



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

Report Nos. 50-400/79-18, 50-401/79-18, 50-402/79-17 and 50-403/79-17

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

Facility Name: Shearon Harris Nuclear Power Plant

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

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

Inspection at Shearon Harris site near Raleigh, North Carolina and Corporate Offices in Raleigh, North Carolina

Inspector: R. D. Bradley 10/11/79  
 R. D. Bradley Date Signed

Approved by: J. C. Bryant 10/18/79  
 J. C. Bryant, Section Chief, RC&ES Branch Date Signed

Inspection on September 4-7, 1979

Areas Inspected

This routine, unannounced inspection involved 39 inspector-hours onsite in the areas of construction progress; crane damage to safety related structure; concrete repair activities; licensee identified items; IE circular 78-08; organization and functional alignment of site inspection personnel; and the corporate auditing program.

Results

Of the areas inspected, no items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*P. W. Howe, Vice President, Technical Services
- \*T. H. Wyllie, Senior Construction Manager
- \*N. J. Chiangi, Manager, Engineering & Construction QA
- \*S. McManus, Manager, Corporate Nuclear Safety & QA
- \*R. M. Parsons, Site Manager
- \*A. M. Lucas, Senior Resident Engineer
- \*G. L. Forehand, Principal QA Specialist
- \*I. A. Johnson, Principal QA Specialist
- \*G. M. Simpson, Principal Construction Inspection Specialist

Other licensee employees contacted included two construction craftsmen, three concrete foremen, two area superintendents, three QA inspectors, two senior QA specialists, and the principal engineer for welding.

#### Other Organizations

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

\*Attended exit interview.

### 2. Exit Interview

The inspection scope and findings were summarized on September 7, 1979 with those persons indicated in Paragraph 1 above.

### 3. Licensee Action on Previous Inspection Findings

Not inspected.

### 4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. New unresolved items identified during this inspection are discussed in paragraph 6d.

### 5. Independent Inspection

#### a. Construction Progress

The inspector conducted an inspection of the containments for units 1 and 2, the waste processing building, fuel handling building, and reactor auxiliary building for unit 2. Observations were made of

concrete acceptance for placement 1FWIW261006 on batch ticket 38116, proper drum counter performance for concrete trucks 6795 and 6796, extent of damage to the unit 2 reactor auxiliary building due to an industrial crane accident and performance and inspection of a dry pack concrete repair in the waste processing building.

Erection of the fifteenth ring of liner plate for the unit 1 containment building has been completed. Chicago Bridge and Iron is continuing to prefab containment dome plate and to erect the dome. Prefabrication work is now 50% complete and erection work is currently 18% complete. Installation of reinforcing steel continues in loop numbers 1, 2 and 3 of the steam generator and reactor coolant pump foundation. Final alignment of anchor plates, installation of reinforcing steel, and installation of forms are nearing completion in preparation for concrete placement in loop number 3.

b. Damage to a Safety Related Structure

On August 22, 1979, an industrial accident involving a large crawler crane occurred at the Harris site. Region II was informed that the crane had overturned into the unit 2 reactor auxiliary building, injuring three construction workers and causing minor damage to the safety related structure. During the course of this inspection, the inspector examined the affected areas, held discussions with site management and reviewed the applicable discrepancy report (C-286) and associated damage assessment report and location sketch.

Damage was confined to three locations within the unit 2 reactor auxiliary building and consisted of rebar deformation and minor concrete surface spoiling. Repairs will be made to rebar by cutting and removing the damaged lengths and Cadwelding new bars in place in accordance with work procedures 01 and 15. Concrete surface repairs will be accomplished in accordance with work procedure 27. As the discrepancy report did not document the complete corrective action and resolution of this damage, this matter is being identified as Inspector Followup Item 401/79-18-05, Damage to reactor auxiliary building. Personnel injuries are being investigated by the State of North Carolina.

c. Repairing of Concrete Surfaces

The inspector reviewed the following documents and held discussions with responsible contractor and utility personnel regarding the associated QA program work in the area of concrete repairs:

Work Procedure WP-27, Repairing of Concrete Surfaces

Quality Control Instruction QCI 13.4, "Concrete Repair Inspection"

Technical Procedure TP-15, "Concrete Placement Inspection" Ebasco Specification CAR-SH-CH-6, "Concrete"



### Field Change Request FCR-C-740 to Specification CAR-SH-CH-6

Concrete activities accomplished in accordance with the above procedures were then observed by the inspector for repair placement 1WPSL236007. One quarter of a cubic yard of dry pack mix was delivered to the waste processing building on batch ticket 38114 and hand mixed with water in a mortar box until the hand ball requirements for grouting were achieved. Three 2" cubes were made of the M-20 mix and retained for 24 hours prior to being forwarded to the concrete laboratory for curing. Prior to witnessing the mix placement, the placement report (exhibit 1 of WP-27) was reviewed to ensure preplacement checkout had been accomplished as required.

As the void to be repaired was located in the upper portion of a concrete beam adjacent to the ceiling, field change request FCR-C-740 was applicable to permit use of a dry pack mix where repair with replacement concrete or preplaced aggregate is not possible to assure a satisfactory patch. The void was cleaned and an epoxy bonding compound (Sikastix 370) was applied as a bonding medium. The M-20 mix was placed using a 2" X 2" packing rod and Nutec 10 curing compound was applied to retain moisture. The placement and post placement checklists (exhibits 2 and 3 of TP-15) were completed, and each was reviewed by the RII inspector. The inspector determined that observed placement and inspection activities were performed in accordance with the referenced procedures within the allotted time frame (90 minutes). However, the inspector pointed out that work procedure WP-27 is in need of revision to ensure the inspection records associated with the repair accurately reflect what was accomplished. That is:

#### Concrete Placement Report

- (1) There was no cross reference on the report to the applicable procedures, WP-27 or QCI-13.4.
- (2) The area engineer signed off the placement as required, but he is using the spaces designated for construction inspection and QC, when in fact the QA unit is accomplishing the QC inspection. The QA unit signed the appropriate blocks.

#### Placement and Post Placement Checklists

The titles adjacent to the two approval signatures need to be changed to reflect the organization of the authorized signatures appearing on the forms.

The observations noted above can be attributed to using production placement forms for nonroutine repair activities. The licensee took immediate action to revise the appropriate documents. This matter is designated as Inspector Followup Item 400,401/79-18-01 and 402,403/79-17-01, Concrete repair procedure.



5



d. Organizational and Functional Alignment of Site Inspection Personnel - Implementation

The licensee's organizational and functional alignment for site inspection personnel was discussed in detail with site management to determine if the site organization described in inspection report 50-400,401/79-15 and 50-402,403/79-14 had been fully implemented. It was determined that the Electrical and Mechanical units of the CP&L Construction Inspection organization were staffed with construction engineering discipline personnel who are performing duties associated with erection/construction. This matter was identified to the licensee as Unresolved Item 400,401/79-18-02 and 402,403/79-17-02, Organizational and functional alignment of site inspection personnel, pending further evaluation by the inspector.

e. Corporate Auditing Program

On September 5, 1979, the inspector traveled to the CP&L corporate offices in Raleigh, North Carolina to examine the licensee's system for performing audits of the project QA program. The Corporate Nuclear Safety and QA Audit (CNS & QAA) manager has been given the responsibility for implementing the corporate audit program which has been established and defined within the corporate and ASME QA manuals. He reports to the vice president for Nuclear Safety and Research and is independent of power plant construction responsibilities. Audits are regularly scheduled on the basis of the status and nuclear safety importance of the activities to assure compliance with the implemented program. The frequency of scheduled audits is covered by Quality Assurance Audit Instruction (QAAI-1), figure 1, which currently specifies semi-annual site audits for both power plant construction (corporate QA manual) and ASME code construction (ASME QA manual).

The inspector discussed the following corporate audit program procedures with the section manager and two principal QA specialists responsible for auditing site QA activities:

QAAP-1, "Procedure for Corporate and ASME QA Audits," revision 8.

QAAI-1, "Instruction for Preparing, Distributing, and Maintaining the Corporate QA Documents and the Corporate QA Program." revision 7.

To verify compliance with the above documents, the inspector reviewed the QA audit checklist and associated planning for audit 170-2, the audit schedules for 1978 and 1979, the reports for audits 81-11, 81-12, and 170-1, and the controls for effective and timely corrective action. The credentials of one of the lead auditors were also reviewed and determined to be in accordance with instruction QAAI-2, "Instruction for Training and Qualification of QA Program Audit Personnel".

The inspector determined that an adequate audit schedule was being maintained, site audits were being performed in accordance with established program procedures, and audit findings were being identified and closed out in a timely manner. The inspector did point out however, that in the future there should be a discernible effort made to place additional emphasis on auditing those quality control activities being performed by the site QA unit.

As previously discussed in inspection report 50-400,401/79-15 and 402,403/79-14, the CP&L site QA unit is monitoring, on a continuing basis, the constructor and the Construction Inspection unit in the performance of specific electrical, mechanical, and civil QC inspections and tests. Similarly, the CNS & QAA section is responsible for monitoring the QC inspections and tests performed by the site QA unit, namely, receiving acceptance, welding, NDE, and specific civil activities. However, the corporate monitoring is performed on a quarterly basis. Therefore, due to the wide variation in monitoring frequency, the licensee should be prepared to demonstrate that his program for monitoring QC inspections and tests places proper emphasis on all elements of the total QC program, regardless of the organizational unit performing the inspections and tests. This matter was identified as Inspector Followup Item 400, 401/79-18-03 and 402, 403/79-17-03, Corporate audit planning.

Within the above areas of inspection, no items of noncompliance or deviations were noted.

6. Licensee Identified Items (10 CFR 50.55(e))

Prior to this inspection, the licensee identified the following items under 10 CFR 50.55(e):

- a. (Open) Item (400,401/79-14-01 and 402,403/79-13-01), Improper welds on engineered embedment plates. The licensee's evaluation of this deficiency is continuing. The quantity of installed plates affected and their location have been identified. Uninstalled plates have been placed on QA hold and the architect-engineer has provided an alternate fillet weld design for their repair. A written interim report is scheduled for submittal to Region II on September 5, 1979.
- b. (Open) Item (400,401/79-18-04), Lack of post weld heat treatment on nozzles for containment valve chambers. The inspector was informed by the licensee on August 24, 1979, that a potential 55(e) deficiency had been identified to them by Ebasco. The architect - engineer was informed by the fabricator, Graver, that the Unit 1 and 2 valve chamber nozzle to shell welds (30" diameter, 18" diameter, 48" manway and 4" diameter) were not post weld heat treated as required by paragraph



NE-4322 of the ASME code, section III, division 1, winter 1971 addenda. The valve chambers for unit 1 have been embeded. CP&L is currently re-evaluating code and procurement requirements to determine if they concur.

7. Inspection and Enforcement Circular Status

(Open) 78-CI-08: Environmental Qualification of Safety-Related Electrical Equipment at Nuclear Power Plants. The inspector was informed by the Nuclear Licensing Unit that work on formulating a proposal for NRR review on the examination requested by the subject circular is nearing completion. This item will remain open pending review of the licensee's actions with regard to the subject IE circular.