

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

Report No. 99900740/81-01

Program No. 51400

Company: Brown Boveri Electric, Incorporated
Switchgear Systems Division
Norristown Road and Route 309
Spring House, Pennsylvania 19477

Inspection at: Chalfont and Spring House, Pennsylvania

Inspection Conducted: February 3-6, 1981

Inspector: I. Barnes 2-24-81
for W. E. Foster, Contractor Inspector Date
Components Section II
Vendor Inspection Branch

Approved by: I. Barnes 2-24-81
I. Barnes, Chief Date
Components Section II
Vendor Inspection Branch

Summary:

Inspection conducted on February 3-6, 1981 (99900740/81-01).

Areas Inspected: Implementation of 10 CFR Part 50, Appendix B criteria, and applicable codes and standards; including follow-up on regional requests; and implementation of 10 CFR Part 21. The inspection involved fifteen hours at the sites.

Results: In the two areas inspected, no violations or nonconformances were identified; the following unresolved item was identified:

Unresolved Item: Follow-up on Regional Requests - it was not apparent that crimped terminal lugs had been subjected to 100% inspection (See Details Section, paragraph B.4.c).

DETAILS SECTIONA. Persons Contacted

- *F. W. Beach, Foreman - Quality Control
- J. A. Cosgrove, Manager - Quality Control
- *W. J. Ewing, Supervisor - Low Voltage Switchgear
- W. E. Laubach, Director - Engineering
- D. W. Pratt, Engineer - Quality Assurance
- E. W. Rhoads, Manager - Quality Assurance

*Did not attend the Exit Interview.

B. Follow-up on Regional Requests1. Background

The Mississippi Power and Light Company had notified the Office of Inspection and Enforcement, Region II, on July 3, 1980, of a deficient condition at the Grand Gulf Nuclear Generating Station, Unit 1. The deficiency concerned incorrectly crimped terminal lugs on wiring in the Engineered Safety Features 4.16 kilovolt bus.

2. Objectives

The objectives of this area of the inspection were to verify that the manufacturer had: (1) taken adequate corrective actions and preventive measures, and (2) assessed generic implications.

3. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing the following documents to verify that: (1) a program existed for corrective actions and preventive measures, (2) generic implications had been assessed, and (3) the program had been implemented:

(1) Quality Assurance Procedures, Nos. -

- (a) 10.7, Revision 2, dated April 18, 1979 - Inspection of Crimped Terminals,
- (b) 12.8, Revision 0, dated June 23, 1978 - Certification and Calibration of Hand Crimping Tools,

- (c) 12.8-C, Revision 1, dated June 23, 1978 - Certification and Calibration of Hand Crimping Tools, and
 - (d) 10.1, Revision 2, dated May 12, 1980 - Inspection Policy and Requirements.
- (2) Quality Assurance Workmanship Standards (Draft), Revision 0, dated November 5, 1980; Section 8 - Terminals.
- b. Reviewing the following activities to verify that the program had been implemented:
- (1) Terminals being crimped onto conductors in a 480 volt Load Center on Sales Order No. 52187, Item CZ, and
 - (2) Wire harness installation in a 480 volt Load Center on Sales Order No. 52187, Item CS.
- c. Reviewing the following records to verify that the program had been implemented:
- (1) Quality Control Checklist for Low Voltage Switchgear, Quality Control Wiring Correction List, and Quality Control Checklist for Assembling and Engineering for Sales Order No. 52187, Item R3; and Item DK3, and
 - (2) Crimping Tool Calibration Records and an associated Certificate of Calibration No. 17527-5074 from American Electronic Laboratories, Incorporated.

4. Findings

a. Comments

- (1) The terminal lugs with defective crimps had been replaced with properly crimped terminal lugs by site personnel after coordination with the manufacturer's personnel. Inspection of the crimped terminal lugs of the Engineered Safety Features 4.16 kilovolt bus at Grand Gulf, Unit 2 is being scheduled. Terminal lugs with defective crimps had not been detected at the manufacturer, subsequent to this incident; therefore, no corrective action had been necessary.
- (2) It was determined that the switchgear was manufactured in 1976 with shipment occurring in November and December 1976. Quality Assurance Procedure No. 10.7 - Inspection of Crimped Terminals, was issued October 17, 1977. Revision 2, dated

April 18, 1978, requires 100% inspection of crimped terminal lugs on nuclear orders.

- (3) The manufacturer's personnel indicated an awareness that the Commission had been notified and stated that a Part 21 report had not been initiated because Bechtel Power Corporation (various offices) were the sole purchaser of this hardware for nuclear application.

b. Nonconformances

None.

c. Unresolved Item

Paragraph 3.2 of Quality Assurance Procedure No. 10.7, Revision 2, dated April 18, 1978, requires 100% inspection of crimped terminal lugs on nuclear orders as part of the final switchgear checklist (paragraph 3.4.1.1). The NRC inspector was informed that no disassembly occurs at final inspection of the switchgear. There were no records to indicate that 100% inspection of crimped terminal lugs had been performed.

It was not apparent to the NRC inspector that 100% inspection of crimped terminal lugs had been performed.

C. Implementation of 10 CFR Part 21

1. Objectives

The objectives of this area of the inspection were to verify that suppliers of safety related equipment had established and implemented procedures in accordance with 10 CFR Part 21.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing Quality Assurance Procedure No. 15.2, Revision 2, dated February 19, 1980 - Reporting of Product Defects, to verify that a procedure had been established to implement 10 CFR Part 21.
- b. Reviewing documentation associated with Low Voltage Switchboard on Sales Order No. 52187, Item DK3 to verify that safety related hardware was being supplied.
- c. Observing posting at the Chalfont facility to verify that posting had been accomplished in accordance with 10 CFR Part 21.

3. Findings

Safety related hardware was being supplied. During this area of the inspection, no violations, nonconformances or unresolved items were identified.

D. Exit Interview

1. The inspector met with management representatives denoted in paragraph A. at the conclusion of the inspection on February 6, 1980.
2. The following subjects were discussed:
 - a. Areas inspected.
 - b. Unresolved Item identified.
 - c. Contractor response to the report.
3. Management representatives acknowledged the comments made by the inspector.