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

Report Nos.: 50-348/88-18 and 50-364/88-18

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: May 9-13, 1988

Inspector: J. J. Lenahan — 6/1/88 Date Signed

Approved by: F. Jape, Section Chief — 6/2/88 Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of the containment tendon surveillance program, the snubber surveillance program, IEN 85-45, previously identified inspector followup items and followup on licensee action on previous inspection findings.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. G. Berryhill, Systems Performance and Planning Manager
D. Hartline, Mechanical Engineer
J. Hornbuckle, Mechanical Maintenance Engineer
R. Livingston, Chemist
C. D. Nesbitt, Technical Manager
*W. D. Shipman, Assistant General Plant Manager
*J. J. Thomas, Maintenance Manager
*J. O. Woodward, General Plant

Other licensee employees contacted included engineers and technicians.

NRC Resident Inspectors

W. H. Bradford
*W. H. Miller

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 13, 1988, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new item was idendified during this inspection:

Inspector Followup Item 348, 364/88-18-01, Determine Effectiveness of Licensee's New Service Water Chlorination Program Implemented in May 1988.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Deviation 348, 364/86-18-01, Failure to Comply with FSAR and Response to IEB 81-03 Commitments Concerning Service Water System Chlorination. The licensee's corrective actions for this deviation are stated in their November 26, 1986, and April 1, 1987, responses to NRC. The licensee's November 26, 1986, response stated that the chlorination

program prescribed in the FSAR had been found to be ineffective in controlling Corbicula (Asiatic clams), and that an experimental program was being conducted to determine an effective chlorination program. The April 1, 1987, response was a supplemental response which described the experimental program, and the compensatory measures implemented until a permanent chlorination program which is effective against Corbicula is established. The inspector examined the results of the experimental chlorination program and the permanent chlorination program which was recently implemented. Details of this review are discussed in Paragraph 8.a below. The compensatory measure implemented by the licensee to prevent fouling of service water components prior to establishment of a permanent effective chlorination program were examined by the resident inspector. These included the following:

a. Converting cooling water supply for the charging pump oil coolers from service water to component cooling water.

b. Monitoring the charging pump oil coolers outlet water temperature at least once each shift for indications of fouling.

c. Periodically inspecting the service water pits and cleaning if necessary.

d. Inspection of ervice water heat exchangers when opened for routine maintenance to determine if Corbicula fouling is present.

Based on the review of implementation of the licensee's corrective actions Deviation 348, 364/86-18-01 is closed.

4. Unresolved Items

Unresolved Items were not identified during this inspection.

5. Snubber Surveillance Program - Unit 1 (Module 70370)

The inspector reviewed procedures and quality records related to the snubber surveillance program and inspected snubbers on safety-related piping systems. Acceptance criteria examined by the inspector appear in Technical Specification 3/4.7.9.

a. Review of Snubber Surveillance Procedures

The inspector examined the following procedures which control snubber surveillance and inspection activities.

(1) Procedure number FNP-1-STP-610, Snubber Functional Testing

(2) Procedure number FNP-1-STP-610.2, Accessible Snubbers Visual Inspection

(3) Procedure number FNP-1-STP-610.6, Inaccessible Snubbers Visual Inspection

(4) Procedure number FNP-0-MP-65.4, Onsite Testing and Rebuilding by Vendor

b. Inspection of Snubbers

The inspector walked down the Unit 1 reactor containment building and inspected various mechanical and hydraulic snubbers installed on portions of the main steam, safety injection, RHR, and reactor coolant piping systems. The inspector verified that the snubbers were not damaged, that attachment to the supporting structure and piping was secure; and for hydraulic snubbers, that fluid levels in the reservior were adequate and that leakage of fluid was not occurring.

c. Review of Quality Recorder

The inspector examined the result of functional tests performed on mechanical snubbers during the seventh Unit 1 refueling outage. Due to the large number of functional test failures, the licensee tested 100% of the Unit 1 mechanical snubbers.

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

6. Containment Building Tendon Surveillance Program, Units 1 and 2 (61701)

The inspector examined procedures and quality records related to the Unit 1 tendon surveillance program and examined the additional tests and inspections performed on the Units 1 and 2 post tensioning systems as a result of the failed tendon anchor heads reported in Unit 2 LER 85-005. Acceptance criteria utilized by the inspector appear in Unit 1 TS 3/4.6.1.6.1 and the licensee's commitments stated in the LER 85-005, Revision 1 report to NRC, dated August 12, 1985.

a. Review of Results of Additional Inspections Performed as a Result of Failed Tendon Anchor Head

On January 28, 1985, while conducting a walkdown inspection of the exterior of the Unit 2 containment building, a licensee employee noticed that a grease can covering the top of a vertical tendon was deformed. Inspection and removal of the lower grease can for the same tendon disclosed the field anchor head had broke. A detailed inspection and testing program was initiated by the licensee to determine the cause and extent of the problem, and to implement any necessary repairs to the post-tensioning system. The inspector reviewed the tendon inspection, testing, and repair activities during

inspections documented in Inspection Report Nos. 50-348, 364/85-09, and 85-26 and 50-364/85-12. Following the repair, the licensee committed to perform additional inspections of the post-tensioning system to verify the continued structural intergrity of the tendon anchor heads on both units. These inspections, which are in addition to those required by the TS tendon surveillance inspections, are documented in LER 85-005, Revision 1, dated August 12, 1985. The inspector reviewed procedures and results of the inspections performed since the tendon repair program was completed in 1985. The reviews included the following:

(1) Results of visual examination of grease samples obtained from the lower end of the Unit 1 and 2 vertical tendons. Samples were taken from all 130 vertical tendons on each unit. These samples were obtained and inspections were performed in June 1986, in accordance with Procedure No. ETP-0-4202, Tendon Grease Inspection. The purpose of the inspection was to determine if any water was present in the grease. No water was found in any of the grease samples.

(2) Results of magnetic particle tests performed on field anchor head removed from Unit 2 horizontal tendon 7FD. The anchor head removal, testing, and inspection was performed in accordance with Procedure FNP-2-2-TP-4186, Procedure for Inspection, Repair, and Replacement of Field Anchor heads for the Containment Post-Tensioning System - Unit 2. The anchor head was found be be acceptable. This testing was performed during the routine Unit 2 tendon surveillance inspection completed in April 1986.

(3) Records documenting regreasing of Unit 2 tendons. This work was completed during the routine Unit 2 tendon surveillance inspection.

b. Unit 1 Containment Tendon Surveillance Inspection

The inspector reviewed Procedure No. FNP-1-STP-609.0, Revision 11, Containment Tendon Surveillance Test. This procedure provides instructions for examinating and testing of the Unit 1 containment post-tensioning system required by TS 3/4.6.1.6.1. The inspector examined quality records documenting the surveillance inspection completed in August 1987. This was the ten year inspection. These records included the following:

(1) Results of testing performed on wire samplers obtained from Tendon Nos. V-14, D-121, and H 26-AC.

(2) Results of testing performed on grease (tendon filler) samples.

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(1) Results of testing performed on wire samplers obtained from Tendon Nos. V-14, D-121, and H 26-AC.

(2) Results of testing performed on grease (tendon filler) samples.

(3) Results of Lift off values obtained for Tendon Nos. V-14, V-31, V-72, V-109, V-120, H 2 AB, H-26 AC, H 44 8C, D-121, D-228, and D-320.

(4) Results of visual inspection for corrosion performed on anchor heads, end anchor for tendons listed in (3) above.

(5) Records for load cell and stressing ram calibrations.

(6) Records documenting retensoning of the tendon listed in (3) above.

No problems were identified during the surveillance inspection. Tendon liftoff values and results of wire testing met the acceptance criteria.

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

7. IE Information Notice (IEN) 85-45, Potential Seismic Interaction Involving the Moveable In-Core Flux Mapping System Used in Westinghouse Designed Plants.

IEN 85-45 provided information to licensee's regarding possible interaction between the nonsafety-related portions of the flux mapping system and the seal table in Westinghouse designed plants during a seismic event. The potential interactions existed because portions of the flux mapping system that had not been seismically designed were located directly above the incore instrumentation tubing/seal table. In a letter to Alabama Power Co. dated August 20, 1985, Westinghouse recommended that Alabama Power Co. evaluate the restraints installed on the Farley Units 1 and 2 Flux Mapping System (FMS) and verify that the FMS would not roll along or lift off the rails. The licensee performed walkdown inspections to determine "as-built" condition of the seal tables in Unit 1 during the October 1986 refueling outage and in Unit 2 during the April 1986 refueling outage. An analysis was performed by Bechtel which determined that the support bolts in the restraints needed to be upgraded to A-325 bolts to assure the structural integrity of the FMS during a seismic event. The inspector examined Modification Work Requests (MWR) 155473 which documented replacement of two bolts on the Unit 1 FMS movable cart and MWR 155472 which documented replacement of four bolts on the Unit 2 FMS. The inspector examined the completed modification on the Unit 1 FMS and verified that the affected bolts had been replaced with A-325 bolts. The inspector has no further questions on IEN 85-45.

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

8. Previously Identified Inspector Followup Items

a. (Closed) IFI 348,364/86-18-02, Review Status of Actions Implemented by Licensee to Address Service Water System Fouling Problems. This

IFI was identified to review the status of the licensee's program to control fouling of the service water system by Corbicula. The short term measures implemented by the licensee are discussed in Paragraph 3 above. The licensee conducted an experimental program to determine an effective chlorination program to control Corbicula. The inspector examined the reports listed below which summarize the results of the licensee's investigations to established an effective chlorination program.

(1) Master Plant for Control of Corbicula At Farley Nuclear Plant, dated May 1987

(2) Results and Recommendations for the Unit 1 Chlorination at Farley Nuclear Plant, June 1, to June 11, 1987

(3) Results and Recommendations from the Unit 2 Chlorination at Farley Nuclear Plant, April 7, to May 7, 1987

(4) Corbicula Program at Farley Nuclear Plant, Summary and Recommendations, dated August 22, 1987

The inspector discussed the results of the experimental program to control Corbicula with a licensee chemist. These discussions disclosed that the licensee had implemented a continuous chlorination program on May 1, 1988, for control of Corbicula as a result of the lessons learned from the experimental program. This treatment program calls for addition at sodium hypochloride to one unit's service water system until a 90% mortality of adult Corbicula occurs is test aquariums or for a maximum of eight weeks, whichever occurs first. The three intermittent treatments per day with chlorine dioxide will be continued on the opposite unit during the continous treatment. The nominal frequency will be eight weeks between the end of one treatment and the start of the next on each unit. The treatment will start on May 1, or upon initiation of the Corbicula's spring spawn (whichever occurs first) and continue through December 31, each year. The inspector examined the biomonitoring tanks (test aquariums) installed in the turbine building, down stream of the service water heat exchanger and at the main discharge surge tank. The inspector reviewed Revision 4 to Procedure FNP-0-CCP-708, Chemical Addition/Control to the Service Water System. The procedure includes the requirements of the continuous chlorination treatment program and monitoring of the test aquariums. In a letter, dated April 15, 1988, to the Alabama Department of Environmental Management, the licensee requested approval of the continuous chlorination program. Discussion with licensee management personnel disclosed that verbal approval has been received from the state of Alabama for the new treatment program. The effectiveness of the licensee's continuous chlorination or control of Corbicula will be reviewed by NRC is a future inspection. This future review will be

tracked on Inspector followup Item 348,364/88-18-01, Determine Effectiveness of Licensee's New Service Water Chlorination Program Implemented in May 1988. IFI 348,356/86-18-02 is closed.

b. (Closed) IFI 348,364/87-22-01, Review of Modifications to Wall Numbers 1-CBW-34, 1-CBW-62, and 2-CBW-34. The inspector walked down and examined the completed modifications to masonry walls 1-CBW-34 and 2-CBW-34, and verified they had been completed in accordance with the requirements shown on Production Change Notice (PCN) B-84-1-3018 (wall 1-CBW-34) and PCN-B83-2388 (wall 2-CBW-34). The inspector also reviewed PCN 8-84-1-3019 which shows modifications to wall 1-CBW-62. The inspector examined quality records documenting inspection of the completed modifications to all three walls. These included the following:

(1) Records for inspection of structural steel erection, welding, concrete/grout and coatings for modifications to wall 1-CBW-62

(2) Records for inspection of structural steel erection, concrete/grout, installation of wedge anchors, and coatings for modifications to wall 1-CBW-34

(3) Records for inspection of structural steel erection, welding, anchors bolts, concrete/grout, and coatings for modifications to wall 2-CBW-34

No discrepancies were identified by the inspector. IFI 348,364/87-22-01 is closed.

9. Temporary Instruction (TI) Closeout

(Closed) Temporary Instruction (TI) 2500/16 - Inspector to Determine if a Potential Seismic Interaction Exists Between Movable Incore Flus Mapping System and Seal Table at Westinghouse Designed Facilities of Facility of Similar Design. This TI defined the NRC inspector requirements for IE Information Notice 85-45. The inspector complete the inspection requirements detailed in the TI during this inspection (see Paragraph 7).