UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-400/81-20, 50-401/81-20, 50-402/81-20, 50-403/81-20

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

Facility Name: Shearon Harris

Docket Nos. 50-400, 50-401, 50-402, 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, CPPR-161

Inspection at Shearon Harris site near Raleigh, North Carolina

Inspector: T E Conlon for 10-14-81
J. J. Lenahan Date Signed

Approved by: T E Conlon 10-14-81
T. E. Conlon, Section Chief Date Signed
Engineering Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on September 29 - October 2, 1981

Areas Inspected

This routine, unannounced inspection involved 28 inspector-hours on site in the areas of structural concrete, lakes, dams, and canals work activities, previous inspection findings, and the soils and concrete laboratories.

Results

Of the four areas inspected, no violations or deviations were identified in three areas; one violation was found in one area (Improper Testing of Concrete Cylinders - paragraph 5).

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *R. M. Parson, Site Manager
   A. M. Lucas, Resident Engineer
   *S. D. Smith, Vice-President, Nuclear Construction
   *G. L. Forehand, Site QA/QC Director
   *W. Seyler, Principal Civil Construction Engineer
   *E. L. Kelly, Senior Civil QA Specialist
   *N. J. Chiangi, Manager, Engineering and Construction QA
   J. F. Nevill, Principal Civil Design Engineer
   W. Noland, Area Engineer, Main Dam

   Other licensee employees contacted included eight civil QA/QC inspectors.

   Other Organizations

   *W. D. Goodman, Project Manager, Daniel Construction Company

   NRC Resident Inspector

   *G. F. Maxwell

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on October 2, 1981 with those persons indicated in paragraph 1 above. The violation described in paragraph 5 was discussed.

3. Licensee Action on Previous Inspection Findings

   a. (Closed) Unresolved Item (400/80-19-01, 401/80-17-01, 402/80-17-01, and 403/80-17-01) - Use of Seeding for Slope Protection Instead of Riprap on Emergency Intake Canal Slopes. The inspector reviewed data provided by the licensee which states that the maximum velocity in the emergency intake canal will be approximately 2.0 feet per second (fps). U. S. Army Corps of Engineers Engineering Manual EM 1110-2-1601, "Hydraulic Design of Flood Control Channels," states that channels constructed of sandy silt (the emergency intake canal is constructed from a sandy silt), when grass lined, can withstand a maximum mean channel velocity of 5.0 fps. Therefore use of seeding (grass) for slope protection is adequate. This item is closed.

b. (Closed) Unresolved Item (400/81-05-01) - QA Controls on Strain Gauge Installation in Unit 1 Reactor Building for SI Test. The inspector reviewed CP&L Memorandum No. HXSP-003-040-XXXA dated May 26, 1981, Subject: "Strain Gauge Application Harris Unit 1 Containment." This memo states that the Unit 1 containment building is a non-prototype containment. Therefore, installation of the strain gauges are not required. The strain gauges are non-Q and do not require monitoring by the site QA/QC unit. The strain gauges are being installed to assist in interpretation of the structural integrity test data. Discussions with licensee engineers disclosed that the installation of the strain gauges is being accomplished in accordance with the manufacturer's instructions. There are no NRC regulations which require strain gauge installation in non-prototype containments. This item is closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort

a. The inspector examined the following areas:

(1) Soils and concrete laboratories and currentness of calibration of laboratory equipment

(2) Partial placement and curing of pour number 1DG1W288005, an interior wall in the diesel generator building

(3) Repair of honeycomb in an exterior doorway in the southeast corner of the diesel generator building. The inspector witnessed partial placement of pour number 1DGXW288001-P to repair the honeycomb after it had been properly prepared.

(4) Procedure Number TP-39, "Inspection of Drilled in Expansion Anchors"

(5) Procedure Number TP-44 "Inspection of Concrete Masonry Walls"

(6) Unconfined compression testing of concrete cylinder number 7847B and C, 7954A through 7956A, and 7959A through 7962A. These cylinders are from various concrete placements in the intake structure, the waste processing building, the diesel generator building and the fuel handling building.

(7) DDR - 559, Application of Concrete Curing Compounds

b. Examination of the above items disclosed the following violation and inspector followup item:

(1) Observation of the unconfined compression testing of the above concrete cylinders disclosed that the test load was being applied to the concrete cylinders at the rate of 125 to 175 psi per second. ASTM C-39, which is the method specified in specification CAR-SH-CH-6 for testing of the concrete cylinder, specifies that the test load is to be applied within the range of 20 to 50 psi per second. The improper rate of application of the test load to the cylinders was identified to the licensee as violation item 400-403/81-20-01, "Improper Testing of Concrete Cylinder."

(2) DDR-559 is a deficiency identified by the site QA/QC group concerning application of curing compound to concrete. This deficiency is related to the lack of requirements in the construction inspection procedure, TP-15, to observe the actual application of curing compound on the surfaces of the concrete to be cured. The licensee is currently revising the procedure to address the problem identified by the QA/QC site group regarding inspection of application of curing compound. Resolution of the problem addressed in DDR-559 will be reviewed by NRC in a future inspection. This was identified to the licensee on Inspector Followup Item 400-403/81-20-02, "Inspection of Curing Compound Application."

6. Lakes, Dams, and Canals - Observation of Work and Work Activities - Units 1, 2, 3, and 4

a. The inspector witnessed partial placement of pour number MDS-457, a mass concrete pour in the main dam spillway. 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 inspectors. Examination of batch tickets indicated that the specified design mix was being delivered. Samples of plastic concrete were tested in accordance with specification requirements. The test results indicated that the plastic concrete being placed met the concrete specification requirements for slump, air content and temperature. Examination of the batch plant indicated materials were being controlled and accurate batch records were being generated. Storage of materials (aggregates, cement and admixtures) were observed to be inaccordance with the specification requirements. Acceptance criteria examined by the inspector appear in PSAR Section 5, EBASCO specification CAR-SH-CH-6, CP&L Procedures CQC-13, TP-15, QCI 13.3, and WP-3 through WP-5, and drawing numbers 2167-G-6253 and 2167-G-6380.

The inspector also witnessed cadwelding of reinforcing steel in the Ogee section of the main dam spillway. The inspector observed cleaning and preparation of the reinforcing steel ends to be cadwelded, placement of the cadweld sleeves on the reinforcing steel, filling of the crucible with cadweld filler metal, and ignition of the filler metal. The inspector discussed the cadweld inspection requirements with the

QA/QC specialist who was inspecting the cadweld operations. Acceptance criteria examined by the inspector appear in PSAR Section 5, EBASCO Specification CAR-SH-CH-15, CP&L procedure CQC-15 and WP-1, and drawing number SD/A-C-0123.

No violations or deviations were identified.

7. Containment (Structural Concrete I) - Observation of Work and Work Activities, Unit 1

The inspector observed cadwelding of three cadwelds in the eight row vertical reinforcing steel at the elevation 364 level of the Unit 1 containment building. The inspector observed cleaning and preparation of the reinforcing steel ends to be cadwelded, placement of the cadweld sleeves on the reinforcing steel, and inspection of completed cadwelds. The inspector inspected the cadwelds listed below after they had been inspected and accepted by the QA/QC specialist performing the cadweld inspection. Completed cadwelds examined by the inspector were numbers 1-C-8-847, 1-C-8-851, 1-C-8-857, 1-C-8-861, 1-C-8-869, and 1-C-8-873. The inspector discussed the cadweld inspection requirements with the QA/QC specialist who was inspecting the completed cadwelds to verify that he was cognizant of the cadweld inspection requirements. Acceptance criteria examined by the inspector appear in PSAR Section 5, EBASCO Specification CAR-SH-CH-15, CP&L procedures CQC-15 and WP-1, and drawing number SD/A-G-0043.

No violations or deviations were identified.