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

Report No.: 50-400/85-04

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: January 20 - February 20, 1985

Inspectors: R. K. Hardin for 3/6/85
G. F. Maxwell Date Signed

R K Hardin for 3/6/85
R. L. Prevatte Date Signed

Approved by: R K Hardin for 3/6/85
Paul E. Fredrickson, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine, announced inspection entailed 243 resident inspector-hours in the areas of heating, ventilation and air conditioning; electrical; preoperational test program; fire prevention and protection; nonconformance control; storage and other areas.

Results: Of the seven areas inspected, no violations or deviations were identified in six areas; two violations were found in one area (Violation - inadequate inspection for electrical separation; Violation-inadequate electrical design).

No apparent deviations were found.

REPORT DETAILS

1. Licensee Employees Contacted

*R. A. Watson, Vice-President, Harris Nuclear Project
C. C. Wagoner, Project General Manager, Construction
*R. M. Parson, Project General Manager, Construction Confirmation Completion
J. L. Willis, Plant General Manager, Operations
*E. J. Wagner, Manager Engineering
L. I. Loflin, Manager Harris Plant Engineering Support
M. Thompson Jr., Manager Engineering Management
B. Van Metre, Manager Harris Plant Maintenance
*N. J. Chiangi, Manager QA/QC Harris Plant
C. S. Hinnant, Manager Start-up
J. M. Collins, Manager Operations
*A. H. Rager, Manager Construction Inspection
*G. L. Forehand, Director QA/QC
C. S. Bohanan, Director Regulatory Compliance
M. D. Vernon, Superintendent QC
*D. A. McGaw, Superintendent QA

Other licensee employees contacted included 15 construction craftsmen, 20 engineers 10 operators, 12 mechanics, and 8 office personnel.

Other Organizations

*G. F. Cole, Vice-Presient Daniel Construction Company
*J. P. Kirk, Project Administrator Daniel Construction Company

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on February 20, 1985, with those persons indicated in paragraph 1 above.

No written material was provided to the licensee by the resident inspectors during this reporting period.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the resident inspectors during this inspection.

The violations identified in this report have been discussed in detail with the licensee. They concur with these findings.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

New unresolved items were not identified during this inspection.

5. Heating, Ventilation and Air Conditioning System (HVAC) (50100)

The inspector selected two documentation packages for HVAC hangers on which the work had been completed, inspected and had received final documentation review. These packages were for hangers F-5868-1A and F-5870-1A in the diesel generator building at elevation 292',. The inspector then accompanied Quality Control (QC) welding inspection personnel and Construction Inspection (CI) hanger inspection personnel who performed a reinspection of the welding and physical mechanical attributes of these components. The following were evaluated during this inspection:

a. Proper location, configuration, identification, and damage, if any;

b. Installation in accordance with approved drawings, procedures, and instructions;

c. Attachments properly installed;

d. Fastening material type, identification, and torquing;

e. Interferences identified;

f. Welding in accordance with approved drawings and procedures;

g. Inspection personnel qualifications; and

h. Inspection results and nonconformances properly documented.

No violations were deviations were noted in the areas inspected.

6. Electrical (51053C, 51063C, 92706B)

a. The inspector selected two completed documentation packages associated with the 120 vdc power supply cables for the uninterruptible power supply cabinets S2 and S3. These cables are identified as 11795B-SA, 11795M-SA, 11795U-SA and 11795V-SA. The cables were selected primarily to review an installation in which all work and inspection and been completed and the components had received a final documentation review. An inspection of the completed installation showed that it had been installed in accordance with the applicable design requirements.

A walkdown of the cable routing revealed at least one instance where the five foot vertical separation requirements of IEEE standard 384 and Regulatory Guide 1.75 were not met. It was noted that where conduit 16101V-SA passes directly above nonsafety trays X1700 and X1701 at plan points 3042 and 3044 in the reactor building at elevation 286', the vertical separation distance is approximately 24". The nonsafety tray

installation had been installed and inspected on August 26, 1982, and the safety-related conduit 16101V-SA was inspected on March 23, 1984. The inspection of the safety-related conduit failed to identify this lack of separation distance. Construction inspection procedure "Installed Electrical Raceway and Components" (TP-42), paragraph 3.5.4 requires that this attribute be inspected and documented on the raceway/conduit installation card and TP-42, exhibit 7 by the construction inspector. A review of these two applicable documents showed the inspector documented this installation as having no separation problem. Upon being informed of this unsatisfactory condition by the inspector, CP&L documented this item on Nonconformance Report 85-0239.

The above instance is contrary to the requirements of 10 CFR 50, Appendix B, Criterion X, ANSI N45.2 and the Preliminary Safety Analysis Report Section 1.8.5.10. This is a violation, "Inadequate Inspection for Electrical Separation" 400/85-04-01.

b. The inspector, as a part of an independent inspection, observed a #10AWG two conductor cable terminated to a 100 ampere rated breaker in 125vdc cabinet DP-11SA. This circuit was identified from drawing CAR-2166-B-041, Sheet 674 as circuit No. 33 and the cable was identified as 10821A-SA. A review of the cable pulling and termination cards showed that this work had been completed and had received the final acceptance inspection. A review of other applicable design documents showed that the circuit had been installed in accordance with design drawings. A Number 10 cable is designed to carry a maximum current of approximately 24 amps. A review of this circuit showed that it was the power supply to the transfer relays for auxiliary transfer cabinet 1A-SA which has a loading of nearly 100 amps. The as-built condition of this installation would have resulted in excessive cable overloading and large cable voltage drops that would have resulted in cable failure. Upon identification of this unsatisfactory condition by the inspector, CP&L issued Nonconformance Report 85-279 to document this item.

Discussions with the Integrated Design Inspection Team which conducted a review of this Harris Plant design during this inspection period revealed that they had also identified this and other additional problems while reviewing electrical circuit designs at the offices of EBASCO, architectural engineer for CP&L, in New York.

The failure of design to select the correct size cables for this installation is contrary to the requirements of 10 CFR Appendix B, Criterion III, ANSI N45.2.11 and the Corporate QA Manual Section 3. This is violation, "Inadequate Electrical Design" 400/85-04-02.

Except as noted, no violations or deviations were identified in the areas inspected.

7. Preoperational Test Program (71302)

a. The inspector conducted tours of the various plant areas. The following items were observed and assessed during the tours to assure compliance with requirements.

(1) The general condition of housekeeping and the overall condition of equipment was observed.

(2) The plant was found to be free of any major fire hazards.

Flammable materials were being protected from ignition sources and were being controlled in accordance with site administrative procedures.

(3) In-process test activities were observed for the component cooling water pumps and portions of the system. During the weeks of January 28 and February 4, 1985, the inspector observed the running of the pumps to fulfill the requirements of Operations Test Procedures E-5 and E-10 (electrical motor and pump test procedures).

On February 7, 1985, the test crew encountered excessive vibrations on the outboard end of the component cooling water pump identified as 1B-SB. The pump was tagged out of service; the outboard pump bearing was replaced; the pump and motor were realigned and coupled, and the required portions of procedures E-5 and E-10 were conducted again.

The inspector inquired about the methods employed by CP&L to evaluate the pump bearing problems associated with component cooling water pump 1B-SB. As a result, the inspector was informed that the bearing was found to have been installed backwards. The inspector continued the inquiry and found that the incorrect installation of the bearing had occurred in the manufacturer's shop. The inspector asked to see the documentation which identified the unsatisfactory pump condition, to assure that the condition was properly evaluated for potential reportability to comply with 10 CFR 50.55(e) and 10 CFR 21. Initially the document, a Work Request Authorization (WRA) which identified the bearing condition, did not contain sufficient information to allow a proper evaluation by the responsible group, Regulatory Compliance. The inspector asked if other WRAs have been evaluated for reportability with a similar lack of sufficient detail. As a result of the inquiry, CP&L has written a nonconformance report (NCR-85-0434) identifying the inspector's concern. This condition will be identified as an Inspector Followup-Item, "Evaluation of Maintenance Work Requests and Authorizations for Reportability", (400/85-04-03). This concern will be evaluated further after NCR-85-0434 has received resolution and corrective action to address preventive measures.

The inspector observed portions of the activities related to the flushing of the charging and safety injection pumps and piping. Prior to initially starting the pumps, the pump manufacturer's representative evaluated the motor/pump alignment and coupling against the specifications. CP&L had the pump manufacturers' representative present during the operation of the pumps to evaluate pump performance. The flushing operations were conducted in accordance with the approved procedure (1-2060-F-02). The prerequisite procedures were completed on or about February 6, 1985, prior to conducting the flushing operations. The flush included running each of the charging pumps, 1A-SA, 1B-SB and 1C-SAB.

(4) The inspector observed electrical personnel placing cables in their respective cable trays and conduits. Sufficient care was being taken to prevent damage to the cables being placed and to cables which were already installed.

b. The inspector observed operations personnel deenergizing electrical components as required by the clearance program when equipment is being placed out of commission for repairs, tests or rework.

c. The inspector observed the status of the plant being correctly identified in the control room by operations personnel. The roving operators were making frequent tours of the various buildings and were maintaining adequate control of plant systems and equipment.

d. The inspector observed the in-process monthly audit, by CP&L Operations personnel, of the equipment clearance tagging system. The audit was conducted to determine if the tags were in place and if equipment, i.e. valves and switches, was in the appropriate position such as open, closed, or off. The inspector observed that the audit identified as least seven situations where the clearence tags were either missing, equipment was not in its proper position, or the tags had an incorrect switch/valve number.

e. The frequency and intensity of the site Operations QA Surveillance activities have increased during the last three months. The inspector observed the presence of QA Surveillance personnel during the testing and flushing operations of safety-related systems.

No violations or deviations were identified in the areas inspected.

8. Fire Prevention/Protection (42051C, 92706B)

a. The inspectors observed the fire prevention and protection activities related to containing combustible materials where the ignition of these materials could damage safety-related structures. The inspectors also observed the on-going site training activities for the construction fire brigade.

b. Some of the specific areas observed by the inspectors during this period are as follows:

(1) Nonflammable protective coverings were observed over such equipment as the electrical control cabinets at elevation 296' of the reactor auxiliary building and over various safety-related pumps and components located throughout the plant.

(2) The inspectors observed during the various tours of the reactor auxiliary building and the containment building that the accumulation of combustible materials in these areas was being minimized.

(3) Flammable materials were stored to prevent or reduce the likelihood of combustion.

(4) Welding activities were observed in at least 15 separate locations throughout the site and in each instance it was observed that appropriate fire extinguishing equipment was available within close proximity of the welding activities. It was also noted that the portable fire extinguishers contained sufficient fire extinguishing medium, as evidenced by displaying current inspection stickers and having unbroken seals.

(5) The inspectors observed that at the various elevations throughout the reactor auxiliary building and the containment building, fire suppression devices are strategically located and readily available for use.

c. A review of the fire brigade drill and training records showed that drills and training are conducted on a regular basis for the fire brigade members.

During the above observations the following were referenced for requirements: FSAR section 1.8 and 9.5; Regulatory Guide 1.39, NFPA Standard 241 and AP-VII-03 (exhibits, 2, 3 and 4).

No violations or deviations were noted in this areas inspected.

9. Nonconformance Control (92706B)

The inspector reviewed closed nonconformances 84-2266, 84-2496, 84-2306, 84-2469, 84-2480, 84-1857, 84-2406, 84-2337, 84-2430, and 84-0170. This sample of ten closed nonconformances was reviewed to determine the following:

a. Adequacy of identification of nonconformances;

b. Proper review and evaluations;

c. Correction disposition and details:

d. Verification, acceptance and review of disposition;

e. Performance of reinspections;

f. Adequacy of corrective action and preventive measures.

g. Proper final review and closeout.

No violations or deviations were noted in the areas inspected.

10. Storage (50073C and 92706B)

The inspector toured warehouses 1, 2 and 3, the operations warehouse, and various plant equipment storage areas. During the tours, the storage conditions of the equipment were evaluated to determined whether requirements are being met as follows:

a. Piping and equipment, in general, were stored off the ground or floor to prevent entry of dirt into them, or contamination from environmental conditions.

b. The storage areas were identified sufficiently to provide identification and locations as required.

c. Access was adequate for placement or removal of parts and equipment.

d. Warehouse equipment was stored in the correct position.

e. The temperature and humidity controls were being maintained as required.

f. Access to plant storage areas was being maintained.

g. Equipment installed heaters were energized as required.

h. Protective covers were in place.

During the observations, the following were referenced for requirements: PSAR Section 1.8, and construction procedures AP-XIII-07 and PGD-002.

No violations or deviations were identified in the areas inspected.

11. Other Activities

a. The resident inspector assisted the I&E Headquarters Integrated Design Inspection team (IDI) during its inspection. IDI electrical inspectors were onsite February 11, 1985, to complete this inspection. The IDI exit meeting was held at the Harris Energy and Environmental Center on February 13, 1985. Region II attendees were P. Bemis, Director, Division of Reactor Safety; P. Fredrickson, Section Chief for CP&L plants, and the resident inspectors for construction and operations.

The IDI team's findings will be summarized in a report to be issued in approximately 60 days.

b. The inspectors observed the ongoing activities associated with inspections on the disassembly and reassembly of the Transamerica Delaval diesel engines. Both of the engines are nearly reassembled. Start-up testing on these units will be accomplished as systems are completed by construction, to support this testing.

c. During this reporting period four Region II inspectors visited the Harris site. The results of their inspections are documented in separate Region II inspection reports.

d. The resident inspector (construction) accompanied CP&L construction turnover personnel on a walkdown of the intermediate head passive safety injection system. The system is identified by CP&L as RFT 1-2090-001. These walkdowns are to identify work that must be completed by construction prior to system turnover to operations. On this system numerous items were identified where work must be completed before the system is ready for turnover. The resident inspector will continue to track this system until it is turned over to operations.