



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30303

Report No.: 50-400/84-39

Licensee: Carolina Power and Light Company
 411 Fayetteville Street
 Raleigh, NC 27602

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Harris 1

Inspection Conducted: October 23, 24, 29, 1984 and November 1, 1984

Inspector: J. J. Lenahan 11/21/84
Date Signed

Approved by: T. E. Conlon 11/21/84
Date Signed
 T. E. Conlon, Section Chief
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 24 inspector-hours in the areas of structural concrete quality records, the program for identification and repair of concrete defects, and followup on concerns expressed by an individual to the Atomic Safety and Licensing Board on October 30, 1984.

Results: In the areas inspected, no violations or deviations were identified.

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REPORT DETAILS

1. Licensee Employees Contacted

J. Brown, QA/QC Specialist
*T. Chiangi, Project QA Manager
L. Garner, Civil Construction Inspection Supervisor
G. Kelly, Civil QA Supervisor
R. Marler, Civil Engineer
*R. Parsons, Project General Manager
W. Pridgen, Civil Engineer
T. Smith, Civil Construction Inspector Supervisor

Other licensee employees contacted included four civil QC inspectors.

NRC Resident Inspectors

G. F. Maxwell
R. L. Prevatte

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 1, 1984, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings without significant comment.

Inspector Followup Item 400/84-39-01, Review of Licensee's Final Walkdown Inspection Program to Identify and Repair Concrete Defects - paragraph 5.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort

The inspector examined the sections of CP&L procedure number TP-15, Concrete Placement Inspection, pertaining to post placement inspection of concrete and identification of concrete defects, CP&L procedure number TP-48, Inspection of Concrete and Grout Repair, and CP&L procedure number WP-27, Repairing of Concrete and Grout Surfaces.

The inspector walked-down and examined concrete surface in various areas in the power block buildings. Surfaces examined included placement number 1CBXW 251001, 256005, 262001, 283001, 288001, 290001, 296001, 3030001, and 306003 in the containment building exterior wall and placement number 1RASL 216009 in the reactor auxiliary building. No defects were observed by the inspector in any of the surfaces examined on the containment building placements. However, examination of placement number 1RASL 216009 disclosed a defect adjacent to an embedded plate in the bottom of a beam on column line 38 between column line Fz and E (This defect had been previously observed by a member of the NRC IE HQ Construction Assessment Team during a walkdown inspection on October 25, 1984).

The inspector discussed the program for identification and repair of concrete defects with responsible licensee engineers and inspectors. These discussions and further review of procedure TP-48 disclosed that the licensee will perform a thorough walkdown inspection to identify concrete defects which have not been identified or repaired prior to turnover to operations.

The program for performing this final turnover inspection will be reviewed and evaluated by NRC Region II in a future inspections. This was identified to the licensee as Inspector Followup Item 400/84-39-01, Licensee's Final Walkdown Inspection Program To Identify and Repair Concrete Defects.

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

6. Containment (Structural Concrete II) - Review of Quality Records (47056B)

The inspector reviewed structural concrete quality records for concrete placement numbers 1CBXW 276001, 1CBXW 356001, and 1CBXW 433001 in the Unit 1 containment building exterior wall. Records examined included concrete placement reports, results of inprocess tests for slump, temperature, entrained air, and unit weight, results of concrete compressive tests on 7 and 28 day old cylinders, concrete placement checklists, and post placement inspection reports.

The inspector also reviewed Deficiency and Disposition Report (DDR) number 655, Concrete Curing. This DDR documents violations of concrete curing requirements for various containment wall placements and corrective action and final disposition of the problems.

Acceptance criteria examined by the inspector appear in FSAR Section 3.8, EBASCO specification CAR-SH-6, Concrete, CP&L procedure number CQC-13, Concrete Control, and CP&L procedure number TP-15, Concrete Placement Inspection.

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

7. Followup on Regional Requests

In an affidavit attached to Well's Eddleman's Response to Summary Disposition Motion on Eddleman 65 (concrete) filed before the Atomic Safety and Licensing Board (ASLB) on June 14, 1984, an individual expressed concerns regarding the quality of the concrete placed in the containment building. Two NRC Region II civil construction inspectors performed an in depth inspection to review and followup on these concerns in July, 1984. The findings of this inspection are documented in NRC Inspection Report No. 50-400/84-21. The inspectors concluded that there was no substance to the concerns stated in the affidavit. The author of the affidavit appeared before the ASLB on October 30, 1984, and provided a two page document dated, October 30, 1984, which was submitted to the ASLB as an Eddleman exhibit. In this new document, hereinafter referred to as the Exhibit, and in his testimony to the ASLB, the individual stated that his concerns written in the previously referenced affidavit had been for the most part adequately addressed by the NRC (Note: This conclusion was probably based on his review of the NRC Staff Testimony on Eddlemen Contention 65 submitted to the ASLB on August 9, 1984, which addressed the concerns stated in the affidavit). The individual stated he still was concerned by the low slump of the concrete placed in the containment building, (this concern was previously stated in his affidavit) and expressed three new concerns in the Exhibit. A summary of the concerns, discussions and findings is presented below.

a. Concern

Expressed concern pertains to low (0 to 4 inch) slump required by EBASCO specification CAR-SH-CH6, Concrete, and the low slump concrete placed in containment basemat (placement numbers 1 CB SL 216001 and 1 CB SL 216002).

Discussion

Review of the Exhibit disclosed that the individual was concerned about placement of concrete with near zero slump in the containment building. The individual stated that, in his opinion, the normally specified range for slump is between two and seven inches.

The inspector reviewed the slump test data for the 13 pour package referenced in the affidavit. This review disclosed that approximately 150 of 160 slumps exceeded 2-inches and thus fell in the range of two to seven inches. Of the remaining slumps, none were less than 1½-inches. Therefore, the slump of the concrete placed would not be considered near zero. In addition, the slump test data was obtained from concrete samples, taken at the point of placement from the pumpline discharge. A general rule regarding concrete placement practice is that if a concrete mix is pumpable, (i.e., is transported to the placement point by pumping) it is workable enough to be placed in a structure.

Regarding the normal range of slump specified for structural concrete, the Bureau of Reclamation Concrete Manual recommends a maximum slump of four-inches for normal concrete (i.e., a concrete without a super-plasticizer admixture). Various other agencies recommend a maximum slump of five-inches. There are very few instances where a slump in excess of six-inches would be permitted. Thus the statement that the normal range of slump in two to seven inches is incorrect.

Findings

The slump of the concrete placed at the Harris project is in accordance with standard industry practices. The concern regarding low slump can be attributed to misconceptions regarding the standard industry practices and slump requirements.

b. Concern

The quantity of concrete placed continuously in the containment building base mat in pour number 1CBSL 216001 (3000 cubic yards placed in two days) and pour number 1CBSL 216002 (4762 cubic yards placed in two days) was very large.

Discussion

Review of the Exhibit disclosed that this concern was apparently based on the fact that these placements were larger than any of the individuals had ever witnessed. The individual was concerned over possible coordination problems regarding the large number of truck loads of concrete required to complete these placements.

The quantity of concrete placed monolithically in these placements was large. However, large construction projects involve large concrete placements. With the advent of slipforms and concrete pumps, continuous concrete placements in excess of 10,000 cy are not unusual. On some large concrete dam projects, the quantity of concrete placed exceed 2500 cubic yards per day. For example, in the Corps of Engineer's, Russell Dam Project, 50,000 cubic yards of concrete were placed each month.

The Exhibit stated that 64 truckloads of concrete were placed in pour number 1CBSL216001 and 98 truckloads in placement 1CBSL216002. The actual number of truckloads of concrete in the basemat placements was more than 300 in placement number 216001 and more than 480 in placement number 216002.

Findings

The fact that the quantity of concrete placed monolithically in the Unit 1 basemat was large has no safety significance. The quality of the concrete was not affected by this placement method. The licensee performed extensive planning prior to making these placements.

c. Concern

Expressed concern in the Exhibit was that procedure WP-05 permitted the area engineer to N/A certain permanent plant concrete placement reports.

Discussion

This concern was based on the fact that the individual felt that this should be QA's responsibility.

The inspector reviewed CP&L procedure number WP-05, Concrete Placement. This review disclosed that Procedure Deviation Notice 1 to Revision 21, (the current revision) to WP-05, dated May 5, 1983, states "The area engineer may N/A certain permanent plant concrete placement reports (e.g. non-Q catch basins, duct banks, sanitary sewer manholes, etc.) that do not require construction inspection sign offs." The inspector discussed this problem with QA/QC and construction inspection personnel. These discussions disclosed that this statement only applies to minor structures, such as curb and gutter, and other types of non-Q structures listed as examples in the procedure deviation notice. All seismic and/or safety-related structures require and receive QA/QC and construction inspection.

Concrete placement records (packages) are reviewed by QA prior to being placed in the records storage vault to verify that all seismic and safety-related placements have been inspected. The licensee also performs inspections on the majority of non-safety-related placements.

Findings

The area engineer is permitted to N/A concrete placement reports on non-safety-related and non-seismic placements which involve minor structures. This is not in violation of NRC regulations and has no safety significance.

d. Concern

Expressed concern was that the individual felt that WP-05 permitted blocks of ice to be added to the concrete mixer in lieu of finely ground ice.

Discussion

The individual misunderstood the statements in WP-05. Addition of blocks of ice to the concrete mixer would result in damage to the mixer blades and was never done at the site. During hot weather concreting conditions, blocks of the ice were placed in the pond in which the water used in concrete mixing was stored. This was to chill the water prior to addition to the mixer. Except for a few placements in the spillways for the main and west auxiliary dams, ice was not added to

the mixer. In these cases, finely ground ice was added in place of some of the mix water. This is a common practice on many projects.

Findings

Blocks of ice were not added to the concrete mixer. This concern was the result of misunderstanding the procedure.

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