



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-400/84-27

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

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Harris Unit 1

Inspection Dates: August 6-10, 1984

Inspection at Harris site near Raleigh, North Carolina

Inspector: N. Merriweather
N. Merriweather

8-27-84
Date Signed

Approved by: T. E. Conlon
T. E. Conlon, Section Chief
Engineering Branch
Division of Reactor Safety

8-27-84
Date Signed

SUMMARY

Areas Inspected

This routine, unannounced inspection involved 32.5 inspector-hours on site in the areas of protective relay settings, electrical equipment installations, previously identified enforcement matters, battery maintenance, and licensee identified items.

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one apparent violation was found in one area (Inadequate QA Interface Procedures Between Harris Plant Engineering and CP&L's Transmission Department for the Development and Distribution of Protective Relay Settings, paragraph 6).

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons, Project General Manager
- *N. J. Chiangi, Manager, QA/QC Harris Plant
- *L. I. Loflin, Manager, Harris Plant Engineering
- *M. Thompson, Manager, Engineering Management
- *G. L. Forehand, Director of QA/QC
- *A. Cockerill, Resident Electrical Engineer
- *E. E. Willett, Resident Mechanical Engineer
- *B. Langlois, Construction Inspection Unit Supervisor
- *D. C. Whitehead, QA Supervisor
- *D. A. McGraw, Superintendent - QA
- *M. D. Vernon, Superintendent - QC
- L. Speece, Lead Engineer
- B. Morris, Project Engineer
- S. McCoy, Site Engineer
- *S. Hinnant, Start-up Representative
- L. Ketchum, CI Supervisor
- *M. Wallace, Construction Specialist

Other licensee employees contacted included QC technicians and other office personnel.

Other Organizations

- P. Aidemirski, Ebasco Senior Engineer
- S. Dey, Ebasco Senior Engineer
- *G. F. Cole, Vice President, Daniels Construction Company

NRC Resident Inspector

R. L. Prevatte

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on August 10, 1984, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below and there were no dissenting comments.

- Violation 400/84-27-01, Inadequate QA Interface Procedures Between Harris Plant Engineering and CP&L's Transmission Department for the Development and Distribution of Protective Relay Settings, paragraph 6.
- Inspector Follow-up Item 400/84-27-02, Review the Final Disposition and Closeout of NCR 83-111, paragraph 7.b.

3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Unresolved Item 50-400/84-12-02: Acceptance Requirements for EDG Cable Replacement. During a previous NRC inspection (Report No. 50-400/84-12), three concerns were identified regarding replacement of defective cables on emergency diesel generators 1A-SA and 1B-SB. The concerns and resolutions are discussed below:

- a. Concern: What acceptance criteria was used to accept the soldering of leads on the governor connector plugs?

Resolution: All rework was supervised by the Transamerica Delaval, Inc. (TDI), vendor representative and acceptance by QC was based upon the vendor representative being satisfied that the work met TDI acceptance requirements. However, the vendor representative had not provided the licensee with documentation indicating that the rework was in accordance with TDI instructions. In a letter dated June 27, 1984, TDI informed CP&L that the cable replacement work was performed in accordance with TDI Service Memo 361, Rev. 1. This item is considered closed.

- b. Concern: Is the soldering material traceable to what was specified by FCR-E-1959 (R1)?

Resolution: The licensee reviewed their purchasing records and determined that only safety-related soldering material has been purchased for on site use. The soldering material purchased was 60/40 resin core which is the same type solder that was specified on FCR-E-1959, Rev. 1. This item is considered closed.

- c. Concern: A conflict exists between work procedures and the equipment modification procedure (WP-137) in that crimping tools are not identified for traceability.

Resolution: The licensee checked all crimping tools used during the period in question and verified that no crimping tools were out of calibration. In addition, the licensee has instituted a construction inspection hold point on all rework packages involving cable terminations to ensure that all calibrated tools and their recalibration due dates are identified on Exhibit 3 of the work package. This item is considered closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort (92706)

The inspector examined the maintenance log of periodic maintenance performed on the 125V DC Class 1E batteries (1A-SA and 1B-SB) during the period January 1984 through August 9, 1984. The maintenance log sheets required a

daily (Monday through Friday) maintenance inspection of the batteries to verify that pilot cell temperature, specific gravity, pilot cell voltage, battery bank voltage, and charging current were within acceptable limits. The maintenance records indicated that all inspections had been performed and documented in accordance with procedures.

Within this area, no violations or deviations were identified.

6. Electrical (Components and Systems) - Review of Quality Assurance Implementing Procedures (51051B)

The inspector attended a meeting with licensee representatives from the Harris Plant Engineering Section (HPES) and CP&L's Transmission Department to discuss the relay coordination studies being developed to protect the 6.9 KV and 480V Class 1E Emergency Power Systems. The inspector had been informed that the Transmission Department was responsible for developing the relay settings for the 6.9 KV system and HPES was responsible for developing the 480 volt relay settings. Therefore, a roundtable discussion with both parties present was the best method to resolve all issues. The inspector questioned the licensee representatives about the procedure requirements for controlling the interfaces between HPES and the Transmission Department. The licensee indicated that no procedures, per se, exist controlling this interface; however, correspondence between HPES and the Transmission Department was presented which detailed the initial agreements between the two organizations. The inspector examined a memorandum (NPED-811447) from the HPES Manager to the Transmission Department which requested the Transmission Department to provide a relay coordination study for Harris Unit 1 and also to provide the following:

- a. Provide a description of the electrical protective system
- b. Provide relay coordination curves, relay settings, and calibration sheets for each plant load including the following:
 - (1) Generator - main transformer
 - (2) Auxiliary transformer
 - (3) Start-up transformer
 - (4) 6.9 KV auxiliary power system
 - (5) 480 V auxiliary power system (including MCC)
 - (6) 6.9 KV safety-related buses and emergency diesel generator

Subsequent changes occurred in responsibilities in that HPES was tasked to provide the 480 volt relay settings and the Transmission Department was only to develop the 6.9 KV relay settings. The licensee stated that an informal agreement existed in which HPES would review the 6.9 KV settings and the Transmission Department would likewise review the 480 volt settings. Later, the inspector examined a sample of correspondence between the Transmission Department and HPES in which some of the 6.9 KV settings were submitted for HPES review and comments. HPES approved the settings in a speed letter (HXDE-003-055-X, dated 10/3/83) and the Transmission Department

issued the settings in a memorandum dated April 18, 1984, to HNP Start-up Group. The licensee indicated that all these settings are preliminary until the design drawings are issued. However, in reviewing the correspondence identified above, the Transmission Department did not identify the settings as being preliminary. This concern was discussed with appropriate Start-up representatives and it was not quite obvious that there were program requirements in place defining how these preliminary settings could be used as far as pre-operational testing.

The interface between the Harris Plant Engineering Department and the Transmission Department is considered to be informal as for the requirements of CP&L's QA program, in that they do not define the QA program requirements for the Transmission Department. 10 CFR 50, Appendix B, Criterion III states in part that "measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. These measures shall include the establishment of procedures among participating design organizations for review, approval, release, distribution, and revision of documents involving design interfaces." The inspector determined that procedures did not exist for the design interfaces between the Harris Plant Engineering Section and CP&L's Transmission Department to control the review, approval, release, distribution, and revision of protective relay settings. This appears to be a violation of 10 CFR 50, Appendix B, Criterion III as stated above. This concern was identified to the licensee as violation 400/84-27-01, Inadequate QA Interface Procedures between HPES and CP&L Transmission Department for Development and Distribution of Protective Relay Settings.

Within the area examined, one violation (400/84-27-01) was identified.

7. Electrical (Components and Systems II) - Observation of Work and Review of Quality Records (51053 and 51055)

The inspector selected the following safety-related electrical components for examination to verify that the as-built installations were in accordance with approved drawings, procedures, and specifications.

Class 1E Electrical Equipment

Diesel Generator Control Panel 1A-SA
 6.9 KV Emergency Bus 1A-SA
 480 V Emergency Transformers 1A3-SA
 480 V Motor Control Centers 1A23-SA and 1A34-SA

The inspector verified that the equipment identified above had been properly located and mounted in accordance with drawings, nonconforming conditions were identified, protection was adequate, and QC inspections had been performed and documented in accordance with inspection procedure TP-28, Rev. 7.

Two minor discrepancies were identified and are discussed below:

- a. Diesel Generator Control Panels Nos. 1A-SA and 1B-SB were seismically mounted using 3/4" anchor bolts with a hold down nut and a lock nut. The control panels were anchored down as per drawing 2167-G-3071 R/2 which specified two nuts. However, the vendor drawing 1364-43092 R/7 specified a hardened steel washer to be installed between the nut and panel instead of the double nut arrangement. The licensee documented this problem on NCR No. 83-111 which has been dispositioned by Engineering to use as is based on a response from TDI; however, TDI indicates that the panel was seismically qualified in the configuration using the 1/8 inch hardened washer and single nut arrangement and that their acceptance is based on engineering judgement. When the inspector examined the installation in the field on the 1A-SA EDG Control Panel the inspector observed that there was not full thread engagement on some of the second nuts. Construction inspection procedure No. TP-28 requires the bolt head to be flush with the nut. The inspector questioned the licensee if this requirement is applicable to double nut installations, and how this would affect the disposition of NCR 83-111. The inspector also questioned the acceptability of the proposed disposition of the NCR considering the panels were seismically tested in the configuration specified on the TDI drawing. The inspector informed the licensee that this item would be identified as inspector follow-up item 400/84-27-02, Review the final disposition and closeout of NCR 83-111.
- b. In examining the installation of the 6.9 KV emergency bus 1A-SA the inspector observed that there were missing panel bolts on the back of the switchgear. These panels are routinely removed during construction for cable installation and terminations inside the cubicles. The inspector questioned the licensee about their procedures for performing equipment walkdowns prior to turnover to verify that items like conduit covers, panel bolts, tray covers, and etc., are properly replaced or identified on a discrepancy list prior to acceptance by operations. The licensee indicated that the walkdown procedures are currently in development and they committed to incorporate line items to verify such items are identified. The inspector had no further concerns in this area.

Within this area, no violations or deviations were identified.

8. Licensee Identified Item, 10CFR 50.55(e) (92700) - Unit 1

(Closed) CDR 83-154, Potentially Defective Engine Mounted Electrical Cables of the Emergency Diesel Generator. The inspector reviewed CP&L's final report dated February 17, 1984, and found it to be acceptable. In this response, CP&L reports that the original cables were replaced with vendor supplied cables and accessories. This deficiency was identified by the licensee on DDR report No. 2209 for tracking, disposition, and closeout. The work was performed in accordance with Field Change Request No. FCR-E-1959(R1), work procedures WP-137 (job Nos. 110/111), and WP-210

(R8). The cables on both diesels have been replaced with cables supplied by the vendor. The work was supervised by the vendor representative (Transamerica Delaval, Inc.) and was determined to be acceptable by CP&L QC on TP-28, Exhibit 6. (For more information on this item see paragraph 3). The inspector considers this item closed.