



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

Report Nos. 50-400/82-24 and 50-401/82-24

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

Facility Name: Shearon Harris

Docket Nos. 50-400 and 50-401

License Nos. CPPR-158 and CPPR-159

Inspection at the Shearon Harris site near Raleigh, North Carolina

Inspector: C. W. Burger for 8/3/82
G. F. Maxwell Date Signed

Approved by: C. W. Burger 8/3/82
C. W. Burger, Section Chief, Division of Project and Resident Programs Date Signed

SUMMARY

Inspection on June 20 - July 20, 1982

Areas Inspected

This routine, announced inspection involved 125 resident inspector-hours on site in the areas of bulletins, reactor vessel, electrical raceways and equipment, fire-retarding system, fire protection, concrete and soils, CP&L activities, and unresolved items.

Results

Of the eight areas inspected, no violations or deviations were identified in seven areas; one violation was found in one area (Violation - Failure to identify and correct nonconforming condition on electrical cable tray supports).

DETAILS

1. Persons Contacted

Licensee Employees

- *R. Parsons, Project General Manager
- *G. L. Forehand, Director, QA/QC
- *A. M. Lucas, Senior Resident Engineer
- *D. C. Whitehead, QA Supervisor
- *F. Taylor, Mechanical/Welding QC Supervisor
- *E. E. Willett, Resident Engineer Mechanical
- *B. St. Pierre, Senior Specialist, QA/QC
- *B. Seyler, Principal Civil Engineer

Other licensee employees contacted included 5 construction craftsmen, 11 technicians, and 20 office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 19, 1982, 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 violations or deviations. A new unresolved item identified during this inspection is discussed in paragraph 8.a.

5. Unresolved Item (Open), 400/82-17-01 "Seismic Data for the Platform for the Reactor Make-up Water Pump"

The inspector was provided a copy of a report which Westinghouse has for the seismic shock analysis for various Chempumps. Chempump Division of Crane Company in Warrington, PA. provided the seismic information as a part of the purchase of the reactor make-up water pumps. A review of the data indicated that the reactor make-up water pumps were seismically qualified by analysis, not by testing. As a result of the inspector's evaluation of the report (A-16799), several questions have arisen:

- a. Paragraph 4.5 (page 18.0) of the report shows that the gusset brace requires four 1/4" spot welds per brace. Actual measurement indicates

a maximum weld size of about 3/16", which will probably result in a weld nugget size of less than .190".

- b. The calculations under paragraph 4.3 are in question as to how the pump cradle is attached to the pump base plate (the member attached to the hold down bolts).
- c. The Fh depicted under paragraph 4.4.3 (page 15.1) is questionable as to whether it is representative of the actual pump support hardware. This is based on the fact that the two reactor make-up pumps do not have the same type of motor to pump cradle bolts. From close inspection the type of support fastening materials could not be determined. Also, the pump end of the cradle consists of a "forked" piece of bent metal fastening it to the yoke by a bolt. What, if any, effect may occur because of the "forked" type of fastening device could not be determined.

The inspector inquired about the above concerns; CP&L is trying to get resolutions from Westinghouse. This item remains open.

6. Bulletins

On September 10, and November 21, 1979, CP&L submitted its response to IE Bulletin 79-15. An NRR memo dated June 22, 1982 stated that this subject will be included in the normal licensing reviews. IE Bulletin 79-15 was closed.

7. Reactor Vessel - Unit 1

- a. The inspector evaluated portions of the rigging, handling and relocating of the reactor vessel head, upper and lower internals. The three assemblies were lifted from their stored locations in the warehouse storage yard number 12 by a Manitowac 200 ton crane placed on a transport vehicle and delivered into Unit 1 containment building. The assemblies were lifted from the transport vehicle by the 250 ton containment crane and placed at their predetermined storage location.

The McLeod Trucking and Rigging Co., Inc. was awarded the transporting responsibilities; the other aspects of the rigging and handling responsibilities were carried out by site workers supervised by CP&L.

- b. As a part of the overall evaluation of the above activities the inspector reviewed the following documents and observed:
 - (1) The test results indicated that the lifting devices (Manitowac and Polar crane) were sufficiently tested to the required loading requirements prior to making the actual lifts.
 - (2) The records showed that the required lifting slings and hardware had been sufficiently inspected and tested prior to actual use.

- (3) The lifting and transporting procedures provided sufficient assurances for a safe loading, transporting and unloading of the three assemblies.
- (4) The last assembly to be transported was the reactor vessel lower internals. Because of the weight and importance of the assemblies, CP&L took additional precautions to assure that the transporting vehicle had adequate capabilities, including brakes, which initially failed during a preliminary test run.

During the above, the following were referred to for requirements: PSAR section 1.8; construction procedures WP-06 appendix 12, WP-07, WP-21 and CQA-26.

No violations or deviations were identified in the areas inspected.

8. Electrical Raceways and Equipment - Unit 1

- a. The inspector observed the installation and the installed condition of fire protection electrical conduit and other non-class IE conduits located in the reactor auxiliary building at elevation 216' and 261'. At elevation 216', near columns 27, 32 and 34 there were several non-safety-related, non-class IE conduits with non-seismic I design supports located directly over class IE conduit pull boxes identified as B1332-SB, B1353-SB and B1335-SB), and near the location where two class IE instrumentation racks are to be mounted. The FSAR section 3.2.1.16, page 3.2.1-2, states in part, "In those areas where adequate separation is not possible, the non-safety-related components are provided with seismic supports, or barriers are provided between the safety-related and non-safety-related components."

The inspector discussed the above concerns, in detail, with CP&L site management personnel. The inspector was informed that CP&L does not plan to design and install special seismic supports for non-safety-related conduits which may be near or above safety-related equipment. Rather, CP&L plans to install non-safety-related conduit with commercial grade conventional supports and subsequently conduct seismic tests on the "worst" cases of the various configurations of these commercial grade support mounting methods. In those cases where the commercial mounting methods fail the seismic tests, the supports will be reinforced, or barriers installed.

Currently, there is no documented program to inspect, document, or track those instances in which non-seismic, non-safety-related conduit is installed in the vicinity of class IE or other safety-related equipment. This matter is an unresolved item, "Installation of non-safety-related non-seismic support electrical conduit in the vicinity of safety-related equipment or component" (400/82-24-01).

- b. The inspector observed the as-installed orientation and general location of the emergency diesel generator switchgear identified as

1B-SB. The internals of the switchgear cubicles were randomly inspected and were found to be free of excessive dirt and debris and were adequately protected from adjacent construction activities. The aforementioned switchgear was located in the reactor auxiliary building at elevation 286'.

- c. On June 30, 1982, the inspector, accompanied by a CP&L QC welding inspector, selected and evaluated six class IE seismic I cable tray field welded support joints located in the reactor auxiliary building at about elevation 261'.
- (1) One of the welded joints (item 143G10 on drawing CAR-2168-G 7051) was selected and evaluated to determine whether it was in accordance with construction procedure WP-203 section 3.7. Section 3.7 of WP-203 requires that in instances where the fit-up gap is 1/16" or greater, up to 3/16", the leg of the fillet weld be increased in increments of 1/16", 1/8" or 3/16", such that the increase in leg size is equal to, or greater than, the actual fit-up gap. The fit-up gap for the field welds on item 143G10, noted above, was 3/32", and the applicable drawing required a 5/16" fillet weld for a weld fit-up of less than 1/16". Therefore, the fillet weld should have been increased from 5/16". However, actual measurements indicated that the fillet weld size had not been increased over 5/16" minimum value.
 - (2) The other five weld joints were evaluated to determine whether they were of the correct sizes as specified on the applicable installation drawing, CAR-2168-G7051. One of the welds on cable tray hanger numbered ED2622 was found to be approximately 1/16" undersized. The details on the aforementioned drawing required that the hanger be fastened to the embedded steel plate by a 5/16" fillet weld; actually the weld was 1/4".
- d. On July 2, 1982 the inspector, accompanied by a CP&L QC welding inspector, randomly selected two other seismic weld joints, which had been previously inspected by the same CP&L QC welding inspector who had inspected the six field welds identified in paragraph c. above. These field welds were evaluated to determine whether section 3.7 of WP-203 was being complied with. As a result of this evaluation, the following were observed:
- (1) While shining a flashlight into electrical conduit pull box, identified as B1373SB, the inspector observed light shining through the base metal near the edge of one of the shop welds which had been applied to the box. The burning-through of base metal while welding and not repairing the metal is an unacceptable industry practice, as the burn-through results in questionable structural integrity. The inspector discussed the burn-through with CP&L management personnel, who stated that the final field acceptance of conduit pull boxes requires inspecting vertical shop welds to assure adequacy, and box B1373SB had not yet received

final field acceptance. Upon further inquiry, the inspector was informed by the responsible QC welding inspection personnel that they were not aware that they had to perform visual inspections of the vertical shop welds on conduit pull boxes. On July 16, 1982 the inspector was informed that the responsible CP&L QC welding inspection personnel have placed a hold tag on box B1373SB and will require it to be repaired. Additionally, responsible personnel have discussed in great detail the requirements of construction procedure TP-42 as it pertains to inspection of shop welds by site QC welding inspectors prior to final acceptance. The inspector has no further questions about this matter at this time.

- (2) The field weld which attaches conduit box B1332SB to the embedded steel at column 34 FZ east elevation 216', Unit 1 reactor auxiliary building, was inspected. The weld was found to be marginally acceptable, relative to the requirements of construction procedure WP-203 section 3.7 (increasing weld size for gap 1/16" or greater). The inspector brought this condition to the attention of responsible electrical supervisory personnel who stated that they would request the weld size be increased to assure that the adequacy of its strength could not be questioned.
- e. The inspector informed CP&L management personnel that failure to identify and correct unsatisfactory field welds that have been applied to cable tray supports, as depicted in paragraph c. above, is contrary to 10CFR50, Appendix B, Criterion XV, as implemented by PSAR section 1.8.5.15, and CP&L Corporate QA program, section 15. This is a violation, "Failure to identify and correct nonconforming conditions on electrical cable tray supports" (400/82-24-02).

The above inspections were conducted against requirements set forth in the following documents: PSAR section 1.7, 1.8; FSAR section 3.2., 7.0, 8.0 through 8.3; specification CAR-2166-B-060; construction procedures WP-203, WP-204, WP-205, TP-28, TP-42, TP-17, CQC-2 and drawing CAR-2168-G7051.

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

9. Fire Retarding System-Unit 1

- a. The inspector reviewed the design change notice (DCN-560-162) which affects the installation of a fireproofing material which is to be applied in Unit 1 reactor auxiliary building at elevation 286'. The materials (Thermo-Lag) are being applied to selected area within the reactor auxiliary building electrical cable spreading room. Currently, the Thermo-Lag coating system consists of three components: 351 primer (to reduce oxidation of the steel being coated), 330-1 subliming compound (this material is the fire-retarding component), and then 350-2000 topcoat. The manufacturer of the coating system allows the

application of the material either by spray, brush or roll on, or a combination of these methods.

- b. Thermo-Lag is rated as having a three-hour fire rating, and depending upon the material being coated, the thickness of the application varies between one-half to three-fourths of an inch ($\frac{1}{2}$ "- $\frac{3}{4}$ "). Because of the additional weight due to the coatings [one-half inches of the coatings weighs about 3.2 pounds per square foot (dry weight)], some of the steel supports require additional reinforcement to attain their required rated support values.
- c. The application and usefulness of Thermo-Lag, as it relates to the fire ratings of the cable spreading room, will be evaluated during subsequent inspections, either by the resident inspector or RII specialists.

During the above review the following were referred to for requirements: 10CFR50, Appendix A; 10CFR50, Appendix R; IEEE-279; IEEE-384; FSAR section 9.5; construction procedure WP-45; TP-43; and design change notices DCN-560-162, DCN-650-742, 734, 724, and 697.

No violations or deviations were identified in the areas inspected.

10. Fire Protection Units 1 and 2

- a. The inspector witnessed a fire brigade drill on June 30, 1982 for the first shift. A fire was simulated on the north side of Unit 2 containment building. Since last documented in RII inspection report 50-400/401-82-10, the first shift fire brigade has been reduced by one person (from 14 to 13 trained members). During the drill it took approximately ten minutes to locate a suitable vehicle and transport the fire equipment to the drill site. Upon inquiry, as to why the arrival time was more than the normal 5-7 minutes, the inspector was informed that the site had recently built a fire brigade wagon which houses the required fire brigade equipment, and that it was difficult to locate a vehicle that would hook up to this wagon. During the drill, the inspector observed the presence of responsible CP&L construction supervisory personnel and a representative from CP&L's fire insurer.
- b. The inspector randomly selected and checked 25 portable fire extinguishers throughout the site and found each of them to be in usable condition and available for use. During one tour of the power block, the inspector observed one instance in which welding slag fell onto, and ignited, a burlap bag which was beneath the area being welded. The minor fire occurred just outside and west of the equipment loading ramp for Unit 1 containment building. No damage was inflicted on any permanent plant equipment, and workers quickly extinguished the fire by stomping it out.

During the above observations, construction procedure AP-VII-03 was referenced for requirements.

No violations or deviations were identified in the areas inspected.

11. Concrete and Soils Unit 1

- a. The inspector observed portions of concrete placement being made in Unit 1 fuel handling building (pour number 1FHSL216013). The observations included the following:
- (1) The condition of the concrete forms was inspected for cleanliness, level and tightness.
 - (2) Concrete placement activities were inspected as they pertained to delivery time, rate of rise, free fall and testing of the concrete at the point of delivery and consolidation.
 - (3) Construction inspection personnel were present to assure compliance with the specification and procedural requirements.
 - (4) Suitable weather protection was provided, as applicable.
- b. While the above pour was in-process, the inspector observed that an unidentified piece of scrap steel, measuring about one and one half inches by ten feet ($1\frac{1}{2}'' \times 10'$), had been inadvertently overlooked by inspection personnel during the pre-placement inspection. The inspector brought the piece of steel to the attention of responsible inspection personnel; the unauthorized piece of steel was removed from the pour location prior to being encased in concrete. The inspector has no further questions about this matter, at this time.
- c. The inspector observed backfill operations for the excavations which were previously made for containment buildings number 3 and 4. The required backfill materials from the top of the in-place seal mats to elevation 216' will be modified random fill to adjacent plant grade elevation. The design engineer authorized compaction to be by machine in layers not more than twelve inches, compacted to a density of not less than 95%. Ten percent of the verification Standard Proctor Density tests are allowed to fall below the specified requirement. Permeability tests for the purpose of verifying that the permeability does not exceed 30 feet per year, are required, in accordance with the Bureau of Reclamation Department test procedure E-19, for every 5000 cubic yards of material placed.

The following were referenced during the above observations: PSAR section 1.4, 1.8; design specification CAR-SH-CG-6 and CAR-HS-8; construction procedures WP-01, WP-05, WP-15, COA-6, TP-17 and TP-02; FCR-C-3027 rev. 1.

No violations or deviations were identified in the areas inspected.

12. CP&L Activities - Units 1 and 2

- a. On or about June 29, 1982, the INPO team that was assessing CP&L and which is discussed in RII report 400/401/82-21, held its closing exit meeting with CP&L senior management personnel. The inspector was informed by CP&L personnel that the results of INPO's assessment were summarized by approximately 17 final points. Several of the summary points were "good practices", and the remaining points were areas which CP&L may consider as "opportunities for improvement."
- b. The inspector attended a meeting held near Durham, N.C. on July 12, 1982. The meeting was held between some of the citizens who have petitioned to intervene in the licensing of Units 1 and 2 NRC, and CP&L. The purpose of the meeting was to obtain agreement on certain administrative and procedural matters prior to the prehearing conference that was to be held on July 13 and 14, 1982. Attempts were made by CP&L and the intervenors to summarize many of the common concerns which several intervenors had, and present them as more simplified and summarized. The meeting ended at about 5:30 p.m. on July 12, 1982 with no major accomplishments other than a more thorough understanding by CP&L as to the concerns of the intervenors. On July 13 and 14, 1982, the inspector attended the pre-hearing conferences held in Raleigh, NC in the North Carolina Public Staff hearing room. The same intervenors who attended the meeting the previous day near Durham, N.C., and other intervenors attended the pre-hearing meeting. Early on July 13, 1982 the intervenors presented the Administrative Judges, the NRC staff and CP&L with a compiled list of areas in which they had summarized some of their common concerns. During the meeting, each of the petitioners had ample opportunity to express each of their concerns, as required, and restate concerns which had been filed previously with the NRC. The Administrative Judges informed those present that an "order" would be written as a result of the pre-hearing, and the notes of the hearing would be published in about two months.

No violations or deviations were identified in the areas inspected.