. D. Snellings, Nuclear Programs Manager
- R. Davis, HP and Radwaste Trainer
- J. Harrell, Radwaste Technician
- D. Plank, Radwaste Technician
- G. Johnson, Assistant Store Supervisor
- R. Gillespie, Technical Analyst Superintendent
- W. R. Pool, Assistant Radiochemistry Supervisor

Others

- *C. C. Harbuck, NRC Resident Inspector
- S. Burrell, Contractor, Nuclear Pacific Packaging

*Denotes those present at the exit interview on March 27, 1987.

2. Inspector Observations

The NRC inspector discussed the following observation with the licensee during the exit interview. This observation is neither a violation nor unresolved item. The observation was identified for the licensee's consideration for program improvement, but has no specific regulatory requirement. The licensee indicated that the item would be considered.

Fire Alarm - The new radioactive waste storage building (RWSB) is equipped with an internal fire alarm system that does not alarm in either of the ANO reactor control rooms. The RWSB is not manned on a 24-hour basis.

3. Follow-up on Previous Inspection Findings

(Closed) Violation (313 and 368/8607-01): Failure to Verify Stability of Solidified Radioactive Waste - This item involved the licensee's failure to implement a program for assuring quality control of solidification of contaminated oily waste. The licensee had revised ANO operations Procedure 1603.017, "Solidification of Contaminated Oil," to include the vendors procedure (PT-18, Revision 2) for processing and testing of solidification samples for structural stability. The NRC inspector reviewed the test results of solidification samples obtained from batches of oily waste processed following the issuance of the violation. This item is closed.

(Open) Violation (313/8631-01): Failure to Promptly Assess Airborne Radioactive Material Uptakes by Personnel - This item involved the licensee's failure to promptly evaluate survey data and assess airborne radioactive material uptakes by personnel. The licensee had implemented a revised procedure for expediently evaluating airborne radioactivity surveys and identifying personnel with elevated exposures. The licensee's new program will be further reviewed during the future inspections to ensure that prompt assessments are performed. This item remains open pending further NRC review.

4. Program Areas Inspected

The following program areas were inspected. Unless otherwise noted, the inspection was completed, and revealed no violations, deviations, unresolved items, or open items. Notations after a specific inspection item are used to identify the following: I = item not inspected or only partially inspected; V = violation; D = deviation; U = unresolved item; and O = open item.

Inspection Procedure

83522

Inspection Requirements

Radiation Protection, Plant Chemistry, Radwaste, and Environmental: Organization and Management Controls

- 02.01 - Organization, Responsibilities, and Authorities - I and O (see paragraph 7)
- 02.02 - Staffing - I
- 02.03 - Identification and Correction of Weaknesses - I
- 02.04 - Audits and Appraisals - I

- 02.05 - Communication to Employees - I
- 02.06 - Documentation and Implementation - I

83722

Radiation Protection, Plant
Chemistry, and Radwaste: Organi-
zation and Management Controls

- 02.01 - Organization - I
- 02.02 - Staffing - I
- 02.03 - Radiation Protection Manager - I
- 02.04 - Identification and Correction
of Weaknesses - I
- 02.05 - Audits and Appraisals - I

83523

Radiation Protection, Plant Chemistry,
Radwaste, Transportation and Environ-
mental: Training and Qualifications

- 02.01 - Training and Qualifications
Program - I
- 02.02 - Education and Experience - I
- 02.03 - Adequacy - I

83723

Training and Qualifications: General
Employee Training, Radiation Safety,
Plant Chemistry, Radwaste, and
Transportation

- 02.01 - Training Adequacy - I
- 02.02 - Employee Knowledge Retention - I
- 02.03 - Transportation/Radwaste
Training - I
- 02.04 - Staff Qualification
Requirements - I
- 02.05 - Replacement Personnel - I
- 02.06 - Accreditation Status - I
- 02.07 - Audits and Appraisals - I
- 02.08 - Identify Training Not
Covered by Accreditation - I

84522

Solid Wastes

- 02.01 - Solid Waste System Construction
and Installation
- 02.02 - Liquid Leakage, Overflow, and
Spillage
- 02.03 - Sampling
- 02.04 - Test Program for Solid Waste
System
- 02.05 - Test Completion for Solid Waste
System

- 02.06 - Process Monitors
- 02.07 - Programs, Plans, and Procedures
for Solid Waste System
- 02.08 - Disposal of Low-Level Wastes

84722

Solid Wastes

- 02.01 - Audits and Appraisals
- 02.02 - Changes
- 02.03 - Processing and Storage
- 02.04 - Disposal of Low-Level Wastes

83726

Control of Radioactive Materials
and Contamination, Surveys, and
Monitoring

- 02.01 - Audits and Appraisals - I
- 02.02 - Changes - I
- 02.03 - Surveys and Monitoring - I and V
(see paragraph 5)
- 02.04 - Radioactive Materials and
Contamination Controls - I

84524

Gaseous Waste System

- 02.01 - Construction and Installation - I
- 02.02 - Sampling - I
- 02.03 - Test Program - I
- 02.04 - Test Completion - I
- 02.05 - Process and Effluent - V (see
paragraph 5)
- 02.06 - Programs, Plans, and
Procedures - I

84850

Radioactive Waste Management -
Inspection of Waste Generator
Requirements of 10 CFR 20 and
10 CFR 61

- 02.01 - Management Controls
- 02.02 - Quality Control (QC)
- 02.03 - Waste Manifests
- 02.04 - Waste Classification
- 02.05 - Waste Form and Characterization
- 02.06 - Waste Shipment Labeling
- 02.07 - Tracking of Waste Shipments
- 02.08 - Disposal Site License Conditions

65051

Low-Level Radioactive Waste Storage
Facilities

- 02.01 - Basis for Construction - O (see paragraph 7)
- 02.02 - Quality Assurance
- 02.03 - Procedures for Construction
- 02.04 - Review of Construction - D (see paragraph 6)
- 02.05 - Organization and Staffing
- 02.06 - Training and Qualifications
- 02.07 - Startup and Operations Procedures
- 02.08 - Effluent Monitoring Changes

86721

Transportation

- 02.01 - Audits and Appraisals
- 02.02 - Procedures
- 02.03 - Procurement and Reuse of Packagings
- 02.04 - Implementation
- 02.05 - Transportation Incidents

86740

Inspection of Transportation
Activities

- 02.01 - Management Controls
- 02.02 - Indoctrination and Training Programs
- 02.03 - Audit Program
- 02.04 - Quality Assurance Program
- 02.05 - Procurement and Selection of Packagings
- 02.06 - Preparation of Packages for Shipment
- 02.07 - Delivery of Competed Packages to Carriers
- 02.08 - Receipt of Packages
- 02.09 - Periodic Maintenance of Packagings
- 02.10 - Records and Reports

5. Violationsa. 83726, Item 02.03 - Surveys and Monitoring

10 CFR Part 20.201(b) requires that licensee shall make or cause to be made such surveys as: (1) may be necessary for the licensee to comply with the regulations in this part, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards

that may be present. As defined in 10 CFR Part 20.201(a), "survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal or presence of radioactive materials or other sources of radiation under a specific set of conditions.

During the inspection of solid radioactive waste compaction activities on March 24, 1987, the NRC inspector determined that the licensee had not established a proper breathing zone survey program to evaluate airborne concentrations for workers involved with operation of the compactor. Part of the compaction process involves workers reaching into the compactor to cut open plastic bags that contain dry radioactive trash. The bags are cut open to release trapped air before the bags are compacted. Opening the bags could create localized airborne concentrations within the worker's breathing zone. The radiation work permit covering this work did not require the workers to wear respiratory protection equipment or lapel air samplers.

The opening of the plastic bags occurs inside the compactor which has similarities to a chemistry laboratory fume hood (sliding door and exhaust ventilation). When the worker reaches into the compactor, the workers body above the waist is positioned inside the compactor, which is maintained at a negative pressure with respect to the surrounding area. Air samples are collected at locations outside the compactor; however, these samples would not be representative of airborne concentrations inside the compactor and in the workers breathing zone.

The failure to perform proper airborne radioactivity monitoring of workers is an apparent violation of 10 CFR Part 20.201(b). (313/8706-01; 368/8706-01).

The NRC had previously brought to the attention of the licensee deficiencies in their radioactivity monitoring and sampling program (NRC Inspection Report 50-313/86-31 - Observation), and the licensee had revised procedures to provide more emphasis in this area. The NRC inspector also noted that the QA Department had made similar observations concerning apparent deficiencies in airborne radioactivity monitoring during a January 1987 QA surveillance of radiological work activities.

b. 84524, Item 02.05 - Process and Effluent Monitors

Criteria 63 and 64 of Appendix A to 10 CFR Part 50 requires, in part, that appropriate radioactive effluent monitors be provided for the monitoring of effluent discharge paths from radioactive waste systems.

Technical Specification (TS) 3.3.3.9, "Radioactive Gaseous Effluent Monitoring Instrumentation," requires effluent monitoring instrumentation to be operable during releases via the pathways set forth in paragraph 6 ("Radwaste Storage Building HVAC Exhaust System") of Table 3.3-12 of the TS. The TS Limiting Conditions for Operations (LCOs) Action Statements 31 and 32 allow for the use of auxiliary sampling equipment when the minimum number of channels operable is less than that described in TS Table 3.3-12.

The licensee had initiated compaction of radioactive wastes using the compaction system installed in the new Radioactive Waste Storage Building (RWSB) on or about January 26, 1987. The licensee had operated the compactor approximately 15 times as of this inspection. The compactors self-contained filtered ventilation system discharges to the RWSB's installed filtered ventilation system. Since the RWSB's gaseous effluent monitoring system had not been installed, the licensee had installed an auxiliary gaseous effluent sampling system. This system is addressed in ANO Procedure 1603.032, "Maintenance and Operation of the Container Products Corporation (CPC) Compactor," Revision 1, dated January 22, 1987, and is operated in accordance with TS 3.3.3.9 Action Statements 31 and 32.

During the inspection of compaction operations at the RWSB on March 24, 1987, the NRC inspector determined that the auxiliary sampling system could not collect representative samples of particulate or iodine radioactivity due to the poor design of the system and leaking mechanical joints upstream of the sample media (filter and charcoal cartridge). Design deficiencies identified included:

- (1) Passing the gaseous effluent to be sampled through a variable orifice flow regulating device, vacuum pump, water filter, extensive plastic tubing, a sample flow measuring device (rotometer), numerous mechanical joints, and a regulating valve prior to collection on the sample media.
- (2) The quantitative sample flow measuring device (rotometer) was placed upstream of the sample media and due to the numerous leakage points (outward) between the rotometer and the sample media, accurate determination of the sample flow at the filter media (TS 3.3.9 requirement) was unobtainable.

Due to sample leakage, plateout, and filtration in the system, a representative sample could not be collected to evaluate the radioactive effluents discharged via this path.

The NRC inspector noted that the licensee suspended further compaction operations at the RWSB pending review of the gaseous effluent discharge monitoring/sampling system.

This failure to implement adequate effluent sampling for the RWSB is an apparent violation of TS 3.3.3.9. (368/8706-02)

6. Deviation

65051, Item 02.04, Review of Construction

ANO-2 FSAR Section 11.5.6 states that the RWSB will be equipped with alarming area gamma radiation detectors and exhaust ventilation airborne radioactivity monitors, high efficiency filters in the ventilation exhaust system, and fire protection systems that include smoke/heat detectors, wet pipe sprinkler, and an automatic deluge system.

The NRC inspector determined that the licensee had started moving packaged and partially processed radioactive wastes into the RWSB on or about November 1986, and started compacting radioactive wastes in the RWSB on or about January 26, 1987. However, several systems that are described in the FSAR had not been either installed, calibrated, or made operational as noted below:

- a. Gaseous Effluent Monitor: This system had not been installed. (See paragraph 5 for related violation concerning effluent monitoring).
- b. Area Radiation Monitors: This system had been installed, but not calibrated.
- c. Waste Compactor Exhaust Process Monitor: This system had been installed, but not calibrated.

The failure to have the above systems installed, calibrated, and operational prior to operation of the RWSB is an apparent deviation from commitments made to the NRC. (368/8706-03)

The NRC inspector determined on March 27, 1987, that the fire protection system had been installed, but facility operating personnel had not been trained on its functions or operation.

7. Open Items

Open items are matters that require further review and evaluation by the NRC inspector. Open items are used to document, track, and ensure adequate follow-up on matters of concern to the inspector.

- a. 83522, Item 02.01 - Organization, Responsibilities, and Authorities

The NRC inspector determined that the licensee had reorganized the ANO Technical Support Department in mid-1986 and had removed the radwaste group from under the HP superintendent's management. The radwaste group now reports directly to the Technical Support Department manager. The new organization is not shown in either the

TS or the Final Safety Analysis Reports (FSARs) for either Unit 1 or 2 at ANO. This matter is considered an open item pending licensee action to update the TS and FSAR. (313/8706-04; 368/8706-04)

b. 65051, Item 02.01, Basis for Construction

ANO-2 FSAR Section 11.5.6, "Storage Facilities," states that the design basis for the RWSB regarding radiation dose rates in office areas and areas adjacent to the RWSB due to activities at the RWSB are as follows:

<u>Location</u>	<u>Design Basis</u>
RWSB Office Space	0.5 millirem per hour (mrem/hr)
External to RWSB	0.8 mrem/hr
Beyond Site Boundary	0.9 mrem/yr

The NRC inspector determined that the licensee had placed thermoluminescent dosimeters in the RWSB office spaces to verify design criteria. However, a similar program had not been established for areas external to the RWSB and beyond the site boundary.

This matter is considered an open item pending licensee action to establish a monitoring program to verify FSAR design criteria. (368/8706-05)

8. Exit Interview

The NRC inspector met with the licensee representatives denoted in paragraph 1 on March 27, 1987. The NRC inspector summarized the scope and findings of the inspection as presented in this report.