APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Reports: 50-313/83-13
50-368/83-13

Licenses: DRP-51
NPF-6

Dockets: 50-313, Unit 1
50-368, Unit 2

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

Facility Name: Arkansas Nuclear One (ANO)

Inspection At: Russellville, AR

Inspection Conducted: June 6-10, 1983

Inspectors: H. Chaney
H. D. Chaney, Radiation Specialist — Date 7/19/83

W. L. Holley
W. L. Holley, Radiation Specialist — Date 7/19/83

Approved: Blaine Murray
Blaine Murray, Chief, Facilities Radiation Protection Section — Date 7/19/83

for W. Johnson
W. Johnson, Chief, Reactor Project Section C — Date 7/20/83

Inspection Summary

Inspection conducted June 6-10, 1983 (Reports 50-313/83-13 and 50-368/83-13)

Areas Inspected: Routine, unannounced safety inspection of: (1) licensee action on previously identified violations and open items, (2) onsite radiation protection organization, (3) staff qualifications, (4) training, (5) exposure control, (6) ALARA program, (7) posting and labeling, (8) radiological surveys, (9) respiratory protection program, (10) notifications and reports, (11) radiation exposure expenditure tracking, (12) instruments and calibration, and (13) Unit 1 spent fuel pool modifications. The inspection involved 72 onsite inspector-hours by two NRC inspectors.

Results: Within the 13 activities inspected, no violations or deviations were identified. Thirteen previously identified open items were closed, and four new open items are discussed in paragraphs 2 and 3 of this report.

DETAILS

1. Persons Contacted

AP&L

*J. M. Levine, General Manager, ANO
*E. C. Ewing, Manager, Engineering and Technical Support, ANO
*D. D. Snellings, Corporate Health Physicist, AP&L
*J. D. Vandergrift, Superintendent of Training, ANO
*M. J. Bolanis, Superintendent of Health Physics, ANO
*L. W. Schempp, Manager of Quality Control, ANO
*L. W. Humphrey, Manager of Plant Administration, ANO
C. Fellhauer, Coordinator of Radioactive Waste (Radwaste), ANO
D. Helm, ALARA Coordinator, ANO
W. Hada, Health Physics Supervisor, ANO
B. Burchard, Health Physics Supervisor, ANO
T. Nickels, Health Physics Supervisor, ANO
M. Durst, Training Supervisor, ANO
I. Mosquito, Employee Instructor, ANO

Others

*L. J. Callan, Senior NRC Resident Inspector

The NRC inspectors also interviewed several other licensee and contractor employees involved in health physics (HP), administrative, and maintenance activities.

2. Licensee Action on Previous Inspection Findings

(Closed) Violation (313/8214-23)/(368/8211-23): Transportation of Licensed Material - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's failure to provide necessary safety analysis certification for containers used to ship Type A quantities of licensee radioactive materials. The licensee verified through recalculations of documented shipping data that the subject shipments did not constitute Type A quantities. The licensee had also revised radioactive material shipping forms and procedures (1603.003, Revision 6) to require the attachment of container safety analyses for shipments of Type A or greater quantities of radioactive materials in the future. This item is considered closed.

(Open) Violation (313/8237-01)/(368/8236-01): Personnel MPC-HR Bioassay - This item was discussed in NRC Reports No. 50-313/82-37 and 50-368/82-36 and involved the licensee's failure to ensure that procedural requirements requiring personnel bioassays at certain levels of personnel exposure to airborne radioactivity were being complied with. The licensee had responded

to this violation; however, the NRC inspectors determined that the licensee's corrective actions would not prevent a recurrence of the violation. See paragraph 7.b for details. This item is still considered open.

(Open) Violation (313/8236-02): FSAR Update - This item was initially discussed in NRC Inspection Report No. 50-313/74-14 as open item (313/7414-14), and then again in 50-313/82-36 as a violation involving the licensee's failure to update the FSAR [10 CFR Part 50.71(e)] to show that certain areas within Unit 1 reactor containment exhibited radiation levels (during initial full power testing) above the design values presented in the FSAR. The licensee has initiated an FSAR change request to rectify the radiation level discrepancies. This item is considered open pending completion of licensee action.

(Closed) Open Item (313/8214-01)/(368/8211-01): Management Attention to Transportation Activities - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's lack of management and supervisory oversite to activities involving radioactive material transportation (offsite). The licensee had thoroughly reorganized, adequately staffed, and implemented a suitable training program for radioactive waste processing, packaging, storage, and transportation. See paragraphs 4, 5, and 6 for details. This item is considered closed.

(Closed) Open Item (313/8214-02)/(368/8211-02): Transportation Activities - Training and Retraining - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's lack of a suitable training program covering the requirements of 10 CFR Part 71 and 49 CFR Parts 100-177 for personnel engaged in radioactive material packaging and transportation activities. The licensee had established a comprehensive training and retraining program for personnel involved in the above activities. See paragraph 6 for details. This item is considered closed.

(Closed) Open Item (313/8214-03)/(368/8211-03): Transportation Activities - Procedures and QA Controls - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's lack of suitable quality control activities in station operations involving waste dewatering, solidification and compaction processes, and the shipment of radioactive materials. The licensee had revised station procedures (i.e., 1603.003, 1603.006, and 1622.27, and others) to provide suitable operational instructions and quality control activities (checklists) over the above-noted processes. This item is considered closed.

(Closed) Open Item (313/8214-04)/(368/8211-04): Closure of Shipment Liners - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved an NRC concern over the lack of a positive closure device on NUPAC Type III liners. The licensee had the liner manufacturer evaluate various closure methods for the subject liner; however, due to

identified ALARA concerns the licensee has adopted use of a similar liner that utilizes a positive closing cover/cap. This item is considered closed.

(Closed) Open Item (313/8214-05)/(368/8211-05): Procedures for Transfer, Packaging, and Transport of Licensed Material - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the lack of suitable guidance in several of the licensee's operational procedures governing radioactive material packaging and transportation activities. The licensee had implemented revisions and/or issued new instructions that resolved the concerns expressed by the NRC in the subject inspection report. This item is considered closed.

(Closed) Open Item (313/8214-06)/(368/8211-06): Reduce Inventory Volume for Radioactive Waste Storage - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's excessive backlog of radioactive waste contained in and around the radioactive waste storage building (RWB). The licensee had disposed of all unnecessary radioactive materials and placed all reusable radioactive materials stored in the RWB on a quarterly use review inventory. All radioactive liquids identified in the subject NRC report had been disposed of properly. This item is considered closed.

(Closed) Open Item (313/8214-07)/(368/8211-07): Audit of Transportation Activities - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the suitability of the licensee's audit program for radioactive material transportation activities. The licensee had conducted what appeared to be a detailed audit of transportation activities during the ANO quality assurance department audit of October 27, 1982, through January 25, 1983 (serial no. 8QA-1365). The audit checklist was prepared by personnel knowledgeable in radioactive material transportation activities. The licensee had resolved previous audit findings regarding disposal of contaminated liquids. This item is considered closed.

(Open) Open Item (313/8236-03): Breathing Zone Air Sampling - This item was discussed in NRC Inspection Report No. 50-313/82-36 and involved the licensee's lack of a suitable program for effectively monitoring workers' breathing zones, evaluation of engineering controls to reduce airborne radioactivity concentrations, and surveillance and testing of temporary HEPA filtered ventilation systems (engineered controls for respiratory protection). The licensee had not completed formulation of corrective actions for the above-noted NRC concerns. This item is still considered open.

(Open) Open Item (313/8236-04)/(368/8237-02): ALARA Program Weaknesses - This item was discussed in NRC Inspection Report No. 50-313/82-36 and involved apparent weaknesses in the licensee's ALARA program in the areas of management attention to improve station ALARA performances and reduction of personnel skin contamination incidents. The licensee had initiated several actions to resolve the NRC's concerns in the above-noted areas;

however, the licensee had not completed implementation of all planned actions as of this inspection. See paragraph 11 for details. This item is still considered open.

(Open) Open Item (368/8122-03): Instrument Calibration - Neutron, Beta, and Whole Body Counter - This item was initially discussed in NRC Inspection Report No. 50-368/82-37 and again in NRC Inspection Reports No. 50-368/82-18 and 50-368/82-37. This item concerned the licensee's lack of a suitable calibration program for neutron and beta dose rate measuring instruments, and internal radioactivity assessment equipment. The portion concerning neutron dose rate measuring instruments was closed in NRC Inspection Report No. 50-368/82-37. The licensee had established a suitable full range (1, 10, and 40 percent of a maximum permissible body burden (MPBB)) calibration program that appears to satisfy NRC and industry standards sufficiently to allow closure of this portion. The remaining portion concerning instrument full range beta dose rate calibration is still awaiting licensee procurement of a suitable strength and energy range beta source. This item is still considered open.

(Open) Open Item (368/8122-05): Evaluation of Contracted HP Personnel Qualifications - This item was originally discussed in NRC Inpsection Report No. 50-368/81-22 and again in NRC Inspection Report No. 50-368/82-37 and involved the licensee's program for evaluation of contractor-type HP technicians. The licensee had established and was utilizing satisfactory criteria (as noted in NRC Inspection Report No. 50-368/82-37); however, this selection criteria had not been issued as an official station procedure. This item is still considered open pending licensee action.

(Closed) Open Item (313/8214-08)/(368/8211-08): Control Room Dose Rate Calculations - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the failure of the licensee to establish the dose rates expected to be experienced in the control room for postaccident operation. The licensee had performed and documented the required calculations and determined that the dose rate to control room personnel would be less than 15 millirem per hour which is considered satisfactory. This item is considered closed.

(Closed) Open Item (313/8214-11)/(368/8211-11): Noble Gas Effluent Monitor Scales Overlap - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved the licensee's failure to verify the medium and high-range scale overlap of the noble gas effluent monitors complied with the criteria of NUREG-0737. The licensee provided the necessary verification that the scale overlap for the monitors met NUREG-0737 criteria. This item is considered closed.

(Closed) Open Item (313/8214-18)/(368/8211-18): Filter - Cartridge Removal - This item was discussed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 and involved a future review of licensee procedures for instal-

lation and removal of the particulate filter and iodine cartridge in the SPING monitor following a postulated reactor accident. The NRC inspectors determined that an approved procedure (1617.101, "Sampling the Super Particulate Iodine Noble Gas Monitor - SPING) had been approved and issued, and appeared to provide satisfactory instructions for conduct of the operation. This item is considered closed.

3. Open Items Identified During This Inspection

(Open) Open Item (313/8313-01)/(368/8313-01): Radwaste Coordinator Qualifications - The licensee failed to ensure that the person selected for the position of radioactive waste supervisor satisfied the minimum qualification criteria established in the AP&L position task analysis - position description for the radioactive waste supervisor position. See paragraph 5 for details.

(Open) Open Item (313/8313-02)/(368/8313-02): Radiation Worker Retraining - The licensee had not established a suitable refresher/retraining program for ANO employees that frequent restricted areas as recommended by NRC RG 8.27. See paragraph 6 for details.

(Open) Open Item (313/8313-03)/(368/8313-03): Respiratory Protection Policy - The licensee had failed to provide a station respiratory protection program policy from a high management source as recommended by NRC RG 8.15 and NUREG-0041. See paragraph 7.b for details.

(Open) Open Item (313/8313-04)/(368/8313-04): Air Sampler Calibration - The licensee's procedures for calibration of airborne radioactivity samplers do not satisfy the recommendations contained in NRC RG 8.25. See paragraph 12 for details.

4. Organization

The NRC inspectors reviewed the licensee's radiation protection organization for changes since the last inspection and compliance with final safety analysis report (FSAR) commitments and Technical Specification (TS) requirements.

The licensee had effected a reorganization, effective June 9, 1983, that would transfer the solid radwaste operations (liquid waste solidification, resin processing, waste packaging, radioactive material storage, packaging, and offsite shipment) from under the control of the technical analysis superintendent (ANO engineering and technical support department) to that of the HP superintendent in the same department. The licensee had further reorganized the HP group by establishing the positions of an assistant HP superintendent (currently vacant), radioactive waste supervisor (filled), and two assistant radioactive waste supervisors (filled). The new assistant HP superintendent will provide additional management direction to daily HP

group activities involving implementation of the ANO radiation protection program.

The new radwaste group will be responsible for all equipment/area decontamination, solid waste processing, laundry handling, spent resin processing for shipment, radioactive material storage and packaging, and radioactive material transportation. These activities will be performed by approximately 16 ANO workers (not hired yet) and a few contractor personnel involved with the contracted laundry service. The radwaste group will be under the general supervision of the radioactive waste (RW) supervisor and the separated activities of "decontamination" and "packaging/transportation" will be under the direct supervision of the two assistant RW supervisors. The RW supervisor appears to possess sufficient knowledge and experience for his assigned responsibilities. The licensee had selected personnel to fill the two assistant RW supervisory slots. The person selected for the position of assistant RW supervisor in charge of packaging and transportation activities possesses a significant amount of (Naval Nuclear Power Program) experience in the aforementioned activities. The NRC conveyed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11 several concerns regarding ANO's radioactive material transportation program. Among these concerns was open item (313/8214-01)/(368/8211-01) which involved ANO management's attention to transportation activities. The newly organized radioactive waste group within the HP group appears to provide a suitable degree of management attention to transportation activities.

The licensee had approved the hiring of 16 new employees to be specially trained and used for decontamination, limited HP activities, radioactive material packaging, and transportation activities. Specialized training for these operations is discussed in paragraph 6 of this report.

The licensee's RP technician staff consists of approximately 38 personnel (supervisory, technical, and approximately 4 contractor-type technicians); 25 HP technicians (ANO employees) function as senior ANSI-N18.1(1971) qualified HP technicians.

No violations or deviations were identified.

5. Staff Qualifications

The NRC inspectors reviewed the licensee's qualification requirements for the ANO training department and HP group, including the new radioactive waste group, for compliance with TS requirements, and the recommendations of NRC RG 8.1 and ANSI N18.1 (1971).

The NRC inspectors reviewed staff experience and training resumes, ANO functional assignment qualification criteria (position descriptions/position task analysis), and actual employee functional assignments. The licensee

was noted to have developed a comprehensive procedure for evaluation of contractor-type HP technicians, but had not officially approved the procedure. The licensee indicated that the contractor evaluation procedure would be processed through the onsite plant safety committee (PSC) in late June or early July of this year. The NRC inspectors found no discrepancies with personnel qualifications versus functional assignment, except in the case of the new RW supervisor. The licensee's position description for the RW supervisor, dated January 12, 1983, requires the person selected to meet all of the qualification criteria set forth in NRC RG 1.8 (September 1975). The current RW supervisor was found not to possess the necessary experience or training to satisfy NRC RG 1.8 criteria. The NRC inspectors noted to the licensee their concern that the qualification criteria of NRC RG 1.8 was established for use in evaluating persons assigned to manage a facility's overall radiation protection program and that in the case of an RW supervisor position the criteria may be too restrictive. The licensee acknowledged that the criteria needed to be reevaluated. The RW supervisor's previous experience and training appeared to satisfy all other selection and qualification criteria except for the NRC RG 1.8 criteria. This item (313/8313-01)/(368/8313-01) is considered open pending licensee action to:

. Provide an RW supervisor that satisfies the qualification criteria established for the position.

No violations or deviations were identified.

6. Training

The NRC inspectors reviewed the initial training and retraining programs for general employees (GET), radiation workers (RWT), radioactive waste process operators, and personnel responsible for the packaging and shipment of radioactive material for compliance with the requirements of 10 CFR 19 and the recommendations of NRC RGs 8.13, 8.27, and 8.29.

The NRC inspectors reviewed training programs, lesson outlines, on-the-job-training (OJT) records for selected individuals, personnel training evaluations (tests), and held discussions with training staff personnel.

The licensee had implemented a very comprehensive training program for personnel to be assigned duties in the RW group with the emphasis being placed on processing, packaging, and compliance with NRC and DOT transportation regulations. Each of the RW group workers, including the RW group supervisors, are required to complete their individual speciality area training programs and crosstraining in a suitable amount of other speciality areas of the RW group. The RW group initial training

program and retraining (supervisor-determined) cover the following (in addition to standard GET and RWT training):

- Radwaste Disposal Requirements
- Nuclear Regulatory Commission Regulations for Radwaste Disposal
- Department of Transportation Regulations for Radwaste Shipment
- Radwaste Disposal Site Criteria
- Radwaste Shipping Papers
- Simulated Radwaste Shipments

- Compactible Radwaste
- Compactible Radwaste Packaging
- Compactible Radwaste Handling and Storage
- Compactible Radwaste Shipping Requirements

- Noncompactible Radwaste
- Noncompactible Radwaste Packaging
- Noncompactible Radwaste Handling and Storage
- Noncompactible Radwaste Shipping Requirements

- Radioactive Resin Disposal
- Packaging, Handling, and Storage of Radioactive Resins
- Shipping Requirements for Radioactive Resin

- Solidified Radwaste
- Packaging, Handling, and Storage of Solidified Radwaste
- Shipping Requirements for Solidified Radwaste

Personnel are required to pass course evaluation tests in each subject area. In addition, personnel must demonstrate functional proficiency (to RW supervisors) in speciality area assignments (OJT).

The licensee's RW training program appears to adequately resolve the NRC concerns about radioactive material transportation training for ANO personnel expressed in NRC Inspection Reports No. 50-313/82-14 and 50-368/82-11.

The NRC inspectors noted the following concern about the licensee's retraining program for ANO radiation workers (personnel that are likely to enter a restricted area (10 CFR Part 20)). The licensee only requires annual retraining and qualification for personnel required to wear respiratory protection equipment. This retraining also provides for the employee to demonstrate a degree of proficiency (arbitrarily decided by each evaluator) in the use of anticontamination clothing. The NRC inspectors noted to the licensee that the radiation worker retraining program did not appear to provide sufficient refresher training in the subject areas recommended in Table 1 of NRC RG 8.27.

The NRC inspectors further pointed out that the licensee's current problems with personnel contamination incidents tend to indicate that radiation worker retraining is in need of an indepth review. The

licensee indicated that this correlation between contamination control problems and radiation worker training have been noted and the ANO training department and HP group are initiating action to review the radiation worker retraining program.

This item (313/8313-02)/(368/8313-02)is considered open pending licensee action to:

. Establish a radiation worker retraining program that satisfies NRC RG 8.27 recommendations.

No violations or deviations were identified.

7. Radiation Exposure Control

a. External

The NRC inspectors reviewed the licensee's external radiation exposure inventory program for compliance with the requirements of 10 CFR Parts 19.13, 20.101(a), 20.101(b), 20.102, 20.202(a), 20.104(a), 20.401(a), and the recommendations contained in NRC RGs 8.2, 8.4, 8.7, and 8.28.

The NRC inspector reviewed selected licensee employment and exposure history records for both current and past ANO employees, reviewed special external multiple whole body and extremity exposure program for past steam generator repair operations, and current spent fuel pool rerack operations, reviewed selected high or unusual exposure investigations, and verified that records of radiation exposure were provided to the NRC and selected employees as required by 10 CFR Parts 19 and 20.

No violations or deviations were identified.

b. Internal

The NRC inspector reviewed representative records, procedures, observed selected operations, and interviewed licensee personnel to determine if the licensee was conducting an internal radioactivity exposure control program (including a respiratory protection program) in accordance with the requirements of 10 CFR Part 20.103, and the recommendations contained in NRC RGs 8.9, 8.10, 8.15, 8.20, and 8.26.

The NRC inspector determined by review of licensee procedures, past calibration records, observations of an actual daily verification of the licensee's whole body counter (WBC) calibration that the NRC's concerns expressed in open item (368/8122-03) concerning full range calibration and instrument sensitivities had been adequately resolved.

The licensee had implemented Revision 3 to ANO Procedure 1632.011, "Operation and Calibration of the Helgeson Whole Body Counter." This procedure provided for a quarterly full range calibration of the WBC and a daily verification of the instruments' calibration. The licensee had used sources (mock iodine, cobalt, and cesium) that provided for verification of the WBC ability to detect concentrations at and below the recommendations of NRC RGs 8.20 and 8.26. Licensee sources are traceable to the National Bureau of Standards and were used in a masonite phantom.

The licensee program for tracking of personnel's exposure to airborne radioactivity and requirements for bioassay of exposed personnel were discussed in NRC Inspection Reports No. 50-313/82-37 and 50-368/82-36 and the resulting Notice of Violation (NOV) (313/8237-01)/(368/8236-01). The licensee's response to the NOV stated that an HP supervisor's review had been provided for on the form used to track periods of employee exposure to airborne radioactivity to ". . . ensure that individuals who exceed 2 maximum permissible concentration (MPC) hours in 1 day or 10 MPC hours in 7 days, receive a whole body count in accordance with ANO Procedure 1622.015." The NRC inspectors determined that the licensee's action would not prevent a recurrence of the subject incident since the supervisor's review was only required after completion of a year's worth of entries which would not prevent a person from reentering an area with airborne radioactivity prior to being WBC and having his previous exposure evaluated. The licensee indicated that the NRC concerns regarding the corrective action would be reviewed.

The NRC inspectors also reviewed the licensee's respiratory protection program, including worker breathing zone surveys, engineered controls for reducing airborne radioactivity concentrations, respiratory protection equipment control issuance, maintenance, decontamination and cleaning, inventory of replacement parts, quality control over breathing air quality, and equipment maintenance facilities.

The licensee's respiratory protection program appears to satisfy all 10 CFR Part 20.103 requirements. However, the NRC inspectors noted to the licensee their concern regarding the [illegible] of a respiratory protection policy for ANO as recommended in NRC RG 8.15.

The NRC inspectors noted that such policies should be issued from a high management source; i.e., above the ANO plant manager. This item is considered open (313/8313-03)/(368/8313-03) pending licensee action to:

- Issue a respiratory protection policy for ANO that satisfies the recommendation of NRC RG 8.15.

No violations or deviations were identified.

8. Posting, Labeling, and Area Control

The NRC inspectors reviewed licensee procedures and inspected selected licensee areas (Units 1 & 2 auxiliary buildings, instrument calibration facility, spent fuel rack decontamination operation, and the radioactive waste/material storage building) to determine compliance with Technical Specification requirements concerning high radiation areas: 10 CFR Parts 19.11, 20.203g, 20.203d, 20.203e, 20.203f, and 20.207 requirements concerning posting and control of radiation and high radiation areas, radioactive material areas, airborne radioactivity areas, and the labeling of containers.

The licensee had provided suitable instructions for the posting and control of all concerns noted above. All areas inspected appeared to be conspicuously and properly posted. The licensee's procedures require a person to sign in on a radiological work permit for entry into any radiological control area, and provide for twice daily high radiation area access control inspections and a monthly access door operational inspection/test (1622.013).

No violations or deviations were identified.

9. Surveys

The NRC inspectors reviewed licensee survey records generated since January 1983 for compliance with the requirements of 10 CFR Parts 20.201b and 20.401b. The licensee's records for leak test of radioactive sources were not reviewed during this inspection.

The licensee's survey records appeared to satisfy all regulatory requirements and licensee procedural requirements. The NRC inspectors noted to the licensee the apparent high quality and detail presented in the survey records being generated, and especially those of the activities surrounding the spent fuel pool rerack job and used rack decontamination operations.

No violations or deviations were identified.

10. Notifications and Reports

The NRC inspectors' review of select reports to individuals and to NRC pursuant to requirements of 10 CFR Parts 19.13, 20.407, 20.408, and 20.409 did not identify any errors or omissions involving termination reports or other reports to any individual. Reports included bioassay information as required by Procedure 1622.012, "Personnel Exposure Records." Notifications and reports required by 10 CFR Parts 20.402 (loss of theft of material), 20.403 (incidents), and 20.405 (overexposures) were not completely reviewed during this inspection and will be covered in subsequent inspections.

No violations or deviations were identified.

11. ALARA

The NRC inspectors reviewed the licensee's ALARA program, selected quarterly status reports for 1982, and actions taken to resolve the ALARA program weaknesses noted in NRC Inspection Reports No. 50-313/82-36 and 50-368/82-37.

The NRC noted in open item (313/8236-04)/(368/8237-02) several weaknesses in the licensee's ALARA program involving management attention to poor departmental ALARA performance, establishment of realistic ALARA goals, and personnel contamination incidents. The licensee had not completed initiation of all planned corrective actions to these concerns. Actions taken and planned are:

- Having corporate management review quarterly performances and improvement actions (planned)
- Having the quarterly ALARA report issued from the plant manager (planned)
- Performing an analysis of personel contamination incidents (completed)
- Revising employee training to resolve some of the identified problems involving personnel contamination incidents (planned)
- Revising the personnel contamination record, Form 1622.010A, "Skin Contamination Record," to provide for (planned):
  - More information as to the cause of the occurrence
  - Initiating of immediate corrective action to prevent a recurrence
  - Identification of additional corrective actions needed

- Forwarding of the report to managers/supervisors responsible for initiating additional corrective action

- Review of the completed form and trending of occurrences

. Establishing contact with contractor employees' managers for review of their employees' involvement in ANO personnel contamination occurrences (continuing)

. Establishing more HP group emphasis on compliance with basic radiation and contamination control practices and enforcement of procedural requirements (planned)

The NRC inspectors determined that a serious attempt is being made by the licensee to reduce the number of personnel contamination incidents at ANO.

The NRC inspectors also discussed with the licensee selected ANO departmental man-rem expenditures for 1982 that significantly exceeded the man-rem goal (greater than 25 percent). The licensee indicated that these performances were to be discussed in the executive summary being provided the AP&L vice president-nuclear operations. The licensee reported a total 1982 man-rem expenditure (for both Units 1 and 2) of 803 man-rem. When this data is averaged to a single reactor, it is significantly below the 1982 national PWR average. Table 1 provides a comparison of ANO's man-rem expenditure performance when compared to national single reactor averages for the years 1980, 1981, and 1982. This data shows that ANO has been consistently and significantly below national averages when normalized to a single reactor performance.

TABLE 1

COMPARISON OF ANO'S ANNUAL MAN-REM EXPENDITURE TO NATIONAL SINGLE REACTOR PERFORMANCE

Year	1980	1981	1982
National LWR* Average	791	773	705
National PWR* Average	578	652	578
ANO-Unit 1 & 2 (PWRs) Average	342**	551	401

*Legend

PWR - Pressurized Water Reactors
LWR - Light Water Reactors (includes PWRs and Boiling Water Reactors)

** - Only Unit 1 man-rem expenditure was reported in 1980

During a review of 1983 first quarter man-rem expenditures the NRC inspectors were informed by the licensee that due to some high man-rem expenditures on Unit 1 special work, the 1983 ANO man-rem goal was being reevaluated. As of May 31, 1983, the licensee had expended approximately 1,025 man-rem which is about 130 percent over the entire 1982 expenditure. The licensee attributed the high man-rem expenditures to the work operations conducted involving Unit 1 OTSG repair (413 man-rem - 130 tubes plugged) and the reentry into the Unit 1 reactor vessel to inspect possible thermal shield bolt defects. Preliminary discussions with the licensee indicated that during steam generator work area decontamination and temporary shielding (internal) were utilized to the maximum extent possible to reduce exposures to ALARA. The licensee indicated that an abnormal amount of equipment problems contributed significantly to the high man-rem expenditure during steam generator repair. The NRC inspectors did not review licensee ALARA practices for the reactor thermal bolt inspection operation. The licensee appears to be fully cognizant of their man-rem expenditure status and are reassessing their 1983 ALARA man-rem goal and ALARA practices for additional 1983 work operations.

The NRC inspectors noted that the licensee in an effort to reduce the high exposure expenditures of the RW group during the transfer and dewatering of radioactive spent resins in burial containers, a special water level indicating system and shield plate, have been utilized and are expected to significantly reduce personnel exposures during resin dewatering operations.

The licensee had collectively expended the following man-rem in the performance of the following activities during 1982. Only those activities reported as exceeding 5 man-rem collectively are shown.

	Activity	Exposure Expended (man-rem)	Indicated period of performance (month/year)
Unit 1	OTSG-A Repairs	40.960	5/82-6/82
Unit 1/2	Decontamination Operations	25.800	3/82-5/82
Unit 1/2	Routine HP Operations	14.382	3/82-5/82
Unit 1/2	Radwaste Operations	8.675	3/82-5/82
Unit 1	Operations	6.175	3/82-5/82
Unit 1	HPSI Nozzle Insp/Repair	44.045	3/82-5/82
Unit 1	OTSG-A Feed Nozzles Inspection and Repair	14.210	3/82-5/82
Unit 1	Reactor Building Tours-General	13.181	3/82-5/82
Unit 1	Scaffolding Installation in Containment	10.991	3/82-5/82
Unit 1	Cavity Platform Modifications	7.535	3/82-5/82
Unit 1	Reactor Coolant Pump (RCP) Maintenance	7.285	3/82-5/82
Unit 1	RCP-C Maintenance	5.340	3/82-5/82

	Activity	Exposure Expended (man-rem)	Indicated period of performance (month/year)
Unit 1/2	Decontamination Operations	25.800	3/82-5/82
Unit 1/2	Routine HP Operations	14.382	3/82-5/82
Unit 1/2	Radioactive Waste Operations	8.675	3/82-5/82
Unit 1	Auxiliary Building Service Water Modifications	27.155	3/82-5/82
Unit 1	Auxiliary Building Gas Collection Header Modification	10.585	3/82-5/82
Unit 1	Decay Heat Pump-A Repair	8.850	3/82-5/82
Unit 2	Inspections Auxiliary Building	5.339	8/82-11/82
Unit 2	Inspections and Tours Reaction Building	8.030	8/82-11/82
Unit 2	Reactor Building Insulation (also scafolding) Removal and Installation	16.569	8/82-11/82
Unit 2	Pressurizer Heater Repair	19.450	8/82-11/82
Unit 2	Refueling - Fuel Shipping, Reconstitution and Handling	7.354	8/82-11/82
Unit 2	Steam Generator Inspection and Repair	21.217	8/82-11/82
Unit 2	Radwaste Handling and Packaging	6.780	8/82-11/82
Unit 2	Resin/Filter Transfers	5.725	8/82-11/82
Unit 1	Decontamination and Housekeeping	11.845	11/82-12/82
Unit 1	General HP Support Function	8.041	11/82-12/82
Unit 1	High Point Vent Repair	14.340	11/82-12/82
Unit 1	General Inspections and Tours of Reactor Building	10.569	11/82-12/82
Unit 1	Reactor Building Breathing Air System Installation	5.130	11/82-12/82
Unit 1	Inservice Inspections-Reader	16.935	11/82-12/82
Unit 1	Reactor Building Insulation (also scaffolding) Installation and Removal	18.283	11/82-12/82
Unit 1	OTSG Insulation Removal and Replacement	11.731	11/82-12/82

No violations or deviations were identified.

12. Instruments and Calibration

The NRC inspectors reviewed the licensee's radiation protection instrument inventory and calibration program for compliance with FSAR commitments and Technical Specification requirements, the recommendations contained in NRC RG 8.25, and industry standards ANSI N13.1-1969 and ANSI N323-1978.

Radiation protection instrument inventory, instrument control, selection, calibration procedures, preuse instrument operational checks, and calibration facilities were reviewed by the NRC inspectors. Instrument use and calibration programs appeared to satisfy NRC and industry standards except for the calibration of portable air sampler flow meters. The licensee does not provide for establishment of linearity over the entire flow range of the air samplers or traceability of the air sampler calibrator as recommended by NRC RG 8.25, "Calibration and Error Limits of Air Sampling Instruments for Total Volume of Air Sampled". This item is considered open pending licensee to:

. Implement an air sampler calibration program that meets the recommendations of NRC RG 8.25.

No violations or deviations were identified.

13. Spent Fuel Pool Rerack Operations

The NRC inspectors reviewed work operations being conducted to replace Units 1 and 2 spent fuel storage racks (SFSR) with a newer type that will increase ANO's spent fuel storage capacity. The radiological controls for the spent fuel pool diving and old SFSR removal operations are similar to those referenced in NRC Inspection Reports No. 50-313/82-36 and 50-368/82-37. The safety evaluation report (SER) for the spent fuel pool rerack work and old SFSR decontamination was reviewed by the NRC inspectors. Onsite observations disclosed no deviations to SER commitments and license ammendments. The licensee is using contractor-supplied services to cut up (plasma arc) old SFSRs and decontaminate them to unrestricted release levels (less than 1,000 disintegrations per minute (DPM) by beta/gamma surface survey and less than 50 DPM loose or fixed alpha activity) by electropolishing technique. Cutting-up and decontamination of the old SFSRs is being accomplished in a temporary outside facility (metal and plastic) adjacent to the maintenance shops on licensee controlled property.

The licensee implemented radiological controls including surveys, engineered ventilation system use, actual SFER cutting, and decontamination operations were reviewed by the NRC inspectors. The licensee indicated that the old SFSRs were being preliminarily washed down in the spent fuel pool area prior to being transported to the cutting and decontamination facility, and were not exhibiting the anticipated high levels of surface contamination planned for. The licensee indicated that no problems are being encountered in maintaining airborne and surface contamination levels below station administrative limits.

No violations or deviations were identified.

14. Exit Interview

The NRC inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on June 10, 1982. The NRC inspectors summarized the scope and findings of the inspection presented in this report.

NRC FORM 766 (11-81) IE MC 0535

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTOR'S REPORT

Office of Inspection and Enforcement

PRINCIPAL INSPECTOR (Name, last, first, and middle initial): Chaney, Harold D

REVIEWER: Blaine Murray

INSPECTORS: W. Holley

LICENSEE/VENDOR: Arkansas Power and Light Co.
P.O. Box 551
Little Rock, Arkansas

TRANSACTION TYPE: ✓ I – INSERT; M – MODIFY; D – DELETE; R – REPLACE

DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (13 digits): 050003 13 (A); 050003 68 (B)

REPORT NO.: 83 13

NEXT INSPEC. DATE: MO / YR

PERIOD OF INVESTIGATION/INSPECTION: FROM 06 06 83 TO 06 10 83

INSPECTION PERFORMED BY: ✓ 1 – REGIONAL OFFICE STAFF; 2 – RESIDENT INSPECTOR; 3 – PERFORMANCE APPRAISAL TEAM; OTHER

ORGANIZATION CODE OF REGION/HQ CONDUCTING ACTIVITY (See IEMC 0530 "Manpower Reporting—Weekly Manpower Reporting" for code.): REGION 4; DIVISION B; BRANCH A

REGIONAL ACTION (Check one box only): 1 – NRC FORM 591; ✓ 2 – REGIONAL OFFICE LETTER

TYPE OF ACTIVITY CONDUCTED (Check one box only): ✓ 02 – SAFETY; 03 – INCIDENT; 04 – ENFORCEMENT; 05 – MGMT. AUDIT; 06 – MGMT. VISIT; 07 – SPECIAL; 08 – VENDOR; 09 – MAT. ACCT.; 10 – PLANT SEC.; 11 – INVENT. VER.; 12 – SHIPMENT/EXPORT; 13 – IMPORT; 14 – INQUIRY; 15 – INVESTIGATION

INSPECTION/INVESTIGATION FINDINGS (Check one box only): X A, X B; 1 – CLEAR; 2 – VIOLATION; 3 – DEVIATION; 4 – VIOLATION & DEVIATION

TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS: A B C D

ENFORCEMENT CONFERENCE HELD: A B C D; 1 – YES

REPORT CONTAIN 2.790 INFORMATION: A B C D; 1 – YES

LETTER OR REPORT TRANSMITTAL DATE: NRC FORM 591 OR REG. LETTER ISSUED; REPORT SENT TO HQ. FOR ACTION: AUG 01 1983

HDC

MODULE INFORMATION

REC ORD TYPE	MODULE NUMBER INSP NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ *	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	91	5	30	703	B	A		1						
						B		1						
						C								
						D								
B	92	5	8	7401		A		13	75					
						B		13	75					
						C								
						D								
B	03	5	83	7411		A		13	50					
						B		13	50					
						C								
						D								
B	AA	5	9,2	7,0,1		A		3			5	8,6	7,4,0	
						B		3			5	8,6	7,4,0	
						C								
						D								

* CIRCLE SEQUENCE IF VIOLATION OR DEVIATION

MODULE INFORMATION

REC ORD TYPE	MODULE NUMBER INSP NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ *	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	05	5	9,2	7,0,1		A		3			5	2,5	5,4,4	
						B		3			5	2,5	5,4,4	
						C								
						D								
B	05	5	9,2	7,0,1		A		3			5	8,3	7,4,5	
						B		3			5	8,3	7,4,5	
						C								
						D								
B						A								
						B								
						C								
						D								
B						A								
						B								
						C								
						D								