UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

AUG 08 1984

Report Nos.: 50-348/84-18 and 50-364/84-18

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

Docket Nos.: 50-348 and 50-364

License Nos.: NPF-2 and NPF-8

Facility Name: Farley 1 and 2

Inspection Dates: June 25 - 29, 1984

Inspection at Farley site near Dothan, Alabama

Inspector: R. E. Weddington 7/18/84
Date Signed

Accompanying Personnel: Dr. A. C. Stalker, EG&G, Idaho

Approved by: G. R. Jenkins, Section Chief 7/19/84
Division of Radiation Safety and Safeguards
Date Signed

SUMMARY

Scope: This routine, announced inspection involved 74 inspector-hours on site in the areas of organization, training, internal exposure, external exposure, control of radioactive material, ALARA, solid wastes and the post accident sampling system.

Results: One violation was identified - three examples of failure to adhere to radiation control procedures.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. D. Woodard, Plant Manager
*W. G. Ware, SAER Supervisor
*L. W. Enfinger, Administrative Superintendent
*W. B. Shipman, Assistant Plant Manager
*W. R. Bayne, Chemistry and Environmental Supervisor
*B. P. Patton, Plant Health Physicist
*M. W. Mitchell, Health Physics Supervisor
*D. N. Morey, Assistant Plant Manager
*W. J. Waites, Plant Training Instructor
*P. E. Farnsworth, Health Physics Sector Supervisor
*D. A. Johnsen, SAER Engineer
C. D. Nesbitt, Technical Superintendent

Other licensee employees contacted included engineers, technicians and office personnel.

NRC Resident Inspector

*W. H. Bradford, Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 29, 1984, with those persons indicated in paragraph 1 above. The following issues were discussed in detail: an apparent violation involving three examples of failure to adhere to radiation control procedures (paragraph 6, 7 and 8); and an Inspector Followup Item concerning the post accident sampling system (paragraph 11.c). The licensee acknowledged the inspection findings and stated in regard to the apparent violation what they believed were extenuating circumstances related to the part of the violation involving breathing air filters as described in paragraph 7.d.

In a July 10, 1984 telephone discussion, the inspector informed licensee management that the issue concerning the return of liquid post-accident sample wastes to the Volume Control Tank (paragraph 11.b.) would be designated as an Unresolved Item*.

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*An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 50-348/84-14-01 and 50-364/84-14-01 - Taking protection factor credit for disposable half face respirators without performing fitting, testing or training. The inspector reviewed and verified implementation of the corrective actions as stated in APCo's letter of June 18, 1984.

4. Organization and Management Controls (83722)

Technical Specification 6.2 describes the licensee's organization. The inspector reviewed changes made to the licensee's organization, staffing levels and lines of authority as they relate to radiation protection, radioactive material control and plant chemistry, and verified that the changes should not adversely affect the licensee's ability to control radiation exposures, radioactive material or plant chemistry.

No violations or deviations were identified.

5. Training and Qualification (83723)

a. Technical Specification 6.3 requires that each member of the facility staff meet or exceed the minimum qualification of ANSI N18.1-1971 for comparable positions. Paragraph 4.5.2 of ANSI N18.1 states that technicians in responsible positions shall have a minimum of two years of working experience in their specialty. The inspector reviewed the experience and training records for selected health physics technicians currently working at the station.

b. 10 CFR 19.12 requires the licensee to instruct all individuals working in or frequenting any portion of the restricted area in the health protection problems associated with exposure to radioactive material or radiation, in precautions or procedures to minimize exposures, and in the purpose and functions of protective devices employed, applicable provisions of Commission regulations, individual responsibilities and the availability of radiation exposure data.

The inspector reviewed the general employee radiation worker course outline and training material and discussed the radiation protection aspects of the training program with licensee representatives. The inspector reviewed changes in the licensee's training policies, goals, programs and methods, related to radiation protection, radioactive material control and plant chemistry, and discussed the changes with licensee representatives and verified that the changes should not adversely affect the licensee's program.

c. Technical Specification 6.4 states that a retraining and replacement training program for the facility staff shall be in accordance with ANSI N18.1-1971. Paragraph 5.5 of ANSI N18.1 states that a training program shall be established which maintains the proficiency of the operating organization through periodic training exercises, instruction periods and reviews.

The inspector discussed the replacement training and refresher training program for licensee employees with licensee representatives and reviewed the course materials and selected records.

No violations or deviations were identified.

6. External Exposure Control and Personnel Dosimetry (83724)

a. 10 CFR 20.101 specifies the applicable radiation dose standards. The inspector reviewed the computer printouts (NRC Form 5 equivalent) for calendar year 1984 to date and verified that the radiation doses recorded for plant personnel were well within the quarterly limits of 20.101(a).

b. 10 CFR 20.101(b)(3) requires the licensee to determine an individual's accumulated occupational dose to the whole body on an NRC Form 4 or equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector selectively reviewed the occupational exposure histories for individuals who exceeded the limits in 10 CFR 20.101(a). The exposure histories were being completed and maintained as required by 10 CFR 20.102.

c. 10 CFR 20.202 requires each licensee to supply appropriate personnel monitoring equipment to specific individuals and require the use of such equipment. During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices.

d. 10 CFR 20.408(b) requires that when an individual terminates employment with a licensee, or an individual assigned to work in a licensee's facility but not employed by the licensee completes the work assignment, the licensee furnish the NRC a report of the individual's exposure to radiation and radioactive material incurred during the period of employment or work assignment, containing information recorded by the licensee pursuant to 20.401(a) and 20.108. 20.409 requires that the licensee send a report to the individual if the report is sent to the NRC in accordance with 20.408. 20.401(a) requires each licensee to maintain records showing the radiation exposure of all individuals for whom personnel monitoring is required under 20.202 of the regulations. Such records shall be kept on NRC Form 5 or equivalent.

The inspector discussed the reporting requirements with licensee representatives and reviewed selected individual exposure records maintained by the licensee and copies of selected exposure reports sent to the NRC and to individuals during calendar year 1984 to date.

e. 10 CFR 20.402, 20.403 and 20.405 establish reporting requirements in the event of the loss or theft of licensed material, personnel overexposures, excessive concentrations and radiation levels and excessive releases of radioactive material. Through review of selected records and discussions with licensee representatives the inspector determined

that the licensee has not had an event which required reporting in accordance with these sections of 10 CFR 20.

f. 10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, high radiation areas, airborne radioactivity areas and radioactive material. Additional requirements for control of high radiation areas are contained in Technical Specification 6.12.

During tours of the plant, the inspector performed independent radiation surveys and reviewed the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas, radioactive material areas and the labeling of radioactive material.

g. The inspector reviewed licensee procedure FNP-0-RCP-740, which prescribes the administration of dosimetry. Paragraph 8.8 of the procedure required that evaluations of TLD and pocket ion chamber dosimeters be performed for discrepancies greater than thirty percent and greater than 100 millirem. Pocket ion chamber readings are the primary means of controlling radiation exposure below regulatory limits until TLD results are obtained. The licensee had not evaluated identified discrepancies for approximately the previous eight months. Most of the discrepancies occurred during the recent Unit 2 outage and several involved exposures of several hundred millirem. The licensee stated that the evaluations were not performed due to more important operational priorities of the dosimetry staff. The inspector informed the licensee that failure to perform the evaluations was an apparent violation of Technical Specification 6.11, which requires that radiation protection procedures be adhered to (50-348/84-18-01 and 50-364/84-18-01).

7. Internal Exposure Control (83725)

a. 10 CFR 20.103(a) establishes the limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. This section also requires that suitable measurements of concentrations of radioactive materials in air be performed to detect and evaluate the airborne radioactivity in restricted areas and that appropriate bioassays be performed to detect and assess individual intakes of radioactivity.

The inspector reviewed selected results of general in-plant air samples taken during calendar year 1984 to date and the results of air samples taken to support work authorized by specific radiation work permits.

The inspector reviewed selected results of whole body counts and the licensee's assessment of individual intakes of radioactive material performed during calendar year 1984 to date.

b. 10 CFR 20.103(b) requires the licensee to use process or other engineering controls, to the extent practicable, to limit

concentrations of radioactive material in air to levels below that specified in Part 20, Appendix B, Table I, Column 1 or limit concentrations, when averaged over the number of hours in any week during which individuals are in the area, to less than 25 percent of the specified concentrations. The use of process and engineering controls to limit airborne radioactivity concentrations in the plant was discussed with licensee representatives and the use of such controls was observed during tours of the plant.

c. The inspector reviewed the following plant procedures which established the licensee's internal exposure control and assessment program and verified that the procedures were consistent with regulations, Technical Specifications and good health physics practices:

FNP-O-RCP-101, Use and Testing of Respiratory Protection Equipment

FNP-O-RCP-102, Selection of Respirators for Radiological Applications

FNP-O-RCP-103, Maintenance and Care of Respiratory Protection Equipment

FNP-O-RCP-108, Use and Operation of Full Face Airline Respirators

FNP-O-RCP-110, Sampling of Service Air to Meet Respiratory Limits

FNP-O-RCP-112, Operation of the Containment Breathing Air System

d. 10 CFR 20.103(b) requires that when it is impracticable to apply process or engineering controls to limit concentrations of radioactive material in air below 25% of 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 seven consecutive days as far below 40 MPC-hours as is reasonably achievable. By review of records, observations and discussions with licensee representatives, the inspector evaluated the licensee's respiratory protection program, including training, medical qualifications, fit-testing, MPC-hour controls, quality of breathing air, and the issue, use, decontamination, repair and storage of respirators.

The licensee has installed air purification units to supply breathing air for air line respirators used inside Units 1 and 2 containments. Licensee procedure FNP-O-RCP-112 required that maintenance on these purification units be performed in accordance with the vendor specifications in the Operating Manual. Incorporation of the specifications into local procedures helps ensure compliance with 10 CFR 20.103(c)(4), which requires that respiratory protection equipment be used within limitations and 10 CFR 20, Appendix A, which requires that atmosphere - supplying respirators be supplied with adequate respirable air of the quality and quantity required in accordance with NIOSH/MSHA certification. The vendor manual stated the replacement

schedule for the catalite converter charge, desiccant charge, 3100 series air line filter, aerolescer filter and hypersorb filter is a maximum of one year. The manual further stated that frequent odor checks should be performed to verify the efficiency of the hypersorb filter. The licensee had not performed any of these specified services on the purification units since they were first used in June, 1980 for Unit 1 and October, 1982 for Unit 2. The licensee stated that they had not intended to commit to the vendor service specifications. The inspector informed the licensee that failure to perform the maintenance specified in their plant procedure was a second example of an apparent violation of Technical Specification 6.11, which requires that radiation protection procedures be adhered to (50-348/84-18-01 and 50-364/84-18-01).

8. Surveys, Monitoring and Control of Radioactive Material (83726)

a. 10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

b. The inspector reviewed the following plant procedures which established the licensee's radiological survey, monitoring and maintenance of monitoring instruments program and verified that the procedures were consistent with regulations, Technical Specifications and good health physics practices:

FNP-O-RCP-26, Radiological Surveys and Monitoring

FNP-O-RCP-28, Monitoring for Personnel Contamination

FNP-O-RCP-77, Operation and Calibration of Eberline Model 1000B Multiple Source Gamma Calibrator

FNP-O-RCP-225, Operation and Calibration of Eberline RO2/2A Ion Chamber

FNP-O-RCP-209, Operation and Calibration of Model 6112 Teletectors

FNP-O-RCP-220, Operation and Calibration of Eberline "Rascal" Model PRS-2

FNP-O-RCP-253, Operation and Calibration of Eberline Portal Monitor PMC-4B/PMB-4B

The inspector performed independent radiation surveys in the auxiliary building, in the restricted area outside the auxiliary building and inside the radwaste building and verified that the areas were properly posted.

e. The inspector selectively reviewed the records of radiation and contamination surveys performed during the week of the inspection and discussed the survey results with licensee representatives.

f. The inspector observed that two licensee employees exited a contamination control zone on the 155 foot elevation of Unit 1 auxiliary building and did not perform a whole body frisk contrary to plant procedure FNP-O-RCP-28, paragraph 4.1. The inspector informed the licensee that failure of the employees to perform whole body frisks was a third example of an apparent violation of Technical Specification 6.11, which requires that radiation protection procedures be adhered to (50-348/84-18-01 and 50-364/84-18-01).

9. ALARA Program (83728)

a. 10 CFR 20.1c states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposure as low as reasonably achievable (ALARA). 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.

b. The inspector reviewed plant procedures FNP-O-RCP-14 and -16 which established the program for keeping occupational exposures ALARA and discussed the administrative aspects of the program with licensee representatives.

c. During the course of the inspection, the inspector interviewed licensee employees and reviewed selected worker initiated ALARA problem reports to determine employee involvement in the program.

d. The inspector discussed the ALARA goals and objectives for the current year with licensee representatives and reviewed the ALARA results of the most recent Unit 2 outage. The inspector also discussed planned changes in the ALARA program and the implementation of a new computer based dosimetry and radiation work permit system and verified that the changes should strengthen the program.

No violations or deviations were identified.

10. Solid Waste (84722)

a. 10 CFR 20.203(e) requires that each area or room in which licensed material is used or stored in excess of ten times the quantity of the material listed in Appendix C shall be posted as a radioactive materials area.

b. During tours of the plant, the inspector verified that radioactive materials storage areas were properly posted. The inspector reviewed

records of transfer of sealed radioactive sources outside the plant restricted area and verified that the sources were in the designated storage area and that the area was adequately posted and controlled.

No violations or deviations were identified.

11. Post Accident Sampling System

a. (1) NUREG-0737, Item II.B.3, establishes eleven criteria for the post accident sampling system. These criteria specify types of samples, sampling times, types, accuracies and sensitivities of sample analysis, exposure to operators and design considerations.

(2) Technical Specification 6.8.3 requires a post accident sampling program which includes the training of personnel, procedures for sampling and analysis and the provisions for maintenance of sampling and analysis equipment.

(3) NRC Order dated March 14, 1983, confirmed licensee commitments to implement NUREG-0737, Clarification of TMI Action Plan Requirements, which for item II.B.3., Post-Accident Sampling, the licensee had confirmed as being complete.

(4) Through review of selected records, observation of sampling operations, discussion with licensee representatives and inspection of the installed systems, the inspector verified that the post accident sampling requirements have been met except as noted in paragraph b. below.

b. (1) NUREG-0737, Criterion 3 requires that reactor coolant and containment atmosphere sampling during post accident conditions shall not require an isolated auxiliary system to be placed in operation in order to use the sampling system.

(2) The liquid waste from the post accident sampling system is transferred to the volume control tank (VCT). The VCT is part of an isolated system (i.e., plant letdown) during an accident. The licensee had not evaluated the capability of the VCT to accommodate the volume of liquid waste expected to be generated from sampling during an accident nor evaluated the long term consequences of using the VCT for liquid waste collection. In a telephone conversation with licensee representatives on July 10, 1984, the inspector identified this as an Unresolved Item pending the licensee's evaluation of the stated concerns, which they stated would be completed by the end of October, 1984. (50-348/84-18-02 and 50-364/84-18-02).

c. The inspector noted that the following did not conform to Regulatory Guide 1.97, Revision 3 recommendations, NUREG-0737 recommendations or good health physics practices and identified these issues as an Inspector Followup Item. Licensee representatives stated that the

items would be resolved by December 31, 1984. (50-348/84-18-03 and 50-364/84-18-03).

(1) NUREG-0737, Criterion 6 requires operation of the sampling system not to cause exposure to any individual greater than 5 rem whole body and 75 rem to the extremities. Since the original shielding evaluation, the licensee has made modifications to their installed systems and procedures. The licensee agreed to evaluate the effect of these changes on the expected exposures to individuals.

(2) NUREG-0737, Criterion 11b states that the ventilation exhaust from the sampling station should be filtered with charcoal adsorbers and high-efficiency particulate air (HEPA) filters. The Unit 1 sampling station had an auxiliary ventilation system to preclude release of airborne radioactivity to the auxiliary building during routine sampling operations. The auxiliary ventilation system had to be disconnected in order to obtain a post accident sample since the auxiliary system took suction off of an opening in the sample station wall used to transfer the post accident sample. The licensee agreed to evaluate the ventilation flow paths when obtaining a post accident sample to determine if airborne radioactivity will be released to the auxiliary building.

(3) NUREG-0737, Criterion 11a states that consideration should be given to provisions for purging sample lines. The inspector determined that there were no provisions to purge the liquid sample lines. The licensee agreed to evaluate means of purging the liquid sample lines.

(4) The recommended range for analysis of dissolved hydrogen in the reactor coolant is 0-2000cc (STP)/kg (Regulatory Guide 1.97, Revision 3). The desirable accuracy within this range is ±10%. Accuracies of ±20% for 50 to 2000 cc/kg samples or ±5% for samples less than 50 cc/kg can be acceptable. The licensee demonstrated the capability to monitor dissolved hydrogen in the reactor coolant with the following results:

Unit	PASS (cc/kg H^2)	Local Sample (cc/kg H^2)	Accuracy
#1	79	47.3	+167%
#2	74.9	38.5	+195%

The licensee agreed to evaluate the cause of the dissolved hydrogen analysis not being within recommended accuracy.

(5) The licensee had a training and requalification program for post accident sample system operators. The inspector noted that the training did not include hands on training for that portion of the system that would only be used during an accident. The licensee agreed to evaluate including this training into their system operator training program.

(6) The licensee did not have a program for the periodic maintenance and testing of post accident sample remote handling equipment. The licensee agreed to evaluate implementation of a maintenance schedule for this equipment to assure its operability during an accident.

(7) The inspector observed during licensee operation of the post accident sampling system that approximately two milliliters of reactor coolant splashed and ran down the outside of the shielded transfer cask due to the method of filling the uncapped sample container. The licensee agreed to evaluate means of obtaining the sample in a sealed container.

(8) In order to demonstrate that the licensee's analytical methods can achieve the accuracies recommended in Regulatory Guide 1.97, the instrumentation should be shown to be effective in the post accident water chemistry and radiation environment. This may be accomplished by performing tests utilizing the standard test matrix or by evidence that the instrument has been successfully used in a similar environment. The licensee has a commitment to the NRC Office of Nuclear Reactor Regulation to resolve this item by August, 1984.