



Carolina Power & Light Company

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P. O. Box 101, New Hill, N. C. 27562
May 23, 1984

Mr. James P. O'Reilly
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Northwest (Suite 2900)
Atlanta, Georgia 30303

NRC-216

Dear Mr. O'Reilly:

In reference to your letter of April 23, 1984, referring to RII: WPK 50-400/84-06, the attached is Carolina Power and Light Company's reply to the violations identified in Appendix A.

It is considered that the corrective action taken/planned is satisfactory for resolution of the items.

Thank you for your consideration in this matter.

Yours very truly,

R. M. Parsons
Project General Manager
Shearon Harris Nuclear Power Plant

RMP/sh

Attachment

cc: Messrs. G. Maxwell/R. Prevatte (NRC-SHNPP)
Mr. B. C. Buckley (NRC)

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Reported Violation:

10 CFR 50 Appendix B, Criteria VII, as implemented by PSAR Section 1.8.5.7, requires measures be established to assure that purchased equipment conforms to procurement documents.

Contrary to the above, adequate measures were not established to assure that purchased equipment conformed to procurement documents in that examples were identified where purchased equipment was installed but did not conform to procurement document requirements. Examples included structural steel welds that were missing, that did not conform to joint design, that failed to satisfy the visual inspection requirements of AWS D1.1 and Addendum A to Ebasco Specifications CAR-SH-BE-31 and CAR-SH-BE-08, that did not meet the liquid penetrant inspection acceptance standards; fasteners which were the wrong material, and missing fasteners.

This is a Severity Level IV violation (Supplement II).

Denial or Admission and Reason for the Violation:

The violation is essentially correct as stated, with the following clarifications:

1. CP&L initiated, through Ebasco, a VQA Plan to establish a level of confidence that items are manufactured by vendors in accordance with applicable specification requirements.
2. Ebasco shop surveillance (Vendor QA) activities were instituted on Contract 435105 in late 1979 and on Contract NY-435162 in mid 1982, consistent with the respective starts of fabrication at the Bahnsen facility. In order to assure proper coverage of vendor activities, a Quality Assurance Plan was developed for each purchase order prior to the start of surveillance. The QA Plan specified those activities or shop operations which the Ebasco Vendor QA Representative (VQAR) was to witness or monitor. The QA Plan also specified what documentation was required to be submitted by the vendor to the SHNPP site at the time of equipment shipment. It also included a series of general instructions which detailed other activities the VQAR was to perform such as verification that the required welding or other special process procedures had been submitted to and accepted by Ebasco Engineering in accordance with the contract requirements.

Ebasco VQA surveillance was intended to monitor the vendor's overall performance and was not to replace or supplement the vendor's own quality control inspection program. It was for this reason that the QA Plans prepared by Ebasco and accepted by CP&L were weighted toward the more complex and performance-related activities such as hydrostatic/pneumatic testing, leak rate test, performance test, and similar types of activities. Additionally, material designations and major critical dimensions were to be checked using the Vendor's Ebasco-approved general arrangement drawings. Rejection rates based on this QA Plan were reasonably low and no trend was seen indicating otherwise.

In March, 1982, structural deficiencies were noted in unrelated orders (Elec. Switchgear) which caused CP&L to request a VQA Enhancement Program in which Ebasco began 100% visual inspection on 10% of the items.

When CP&L began performing a 100% inspection of units at receipt inspection in September 1982, CP&L informed Ebasco that additional VQAR surveillance was warranted. In September of 1982, Ebasco revised the QA Plans (approved by CP&L October 1982) to provide for broader surveillance, and to specifically provide for a mechanical/welding inspection of the units as opposed to the more general and performance-based approach previously taken. Specified coverage was now to be 100% of 10% of the units. Although this more rigorous coverage resulted in identification by Ebasco VQA personnel of substantially more deficiencies and resulted in a general improvement in the quality level of the units being shipped, the CP&L 100% receipt inspection continued to identify deficiencies. In addition to meetings and discussions with Bahnson personnel, Ebasco then recommended to CP&L that VQA personnel review each unit 100% prior to release to CP&L. In August of 1983, the revised QA Plan was approved by CP&L and implemented.

For these reasons, it is felt that the activities performed by Ebasco VQA were consistent with project procedures and original surveillance commitments, and that as problems were identified, corrective action was taken in the form of modified and approved QA Plans for surveillance. As a result of Ebasco experience with Bahnson (for air handling equipment), as well as other suppliers of such items as cabinets, racks and other equipment, a programmatic change was made in QA Plans mandating detailed mechanical/welding surveillance and inspection. All SHNPP purchase orders were reviewed by Ebasco QA for applicability and modified QA Plans have been implemented.

Corrective Steps Taken and Results Achieved:

CP&L has systematically evaluated and responded to vendor problems as they have been noted. The increasing degree of inspections imposed at the vendor's shop and on site demonstrates this.

Safety-related equipment fabricated by Bahnson include two equipment categories - Air Cleaning Units and Air Handling Units. All of the Safety-Related Air Handling Units on site were fabricated by Bahnson; however, only six Safety-Related Air Cleaning Units were fabricated by Bahnson (subcontracted to Bahnson by CTI).

The six Safety-Related Air Cleaning Units were received in July and August of 1982. One of these six units was subjected to receipt inspection which resulted in DDR-1053. This inspection consisted of a visual inspection; hence, no PT inspection was performed. Deficiencies/discrepancies noted on the DDR were evaluated and found to be acceptable with no repairs required (PW-M-619R1). Note that DDR-1053 identified two cracks in welds. These were evaluated as products of a cold start and not cracks. (This was confirmed via PT and visual exam in presence of NRC Inspector W. Kleinsorge for the one "crack" still accessible.)

Forty-seven Safety-Related Air Handling Units were fabricated by Bahnson and were shipped to the job site between December, 1979 and December, 1983. Receipt inspection of four of these units resulted in DDR-1493. The deficiencies noted on DDR-1493 were evaluated as "not reportable" based on the fact that the unit would continue to function per design if the deficiencies were not repaired. Some of the more accessible defects were reworked to restore design margin. FCR-M-791 provided disposition details.

The following is CP&L's response to the specific items addressed in the NRC report:

NRC Report - Paragraph 5.a(1)

This item was originally identified as a nonconformance by Bahnson in fabrication phase and dispositioned as acceptable by CTI-Nuclear. This item was again identified at SHNPP site by QC receiving personnel per DDR-1053 and dispositioned as acceptable by CP&L per PW-M-619 and PW-M-619 R/L. Again, this item was identified by NRC personnel during site audit of Bahnson equipment and was reanalyzed by CP&L/HPES and found acceptable.

NRC Report - Paragraph 5.a(2)

Based on CP&L's Structural Analysis, the existing weld condition (welded from one side only) is acceptable as is.

NRC Report - Paragraph 5.a(3)

Undercut - This item was identified by SHNPP/NDE personnel during NRC requested liquid penetrant examination. Requirement for undercut in excess of 1/64 inch being a rejectable indication (per HVAC Addendum A to Specification CAR-SH-BE-31) is applicable to sheet metal components. The identified undercut is located in a reinforcing member and the appropriate inspection criteria is 2165-A-003, paragraph 2.6 ("undercut up to 1/32 inch depth is acceptable in all steels and all thicknesses"). The CP&L welding inspector originally identifying undercut to be in excess of 1/64 inch, reinspected indication and determined it to be less than 1/32 inch. Acceptability of evaluation to this item has been confirmed with Ebasco.

Lack of Fusion - Item was identified by SHNPP/NDE personnel during liquid penetrant examination and was not evident per visual examination. The requirement for receipt inspection is for visual examination only. As per FSAR commitment, in-place HEPA filter tests for each HEPA filter frame will be performed during pre-operational testing in accordance with Reg. Guide 1.52, Revision 2. This will ensure operational integrity of these items and would detect any unacceptable leak paths. Review of weld where lack of fusion was noted indicates that 99.3% of the weld is available. If the weld stress were to reach 100% of that available for the design configuration, the existing lack of fusion would result in 0.7% overstress which is acceptable based on existing weld design allowable margins.

NRC Report - Paragraph 5.b

Based on identified weld defects, an inspection of all accessible critical welds was performed on thirty-three (33) safety-related air handling units. These thirty-three (33) units represent all units required for operation of SHNPP Unit 1 which were not previously receipt inspected.

Analysis of the data based on the inspection performed by CP&L for the first seven units (AH-11 (1A-SA), AH-11 (1B-SB), AH-12, AH-13, AH-17 (1-4A-SA), AH-17 (1-4B-SB) and AH-28 (1A-SA) revealed the units to be structurally adequate. The critical welds on the remaining twenty-six units are presently being analyzed.

The cooling coil mounting bolts, when subjected to a maximum loading condition, are in a state of low stress. The reported omission of cooling coil mounting bolts and incorrect bolting materials will result in a small increase in stress in the remaining bolts (due to omission or postulated failure) when subjected to a maximum loading condition. This increase will not compromise the integrity of the units.

Corrective Steps Taken to Avoid Further Noncompliance:

1. Continuing increased VQA surveillance
2. 100% review of each unit by VQA prior to release to CP&L
3. Site receipt inspection including 100% weld inspection
4. Reinspection of structurally significant welds on units not previously inspected on site.
5. Evaluation of the critical welds on the remaining twenty-six units will be completed by August 31, 1984.

Date When Full Compliance Was Achieved:

Full compliance is projected to be achieved by October 1, 1984.

Attachment No. 2 to CP&L Letter of Response to NRC Report RII: WPK 50-400/84-06-02

Reported Violation:

10 CFR 50 Appendix B Criteria XVI, as implemented by PSAR Section 1.8.5.16, requires measures be established to assure conditions adverse to quality are promptly identified and corrected.

Contrary to the above, adequate measures were not established to assure that conditions adverse to quality were identified and corrected in that the programs have failed to assure that conditions adverse to quality have been properly identified and promptly corrected. Examples included:

- a. Bahnsen supplied air handling units AH-85, AH-86, AH-92, and AH-93 were received after the institution of the 100% receipt inspection program. CP&L had rejected all the units for a combination of nonconforming weld quality, weld joint configuration, and missing welds. However, CP&L had not performed any kind of reinspection on air handling units received prior to instituting the 100% receipt inspection.
- b. The "Preventive 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 Bahnsen equipment was initiated.
- c. The following areas of Bahnsen's QA program were repetitively cited by Ebasco, an agent for CP&L, and reflect a lack of adequate corrective action by Bahnsen 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.

This is a Severity Level IV violation (Supplement II).

Denial or Admission:

The violation is denied for the following reasons.

- a. CP&L takes exception to this item in that we had developed a significant inspection history of Bahnsen supplied air handling and air cleaning units prior to instituting the 100% receipt program:
 1. Conducted full receipt inspection of air cleaning units E-6 (2A-SA) and E-6 (2B-SB) July 26, 1982. Found no discrepancies.
 2. Conducted full receipt inspection of air cleaning unit R-2 (1B-SB, 1A-SA) September 7, 1982. Found minor weld deficiencies; issued DDR-1053. Weld deficiencies examined by welding engineer and mechanical engineer; dispositioned "accept-as-is" by Permanent Waiver-M-619, dated October 21, 1982.

3. Conducted full receipt inspection of air handling units AH-15 (1A-SA) and AH-15 (1B-SB) November 19, 1983. (These units were received February 11, 1982 and selected as sample for full inspection. Inspection was delayed due to difficulties obtaining fabrication drawings from Bahnson.) Found reduction of base metal due to grinding. This had been dispositioned in the shop by Ebasco NCR-BAHN-6, dated February 4, 1982. No other deficiencies were identified.
- b. This item does not describe a nonconforming condition. DDR-1053 identified minor deficiencies in shop welds which were dispositioned "accept-as-is" through engineering evaluation. The decision not to inspect previously received items was based on:
1. The minor nature of the deficiencies.
 2. No welding deficiencies found in the previous shipment which was fully receipt inspected.
 3. The previously received units were inspected and accepted by a CTI representative and Ebasco VQA. The R-2 (2A-SA, 2B-SB) unit was, in fact, the last safety-related air cleaning unit shipped on our contract with CTI, so action to prevent recurrence was not appropriate.
- c. CP&L takes exception to this item in that, while Paragraph 5.f. of the report implies that Ebasco did not question Bahnson commitments and did not schedule follow-up audits specifically to verify Bahnson corrective action, Ebasco did in fact maintain a running contact with this vendor which included several corrective action review cycles as well as specific plant re-audits for corrective action implementation.

Ebasco conducted continuing facility evaluations on the Bahnson Company over a period of several years including a program of follow-up audits on its implementation of required corrective actions. Attachment A provides a listing of evaluations done on this vendor's facilities and the related correspondence involved in the resolution of audit findings and concerns.

In the conduct of its program for the evaluation of this vendor, Ebasco followed Department Implementing Procedure QA-P.9. As the attachment shows, the original audit of this facility to determine its qualification to perform safety-related work was conducted, documented and reported in May 1977 with an initial "Unsatisfactory" rating. The Ebasco Implementing Procedure QA-P.9 provides the following direction for this situation: "Unsatisfactory - Significant deficiencies exist and corrective action must be taken. The Vendor Evaluation Group Leader must be satisfied by the vendor's response prior to scheduling a follow-up audit. Satisfactory corrective action must be verified by a re-audit." Several rounds of correspondence ensued where Bahnson proposed its corrective actions for Ebasco's reviews.

In September 1977, the required re-audit for verification was scheduled, with Bahnson reported as Conditionally Satisfactory. The attachment again shows the relevant correspondence.

In the case of a vendor evaluation rated as "Conditionally Satisfactory", Procedure QA-P.9 states as follows: "Satisfactory - Subject to resolution of comments - Corrective action is required. The vendor is required to respond within twenty working days or as determined by the Vendor Evaluation Group Leader or his

designee. This status is given to a vendor when deficiencies are identified in the system that require corrective action, but are not sufficiently serious that resolution is questionable or that would adversely affect the end product." Bahnson was, therefore, placed upon the Ebasco Approved Vendors List but listed for an annual periodic evaluation in lieu of the normal three-year review cycle.

The attached correspondence listing indicates the considerable documentation and correspondence connected with the subsequent auditing of this vendor from October 1978 with an "Unsatisfactory" rating, the corrective action follow-up audit in January, 1979 with a "Conditionally Satisfactory" rating and another periodic audit in February 1980, again with a "Conditionally Satisfactory" rating. Audit findings and concerns, however, were not repetitive, but varied in nature, and adequate corrective actions were introduced into the Bahnson system. Additionally, a special audit on the seismic and environmental requirements established by the Bahnson Company in the qualification of its cabinets was conducted on December 15, 1982 with acceptable results. A final periodic facility evaluation was conducted in February 1983 with again a "Conditionally Satisfactory" rating determination. Surveillance performed by VQA at the time in accordance with accepted surveillance plans did not result in a level of rejections which would have indicated a program out of control.

While hindsight may indicate that additional or different corrective action might have been requested of Bahnson, judgements made at the time were considered reasonable and were within project procedure provisions for supplier evaluation.

