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

Report Nos.: 50-250/89-22 and 50-251/89-22

Licensee: Florida Power and Light Company
9250 West Flagler Street
Miami, FL 33102

Docket Nos.: 50-250 and 50-251 License Nos.: DPR-31 and DPR-41

Facility Name: Turkey Point 3 and 4

Inspection Conducted: April 24-28, 1989

Inspector: _____ 6/1/89
J. J Lenahan Date Signed

Approved by: _____ 6/5/89
G. A. Belisle, Chief Date Signed
Test Programs Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of placement of concrete in the basemat of the new diesel generator building, condition survey of protective coatings in the containment buildings, seal table repair, and followup on an allegation pertaining to a bypassed inspection hold point during seal table repair.

Results:

The allegation was substantiated. One violation was identified pertaining to the failure of QC inspection personnel to witness cutting of the thimble guide tube - Paragraph 6.

Weaknesses were identified in the licensee's corrective action program regarding the protective coatings in the Unit 3 containment building.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Arias, Jr., Technical Assistant to Plant Manager
L. Bennett, Construction Supervisor
*L. Bladow, Quality Assurance Superintendent
M. Blew, ISI Engineer
*K. Buzek, ISI Engineer
J. Cross, Plant Manager, Nuclear
K. Crossby, Backfit QC Supervisor
*S. Franzone, Lead Engineer
R. J. Earl, QC Supervisor
*J. S. Odom, Site Vice-president
W. Poppell, Lead Mechanical Construction Supervisor
E. Thompson, Mechanical Engineer
*K. Van Dyne, Regulation and Compliance Supervisor (Acting)

Other licensee employees contacted during this inspection included engineers, technicians, and administrative personnel.

Other Organizations

Bechtel

R. Slover, Site Services Manager
C. B. Schmitt, Lead Mechanical Superintendent
C. D. Hamilton, Backfit Construction Superintendent

Other Bechtel employees contact during this inspection include construction superintendent, pipe fitters, and pipe fitter foremen.

Stone and Webster

M. Field, QC Supervisor
F. Crytzer, QC Supervisor

Other Stone and Webster employees contacted during this inspection include six QC inspectors.

*Attended exit interview

2. Placement of Structural Concrete in New Diesel General Building (46053)

The inspector witnessed partial placement of pour number F-2-EDG 9 in the Emergency Diesel Generator basement. Acceptance criteria examined by the inspector appear in the following documents:

Specification CN-2.9, Concrete Materials and Mixes, Concrete Mixing and Transportation

Specification CN-2.11, Concrete Testing, Placing, Curing and Finishing

Technique Sheet 10.3-2.1, Concrete Placement

Technique Sheet 10.3-3.1, Concrete Post-Placement

Technique Sheet 10.4-1.1, Concrete Field Testing

Plant Change/Modification (PCM) 259, Emergency Diesel Generator Building Construction

The inspector observed that forms were tight, clean and level. Placement activities pertaining to delivery time, free fall, flow distance, layer thickness and consolidation conformed to specification requirements. Concrete placement activities were continuously monitored by construction quality control inspectors. Examination of the batch tickets indicated that the specified design mix (mix design 5006, Class AAA 5000 psi pump mix) was being delivered to job site. Samples of the concrete were obtained from the pumpline discharge and tested in accordance with specification requirements. The inspector witnessed testing of the plastic concrete samples obtained at 50, 100 and 150 cubic yard intervals. Test results indicated that the concrete being placed met the specification requirements for slump and temperature, with the exception of one sample tested which had a seven inch slump. However, the measured air content did not conform to the range of 2 to 5 percent specified in the mix design. The field test results showed the air content was 1 to 1.5 percent. The above discrepancies (the seven inch slump and low air contents) were documented by the licensee on non conformance reports (NCRs). Disposition of the NCRs will be examined in a future inspection.

Within the areas inspected, violation or deviations were not identified.

3. Review of Structural Concrete Quality Records (46055)

The inspector examined the following quality records:

a. Results of 7 day breaks for cylinders from concrete placement number F-3-EDG-8. The test data demonstrated that the concrete exceeds the 5000 psi compressive strength design requirements.

b. Results of 7 day break for a cylinder representing concrete affected by rain during placement operations for pour number F-3-EDG-8. The results of this test showed that this concrete also exceeded the design requirements. This test data will be used to disposition NCR N-89-05551.

c. The concrete placement check card for pour number F-2-EDG-9.

d. The concrete mix design test data for concrete mix design 5006, Class AAA, 5000 psi pump mix.

Review of the above data indicated that the design strength of the concrete placed met the requirement specified in PCM 259 and Specification CN-2.9.

Within the area inspected, violations or deviations were not identified.

4. Containment Building Coatings - Units 3 and 4 (62700)

The inspector walked down portions of the Units 3 and 4 containment building and examined the condition of the protective coatings on the containment liner plates and concrete surfaces. The inspector examined repairs that had recently been completed on coatings in the Unit 4 containment building. The inspector noted that some other areas still required recoating but these had been identified and documented by the licensee. The overall condition of the protective coatings in the Unit 4 containment building is acceptable, although some repairs are required. During the walkdown in the Unit 3 containment building, the inspector noted that the protective coating were peeling, blistering or flaking in several areas on the liner plate. A similar problem was identified as Unresolved Item Number 250/85-16-01 by the inspector during an inspection conducted April 29 - May 3, 1985, and was documented in NRC Inspection Report 50-250/85-16. The licensee's actions to correct this problem were examined by the inspector during an inspection conducted April 27 - May 1, 1987, and were documented in NRC Inspection Report 50-250/87-21. During the 1987 inspection the inspector re-examined the coatings and PCM 85-041 which was written to repair the coatings. The inspector concluded at that time that the coatings would meet design requirements. The defective areas identified by the inspector during the current inspection appear to be located in areas other than those previously repaired. The problem concerning the current defective coating in the Unit 3 containment building was identified to the licensee as unresolved item 250/89-22-01: Identification of defective protective coatings in Unit 3 containment building, pending further review by NRC.

5. Repairs to Unit 3 Seal Table Thimble Guide Tubes

The inspector examined PCM 89-297, Thimble Guide Tube Repair. This PCM was issued to replace 13 of the thimble guide tubes on the Unit 3 Seal Table which were found to have indications of possible stress corrosion cracking. The repair method is similar to prior repair performed under PCM 89-067 for replacement of guide tube J-12 and under PCM 89-267 for replacement of guide tubes J-5 and J-15. The inspector discussed the repair methods with licensee engineers and examined the drawings showing the repair details. The inspector also examined Process Sheet 89-423 which was prepared for implementation of PCM 89-297. The inspector

reviewed the results of the licensee's root cause investigation of stress corrosion cracking. The licensee identified chloride induced stress corrosion cracking as the probable cause. The licensee obtained smear samples from various location in both the Unit 3 and 4 containment buildings. Laboratory analysis of the samples disclosed areas of high chloride concentrations on both seal tables. The licensee is evaluating methods to reduce the chloride levels in these areas. During the inspection, NRC Region II received an allegation pertaining to the seal table repair. Followup on this allegation is discussed in paragraph 6, below.

6. Case RII-89-A-0066

a. Background

An individual, hereinafter referred to as the alleger, contacted NRC Region II on April 25, 1989, with information that the seal table repair work was not being performed in accordance with the modification procedures. The alleger stated that in the early a.m. on April 25, 1989, cutting of thimble guide tube L-9 was initiated in error by workers assigned to cut thimble tube J-10. The alleger also stated that the workers violated a QC hold point. The NRC resident inspectors were informed by the licensee on April 26, 1989, that a non conformance report (NCR) had been written on April 25 regarding this problem.

b. Concern

During repair to the seal table, the workers assigned to cut thimble tube J-10 initiated a cut on thimble guide tube L-9. The cut on thimble tube L-9 penetrated approximately one thirty-second of an inch (1/32") before the work was terminated. The alleger also stated that Quality Control inspectors should have been notified by the workers prior to starting work as required by Step 34.0 of Process Sheet 89-423. The workers departed from the approved procedure (Process Sheet 89-423) by failing to notify QC prior to starting work and by cutting the wrong thimble guide tube.

c. Discussion

The inspector examined step 34.0 of process sheet 89-423. The process sheet requires the Project Field Engineer and Quality Control to witness the activities of Step 34.0 for the 13 Thimble Guide Tubes to be replaced/repaired. Step 34.0 states "Using a pipe cutter, and being careful not to damage the thimble, cut the thimble guide conduit ≈ 5 ft. below the bottom of the seal table. Visually inspect to verify that thimble is not damaged. Minor scratches or nicks may be polished out." The inspector also examined NCR N-89-0585 which documents the non-conforming condition regarding the improper cutting of thimble guide tube L-9 and the failure of craft personnel to notify QC prior to starting work.

The inspector examined Administrative Site Procedure ASP-34, Preparation of Process Sheets and Installation Lists. Paragraph 4.12 defines witness, as pertaining to the inspection activity code on the process sheet as follows: To watch over, observe, or visually examine a specific work activity which is performed by others. Work may proceed only to the point at which the specified work activity would begin.

The inspector interviewed the craft personnel (pipe fitters), and the foreman, and Bechtel construction supervisory personnel regarding the cutting of thimble guide tube L-9. The pipe fitter who actually made the cut on thimble guide tube L-9 was not interviewed by the inspector since the individual was terminated by the licensee for his actions.

Based on the interviews, the inspector concluded that the reason the individual initiated the cut on the incorrect tube was due to an error by the individual in selecting guide tube L-9 instead of guide tube J-10. L-9 is adjacent to J-10. The individual did this even though guide tube J-10 had been properly marked by this foreman prior to him selecting and cutting guide tube L-9. The cutting of the tube was limited to making a scribe mark approximately 1/32 in. deep with a tubing cutter on guide tube L-9. The purpose of the scribe mark was to provide a guide for the pipe cutter which would be used to make the actual guide tube cut. The individual who made the scribe mark on tube L-9 discovered his own error and reported the problem to his foreman prior to installing the pipe cutter on the tube. The actual cutting process was not started prior to discovery of the error. The inspector questioned the craft personnel, the craft foreman and other Bechtel construction personnel regarding the inspection requirements for step 34.0 of the process sheet. These discussions disclosed that the construction personnel interpreted step 34.0 as requiring QC personnel to be present only during the final cutting and breaking of the thimble guide tube. The construction personnel stated that QC inspectors were seldom present to witness the entire tube cutting operations specified in step 34.0 of the process sheets, or during cutting of thimble guide tubes for replacement of thimble guide tubes J-5, J-12 and J-15.

The inspector also interviewed licensee and Stone and Webster QC inspection personnel who had been involved in the previous and present thimble guide tube repair. The supervisory QC personnel stated that QC inspectors were required to be present during all phases of the tube cutting operations, while the field inspection personnel stated they were only normally present to inspect the final cut ends of the thimble guide tube, to verify the cut length, and to inspect the thimble to verify it had not been damaged during cutting of the guide tube.

The inspector reviewed completed process sheet for PCM 89-067 for repairs to thimble guide tube J-12, and completed process sheet for PCM 89-267 for repair to thimble guide tubes J-5 and J-15. Step 28.0 of these process sheets were verbatim to step 34.0 of Process Sheet 89-423. The inspector reviewed the following inspections reports which documented inspection for step 28.0 of the listed process sheet.

Inspection Report M89-412 for process sheet 89-113, PCM 89-067, for thimble guide tube J-12

Inspection Report M89-1924 for process sheet 89-377, PCM 89-267, for thimble guide tube J-5

Inspection Report M89-1946 for process sheet 89-377, PCM 89-266, for thimble guide tube J-15

Based on review of the above listed inspection reports, and discussion with QC and craft personnel, the inspector concluded that cutting of the thimble guide tubes were not witnessed as required by the appropriate process sheets and Administrative Site Procedure ASP-34. The failure to conduct the required inspections was identified to the licensee as violation item 250/89-22-02, Failure of QC Inspection to Witness Cutting of Thimble Guide Tubes During Repairs to Unit 2 Seal Table.

d. Findings

The allegation was substantiated resulting in identification of violation 250/89-22-02.

Within the areas inspected, no deviations were identified.

7. Review of Corrective Actions to Disposition NCR N-89-0585, Cutting of Incorrect Thimble Guide Tube

The inspector reviewed Revision 1 to Process Sheet 89-423. Revision 1 added Steps 33.1 and 33.2 to the process sheet for additional verification that the tube cutting equipment is being set up at the proper tube location. Step 33.1 is a witness point performed by the Craft superintendent, and Step 33.2 is a QC inspection hold point, which requires QC to verify that the proper tube is being cut, prior to the start of the actual cutting actions. The inspector examined the disposition of NCR N-89-0585, pertaining to the acceptance of Thimble Guide Tube L-9. The scribe mark was ground out and blended to a smooth transition. A liquid penetrant inspection was performed on the repaired area to ensure that there were no indications in this area. The Outside Diameter (OD) of thimble guide tube L-9 was measured in the repaired area to verify that the minimum pipe wall thickness required by the design requirements still existed after the repair were completed. These

inspections are documented on FPL Inspection Report Nos. W89-1229 and M89-2344. The licensee determined that guide tube L-9 met design requirements and that no additional repairs were required.

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

8. Action on Previous Inspection Findings

(Open) Inspector Followup Item 250, 251/87-21-01, Followup on Licensee's Response to IN 85-45, Seal Table Interaction. The licensee has performed a preliminary review of equipment located above the seal table (other than the flux mapping system) for possible seismic interaction with the seal table. This initial review indicates that this equipment was seismically supported and would not interact. However, the licensee plans to perform a detailed evaluation to support their conclusion. This evaluation is scheduled to be performed within the next year. IFI 250, 251/87-21-01 will remain open pending completion of the licensee's evaluation and review by NRC.

9. Exit Interview

The inspection scope and results were summarized on April 28, 1989, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed above. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

Unresolved Item 250/89-22-01, Identification of Defective Protection Coatings in the Unit 3 Containment Building.

Violation Item 250/89-22-02, Failure of QC Inspectors to witness cutting of Thimble Guide Tubes During Repair to Unit 3 Seal Table.