

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/88-02
50-368/88-02

Operating Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

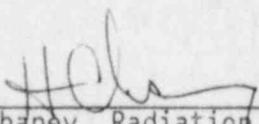
Licensee: Arkansas Power & Light Company (AP&L)
P.O. Box 551
Little Rock, Arkansas 72203

Facility Name: Arkansas Nuclear One (ANO)

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

Inspection Conducted: February 21-26, 1988

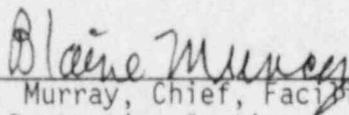
Inspector:



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

4/8/88
Date

Approved:



B. Murray, Chief, Facilities Radiological
Protection Section

4/8/88
Date

Inspection Summary

Inspection Conducted February 21-26, 1988 (Report 50-313/88-02; 50-368/88-02)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection activities during the Unit 2 refueling outage (2R6).

Results: Within the areas inspected, one violation (failure to survey and post, paragraph 5.e) was identified. No deviations were identified.

DETAILS1. Persons ContactedAP&L

- *D. Akins, Radioactive Waste (Radwaste) Supervisor
- *T. Baker, Technical Support Manager
- *E. Bickel, Health Physics (HP) Superintendent
- *E. Ewing, Assistant Plant Manager
- *D. Lomax, Plant Licensing Supervisor
- *P. Michalk, Plant Licensing Engineer
- *S. Quennoz, Plant General Manager
- *R. Wewers, Work Control Center Supervisor

Others

- *W. Johnson, Senior NRC Resident Inspector

*Denotes those present at the exit interview on February 26, 1988.

2. Inspector Observations

The following are observations the NRC inspector discussed with the licensee during the exit interview on February 26, 1988. These observations are not violations, deviations, unresolved items, or open items. These observations were identified for licensee consideration for program improvement, but the observations have no specific regulatory requirement. The licensee stated that the observations would be reviewed.

a. HP Supervisor Job Oversight

The HP Supervisors (licensee and contractor) have not spent an adequate amount of time inside containment and other radiological work areas since the start of the Unit 2 outage.

b. Personnel Contamination Control Work Practices

Many poor radiological work practices employed by workers are not being observed by the licensee, and when they are observed the workers are not being critiqued on their poor contamination control practices.

c. Use of the PCM-1 Monitors

Personnel were observed to be turning their face away from the monitoring screen thus reducing the effectiveness of the monitor to detect radioactive contamination.

3. Open Items Identified During This Inspection

An open item is a matter that requires further review and evaluation by the NRC inspector. Open items are used to document, track, and ensure adequate followup on matters of concern to the NRC inspector. The following open items were identified:

<u>Open Item</u>	<u>Title</u>	<u>See Paragraph</u>
313/8802-02 & 368/8802-02	Control Room Habitability	6

4. Followup on Previous Inspection Findings (92701 and 92702)

(Closed) Open Item 313/8724-04; 368/8724-04: Radioactivity in Sanitary System Filter Beds - This item was identified in NRC Inspection Report 50-313/87-24 and 50-368/87-24 and involved the detection of radionuclides in the sanitary effluents. The licensee had implemented weekly sampling and analysis of sanitary effluent to and from the filter beds. Since Iodine-131 was not found in the sanitary filter beds following the initial discovery, the licensee believes that the radioiodine in the effluent was the result of a person using the sanitary facilities at ANO following a medical administration of iodine for diagnostic purposes. The licensee has determined that the most likely source of the Cesium-137 in the filter beds was due to effluents from the secondary side (steam) of Unit 1 which still has residual fission products in the system from a previous fuel and steam generator integrity problem. The licensee has been sampling and accounting for the additional cesium and other fission products in the semiannual effluent reports. The NRC inspector reviewed the licensee's sampling protocols for the sanitary system (monthly frequency) and documentation of their evaluation of the situation.

(Closed) Violation 313/8631-01; 368/8631-01: Failure to Provide Timely Update of Worker Internal Exposures - This violation was identified in NRC Inspection Report 50-313/86-31 and 50-368/86-31 and involved the failure to provide a timely update of a worker's exposure to airborne radioactive materials. The NRC inspector reviewed the licensee's corrective actions and their written response to the violation and verified the adequacy of the licensee's corrective actions.

5. Outages (83729)

The NRC inspector reviewed the licensee's radiation protection program in effect during the Unit 2 refueling outage (2R6). The NRC inspector reviewed planning and scheduling activities, worker briefings, HP staffing and manning, control of radiological work activities, qualifications of contract HP personnel, and compliance with Unit 2 Technical Specification 6.11 and radiological work and industrial safety instructions. The licensee's ALARA activities associated with conduct of the 2R6 outage were also reviewed. The following specific areas were reviewed:

a. Planning and Preparation

The NRC inspector attended daily planning and scheduling meetings, held discussions with senior plant managers concerning outage preparations, and reviewed job preplanning for issuance of Radiation Work Permits (RWP). The NRC inspector discussed with licensee representatives several industrial safety observations associated with the head removal that should be evaluated. These items of concern were:

- ° Lighting in the refueling canal during lifting of the head and inspection for equipment hang-ups was marginal. The workers used hand-held 3-cell flashlights.
- ° Use of the plant paging system was not controlled and coupled with its excessive volume, it was very distracting during head lifting when verbal communication between riggers and maintenance personnel was critical to safety.
- ° A maintenance mechanic did not follow instructions to obtain and wear a safety belt while working over the open refueling pit.

The licensee indicated that the above noted concerns would be addressed.

The NRC inspector noted that the licensee had installed a temporary weather proof passageway and auxiliary offices for HP technicians, dosimetry issue and protective clothing issue at the Unit 2 equipment hatch. This facility (Alternate Controlled Access) greatly improves accessibility to the reactor containment and provides greater HP control over reactor access and work operations.

No violations or deviations were identified.

b. Training and Qualification of Workers

The NRC inspector reviewed the licensee's program and its implementation for evaluation and screening of contract HP workers. The NRC previously reported in NRC Inspection Report 50-313/87-33; 50-368/87-33, an investigation into the circumstances surrounding the failure of a contract HP technician to properly control a radiological work operation. The NRC inspector determined that the licensee had screened, by testing, approximately 126 contract technicians and 37 of these technicians (senior and junior technicians) failed the screening test. The licensee had a technical review board evaluate each person that failed and determine if retesting would be warranted. Of the 37 that initially failed, 20 were hired after a review of their experience and weaknesses. The licensee had hired five contract HP supervisors to assist the

licensee's inhouse supervisors during the outage. Each contract technician completed on-the-job training and was evaluated by a licensee senior technician prior to being assigned for independent work responsibilities.

No violations or deviations were identified.

c. External Exposure Control

The NRC inspector reviewed the licensee's control of radiation and high radiation areas, hot spot posting, dose rate evaluations for steam generator entries, multiple whole body and extremity dosimetry use, and the conduct of radiological surveys.

The NRC inspector reviewed the radiological controls associated with the removal and replacement of the pressurizer spray line, inspection and maintenance on the two U-tube steam generators, and the reactor head removal.

The NRC inspector discussed with licensee representatives the apparent need for HP technicians working as rovers within the reactor containment to be more attentive in maintaining hotspot and high radiation area postings. Two high radiation area perimeter postings in the lower level of the containment in equipment congested areas were noted to be marginal, but within the limitations of the TS. The NRC inspector identified to the licensee two hotspot warning labels that stated the contact dose rate was a factor of at least 3 times lower than NRC and licensee radiation surveys indicated. The licensee immediately corrected the situations with shielding and updated the hotspot warning signs.

No violations or deviations were identified.

d. Internal Exposure Control

The NRC inspector reviewed the licensee's respirator issue program, airborne radioactivity surveys, internal exposure trending and tracking program, and on-the-job respirator use.

The NRC inspector noted that workers routinely inspected and properly performed negative fit tests of their respirators prior to use. The licensee maintains positive control over issuance and return of respirators. The licensee's internal uptake tracking system was reviewed and found to be well run and only 2 to 3 days lapse before records are updated to reflect an individual's uptake. This is a major improvement over the situation found during the refueling outage 1R7 for Unit 1.

No violations or deviations were identified.

e. Control of Radioactive Materials and Contamination, Surveys, and Monitoring

The NRC inspector inspected the licensee's radioactive material control program for release of materials from radiological work areas, implementation of contamination control practices for major jobs, cleaning of welds on the exterior of the steam generators, and the removal of radioactive piping from the pressurizer system. The licensee's use of contamination control containments and partial enclosures has improved over past outages. The NRC inspector noted to the licensee that they were apparently allowing loose surface contamination levels in work areas to increase to a high level prior to having the areas decontaminated (100 millirad per hour smearable). The NRC inspector discussed with the licensee's representative the need to improve preplanning and the use of layered plastic film flooring to aid in the decontamination of areas and to allow decreased use of respiratory protection equipment and additional protective clothing. The NRC inspector reviewed material release logs at exits from contamination controlled areas.

10 CFR Part 20.201(b) requires that licensees 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.

10 CFR Part 20.202 states, in part, that a "Radiation Area" means any area, accessible to personnel, in which there exists radiation and a major portion of the body could receive in any 5 consecutive days a dose in excess of 100 millirems. This limit equates to a dose rate of approximately 0.8 mR/hr. Furthermore, Part 20.203 states, in part, that each radiation area shall be conspicuously posted with signs identifying the radiation area.

In addition, TS 6.10 and 6.11 for ANO Units 1 and 2, respectively, require that procedures for personnel radiation protection shall be adhered to for all operations involving personnel radiation exposure.

Licensee Procedure 1622.003, "Radiological Posting and Entry Requirements," requires that in-plant radiation areas located outside of Controlled Access be posted at 0.8 mR/hr.

During a review of facility surveys on February 24-26, 1988, it was noted that three radiation area surveys conducted on February 14, 1988, and one on February 17, 1988, indicated that areas (Quadrex decontamination trailer outside perimeter, offices adjacent to the Unit 1 Controlled Access 386-foot level, and nonradiological

Instrument and Controls Department work areas above the Maintenance Shop) normally not classified or posted as radiation areas were identified as having dose rates under 2.0 mR/hr which would indicate that they may exceed the posting limit of 0.8 mR/hr. Furthermore, the surveys were accomplished with portable radiation survey instruments that did not have the necessary sensitivity to accurately measure 0.8 mR/hr of gamma radiation nor did the meter readout allow for interpretation of values below 1 or 2 mR/hr. The instruments used were both high range beta-gamma dose rate survey instruments. These surveys were taken by contract HP technicians and were not representative of the quality of the majority of the surveys taken at the plant by both contract and licensee HP technicians. The NRC inspector noted also that the surveys in question had been reviewed by a different licensee HP supervisor as a final step in the documentation process. The NRC inspector noted that sufficient surveys prior to and after the dates of the questionable surveys substantiate the fact that the areas were and have been nonradiation areas, and that the questionable survey results were not the result of transient radioactive materials.

The failure to properly conduct radiation area surveys is considered an apparent violation of 10 CFR Part 20.201 requirements. The failure to recognize and have posted identified radiation areas is considered an apparent violation of 10 CFR Part 20.203(b). These are considered one violation due to their interrelationship. (313/8802-01 and 368/8802-01)

No deviations were identified.

f. Independent Surveys by the NRC Inspector

The NRC inspector conducted independent radiation surveys of high radiation areas, radiation areas, office spaces, and waste receptacles. The NRC inspector also verified licensee controls and periodic inspection records for very high radiation areas.

No violations or deviations were identified.

g. ALARA Program

The NRC inspector reviewed the licensee's ALARA program. The NRC inspector noted that the licensee was providing 24-hour ALARA technician support for resolution of problems concerning radiological job requirements and temporary shielding installation. The licensee had provided an ALARA technician for interfacing with Work Control Center Personnel for early review of maintenance work packages for determining Radiation Work Permit requirements. The NRC inspector observed senior plant management interfacing with the ALARA coordinator on resolving major radiological problems involving

removal of the reactor head. The licensee was found to be closely tracking job performance based on person-rem exposure.

No violations or deviations were identified.

h. Staffing

The NRC inspector reviewed the licensee's HP staffing for the outage and determined that it was adequate, but was stretched thinly during some instances when maintenance work scheduling exceeded the available HP manpower.

No violations or deviations were identified.

6. Control Room Habitability

The NRC inspector reviewed the licensee's corrective actions taken in response to NRC Memorandum, "Survey of ANO Units 1 and 2 Control Rooms," dated July 28, 1987 (J. Hayes, NRR to R. Lee, NRR).

The licensee had initiated a project to conduct a detailed review of control room habitability systems. The licensee had issued at least one Licensee Event Report (LER 87-08, concerning air leakage into the control rooms) due to this review project. The licensee is drafting a response to the NRC regarding their review of the NRC information concerning the ANO control rooms which was transmitted to the licensee on or about August 1, 1987.

The NRC inspector obtained procedures for testing and surveillance of the control room ventilation and safety systems. Due to the extensive amount of material presented for review, this item will be considered an open item pending further NRC review for close out of the NRC's concerns in this area. (313/8802-02; 368/8802-02)

No violations or deviations were identified.

7. Exit Interview

The NRC inspector met with the NRC resident inspector and licensee representatives denoted in paragraph 1 on February 26, 1988, and summarized the scope and inspection findings.