

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/84-19
50-368/84-19

Licenses: DRP-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), Units 1 and 2

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

Inspection Conducted: June 18-29, 1984

Inspector:

H Chaney
H. D. Chaney, Radiation Specialist, Facilities
Radiological Protection Section

8/2/84
Date

Approved:

Wesley L. Holley
Sor B. Murray, Chief, Facilities Radiological
Protection Section

8/2/84
Date

L. E. Martin
L. E. Martin, Chief, Project Section A,
Reactor Project Branch 2

8/3/84
Date

Inspection Summary

Inspection Conducted June 18-29, 1984 (Report 50-313/84-19 and 50-368/84-19)

Areas Inspected: Routine, unannounced inspection of the onsite low-level radioactive waste (LLRW) facility, implementation of 10 CFR Parts 20.311 and 61, low-level radioactive waste (RW) disposal, radioactive material transportation program, and nonlicensed training program for onsite and corporate personnel. The inspection involved 74 inspector-hours onsite and 8 inspector-hours offsite at AP&L corporate offices by one NRC inspector.

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

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DETAILS

1. Persons Contacted

AP&L

- J. Levine, ANO General Manager
- *+B. Baker, Operations Department Manager
- *+T. Cogburn, Special Projects Department Manager
- E. Ewing, Engineering and Technical Support Department Manager
- * L. Humphrey, Manager, Administration Department
- +L. Schempp, Nuclear Quality Control (QC) Department Manager
- B. Evans, AP&L Energy Supply Services Training Department Manager
- +D. Snellings, AP&L Corporate Health Physics (HP)
- D. Akins, Supervisor, Shift Maintenance Group
- +T. Baker, Superintendent, Technical Analysis Section
- +D. Barton, Supervisor, Maintenance Training Group
- B. Bata, Engineer, AP&L Quality Assurance (QA) Group
- W. Bell, Engineer, AP&L Energy Supply Services
- * M. Bolanis, Superintendent, HP/RW Section
- J. Deal, Trainer, HP/RW Training Group
- * C. Fellhauer, Supervisor, RW Group
- +G. Fiser, Supervisor, Radiochemistry (RC) Group
- +M. Frala, Assistant Supervisor, RC Group
- +G. French, Inspector, QA Group
- +R. Gillespie, Supervisor, Chemistry and Environmental Group
- +R. Green, Supervisor, HP Group
- R. Grom, Assistant Supervisor, RW Group
- W. Hall, Engineer, Plant Engineering (PE) Mechanical Group
- V. Hughes, Technician, HP Group
- *+D. Lomax, Supervisor, Plant Licensing Group
- I. Mosquito, Trainer, General Employee Training (GET) Group
- * G. Provencher, Supervisor, QA Group
- +L. Qualls, Jr., Technical, HP Group
- T. Rolniak, Lead Trainer, HP/RW Training Group
- H. Scalco, Supervisor, Electrical Maintenance Group
- S. Strasner, Supervisor, QC Group
- J. Vandergriff, Superintendent, ANO Training Section
- S. Wages, Technician, PE Section
- *+D. Wagner, Assistant Superintendent, HP Section
- +J. Waid, Supervisor, Administration and Technical Support Training Group

Others

- *+W. Johnson, NRC Senior Resident Inspector
- +P. Harrell, NRC Resident Inspector
- D. Piper, Contractor, RW Group
- S. Burrell, Contractor, RW Group

The NRC inspector also contacted other site personnel including administrative, clerical, document control, maintenance, operations, and training.

*Denotes presence at the exit interview (RW/transportation) on June 27, 1984

+Denotes presence at the exit interview (nonlicensed training) on June 29, 1984

2. Licensee Action on Previous Inspection Findings

(Closed) Violation (313/8310-01): Radioactive Waste Containers Not Properly Labeled - The licensee had provided additional instructions (Procedure 1622.017) on establishing an access control point at the reactor containment equipment hatch that requires radiological surveys of all material prior to release. Also, Procedure 1622.008 had been revised to require an inventory log for radioactive materials (RAMs) temporarily stored outside of controlled areas. During a tour of facility areas, the NRC inspector noted that all RAM packages were properly labeled. This item is considered closed.

(Closed) Violation (313/8316-01; 368/8316-01): General Employee Training - The licensee had revised the GET implementing procedure (1063.07) to provide for appropriate training in radiation protection, emergency preparedness, and QA for temporary employees (less than 12 months planned employment) which satisfies the licensee's commitments addressed in the Updated Safety Analysis Report regarding compliance with the recommendations of ANSI N18.1-1976. This item is considered closed.

(Closed) Open Item (313/7904-01; 368/7904-01): Area Radiation Monitor Alarm Setpoint Procedure - The licensee had implemented Procedures 1305.01 and 2105.16 that establish the basis and setpoint criteria for monitors. HP input to the procedures is via the Plant Safety Committee (PSC) review of the procedures. This item is considered closed.

(Closed) Open Item (313/7918-01): Radioactive Effluent Discharge Monitor Setpoint Criteria - The licensee's procedures for isolating liquid effluent discharge lines following a release and the flushing of the counting chambers to reduce ambient radiation levels resolve NRC's concerns regarding this item. This item is considered closed.

3. Open Items Identified During this Inspection

<u>Number</u>	<u>Description</u>	<u>Paragraph Number</u>
313/8419-01; 368/8419-01	Control of chelating agents in radioactive waste	5
313/8419-02; 368/8419-02	Radiological work practices	5
313/8419-03; 368/8419-03	QC department training	7

4. RAM Shipment Program

The NRC inspector reviewed the licensee's RAM shipping program for compliance with the requirements in Department of Transportation (DOT) and NRC regulations 49 CFR Parts 100-199 and 10 CFR Part 71, respectively.

The NRC inspector found that the licensee's RAM shipping program provided full implementation of DOT and NRC regulations by comprehensive procedures.

The NRC inspector reviewed the licensee's RAM shipment records for shipments made since November 1983. Approximately 90 RAM shipments had been made. Sixty-seven shipments had been made since January 1984. Since approximately April 16, 1984, the licensee had resumed the shipping of RW wastes to low-level waste burial sites. A review of shipping records, package preparation, and observation of a shipment leaving the licensee's site disclosed no discrepancies in the licensee's program or conduct of operations. The QC department and the RW group have established which RW group activities require surveillances and the frequency at which they should be reviewed so that all activities are adequately monitored.

The licensee knew of no highway incidents involving their RAM shipments.

No violations or deviations were identified.

5. Low-Level Radioactive Waste Disposal Program

The NRC inspector reviewed the licensee's program for disposal of LLRW to determine compliance with the requirements of 10 CFR Parts 20.311 and 61, and commitments made to the NRC during a previous LLRW inspection (NRC Inspection Report 50-313/83-36; 50-368/83-36).

The NRC inspector determined that the licensee had implemented a suitable program for LLRW classification and waste form characterization prior to the shipment of LLRW on April 16, 1984. The April 16, 1984, shipment of LLRW was the first LLRW shipment made by the licensee since the effective

date (December 27, 1983) of the LLRW regulations contained in 10 CFR Part 61. The licensee's actions are in agreement with their commitment, in the aforementioned NRC inspection report, to not ship any LLRW until ANO could comply with the requirements of 10 CFR Part 61.

The licensee had established contracts with several vendors to provide the following:

- ° A program for identification of nuclides in the licensee's waste.
- ° A waste solidification process that will satisfy the waste form stability requirements of 10 CFR Part 61 and those attributes set forth in applicable NRC branch technical position papers.
- ° A computer-based program for the classification of waste streams, data storage, and record/documentation generation.
- ° An independent review of the licensee's program for determination of compliance with 10 CFR Part 61 requirements.

The NRC inspector determined that the licensee had instituted an acceptable program for the identification of nuclides in waste streams. The method employs radioanalysis of waste stream samples by an offsite vendor. Currently, this program requires twice-yearly stream analyses by the offsite vendor in addition to gamma isotopic waste stream checks performed by the licensee. The vendor's nuclide identification and concentration determination program has been reviewed and found acceptable by the NRC Division of Nuclear Reactor Regulation (NRR). The NRC inspector reviewed two waste shipment classifications and noted no deficiencies. However the NRC inspector noted there were no formal procedures in place that would ensure that chelating agents are adequately controlled to prevent exceeding the limits set forth in 10 CFR Part 20.311 as they pertain to LLRW. This item is considered open (313/8419-01; 368/8419-01) pending licensee actions to provide controls over chelating agents in LLRW.

The licensee had issued a process control program (PCP) for solid waste management in the form of a station procedure (1012.003) that had been reviewed by the PSC.

This PCP had also been forwarded to NRR for review as part of the Radiological Effluent Technical Specifications (TS). Currently, the licensee is utilizing a vendor-supplied and operated cement solidification process to meet waste form requirements for wet wastes involving resins. The vendor's cement solidification process topical report is currently under review by NRR.

The NRC inspector observed the solidification of a batch of resin. During the solidification process, it became apparent to the NRC inspector that there may be an unmonitored discharge of airborne radioactivity occurring during the continuous venting of the solidification liner while performing the solidification process. The liner's exhausted air passes through two high-efficiency particulate air (HEPA) filters prior to being discharged to the train bay which is open to the outside environment.

The licensee had analyzed periodic grab samples for this work area, but the discharge pathway was not monitored on a continuous basis. The licensee's radiological controls for the solidification process, including resin sampling and cement/resin specimen mixing/testing in the RWB building (RWB), were reviewed. The NRC inspector discussed with the licensee his concern over the increase in work activities taking place in the RWB (i.e., cement/resin specimen preparation and testing, and cleaning/overhaul of the vendor's vacuum used for venting the solidification liners), since previous discussions with the licensee regarding intended use of the RWB during the NRC inspection of June 21-25, 1982. The NRC inspector was primarily concerned that work activities involving highly contaminated resins were only provided general instructions in the Radiation Work Permit (RWP), even though continuous HP coverage was provided. The licensee acknowledged the NRC inspector's concerns and stated that a detailed work plan (radiological control instructions) for work activities occurring in the train bay and RWB would be implemented by July 20, 1984.

The licensee was noted to have suspended work activities in the RWB until continuous airborne radioactivity monitors could be installed and a new RWP written for each specific work operation occurring in the train bay and RWB. These work operations would be reviewed by the HP section for determination of where it would be more suitable to perform the work, either inside the auxiliary building or in the RWB.

This item is considered open (313/8419-02; 368/8419-02) pending implementation of the licensee's corrective actions discussed above.

The licensee was noted to be using waste shipment manifests that provided all the information required by 10 CFR Part 20.311. The licensee also utilized Procedure 1603.003 and the status board for waste shipment tracking on arrival verification. The licensee had not had to perform any "lost" shipment verifications as required by 10 CFR Part 20.311(d)(8).

The NRC inspector also noted that the licensee had purchased a large quantity of specially designed stainless steel alloy, high-integrity containers (HICs) for use in disposal of liquid filters (using absorbent material) and dewatered resins. NRR has performed a cursory review of the vendor's topical report to the requirement of 10 CFR Part 61 as they apply to HICs. These HICs appear to be capable of satisfying the qualifying criteria of 10 CFR Parts 71.71 and 72. The licensee had obtained temporary approval of one burial site contractor and its state LLRW regulatory group for use of these HICs.

It is apparent that the licensee has made a serious commitment to implementing a high quality LLRW program.

No violations or deviations were identified.

6. Onsite Interim LLRW Storage Facility

The NRC inspector reviewed the licensee's preparations for establishing an onsite LLRW storage facility for compliance with facility licensing conditions (Unit 2) and the recommendations of NRC Generic Letter 81-38, NRC Office of Inspection and Enforcement Circular 80-18, NRC Regulatory Guide (RG) 1.143, and NUREG 0800.

The NRC inspector determined that the licensee had written contracts for the development of architectural engineering (AE) plans for the construction of an onsite LLRW facility of approximately 20,000 square feet of floor space with approximately 116,080 cubic feet of LLRW storage space. The licensee had not, at the time of this inspection, authorized construction of the facility. The licensee's contract with the AE provides for performance of any required 10 CFR Part 50.59 safety reviews and any environmental assessments required by federal regulations. A review of the contract specifications shows that the LLRW storage facility was to be designed and constructed in accordance with current industry construction standards and applicable federal regulations, such as 49 CFR 190, 10 CFR 50, and applicable NRC RGs (1.143, 8.8, and 8.10).

The NRC inspector also noted that the facility design included an HEPA-filtered ventilation system, a fire protection system, and a liquid drainage system that employs three sumps. The AE was noted to have claimed to possess a QA program that satisfies 10 CFR Part 50, Appendix B, and ANSI N45.2-1974 criteria. The licensee had tentatively designated placement of the facility in the east-northeast corner of the protected area (fenced area). This will require relocation of the security fence. Construction completion is tentatively scheduled for November 1985.

No violations or deviations were identified.

7. Nonlicensed Training Program

The NRC inspector reviewed the licensee's training program for nonlicensed personnel to determine compliance with FSAR commitments, facility TSs, and 10 CFR Part 19.12.

The following training programs were reviewed:

- Corporate Engineering
- Radiation Protection Technician

- QC Department
- Maintenance Department
- GET

The NRC inspector determined that the licensee had established dedicated training groups and facilities at both the corporate (energy supply training section (ESTS)) and onsite locations (nuclear training section (NTS)). The NRC inspector noted that the two groups have a memorandum of understanding for respective areas of responsibility regarding training. The NRC inspector reviewed a training effectiveness evaluation conducted and prepared by the ESTS. This evaluation was of the training program for new hires into the RW group (career ladder to HP technician) and consisted of basic HP subjects and preparatory college mathematics reviews. Another evaluation reviewed was of the ANO program for advanced firefighter training. Both evaluations were well performed and comprehensive. The recommendations generated by the effectiveness evaluations were provided to the ANO management for response. The NTS provided timely response to the evaluation findings.

The NRC inspector also noted the following endeavors by AP&L to ensure that the training and personnel qualification at ANO will be of high quality:

- Development of a yearly supervisory review of each employee's training needs based on observed performance.
- Development of a criterion-based employee promotion program. This program will resolve the concerns expressed in NRC Inspection Report 50-313/83-16; 50-368/83-16 concerning promotions of personnel to journeyman skill level based solely on time-in-grade.
- Obtaining Institute of Nuclear Power Operations (INPO) accreditation of the AP&L training programs. This is in addition to the already obtained INPO accreditation (January 1984) of ANO's licensed operator training program.
- Developing and implementing a training and qualification program for personnel assigned as members in the corporate safety review committee and the ANO PSC.
- Developing a training matrix for corporate engineers and personnel in other scientific disciplines.
- Developing and implementing a structured training program for new-hires in the maintenance trade for ANO and other licensee power plants.

The NRC inspector reviewed the training records of five corporate engineers and interviewed one engineer and the corporate health physicist. The training records reflected that most engineers receive speciality area training and site specific training as needed. During the interviews, it was determined that there did not appear to be a structured corporate training program for engineers and other scientific disciplines; however, the licensee has a policy for support of individuals continuing educational needs. The NRC inspector noted that the corporate plans for establishing a training matrix for corporate professionals should resolve concerns regarding a formal training program.

The NRC inspector reviewed the administration, staffing, and training program implementing procedures of NTS. The NRC inspector determined that the licensee had transferred HP staff training functions from the direct control of the HP superintendent to a newly created HP technician/RW training group. The NRC inspector noted that a licensee-conducted audit (QAP-3, dated September 19, 1983), utilizing the corporate health physicist, was very comprehensive and resulted in a very objective and critical review of the licensee's training programs for HP technicians, radiation workers, advance radiation workers, respiratory protection users, and contract HP technician screening. The licensee had also conducted a QA audit of other NTS programs (QAP-4, dated August 1983) that included fire brigade training, GET, shift technical advisor training, and the on-the-job training (OJT) program. The audit appeared to be comprehensive and objective and resulted in two minor audit findings. The QA department was in the process of conducting an audit of ANO training activities during this inspection. The licensee's review of actions taken to resolve the NRC violation (50-313/8316-01; 368/8316-01) concerning GET for temporary employees was independently verified by the NRC inspector based on employee interviews, review of employee training records, and a review of ANO Procedure 1603.007, Revision 2, dated February 1, 1984.

The NRC inspector reviewed position descriptions for selected duty assignments, including NTS trainer positions (Trainers I and II).

Maintenance training is currently being upgraded and lesson plans are being developed to support both INPO accreditation and the future implementation of the criterion-based promotion program.

A review of selected lesson plans involving GET, respiratory protection training, solidification of RW, chilled water system, mechanical maintenance, radiation protection procedures/manuals, and shift technical advisor training disclosed that most lesson plans were adequate in defining training objectives. However, several lesson plans that address radiation protection material appeared not to have been reviewed for technical adequacy by the HP superintendent. Discussions with the NTS representatives disclosed that there is a significant backlog of lesson plans awaiting review by the HP superintendent. Some lesson plans had

been signed out to the HP section for review since February 1983. The NRC inspector also noted to the licensee that it appears that there may be several lesson plans being presented, such as advanced radiation worker training and HP practical factors, that address radiation protection aspects that have not been reviewed/approved by the HP superintendent.

The NRC inspector informed the licensee that this item would be considered an open item (313/8419-02; 368/8419-02) pending licensee action to have all lesson plans that provide instruction on radiation protection practices (other than minor cautionary statements) reviewed for appropriateness by the HP superintendent or by an appropriately qualified individual designated by the HP superintendent.

The NRC inspector also noted that the licensee had developed and staffed a chemistry/RC training group and allocated space for establishing a functional chemistry laboratory. These licensee actions are part of an action plan to resolve NRC Open Item 313/8212-03; 368/8212-03 regarding the lack of a formal training program for RC personnel. The licensee still needs to establish qualification criteria and lesson plans and implement the training and retraining program.

The licensee has a very comprehensive and somewhat unwieldy OJT program, which, in most cases, provides task signoffs that are far more extensive than can be handled in a reasonable time frame by employees. This was most notably in the maintenance training area. The licensee had established a task force to look into improving the OJT program at ANO.

The NRC inspector noted that the ANO QC department is one of only a few ANO departments that are responsible for the development and implementation of departmental training and qualification programs. The NRC inspector discussed the QC department's training program impact on routine QC department responsibilities with responsible NTS representatives and the QC department manager, who currently coordinated and administered all QC department training and a special QA training program for ANO warehouse personnel. The training program appears to require a larger man-hour commitment by the QC manager than other department managers. The NRC inspector noted to the licensee that this concern would be considered an open item (313/8419-03; 368/8419-03) pending a licensee evaluation of the NTS training programs currently administered by the QC manager.

The NRC inspector interviewed nine licensee employees (seven at ANO, two of whom were females, and two at the corporate offices of AP&L). The NRC inspector noted a definite weakness in the interviewees' ability to recall specific training in the area of prenatal radiation protection training (RG 8.13); however, the employees were knowledgeable of the basic concern of radiation exposure to female employees. This aspect concerning RG 8.13 was previously discussed with the licensee and addressed in NRC Inspection Report 50-313/84-09; 368/84-09. The training programs reviewed appeared to comply with the licensee's TS commitments.

No violations or deviations were identified.

8. Exit Interview

The NRC inspector met with licensee representatives and the NRC resident inspectors denoted in paragraph 1 on June 27, 1984, and at the conclusion of the inspection on June 29, 1984. The NRC inspector summarized the scope and findings of the inspection as presented in this report.