



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

Report Nos.: 50-348/88-16 and 50-364/88-16

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: April 19-21, 1988

Inspectors:	<i>N. Merriweather</i>	5-17-88
	N. Merriweather	Date Signed
	<i>C. Paulk</i>	5-17-88
	C. Paulk	Date Signed

Accompanying Personnel: T. E. Conlon

Approved by:	<i>T. E. Conlon</i>	5-17-88
	T. E. Conlon, Section Chief Plant Systems Section Division of Reactor Safety	Date Signed

SUMMARY

Scope: This special, announced inspection was in the area of Environmental Qualification (EQ) of Electrical Equipment and involved followup on Unresolved Items 50-348, 364/87-30-04, 10 and 12 and Violation 50-348, 364/87-30-15.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *S. Fulmer, Supervisor, Safety Audit Engineering Review
- *J. Garlington, Manager, Engineering and Licensing
- *D. H. Jones, Manager, Nuclear Engineering
- *W. B. Shipman, Assistant Plant Manager - Support
- *J. D. Woodard, General Manager, FNP

Other Organization

- *J. Love, Assistant Project Engineer, Bechtel Engineering
- *J. E. Sundergil, EQ Group Supervisor, Bechtel Engineering

NRC Resident Inspectors

- W. Bradford, Senior Resident Inspector
- **W. Miller, Resident Inspector

*Attended exit interview

**Attended entrance meeting on April 19, 1988

2. Exit Interview

The inspection scope and findings were summarized on April 21, 1988, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. However, the licensee did make certain commitments which are discussed in Paragraphs 3.a and 3.d.

The licensee did identify some material as proprietary during this inspection, but this material is not included in this inspection report.

3. Licensee Action on Previous Enforcement Matters

a. (Open) Violation 50-348, 364/87-30-15, Raychem/Chico-A Seals

A previous inspection had identified the licensee's failure to establish qualification for the Raychem/Chico-A seals for moisture barriers on Namco Limit Switches both inside containment and in the Main Steam Room (MSR). Subsequent to that inspection, the licensee provided additional information which indicated that the seal design used in the MSR was different from the one used inside containment in that no Chico-A sealing compound was used. However, neither design was shown to be qualified to the DOR Guidelines or NUREG 0588, CAT II criteria. Additional test data was provided which indicates that the design with the Raychem boot used in the MSR was tested for

submergence at 212°F for four hours and a cooldown and soak of 20 hours at a pressure head of approximately ten feet (5 psig). This test data was not adequate to demonstrate qualifications for Main Steam Line Break accident in the MSR with peak temperatures of approximately 326° F.

In a letter dated April 4, 1988, APCO committed to replace all Raychem/Chico-A seals on Namco limit switches inside Unit 1 containment prior to restart from the current refueling outage. Additionally, APCO committed to replace these same seals in Unit 2 containment during the next outage of sufficient duration. During this inspection APCO committed to install an acceptable cable entrance configuration for the Namco Limit Switches in the MSR's on both units during the next refueling outage. Furthermore, APCO committed to provide a justification for continued operations for Units 1 and 2 to the NRC for evaluation and acceptance prior to Unit 1 restart.

The previously identified violation is still open and being evaluated for escalated enforcement.

- b. (Closed) Unresolved Item 50-348, 364/87-30-04, Failure to Train Personnel Involved in EQ Activities in the Requirements of the EQ Program.

Actions taken by the licensee to resolve this issue were discussed during the enforcement conference held in the NRC Region II office on March 15, 1988. In this meeting, the licensee stated that the following immediate corrective actions had been implemented:

- Plant training plan has been revised to require training for Technical Staff and Managers
- The FNP QC engineer and his staff, and the Plant Modifications group have been trained on EQ
- Appropriate General Office Staff personnel have also been trained on EQ
- Licensed operator will be trained as part of upcoming requalification training

A review of training attendance sheets confirmed the implementation of the corrective action. Based on the above, this item is considered closed.

- c. (Closed) Unresolved Item 50-348, 364/87-30-10, Raychem Stilan Cable

This cable was not considered qualified during the inspection because the IR values given in the report have no meaning. Subsequent to that inspection the licensee provided information on their commitments to the commission to meet Regulatory Guide 1.97. In a letter dated June 12, 1984, from NRC, S. Varga to Mr. R. P. McDonald, the

Commission issued a confirmatory order based on certain APCO commitments. The order required APCO to implement RG 1.97 requirements on Unit 1 by March 1988, and on Unit 2 by October 1987.

The licensee stated that the Stilan Cable was added to the EQ Master list by error. The Stilan cable has been replaced as part of the Reg. Guide 1.97 upgrade for Unit 2 and will be replaced on Unit 1 during the eighth refueling outage.

This item is, therefore, considered closed.

- d. (Open) Unresolved Item 50-348, 364/87-30-12, Certain SOVs may not be Qualified Due to a Lack of Cable Entrance Seals.

A major environmental qualification concern involves the absence of cable entrance seals on Automatic Switch Company (ASCO) Solenoid valves that are required to be energized and/or cycled during a design basis accident. The valves effected by this concern are located both inside containment and the MSR. A detail description of these valves is included in Appendix A to this report.

The NRC inspectors reviewed ASCO test reports (AQS 21678/TR Rev. A and AQR-67368/Rev. 1), FRC Test Report (NUREG 3424) and GPC Hatch Test Report on LOCA/MSLB Testing of ASCO solenoid valves. The inspectors concluded that the ASCO reports by themselves did not adequately address the anomalies due to moisture intrusion. The Franklin report was inconclusive as to whether ASCO housings were seal tight under LOCA conditions because they did not use a known qualified seal configuration. The only test report that obtained good results appeared to be the GPC Hatch Report. However, there still remained some questions with this report. Based on review of the above, the inspectors concluded that Farley's ASCO configurations were not qualified because they had not adequately addressed the anomalies caused by moisture intrusion. Therefore, to resolve this concern APCO proposed the following corrective actions:

- (1) APCO will develop a JCO for SOVs required for long term operation. This JCO will consider existing test data, Farley configuration and short duration environmental profile for the MSR. APCO will submit the JCO to NRC for evaluation and acceptance.
- (2) APCO will modify the existing conduit configuration on both units in the MSRs to permit when possible moisture drainage away from the solenoid housing. Those in Unit 1 will be modified prior to plant restart.

- (3) APCO will develop a JCO for five SOVs required for long term operations inside Units 1 and 2 containments. The JCO will be formulated to meet the requirements of GL 86-15 and submitted prior to restart of Unit 1 to NRC for evaluation and acceptance.
- (4) APCO will modify the flex conduit on one PORV SOV, inside Unit 1 containment, to provide for moisture drainage. This also will be completed prior to Unit 1 restart.

The inspectors examined SOV installations in the MSR on Unit 1 and reviewed photographs of all ten long term SOV containment configurations. The inspectors concluded that these configurations are somewhat similar to what was tested by ASCO in the above test reports, however, the anomalies were not adequately addressed. This item will remain open pending review of the licensee's submittal and completion of proposed long term corrective actions.

4. Unresolved Items

Unresolved items were not identified during this inspection.

APPENDIX A

LIST OF ASCO SOLENOID VALVES WITHOUT CABLE ENTRANCE SEALS

<u>Component</u>	<u>Equipment Function</u>	<u>Location</u>	<u>Comments</u>
N11SV3369AC-A	Main Steam Isolation	MSR	Note 1
N11SV3369BC-A	Main Steam Isolation	MSR	Note 1
N11SV3369CC-A	Main Steam Isolation	MSR	Note 1
N11SV3370AC-B	Main Steam Isolation	MSR	Note 1
N11SV3370BC-B	Main Steam Isolation	MSR	Note 1
N11SV3370CC-B	Main Steam Isolation	MSR	Note 1
N11SV3976A-B	Main Steam Bypass	MSR	Note 1
N11SV3976B-B	Main Steam Bypass	MSR	Note 1
N12SV3235A-AB	Steam Admission to Turbine Driven Auxiliary Feedwater (TDAFW)	MSR	Note 1
N12SV3235B-AB	Steam Admission to TDAFW	MSR	Note 1
N23SV3227AA-A	Motor Driven (MD) AFW Flow Control	MSR	Note 2
N23SV3227AC-B	MD AFW Flow Control	MSR	Note 2
N23SV3227BA-A	MD AFW Flow Control	MSR	Note 2
N23SV3227BC-B	MD AFW Flow Control	MSR	Note 2
N23SV3226CA-A	MD AFW Flow Control	MSR	Note 2
N23SV3227CC-B	MD AFW Flow Control	MSR	Note 2
N23SV3228AA-AB	TD AFW Flow Control	MSR	Note 2
N23SV3228BA-AB	TD AFW Flow Control	MSR	Note 2
N23SV3228CA-AB	TD AFW Flow Control	MSR	Note 2
B31SV0444BA-B	Pressurizer (PZR) PORV	CTMT	Note 2
B31SV0444BA-A	PZR PORV	CTMT	Note 2
B31SV0445AA-A	PZR PORV	CTMT	Note 2
B31SV0445AB-A	PZR PORV	CTMT	Note 2
P17SV3184-B	RCP CCW	CTMT	Note 3

Note 1: Energized, does not change state during accident

Note 2: Changes state periodically during accident

Note 3: Energized on a Phase B isolation.