



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

Report No.: 50-400/84-06

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

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Harris

Inspection at Harris site near Raleigh, North Carolina

Inspector: W. P. McInnis  
W. P. McInnis

April 16, 1984  
Date Signed

Accompanying Personnel: E. T. Baker, D. Norman, and J. J. Blake

Approved by: J. J. Blake  
J. J. Blake, Chief  
Materials and Process Section  
Engineering Inspection Branch  
Division of Engineering and Operational Programs

4/16/84  
Date Signed

SUMMARY

Inspection on February 6-10, 1984

Areas Inspected

This special announced inspection involved 88 inspector-hours on site in the area of heating ventilating and air conditioning (HVAC).

Results

Of the one area inspected, two apparent violations were found (Violation - "Failure to Establish Adequate Procurement Controls," paragraph 5.c, and Violation - "Failure to Take Effective Corrective Action in Receipt Inspection," paragraph 5.g). No deviations were identified.

8406190129 840611  
PDR ADOCK 05000400  
Q PDR

## REPORT DETAILS

### 1. Persons Contacted

#### Carolina Power and Light (CP&L)

N. J. Chiangi, Harris Plant QA/QC Manager  
\*D. Deal, Engineering  
\*G. L. Forehand, Director, QA/QC  
\*P. Foscolo, Assistant General Project Manager  
\*E. M. Harris, Jr., Principle Mechanical Engineer  
\*K. V. Hate, Principle QA Engineer  
J. Hooks, Engineering  
\*T. W. Johnson, Resident Engineer, HVAC  
L. I. Loflin, Manager, Engineering  
\*D. A. McGaw, Superintendent - QA  
\*G. R. Osman, Principle QA/QC Specialist - NDE  
\*R. M. Parson, Project General Manager  
W. Pere, Welding Inspector  
J. Pierce, Engineering  
\*A. H. Rager, Resident Engineer - Hangers  
\*L. Rowell, Engineering  
\*G. M. Simpson, CI Supervisor  
\*R. A. Stewart, Project Engineer  
\*M. F. Thompson, Jr., Senior Resident Engineer  
\*M. D. Vernon, Superintendent - QC  
\*R. A. Watson, Vice President - Harris Nuclear Project

#### Daniel Construction Company (DCC)

\*W. D. Goodman, Project Manager

#### Westinghouse (W)

\*B. Blevins, Engineering

#### USNRC

\*J. J. Blake, Section Chief, Region II  
\*G. F. Maxwell, Senior Resident - Operations  
\*R. L. Prevatte, Senior Resident - Construction

\*Attended exit interview

NOTE: The inspector also conferred with other licensee and contractor personnel during the course of the inspection.

## 2. Exit Interview

The inspection scope and findings were summarized on February 10, 1984, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 400/84-06-01: "Failure to Establish Adequate Procurement Controls," Paragraph 5.c.

(Open) Violation 400/84-06-02: "Failure to Take Effective Corrective Action in Receipt Inspection," Paragraph 5.g.

## 3. Licensee Action on Previous Enforcement Matters

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. New unresolved items identified during this inspection are discussed in IE Report 50-400/84-05.

## 5. Heating Ventilating and Air Conditioning (HVAC)

As reported in IE Report 50-400/84-05, an announced inspection was performed at the Harris site in the area of HVAC with respect to the Bahnsen Company. The inspectors inspected the following received, inspected, and accepted HVAC units.

Identification

1A-SA-E6  
 1B-SB-E6  
 2A-SA-E6  
 2B-SB-E6  
 1A-SA-1B-SB-R2  
 2A-SA-2B-SB-R2  
 1A-SA-AH5  
 1B-SB-AH5  
 1A-SA-AH6  
 1A-SA-AH7  
 2A-SA-AH15  
 1-4A-SA-AH17  
 1-4B-SB-AH17  
 1A-SA-AH19  
 1A-SA-AH20  
 1B-SB-AH20  
 1X-SB-AH25

1A-SA-AH28  
 1B-SB-AH28  
 AH29  
 1A-SA-AH85

- a. With respect to the E6 and R2 units, the following conditions that did not conform with procurement documents were identified:

- (1) The weld requirements for attaching the HEPA filter rack (Item 2 on CTIN Drawing 32735A) to the unit housing are for a continuous fillet weld and an interrupted (2-10) flair bevel weld, (shown in Section C-C of the drawing).

Contrary to the above, both HEPA filter racks are attached to the unit housing with an intermittent (2-10) fillet weld and a continuous flair bevel weld. This condition existed on both R-2 units examined.

- (2) The weld requirement for attaching Item 27 to Item 28, both 3" x 3" x 3/16" angles, on CTIN Drawing 32629 is a square bevel partial penetration butt, welded from both sides, (shown in Section Z-Z of the drawing).

Contrary to the above, the welds attaching Item 27 to Item 28 are welded from one side only. This condition exists in four places on the 1B-SB E6 unit examined.

- (3) Paragraph 16, of the HVAC Addendum A, to Ebasco Specification CAR-SH-BE-31, "Air Cleaning Units", prohibits any lack of fusion, and undercut in excess of 1/64."

Contrary to the above, the following was noted.

An area of lack of fusion at the toe of the weld between the weld and the HEPA filter rack was identified. An area of undercut at the fusion line between the weld and the HEPA filter rack was identified. Later measurement, by a CP&L welding inspector, revealed the undercut to be in excess of 1/64."

The inspectors reviewed the documentation packages for the air cleaning units discussed above to determine whether or not the nonconformances noted above had been documented and evaluated. There was no documentation to indicate that the nonconformances had ever been detected.

- b. With respect to the remainder of the units, the following conditions that do not conform to procurement documents were noted:

Identification

Defect Description

AH-5 (1A-SA)

Missing floor to frame welds,  
 missing weld on cooling coil frame

AH-5 (1B-SB)	Lack of fusion, burn through the side panel frames
AH-7 (1A-SA)	Crack in skin to frameweld; weld craters, lack of fusion, burn through, overlap in skin to frame welds and side panel frames
AH-15 (2A-SA)	No weld symbol on drawing for skin to cooling coil frame channel stitch weld
AH-17 (1-4A-SA)	Stitch fillet weld on fan housing did not extend to end of joint, end weld less than 2" long, lack of fusion, insufficient weld reinforcement, unconsumed weld rod protruding from weld joint, tack welds not removed or incorporated into final weld in panel frame welds and skin to frame welds
AH-17 (1-4B-SB)	In addition to nonconformances noted under AH-17 (1-4A-SA), floor panel joints were mismatched, roof skin to cooling coil frame welds were corroded, one fan housing anchor bolt missing and 7 cooling coil mounting bolts were incorrect material
AH-19 (1A-SA)	Missing nut on cooling coil mounting bolt, missing cooling coil mounting bolt
AH-25 (1X-SB)	Missing welds on cooling coil frame and side panel frames; undercut and lack of fusion on skin to frame welds missing side panel frame welds, missing cooling coil mounting bolts
AH-28 (1A-SA)	Lack of fusion, weld craters in side panel frames and skin to frame welds, pitch on stitch weld more than 10" center to center
AH-28 (1B-SB)	Missing 2 welds on cooling coil channel

AH-29

Missing side panel frame welds,  
missing cooling coil mounting bolts,  
skin to frame welds less than 2"  
long

- (1) Inspection of weld quality was based on Ebasco Specification CAR-SH-BE-05, Addendum A, "Quality Assurance Requirements for Nuclear Safety Related HVAC Equipment," which invokes AWS D1.1 and specifically prohibits cracks, craters, lack of fusion, and undercut which exceeds 1/64." As noted in the listing above, there were seven Air Handling Units which did not meet the acceptance criteria for welds.
  - (2) The inspectors made a visual examination of selected connections for appropriate fastener material type, size, and material traceability. One instance of substituting carbon steel bolts for stainless steel bolts and four instances of missing fastener hardware were discovered by the inspectors.
  - (3) The inspectors reviewed the documentation packages for the air handling units to determine whether or not the missing welds in Unit 28 (1B-SB) and the weld quality and bolting nonconformances in the other units had been documented and evaluated. There was no documentation to indicate the nonconformances had ever been detected.
- c. The numerous examples of failure to identify and evaluate nonconforming conditions in purchased equipment discussed in paragraphs 5.a, and 5.b. indicates that the licensee had not established adequate measures to assure purchased equipment conformed to procurement documents. Failure to establish adequate controls for the purchase of material is in violation of 10 CFR 50, Appendix B, Criteria VII. This violation will be identified as 400/84-06-01: "Failure to Establish Adequate Procurement Controls."
- d. CP&L instituted a 100% receipt inspection at the Shearon Harris Plant site in approximately September 1982. Bahnson supplied air handling units AH-85, AH-86, AH-92, AH-93 and 2A-SA-2B-SB-R2 were received after the institution of the 100% receipt inspection program. The inspectors reviewed the CP&L receipt inspection reports and accompanying deficiency documentation reports. CP&L had rejected all the units for a combination of nonconforming weld quality, weld joint configuration, and missing welds. At the time of the inspection, Units AH-85, AH-86, and AH-93, and 2A-SA-2B-SB-R2 had already been repaired and accepted by CP&L. However, CP&L had not performed any kind of reinspection on air handling units received prior to instituting the 100% receipt inspection.

- e. The "Preventative Measures" block of the Corrective Action Report for DDR-1053 for air handling Unit No. 2ASA-2B-SB-R2 was marked "NA", Not Applicable, with an accompanying note which stated that preventative measures were not applicable because the air cleaning unit inspected and rejected was the last unit in production. No reinspection of previously received units of Bahnson equipment was initiated.
- f. The inspectors reviewed reports of Ebasco facility evaluations and Bahnson commitment to corrective actions to cited deficiencies for 1977, 1978, 1980, and 1983. The review revealed the following conditions:

The corrective actions committed to by Bahnson indicated a lack of adequate measures to prevent recurrence of the problems; however, most commitments were never questioned by Ebasco and there was no evidence that Ebasco performed followup to review implementation of corrective action until the next facility evaluation was performed. The following areas of Bahnson's QA program were repetitively cited by Ebasco and reflects a lack of adequate corrective action by Bahnson and a lack of vendor control by Ebasco:

- Failure to maintain adequate vendor program control for nuclear suppliers.
  - Failure to maintain adequate controls of procedures and personnel relating to performance of the quality function including NDE.
- g. Paragraphs 5d, 5e and 5f are examples of failure to take effective corrective action, and indicate that the licensee had not established adequate measures to assure that conditions adverse to quality are promptly identified and corrected, and is in violation of 10 CFR 50, Appendix B, Criterion XVI. This violation will be identified as 400/84-06-02: "Failure to Take Effective Corrective Action in Receipt Inspection."