



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

Report Nos.: 50-348/85-20 and 50-364/85-20

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 Conducted: April 2 - May 10, 1985

Inspector: W. H. Bradford 5/23/85  
Date Signed

Approved by: F. S. Cantrell, Jr. 5/24/85  
F. S. Cantrell, Section Chief  
Division of Reactor Projects  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 170 inspector-hours on site in the areas of licensee action on previous enforcement matters, monthly surveillance observation, monthly maintenance observation, operational safety verification, independent inspection effort, Licensee Event Reports, station batteries, Allis Chalmers 4160V Breakers, and action on previously identified station items.

Results: Four violations were identified: two violations involved violation of Technical Specifications; one violation involved 10 CFR 50 Appendix B, Criterion II; one violation involved failure to follow procedures.

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## REPORT DETAILS

### 1. Licensee Employees Contacted:

J. D. Woodard, Plant Manager  
D. N. Morey, Assistant Plant Manager  
W. D. Shipman, Assistant Plant Manager  
R. D. Hill, Operations Superintendent  
C. D. Nesbitt, Technical Superintendent  
R. G. Berryhill, Systems Performance and Planning Superintendent  
L. A. Ward, Maintenance Superintendent  
L. W. Enfinger, Administrative Superintendent  
W. C. Carr, Assistant Operations Superintendent  
J. E. Odom, Operations Sector Supervisor  
B. W. Vanlandingham, Operations Sector Supervisor  
T. H. Esteve, Planning Supervisor  
J. B. Hudspeth, Document Control Supervisor  
L. K. Jones, Material Supervisor  
R. H. Marlow, Technical Supervisor  
L. M. Stinson, Plant Modification Supervisor  
W. G. Ware, Supervisor, Safety Audit Engineering Review

Other licensee employees contacted included technicians, operations personnel, mechanics and I&C personnel, security force members, and office personnel.

### 2. Exit Interview

The inspection scope and findings were summarized during management interviews throughout the report period and on May 9, 1985, with the plant manager and selected members of his staff. The inspection findings were discussed in detail.

The inspector reviewed certain drawings, manuals and procedures which were identified as proprietary. None of the proprietary material is included in this report.

### 3. Licensee Action on Previous Enforcement Matters (92702)

Closed (Violation 364/85-11-01). Violation of over temperature delta temperature Technical Specifications. Licensee response dated May 1, 1985. Procedures have been revised to ensure potentiometers are reset when required and for periodic re-check.

### 4. Monthly Surveillance Observation (61726)

The inspectors observed and reviewed Technical Specification required surveillance testing and verified that testing was performed in accordance with adequate procedures; that test instrumentation was calibrated; that

limiting conditions were met; that test results met acceptance criteria and were reviewed by personnel other than the individual directing the test; that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel; and that personnel conducting the tests were qualified.

The inspector witnessed/reviewed portions of the following test activities:

FNP-1-STP-40.0 -	Safety Injection with Loss of Offsite Power Test
FNP-2-STP-7.0 -	Quadrant Power Tilt Ratio Calculation
FNP-2-STP-80.1 -	2 B Diesel Generator
FNP-2-STP-9.0 -	RCS Leak Rate
FNP-2-STP-1.0 -	Operations Daily and Shift Surveillance Requirements
FNP-2-STP-22.5 -	AFW System Flow Path Verification
FNP-2-STP-64.0 -	Safeguard Systems Locked Valve Verification
FNP-1-STP-29.2 -	Cycle VII Shutdown Margin Calculation (TAVG 547°F)
FNP-1-STP-11.7 -	Verifying RHR Relief Valve Isolation is open

Unit 1, Cycle VII Refueling Procedure FP-ALA-R6 and Fuel Inspection Procedure FNP-1-ETP-3636.

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

#### 5. Monthly Maintenance Observation (62703)

Station maintenance activities of safety-related systems and components were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and were in conformance with Technical Specifications.

The following items were considered during the review: limiting conditions for operations were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials were properly certified; radiological controls were implemented; and fire prevention controls were implemented.

Work requests were reviewed to determine the status of outstanding jobs to assure that priority was assigned to safety-related equipment maintenance which may affect system performance. The following maintenance activities were observed/reviewed:

- Steam generator 1C eddy current testing
- Steam generator 1B AVB modification
- Unit 1 auxiliary containment hatch
- Steam generator Sludge Lancing

- Unit 1 MSIV Inspection
- Main steam valve room snubbers and snubber inspections
- 1C CCW heat exchanger
- 1B service water pump
- Service water batteries and UPS batteries spacer installation
- Units 1 and 2 containment tendons
- Unit 1 local leak rate testing
- Turbine driven auxiliary feed pump turbine overhaul
- 1E Inverter - 7.5 KVA inverter inspection per Westinghouse Technical Bulletin 84.08

Within the areas inspected no violations or deviations were identified.

#### 6. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the report period. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified proper return to service of affected components. Tours of the auxiliary, diesel, and turbine buildings were conducted to observe plant equipment conditions, including fluid leaks and excessive vibrations.

The inspectors verified compliance with selected Limited Condition for Operations (LCO) and results of selected surveillance tests. The verifications were accomplished by direct observation of monitoring instrumentation, valve positions, switch positions and review of completed logs, records, and chemistry results. The licensee's compliance with LCO action statements were reviewed as they happened.

The following systems and components were observed/verified operational:

- Station electrical boards in the control room and various electrical boards throughout the plant for proper electrical alignment.
- Certain accessible hydraulic snubbers.
- Accessible portions of service water and component cooling water systems.
- Units 1 and 2 suction and discharging piping and valves on auxiliary feedwater system.
- Diesel generators and support systems.
- Certain accessible portions of CVCS piping and valves to and from the charging/high head safety injection pumps.

- Certain portions of RHR and containment spray systems.
- Portions of various other systems (safety-related and nonsafety-related).

The following violations were identified:

- a. On April 15, 1985, Unit 1 was in the Mode 6 refueling outage with fuel movements in progress in the reactor core. At 2:37 a.m. the licensee determined that there was no charging pump operable in the boron flow path as required by Specification 3.1.2.1 and capable of being powered from an operable emergency bus.

1A charging pump was tagged out and became inoperable at 10:42 p.m. on April 14, 1985. 1B charging pump was tagged out previously to permit work on the pump seals. 1C charging pump was inoperable due to a tagging order on B train service water which made 2C and 1C diesel generators inoperable to supply power to the emergency bus. Fuel movements continued from 11:03 p.m. on April 14 until 2:37 a.m. on April 15.

The shift foreman and two licensed operators knew the status of the unit and should have known the charging pump requirements and brought this to the attention of the shift supervisor.

The licensee immediately suspended all fuel movements at 2:37 a.m. until 1A charging pump was declared operable at 4:24 a.m. on April 15, 1985. Charging pump 1A was inoperable for a period of six hours.

This is a violation (348/85-20-01).

- b. On May 6, 1985, with Unit 1 in Mode 5 both trains of Residual Heat Removal (RHR) cooling were lost. Loss of RHR was observed in the control room and immediate action was taken to correct the problem.

At 9:20 a.m. the power available light on the MCB energized on MOV-8701B and the valve began to close. The A train RHR pump was tripped and B train RHR pump was started. Valve 8701B would not reopen. At about 9:24 a.m. the power available light on MOV-8702 B energized and the valve closed. B train RHR pump was tripped resulting in a total loss of RHR. Action was taken immediately to open the breakers for each valve and manually open valves 8701B and 8702B. RHR was restored at about 10:12 a.m.

The loss of RHR occurred due to two procedures being performed simultaneously and incorrectly. The Shift Supervisor (SS) had earlier approved clearing a tag-out on electrical penetration 38. The approved tagging order directed removal of the tags and closing the breakers associated with the penetration. The (SS) should not have approved energizing the breakers for MOV 8701B and 8702B. The electrician following the tagging order, removed the tags and closed the breakers



associated with electrical penetration 38. When the breakers for MOV-8701B and 8702B were closed the valves closed resulting in the loss of RHR. The valves closed when the circuit was energized because they were receiving a system inlet pressure signal exceeding 700 psig. Investigation revealed the 700 pound signal resulted from STPs 201.16A and 201.17A, Reactor Coolant Loop Pressure Wide and Narrow Range Calibration, being performed. As part of the surveillance tests pressure transmitters PT-402 and 403 were placed in test position. Step 5.10 of the Precautions and Limitations section of the procedure had not been adhered to which stated "the interlock with RHR valves and RCS pressure will be disabled and inoperative." This resulted in the 700 psig test signal, closing the RHR valves and rendering both trains of the RHR system inoperable.

This is a violation (348/85-20-02).

The licensee has initiated the following corrective action:

- (1) Caution tags will be placed on the RHR valve electrical breakers when RCS temperature is 180°F.
  - (2) STPs 201.16A and 201.17A have been changed to require a sign-off to assure the interlock between RCS pressure and RHR valves is disabled and inoperable.
- c. On April 15, 1985, at 10:20 a.m. the licensee discovered the inner and outer doors of Unit 1 containment building auxiliary hatch open. The unit was in Mode 6 refueling outage with the core being unloaded. The licensee immediately stopped fuel movements until the auxiliary hatch doors could be closed and secured. The hatch doors were closed at 10:25 a.m.

The licensee performed an investigation of the incident and interviewed all personnel who had been logged into and out of Unit 1 containment on the previous shift. The licensee found that a sub-contractor employee, involved in steam generator sludge lancing had used the auxiliary hatch to exit the containment building. He should have used the main personnel hatch. He did not close the inner door to make up the interlock on the outer door. He used excessive force which allowed him to open the outer door.

A security guard had been posted outside the auxiliary hatch but due to building structure configuration he could not directly observe the outer auxiliary hatch door. Anyone going to or from the containment door must pass directly by his desk. The person who exited through the hatch came by the guard after clearing the controlled area. The guard asked him where he had come from. He told the guard he had been inside containment and had just come through the auxiliary hatch. The guard directed him to go to the main personnel hatch where he had entered containment and check out through security and health physics personnel.

The containment hatch door is an alarmed security door and alarms in the central alarm station (CAS). There was no response to the alarm because a security officer was posted at the door. The alarm stayed in until the auxiliary hatch door was closed.

During shift turnover at 7:00 a.m. "board walk-down" by the oncoming and offgoing reactor operators it was noted that the refueling cavity water level was about two inches low. At that time the oncoming operator made preparations to add water to the refueling cavity. This required boron concentration samples. At about 10:20 a.m. the operator noted that the refueling water level had returned to normal. However, no water had been added.

When the containment building is closed for refueling operations and the containment ventilation system is in operation, if a containment door is opened, there is a delta pressure created between the containment building through the refueling canal into the spent fuel building. This delta pressure was sufficient to cause the refueling cavity to decrease by two inches.

The inner and outer doors were both open for a period of about four hours prior to discovery by operations personnel.

Technical Specifications Section 3.9.4.(b) require a minimum of one door in each airlock to be closed during refueling operation.

This is a violations (348/85-20-03).

Licensee corrective action:

Both doors of the containment building auxiliary hatch were closed and locked with break away locks.

## 7. Independent Inspection Effort (92706)

The inspectors routinely attended meetings with certain licensee management and observed various shift turnovers between shift supervisors, shift foremen, and licensed operators. These meetings and discussions provided a daily status of plant operating, maintenance, and testing activities in progress, as well as discussions of significant problems.

During a routine inspection tour of the Unit 1 auxiliary building 121' and 100' floors on May 2, 1985, by NRC Resident Inspectors the following occurred: The inspectors descended the stairway, adjacent to the boric acid batch tanks, from the 121' level to the 100' level of the auxiliary building. The stairwell area was wet from water leakage and a large number of plastic booties had been spread on the floor at the bottom of the stairs covering the water leakage. A significant amount of boric acid powder also

covered the 100' floor adjacent to the tanks. There were no contamination signs or other postings on the stairs to indicate the area below was contaminated. The inspectors walked through the boric acid tank area and through a hallway leading to a main corridor adjacent to the charging/safety injection pump rooms. At the end of the hallway a contamination sign was posted and a step-off pad placed on the floor. Contamination levels were posted at 2000 dpm/100 cm<sup>2</sup>βx. The area the inspectors had passed through had been identified as a contaminated area at one point of access and not at the other. The licensee later stated that postings had been placed at the top of the stairs on the 121' level, but had been removed. At the control point it was determined the inspectors shoes were contaminated. The licensee immediately posted contamination signs at the top of the stairs on the 121' level as required by licensee procedures.

The contaminated area should have been conspicuously posted at both access points as directed by procedures FNP-O-RCP-0, General Guidance to Health Physics Personnel and FNP-O-RCP-29, Contamination Guidelines. FNP-O-RCP-0 sections 5.11.4.1 and 5.11.4.2, states that a contaminated area is any area which exceeds the limits specified in FNP-O-RCP-29 (1000 dpm/100 cm<sup>2</sup>βx) and if any area is found to exceed the above limits it should be posted conspicuously.

This will be carried as an \*Unresolved Item 348/85-20-05 pending review by regional radiation protection personnel.

## 8. Station Batteries

Units 1 and 2 Service Water Batteries and Turbine Driven Auxiliary Feed Pumps Uninterruptible Power Supply (UPS) batteries.

On March 28, 1985, the inspector found the spacers missing between the cells on train A and train B 125 V DC service water batteries, and Unit 1 and Unit 2 (UPS) 48 volt DC batteries. The spacers had not been inserted between the cells at the time of original installation of the batteries. The inspector questioned the ability of the above systems to meet seismic qualifications and remain operable without the spacers installed between the battery cells during a seismic event. The licensee agreed to perform a safety evaluation to determine if the spacers were required for seismic qualifications.

The inspector previously identified this as an Unresolved Item (348-364/85-18-01) pending a review of the safety evaluation.

The inspector has completed a review of the safety evaluation conducted by Southern Company Service, Inc., Bechtel Power Corporation, and Allied C&D Power Systems. The conclusion of the safety evaluation is that the service water batteries and UPS would meet seismic qualifications without the spacers installed between the cells.

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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.



The manufacture drawing No. U-184416 for the service water batteries, and drawings No. 263216 and 216919 for the UPS batteries (these drawings are marked proprietary), show spacers installed between the cells.

The UPS Vendor Manuals U-263212 and U-216914, Section 12-600-1C of vendor manual, "C and D Installation and Operating Instructions for Safety Batteries," 3.2.3 - Earthquake Protected Racks Assembly, Item #7 states, "Install cells, noting special requirements, place the furnished plastic spacer between each cell (spacing 1/2 inch approximately).

The above manufacture drawings clearly indicate that the spacers provided should be inserted between each cell. The spacers had not been installed between the cells at the time of original installation as required. The licensee failed to carry out the quality assurance program in accordance with written policies, procedures or instruction as required by 10 CFR 50 Appendix B, Criterion II.

This is a violation (348-364/85-20-04).

Licensee corrective action: The licensee has procured and installed the spacers between the battery cells.

9. Allis Chalmers 4160 Volt Breakers

On May 6, 1985, the licensee was performing preventive maintenance on 2B diesel generator output 4160 V. breaker. After completion of the maintenance, the tagging order was released and the breaker was returned to service by energizing the charging motor. The charging motor started and as the breaker neared its fully spring charged position, the breaker closed prematurely and immediately tripped to the open position.

Evaluation indicates a set screw on the X-W link had changed position enough to allow the breaker to close on charging and to trip free.

The breaker is a Allis Chalmers type MA 350 C stored energy operator. There are about 120 breakers of this type at Farley. Not all are used on safety related equipment.

The licensee has initiated an inspection of other breakers of this type to determine if this same set screw problem exists. To date the 2B diesel generator breaker is the only one with this problem.

The licensee has found other problems on this type breaker. These problems consist of loose bolts and screws and scored linkage springs. The licensee is continuing their evaluation.

A Vendor Representative is scheduled to be on site on May 13, 1985, to participate in the inspection.

The inspector will continue to follow this evaluation (IFI-348/85-20-06).

## 10. Licensee Event Report

The following Licensee Event Reports (LERs) were reviewed for potential generic problems to determine trends; to determine whether information included in the report meets the NRC reporting requirements; and to consider whether the corrective action discussed in the report appears appropriate. Licensee action, with respect to selected reports, were reviewed to verify that the event had been reviewed and evaluated by the licensee as required by the Technical Specification; that corrective action was taken by the licensee; and that safety limits, limiting safety settings and LCOs, were not exceeded. The inspector examined selected incident reports, logs and records and interviewed selected personnel. The following reports are considered closed:

### Unit 1 LERs

- 84-05 - Unit 1 feedwater nozzles indications
- 84-14 - Inadequate procedure for input from NI-43 to OT delta T
- 85-02 - Reactor trip
- 85-06 - Steam generator tubes plugging

### Unit 2 LERs

- 84-11 - OT delta T
- 85-05 - Failed containment field anchors
- 85-06 - Inoperable containment sump level recorder
- 85-07 - Missed fire watch
- 85-08 - Reactor trip
- 85-09 - Reactor trip

## 11. Action On Previously Identified Items (92701)

(Closed) 348-364/84-29-01 and 348-364/84-02. The inspector has reviewed the licensee's safety evaluation and the results of a special ventilation test which was performed on the penetration filtration system.

The inspector had no further questions.

## 12. TMI Action Item II.B.3

(Closed) Item II.B.3, Post-accident Sampling, is closed for both units based on completed safety evaluations issued by NRR dated October 11, 1984, and March 26, 1985.