

YANKEE ATOMIC ELECTRIC COMPANY



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JAY K. THAYER
VICE PRESIDENT and
MANAGER OF OPERATIONS

June 26, 1991
BYR 91-082

Director, Office of Enforcement
United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

- References:
- (a) License No. DPR-3 (Docket No. 50-29)
 - (b) Letter, YAEC to USNRC, dated March 20, 1991
 - (c) Letter, YAEC to USNRC, dated March 28, 1991
 - (d) Letter, USNRC to YAEC, dated April 10, 1991
 - (e) Letter, USNRC to YAEC, dated May 30, 1991

Subject: Reply to a Notice of Violation

Dear Sir:

On February 26, 1991, Yankee Atomic Electric Company (YAEC) began a follow-up investigation of the circumstances which had caused an Emergency Diesel Generator to fail to start in January, 1991. During the investigations, 92 nonconforming electrical connections (out of a total 522) were identified and corrected.

This was reported by letter, reference (b), and via reference (c), Licensee Event Report No. 50-29/91-001. A special Nuclear Regulatory Commission (NRC) safety inspection was conducted on February 20 to March 25, 1991 to review the circumstances and is documented in reference (d), Inspection Report No. 50-29/91-03.

On April 29, 1991, at an enforcement conference held in the Region 1 Headquarters, YAEC presented an explanation of the violation, its causes and our corrective actions to preclude recurrence. Subsequently, per reference (e), the event was determined to be a Severity Level III problem with two violations cited. In accordance with 10 CFR 2.201, we hereby submit the following information:

Violations

- A. 10 CFR Part 50, Appendix B, Criterion II, "Quality Assurance Program," requires, in part, that the Quality Assurance Program provide for training of personnel; performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.

The Yankee Atomic Electric Company's Quality Assurance Program, Revision 19A, Section VII 3.3.b, states that the plant shall be

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responsible for the evaluation of purchased services during and/or after completion of the service.

Contrary to the above, the licensee's Quality Assurance Program did not provide for adequate training of the electrical personnel who installed the electrical connections on three Emergency Diesel Generators (EDGs) in September 1990 nor did it adequately evaluate their services. This is evidenced by the failure of EDG-1 to start during a surveillance test on nonconforming wire connections subsequently identified.

- B. 10 CFR Part 50, Appendix B, Criterion X, "Inspection," requires, in part, that a program for inspection of activities affecting quality be established and executed to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity.

Contrary to the above, in September 1990, the licensee did not establish and execute an adequate quality control inspection program to ensure quality installation of the replacement EDGs, specifically the installation of the electrical connections associated with these EDGs. The program was inadequate in that the EDG replacement was subjected to random surveillance and not mandatory inspection points, nor did the development of the inspection activities identify the appropriate attributes requiring inspection.

Response

We concur with the Notice of Violation as described above and in Reference (e).

The primary cause of the nonconforming electrical connectors was personnel error on the part of the electrical personnel who installed them incorrectly. The work was performed by personnel supplied by a contractor and working under the YAEC Quality Assurance Program. The electrical connections were made using calibrated crimping tools and coded components.

The causes of the violations include the failure to provide adequate evaluation and training of the contracted personnel and, subsequently, failure to provide a quality control program to detect the nonconforming connectors.

Violation "A", the failure to provide adequate evaluation and training of contracted personnel, had several contributing factors. The primary factor was an erroneous assumption on our part that the correct use of crimping tools could be considered a normal skill of a professional electrician. Inspection of a large number of crimps indicates that this might be a reasonable assumption for most, but not all, electricians. Many of the nonconforming crimps discovered were traceable to a single electrician. A second contributing factor was a long term record of success with this group of contracted personnel, especially their supervisors. This record led to optimistic assumptions regarding the level of detail necessary to verify their skills. Finally, the lack of a systematic approach to the evaluation of skills and training of contracted personnel allowed the factors listed above to prevail.

Violation "B", the failure to provide an adequate quality control program to detect the nonconforming connectors, also had contributing factors. The primary factor was the lack of a detailed inspection plan for crimped connections. In the absence of a comprehensive sampling plan with specific hold points, random small sampling sizes were used and their results supported an erroneous conclusion that the crimping operation was being performed correctly. Secondly, the attributes of a deficient crimped connector, there are fourteen, were not effectively communicated to the inspectors.

A third factor, which was also a factor in violation "A", was the long term success with this contractor on electrical projects. This led Quality Control personnel to focus their resources and attention on nonelectrical aspects of the Emergency Diesel Generator project. Finally, the installation program called for notification of inspectors rather than hold points for inspection. This resulted in some crimped connections being physically covered prior to inspection.

In reviewing the events and investigations, we have also identified potentials for improving the timeliness and thoroughness of our nonconformance evaluation and reporting programs. The nonconformance evaluation could have been completed in roughly one half the actual time taken had its priority been higher and had the scope been broadened sooner. Reporting requirements could also have been addressed sooner.

Corrective Actions Taken

1. In addressing the immediate problem:
 - a. A 100% inspection of the Emergency Diesel Generator electrical terminations was completed and all deficient connections were replaced by March 20, 1991.
 - b. All accessible safety related terminations performed by personnel supplied by the contractor in question during the 1990 refueling outage were inspected. No defective connections were identified in these inspections.
 - c. A sampling of 4654 other safety related crimped terminations of all sizes, made by contractors or by plant personnel, has been inspected and evaluated. Crimped connections requiring replacement were evaluated for operability and safety significance and prioritized accordingly. Replacements are being made based on assigned priority and have been completed with the exception of crimped connections which must be replaced during an extended outage period. These will be completed by the end of the 1992 refueling outage.
 - d. Samples of other (non-crimp) work performed by personnel supplied by the contractor in question have been inspected. The net result was two bolts (on a nonseismic device) found without the proper torque values.

2. In addressing violation "A":
 - a. Training was developed for plant and contracted personnel in the proper use of calibrated crimpers.
 - b. Plant procedures have been revised to include specific instructions for making crimped connections.
 - c. Quality procedures have been revised to differentiate between services and labor so that appropriate controls are established.
 - d. Until the new evaluation program is in place (see "Corrective Actions to be Taken" #3 below) personnel contracted to work on safety related activities are being evaluated on a case by case basis.
3. In addressing violation "B", Quality Services Group implementing instructions have been evaluated and revised to include more detailed requirements regarding inspection sample sizes, documentation of those inspections, and to stress the need to verify in-process controls.
4. In addressing the associated findings:
 - a. Plant procedures governing reportability have been revised to include more comprehensive 10 CFR 50.72, 50.73 and Part 21 criteria and to more clearly document the assessment.
 - b. Control room duties for the Shift Supervisors have been adjusted to allow more time to engage in technical discussions and in the decision process for such issues.
 - c. The nonconformance process has been revised to provide more timely dissemination of information, including:
 - Informing the Shift Supervisor and PORC of a potential problem in a more timely fashion.
 - Establishing an NCR status listing to facilitate Shift Supervisor and PORC reviews.
 - Requiring a documented reportability assessment.
 - Based on its importance, establishing specific dates for investigations and corrective actions.

Corrective Actions to be Taken

1. By July 31, 1991, new guidelines will be provided for QA interface with plant and engineering to more clearly establish the critical items and attributes for QC inspections.

- 2. By July 31, 1991, a review of work and quality control oversight of work performed by contractor personnel operating under the Yankee Operational Quality Assurance Program during the 1990 outage will be completed. Based on results of the review and type of work performed, field verifications of specific work will be conducted. The scope of these field verifications will be expanded if significant quality problems are encountered. The results will be documented.
- 3. By October 31, 1991, procedures will be revised to assure, through a documented evaluation, that personnel contracted to work on safety related activities are qualified to perform their designated tasks.

Date of Full Compliance

Full compliance was achieved as of May 31, 1991. Programs have been instituted to (1) provide for evaluation and training of all personnel performing activities affecting quality and (2) establish and execute a program for inspection of all activities affecting quality.

If you have any questions or desire additional information, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

Jay K. Thayer
Jay K. Thayer

Vice President and Manager of Operations

c: Regional Administrator, USNRC, Region 1
NRC Senior Resident Inspector, YNPS

COMMONWEALTH OF MASSACHUSETTS)
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MIDDLESEX COUNTY)

Then personally appeared before me, J. Thayer, who, being duly sworn, did state that he is Vice President and Manager of Operations of Yankee Atomic Electric Company, that he is duly authorized to execute and file the foregoing document in the name and on behalf of Yankee Atomic Electric Company and that the statements therein are true to the best of his knowledge and belief.

Marie I. Davis
Marie I. Davis Notary Public
My Commission Expires January 30, 1998