



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

Report Nos.: 50-348/85-09 and 50-364/85-09

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

Inspection Conducted: January 31 - February 1 and February 13 - 15, 1985

Inspection at Farley site near Dothan, Alabama

Inspector: _____

J. J. Lenahan
 J. J. Lenahan

3/5/85

Date Signed

Approved by: _____

Frank Jape
 F. Jape, Section Chief

3/5/85

Date Signed

Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 42 inspector-hours on site in the areas of surveillance and inspection program for snubbers and followup on the licensee's actions to determine the cause of the failed tendon anchor heads and corrective actions to repair the anchor heads.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. D. Woodard, Plant Manager
- *R. G. Berryhill, Systems Performance and Planning Superintendent
- *H. G. Garland, Maintenance Supervisor
- W. G. Hairston, Manager, Nuclear Engineering and Technical Support
- J. Hornbuckle, Mechanical Maintenance Engineer
- W. D. Shipman, Assistant Plant Manager
- *L. A. Ward, Maintenance Superintendent

NRC Resident Inspectors

- *W. H. Bradford
- W. H. Ruland

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 15, 1985, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings.

Unresolved Item 364/84-09-01 - Tabulation of Snubber Visual Inspection Failures which Occur Between Visual Inspection Surveillance Intervals - paragraph 5.c.

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

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. A new unresolved item was identified during this inspection, is discussed in paragraph 5c.

5. Snubber Surveillance Program - Unit 2 (Module 61729)

The inspector reviewed procedures and quality records relating 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-2-STP-610.0, Steam Generator Snubber Visual Inspection
- (2) Procedure Number FNP-2-STP-610.2, Accessible Snubbers Visual Inspection
- (3) Procedure Number FNP-2-STP-610.6, Inaccessible Snubbers Visual Inspection
- (4) Procedure Number FNP-2-STP-610.7, Snubber Functional Test (Hydraulic and Mechanical) Using Wyle Laboratories Model 100 Snubber Test Machine
- (5) Procedure Number FNP-2-MP-4.6, Steam Generator Snubber Inspection

b. Inspection of Snubbers

The inspector performed a visual inspection of the mechanical (PSA) and hydraulic snubbers listed below and verified that the snubbers were not damaged, that attachments to the supporting structure and piping were secure, and that the proper size snubbers were installed. These snubbers are installed on piping systems in the reactor containment building.

- (1) Snubber numbers 2 SI-BR2, 2SI-BR8, and 2SI-R221 on the safety injection system
- (2) Snubber numbers 2 MS-R91 A/B, 2MS-R93, and 2 MS-R100 on the main steam system
- (3) Snubber numbers 2 RHR-B22, 2RHR-110, 2RHR-111, 2RHR-113, 2 RHR-116 A/B, and 2 RHR-118 on the residual heat removal system
- (4) Snubber numbers 2-RC-R6*, 2RC-R7*, and 2RC-R-11 A-D* on the reactor coolant system

* Indicates mechanical snubber. All other snubbers are hydraulic.

- (5) Snubber numbers 12545* and 12547* on RHR system
- (6) Snubber number 2FW-R4 on the feedwater system.

The inspector also examined the large hydraulic snubbers mounted on the "A" steam generator. The three common reservoirs which supply makeup fluid to all steam generator snubbers were examined to verify that the fluid level in the reservoir was within target level.

c. Review of Quality Records

The inspector reviewed the following quality records:

- (1) Results of functional tests performed on mechanical and hydraulic snubbers during January - February 1985
- (2) Service life records for various mechanical and hydraulic snubbers
- (3) Maintenance Work Request Numbers 96450, 97452, 99122, 100056, 100095, 102587 and 102686.

Review of the maintenance work requests disclosed the following problem. Maintenance Work Request Nos. 96450 and 102686 were written for hydraulic snubbers that had empty reservoirs. These snubbers, when functionally tested in accordance with the Technical Specification requirements, did not meet the licensee's procedure requirements for lockup (restraining action) velocity. The snubbers were repaired before being returned to service. However, since these problems were discovered by an alert licensee employee prior to the licensee's scheduled visual inspection date, (the snubbers with empty reservoirs were discovered in September 1984 and the next visual inspection was scheduled for January - February 1985) the licensee did not include these results as visually inoperable snubbers for the January - February inspection period. The interval between visual inspection periods is based on the number of inoperable snubbers found during the visual inspection. The inspector discussed the method for handling inoperable snubbers which are discovered prior to the next scheduled visual inspection with licensee engineers and management personnel. The inspector identified this problem as Unresolved Item 364/85-09-01, Tabulation of Snubber Visual Inspection Failures Which Occur Between Visual Inspection Surveillance Intervals, pending clarification of the proper method for classifying these visual failures by NRC.

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

6. Repairs to Unit 2 Containment Building Tendons

a. Background

On January 28, 1985, while conducting a pre-integrated leak rate test walkdown of the exterior of the Unit 2 containment building, a licensee employee noticed that a grease can (cap) covering the top of a vertical tendon was deformed and grease was leaking from the deformed can. Inspection of the lower grease can on the same tendon, tendon number V-17, disclosed that the lower grease can had been damaged also. Removal of the lower grease can disclosed that the field anchor head had broken into seven pieces, thus releasing the post-tensioning force in the tendon. As a result of this problem, the licensee removed the lower grease cans on additional vertical tendons. The first tendon, number V-21, which was subjected to detailed inspection was found to be cracked. Inspection was curtailed until this tendon could be detensioned. Based on a review of tendon fabrication and installation records, the licensee determined that the broken anchor head and the cracked anchor head had the same fabrication lot control number, (Lot Control Number HV), which indicates that both anchor heads were made from steel of the same heat number, manufactured and heat treated within the same time period, and supplied by the same vendor's subcontractor. In order to determine the cause of this problem and its correction, the licensee implemented an extensive inspection and testing program. This program involved licensee engineers; and engineers from Bechtel, the Architect-Engineer; and INRYCO, the tendon manufacturer. The correction program involves replacing the field anchor heads on tendons with anchor heads from the HV lot control number.

QA/QC procedures which control implementation of the inspection, testing and anchor head replacement program were reviewed by the inspector. Also, the inspector observed replacement of some of tendon the anchor heads.

b. Review of Procedure

The inspector examined the following procedures which control the anchor head inspection and replacement activities:

- (1) INRYCO Procedure Number SQ6.1, Inspect Field Anchors
- (2) INRYCO Procedure Number SQ6.3, Inspect "HV" Field Anchors
- (3) INRYCO Procedure Number DT1.0, Detension Tendons
- (4) INRYCO Procedure Number BH1.0, Cutoff Buttonheads
- (5) INRYCO Procedure Number BH1.1, Buttonheading Tendon Wires
- (6) INRYCO Procedure Number SQ7.2, Sheathing Filler Analysis

- (7) INRYCO Procedure Number SQ7.3, Grease Samples, Acquire and Evaluate
- (8) INRYCO Procedure Number SQ12.2, Grease Replacement in Gallery Grease Cans
- (9) INRYCO Buttonhead Specification 1610
- (10) INRYCO Buttonhead Specification BH 102
- (11) Bechtel letter number AP 10027, date February 2, 1985, Unit 2 Containment Tendon Detensioning Sequence

c. Observation of Work Activities

The inspector witnessed detensioning of vertical tendon V-21 which was the tendon with the cracked anchor head and examined the bottom end of tendon V-17 which had the failed anchor head. The inspector also witnessed replacement of the HV anchor heads on tendon numbers V-65 and DE8. The licensee had also implemented a program to inspect an additional 55 tendons with anchor heads from other than HV heat numbers. Plans are to inspect and replace all tendon field anchors with "HV" lot numbers. Discussion with licensee engineers disclosed that the field anchor heads on approximately 30 of the 55 tendons with non-HV anchors had been inspected. No problems had been identified as of the inspection date with the non-HV anchors.

The licensee has sent the failed and cracked anchor heads and some additional anchor heads with HV lot control numbers, which had been removed from Unit 2 tendons, to offsite laboratories for extensive metallurgical and mechanical testing. An HV anchor head was also provided to NRC. NRC will have additional metallurgical and mechanical testing performed in an independent laboratory to confirm the licensee's test results.

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

7. Inspection of Unit 1 Containment Building Tendons

The inspector examined the grease cans covering the vertical tendons in the Unit 1 containment building and approximately half of the grease cans covering the Unit 1 horizontal and dome tendons. There was no indication of grease leakage from any of the grease cans nor were any deformed grease cans noted. Based on this inspection, which was performed as a followup to a detailed inspection performed by licensee engineers, the inspector concluded that none of the Unit 1 tendons had failed in a manner similar to the Unit 2 tendon V-17. None of the Unit 1 tendons had anchor heads from control lot number "HV".

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