

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 99900111/79-01

Program No. 51400

Company: Westinghouse Electric Corporation
Large Motor Division
4454 Genesee Avenue
Buffalo, New York

Inspection Conducted: December 10-12, 1979

Inspectors:

J. R. Agee
J. R. Agee, Contractor Inspector
Components Section II
Vendor Inspection Branch

1/13/80
Date

Approved by:

D. M. Hunnicutt
D. M. Hunnicutt, Chief
Components Section II
Vendor Inspection Branch

1/18/80
Date

Summary

Inspection on December 10-12, 1979 (99900111/79-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, criteria and applicable codes and standards including: Action on Previous Inspection Findings, QA Manual/Program, Design Review/Production Testing and Inspection of Construction deficiency identified at a plant site. The inspection involved twenty (20) inspector-hours by one (1) NRC inspector.

Results: Within the four (4) areas inspected, no deviations or unresolved items were identified.

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DETAILS SECTIONA. Persons Contacted

- *B. F. Aichinger - General Manager
- R. A. Gearhart - Applications Engineer
- *D. L. Hawkins - Manager Quality Assurance
- *G. M. Howard - Manager Manufacturing Department
- H. B. Engler - Test Floor Foreman
- *J. L. Maurer - Manager Division Services
- T. N. McCausland - Manager AC Products Department
- J. G. Schraven - Receiving and Inspection Supervisor
- R. I. Smalter - Applications Engineer
- F. J. Wenzel - Sales Manager AC Products Department

*Attended the exit meeting.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Inspection Report 78-01): Audits had not been conducted at selected suppliers, examples: RTD Company and Minco. The inspector verified these companies had not been surveyed because no procurement had been made from them. The other selected suppliers have been surveyed and approved, examples: Buffalo Electric (now Westinghouse Electric Service Company) November 1978; Tallman Bronze; Sentry Equipment Company, October 23, 1979; and Joseph Oat Company, September 18, 1979. These companies provide heat exchangers and motor frames and brackets for Class 1E applications.
2. (Closed) Deviation (Inspection Report 78:01): Management did not review the organization and quality program annually. The inspector verified the QA Manual was revised November 1, 1978, which displayed the revised organization structure and described management positions and responsibilities. Also management audits had been instituted with such audits being conducted November 1, 1978; July 25, 1979; and December 6, 1978.
3. (Closed) Deviation (Inspection Report 78:01): All aspects of the QA Program had not been audited within the committed yearly frequency. The inspector verified that management audits had been instituted with intent to provide an annual audit overview of the QA Program. The QA department had audited all of the QA program throughout the previous twelve (12) months. In 1979, twenty-five (25) audits had been conducted and the audits program plan was on schedule for the calendar year.
4. (Closed) Deviation (Inspection Report 78-01): QA department did not review purchase orders prior to their release to suppliers. The

inspector verified the QA manual had been revised to indicate "the Quality Assurance Organization Audits Nuclear related Purchase Orders prior to order placement . . ." The inspector verified that selected nuclear purchase orders had been signed off by the QA department.

5. (Closed) Deviation (Inspection Report 78-01): Quality Assurance requirements were not passed on to suppliers. The inspector verified the QA manual had been revised to require that applicable QA requirements be passed on to suppliers" . . . to make sure that the inspection requirements are noted on the Purchase Order . . . that all certifications . . . are ordered"
6. (Closed) Deviation (Inspection Report 78-01): Certain departments had not received QA indoctrination and training. The inspector verified that LMD management training session was conducted December 14, 1978, involving fourteen (14) managers, subject: LMD QA Manual and Internal QA Training. Training covered the eighteen (18) criteria of 10 CFR 50, Appendix B. Eight (8) of the fourteen (14) managers provided training to their departments on the same subjects. Those departments included: Q.C., design engineering, manufacturing, manufacturing engineering, test, D.C. motor, utility products, and purchasing and materials.
7. (Closed) Deviation (Inspection Report 78-01): Several types of non-conforming materials - some identified, others not identified, with appropriate scrap or nonconforming materials tags - were not segregated from acceptable materials. The inspector inspected the F-10 manufacturing where acceptable and nonconforming materials had been detected and found no instances where acceptable and nonconforming materials were intermingled.
8. (Closed) Deviation (Inspection Report 78-01): Nonconforming (defective) materials and acceptable materials were intermingled in the receiving inspection area. The inspector inspected the receiving inspection area and found no instances where defective and acceptable materials were intermingled.
9. (Closed) Deviation (Inspection Report 78-01): Several instruments in storage in the electrical test laboratory were not identified by inactive stickers. The inspector examined the instrument test laboratory storage of inactive instruments and verified that each inactive instrument had affixed to it an inactive instrument sticker.
10. (Closed) Deviation (Inspection Report 78-01): Certain instruments located in the test calibration laboratory had calibration stickers attached which identified the month for calibration due but not the calendar day. The inspector verified the instruments that previously

had been calibrated without displaying the calendar day of the calibration had since been calibrated in compliance with the required three (3) month calibration with the calendar day of calibration date being recorded on the calibration card.

11. (Closed) Deviation (Inspection Report 78-01): Certain surface plates located in the manufacturing and receiving inspection areas had no calibration stickers affixed, had not been calibrated since procurement or had no records of existence. The inspector verified that certain surface plates that were not currently used were discarded and all other surface plates were calibrated by an outside calibrating organization and placed in the LMD instrument calibration and recall system.

C. QA Manual/Program

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. The QA Manual had been revised and updated in compliance with commitments from previous inspection.
- b. Quality assurance training had been conducted for those groups whose activities affect quality.
- c. An audit program had been implemented to audit the quality assurance program on an identified frequency.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the current QA Manual and program including proposed revisions to the manual and plans for continued emphasis on quality.
- b. Review of management QA training records and sessions that have been conducted including plans for continuation of the training program on a planned frequency.
- c. Review of the QA department scheduled audit program including the management audit program.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

D. Design Review/Production Testing

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. Procedures have been established for performing design tests and production tests on Class 1E equipment that are consistent with applicable national codes and standards.
- b. Established test procedures are being implemented for Class 1E equipment.
- c. Service conditions identified in procurement documents are satisfied by equipment qualifications.
- d. Test sequences identified in the qualification test procedures satisfy the test sequence requirements identified in IEEE standards 112 and 334.
- e. Sub-components that determine the life of the equipment have been adequately qualification tested or analyzed.
- f. Production test procedures are consistent with applicable national standards, test criteria.
- g. Design review of Class 1E products are subject to design review by another engineer acting independently who signs all job original drawings.
- h. Verify that final test results for certified engineering tests are analyzed by a cognizant design engineer.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussions with the engineering manager and application engineering personnel regarding development and qualification testing of Class 1E motors.
- b. Verifying that qualification testing and analysis of generic Class 1E motors and safety related components have been completed and final qualification reports have been approved and published.

- c. Review of the LMD document, Environmental Qualification of Class 1E Motors for Nuclear Out-of-Containment Use, WCAP-8754 Revision 1, which includes the following conclusion, "These motors have been tested under every type of environment condition they are likely to encounter during either normal plant operation in design basis accident conditions. These conditions include: thermal aging, voltage stress, moisture, cycling resulting from starting the motors, and seismic events."
- d. Review of Product Specification, Nuclear Safety-Related AC Motors, drawing 4209A62, dated October 20, 1978.
- e. Review of typical product test data completed for a specific customer on Form 2958K, Report of Tests on Induction Motors and verified that this data complies with the production test criteria of IEEE Standards 112A and 334.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

E. Inspection of Construction Deficiency Identified At a Plant Site.

1. Objectives

- a. Discuss with LMD senior and engineering management details of the construction deficiency which concerns thermocouple lead wire failures in Class 1E pump motors at a nuclear plant site.
- b. Determine whether LMD had been responsive to the findings and whether satisfactory solutions had been provided or recommended to cope with the incident and/or to prevent future occurrences.
- c. Determine whether the thermocouple lead wire failure represents a generic problem.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Verifying that senior and engineering management personnel were aware of the problem and had communicated with Westinghouse Field Service personnel on five (5) occasions from September 19, 1979, to October 11, 1979, regarding the problems.

- b. Review of the LMD pump motor drawing 8237D95, Revision 07, dated February 2, 1977, for the specific motor or motors on which the thermocouple wire failure occurred.
- c. Discussions with the LMD engineering personnel concerning recommendations for repairing the thermocouple wire and recommendations for prevention of possible generic problems.

3. Findings

The motor frame has two (2) conduit boxes mounted on the side of the frame. The covers to these conduit boxes are unmarked, however, the electrical terminal strips inside each conduit box are marked: D1, D2, D3, OPP BRG: D4, D5, D6, DRV BRG and H1, H2, for the thermocouples and space heater terminal connections, respectively.

The field problem was identified as a thermocouple lead wire that had physically separated. Cause of the break of separation is unknown however LMD engineering postulates that a power source was mistakenly applied to the thermocouple lead wires.

A review of drawing No. 8237095, Revision 7, dated February 2, 1977, the standard production tests and the related QA records of the motor shipped, revealed the motor operated and tested satisfactorily with no electrical connection anomalies as inspected and approved for shipment by the customer quality control inspector.

LMD engineering personnel recommended the thermocouple lead wire be spliced by twisting the ends of the separated lead wires together and fusing them according to established field practices. Then fit an electrical insulating sleeve over the splice.

This information had been submitted to the Westinghouse Field Service Office for transmittal to the cognizant Nuclear Steam Supply System and nuclear utility plant personnel.

Westinghouse LMD engineering personnel do not recognize this incident as a generic problem and do not propose any corrective/preventative measures other than repair to the damaged thermocouple wire.

F. Exit Interview

The inspector met with management representatives denoted by an asterisk in paragraph A. above at the conclusion of the inspection on December 12, 1979, at the Buffalo, New York plant. In this meeting the inspector summarized the scope of the inspection and the following areas that were inspected:

- a. Action on Previous Inspection Findings.
- b. QA Manual/Program, Design Review/Production Testing,
- c. Design Review/Production Testing.
- d. Inspection of the Construction Action Item.

Management acknowledged statements made by the inspector.