



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

SEP 28 1990

Report Nos.: 50-348/90-27 and 50-364/90-27

Licensee: Alabama Power Company
600 North 18th Street
Birmingham, AL 35291-0400

Docket Nos.: 50-348 and 50-364

License Nos.: NPF-2 and NPF-8

Facility Name: Farley 1 and 2

Inspection Conducted: September 17-21, 1990

Inspector:

Fred N. Wright
F. N. Wright

9/28/90
Date Signed

Approved by:

J. P. Potter
J. P. Potter, Chief
Facilities Radiation Protection Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

9/28/90
Date Signed

SUMMARY

Scope:

This routine, unannounced inspection of radiation protection program activities included reviews of licensee preparations for Unit 2 1990 refueling outage, organization and management controls, internal and external exposure controls, control of radioactive material, and as low as reasonably achievable (ALARA) programs.

Results:

The licensee's radiation protection staff appears to be generally effective in protecting the health and safety of the occupational radiation workers. Licensee preparations for the up-coming refueling outage for Unit 2 appeared to be adequate for planned work activities. Within the scope of the review no violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *S. Fulmer, Supervisor, Safety Audit and Engineering Review
- *M. Mitchell, Radioactive Waste Health Physics Supervisor
- *D. Morey, General Plant Manager
- *C. Nesbitt, Technical Manager
- *J. Osterholtz, Operations Manager
- P. Patton, Plant Health Physicist

Other licensee employees contacted during this inspection included technicians and administrative personnel.

Nuclear Regulatory Commission (NRC)

- *G. Maxwell, Senior Resident Inspector

*Attended exit interview held September 21, 1990

2. Organization and Management Controls (83722)

The inspector reviewed changes made to the licensee's organization, staffing levels, and lines of authority as they relate to the licensee's in-plant radiation protection organization. The review was made with respect to Technical Specification (TS) section 6.2, Organization. The inspector evaluated the licensee's performance in the area by discussing the organization and staffing levels with cognizant personnel and reviewing organization charts.

The inspector determined that the licensee had filled 3 of the 5 health physics (HP) technician positions recently approved by licensee management. However, the licensee had lost two technicians that accepted other positions with and outside the licensee's company. The inspector verified that the changes had not adversely affected the licensee's ability to implement the radiation protection program.

The inspector also reviewed the licensee's outage organization and management controls for oversight of outage work activities. The licensee had planned to utilize approximately 65 senior and 20 junior vendor HP technicians during the Unit 2 refueling outage. The licensee did not plan to utilize vendor HP foremen during the refueling outage. Plant HP foremen or supervisors were assigned to control and monitor all HP activities on shifts. The licensee plans to promote senior plant HPs technicians into temporary foreman positions to implement the management controls.

Within the scope of this review, no violations or deviations were identified.

3. External Occupational Exposure Control and Personnel Dosimetry (83724)

Evaluation of the licensee's performance in this area was based on observations during plant tours, discussions with licensee personnel, and review of licensee documentation.

10 CFR 20.203 specifies the posting, labeling, and control requirements for radiation areas, high radiation areas, airborne radioactivity areas, and radioactive material. Additional high radiation area requirements are specified in licensee TS 6.12.

The inspector toured the licensee radiation control areas and made independent radiation surveys. The inspector determined that selected radiation and high radiation areas inspected and surveyed by the inspector appeared to be properly posted and controlled as required.

The inspector reviewed selected radiation work permits (RWPs) for appropriateness of the radiation protection requirements based on work scope, location, and conditions. The licensee appeared to be using adequate radiation protection controls for reviewed task.

Within the scope of this review, no violations or deviations were identified.

4. Internal Exposure Control and Assessment (83725)

The inspector reviewed the licensee's respiratory protection program. The review was made with respect to requirements specified in paragraph c of 10 CFR 20.103, Exposure of Individuals to Concentrations of Radioactive Materials in Air in Restricted Areas.

10 CFR 20.103 (b)(2) requires that when it is impracticable to apply process or engineering controls to limit concentrations of radioactivity in air below the concentrations specified in Appendix B, Table 1, Column 1, other precautionary measures should be used to maintain the intake of radioactive material by any individual, within any seven consecutive days, as far below 40 Maximum Permissible Concentration (MPC)-hours that is reasonably achievable.

10 CFR 20.103 (c) specifies the requirements for the use of respiratory protection equipment to limit the inhalation of airborne radioactive material pursuant to paragraph (b)(2). The licensee may make allowance for this use of respiratory protective equipment in estimating exposures to individuals to airborne radioactive material provided the licensee implements a respiratory protection program that meets the requirements of 20.103 (c)(1)-(4).

The inspector attended the licensee's respiratory protection training program for respirator users and was fitted with a licensee full-face

tight fitting respirator in accordance with licensee procedures. The determined that the licensee's respiratory protection and training program addressed the respiratory protection requirements specified in 10 CFR 20.103 (c)(1)-(4).

The licensee's respiratory protection program appeared to be generally effective. The licensee collects a nasal smear for radioactivity analysis for every respirator wearer following use. Nasal smears having positive radioactive measurements of approximately 200 disintegrations per minute (dpm) require an investigation and follow-up bioassays to determine internal exposures. The licensee had two positive nasal smear measurements since January 1989 and the bioassays for those two measurements indicated intakes less than 3 percent maximum permissible organ burden (MPOB).

Within the scope of this review, no violations or deviations were identified.

5. Control of Radioactive Materials and Contamination, Surveys, and Monitoring (83726)

The inspector reviewed licensee's controls for radioactive contamination and surveys. Evaluation of the licensee's performance in this area was based on observations and radiological surveys made during plant tours, discussions with licensee representatives, and review of documentation.

The following areas were reviewed and discussed with licensee personnel:

- radiation surveys for whole body exposures, contamination, and airborne radioactivity material;
- personnel contamination trends; and
- selected radiation and contaminated survey procedures.

The inspector reviewed licensee procedures, which established the licensee's radiological survey and monitoring program, and verified that the procedures were consistent with regulations, TS's, and good HP practices.

The licensee documents personnel contaminations in which the activity of the contamination is equal to or greater than 5,000 dpm/100 square centimeters (cm²). The licensee documented 105 personnel contaminations in 1989, of which 49 were skin and 56 were clothing contaminations. The licensee's personnel contamination goal for 1990 was to reduce the total number of personnel contaminations to no more than 65. Through the end of August 1990, the licensee had 20 personnel contaminations for the year, of which 3 were skin and 17 were clothing contaminations. The licensee expected the number of personnel contaminations to increase during the Unit 2 refueling outage in the fall of 1990. No adverse trends of personnel contaminations were detected.

The licensee classifies particles having activities greater than 25,000 dpm as hot particles and utilizes VARSKIN to calculate personnel exposures from them. The licensee had 37 hot particles in 1989, of which 12 were skin and 27 were clothing contaminations. Through the end of August 1990, the licensee had detected and documented 7 hot particles for 1990. Six were found on clothing and one on an individual's skin. The licensee calculated the skin dose from the hot particle and assigned a dose of 91 mrem for the exposure.

At the time of the inspection, the percentage of licensee's floor space contaminated was approximately 6.5 percent of a recoverable area of 8,682 square feet (ft²). The licensee's recoverable area did not include areas having a whole body radiation dose rates exceeding 1,000 mrem/hr.

Within the scope of this review, no violations or deviations were identified.

6. Maintaining Occupational Exposures As Low As Reasonably Achievable (83728)

10 CFR 20.1(c) states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposures as low as reasonably achievable. The recommended elements of an ALARA program are contained in Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations will be ALARA," and Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA."

The inspector reviewed the licensee's ALARA program policies, procedures, and selected records; and discussed the ALARA goals and preparations for upcoming Unit 2 outage work with licensee personnel. The inspector also reviewed licensee RWPs, completed pre-job ALARA checklist and briefing records for selected outage tasks having collective personnel dose estimates of five rem or more.

The 1990 collective personnel radiation exposure goal was 374 person-rem with an additional allowance of 76 person-rem for unscheduled outages. The licensee had one unscheduled outage in 1990 and the licensee's collective personnel exposure through the end of August was approximately 40 person-rem. The licensee's estimated personnel exposure for the scheduled Unit 2 outage was 308 person-rem.

The major dose contributor for the Unit 2 refueling outage was expected to be from steam generator work. The licensee planned to do 100 percent eddy current testing on all steam generators and make tube plugs as necessary. The licensee estimated that those activities could result in exposure of approximately 80 person-rem.

The licensee had also developed contingency plans for increased steam generator activities. Based upon the licensee's inspection and evaluation of the steam generator conditions following shutdown, the licensee was preparing to sleeve steam generator tubes as needed and unplug and perform

"U" bend heat treatment of row 1 tubes. The licensee's exposure goal for the additional steam generator work was an additional 300 person-rem. The dose estimate was based on the possibility that approximately 2,000 steam generator tubes could require plugging following the inspection of the 3 generators.

Within the scope of this review, no violations or deviations were identified.

7. Exit Interview

The inspection scope and findings were summarized on September 21, 1990, with those persons indicated in paragraph 1. The inspector described the areas inspected and reported that the licensee's radiation protection program appeared to be effective in protecting the health and safety of the occupational radiation worker. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.