

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

Report No. 99900277/80-01

Program No. 51400

Company: The Rockbestos Company
A Member of the Marmon Group
285 Nicoll Street
New Haven, Connecticut 06504

Inspection at: New Haven, North Haven and East Granby, Connecticut

Inspection Conducted: November 18-21, 1980

Inspector:

W. E. Foster
W. E. Foster, Contractor Inspector
Components Section II
Vendor Inspection Branch

12/8/80
Date

Approved by:

I. Barnes
I. Barnes, Chief
Components Section II
Vendor Inspection Branch

12/10/80
Date

Summary

Inspection on November 18-21, 1980 (99900277/80-01)

Areas Inspected: Implementation of 10 CFR 50 Appendix B criteria, and applicable codes and standards; including follow-up on a regional request; and manufacturing process control. Implementation of 10 CFR Part 21 was also inspected. The inspection involved twenty-three and one-half inspector hours on site.

Results: In the three (3) areas inspected, no deficiencies and no deviations were identified. The following unresolved item was identified:

Deficiencies: None.

Deviations: None.

Unresolved Item: Follow-up on Regional Requests - it was not apparent that possible insulation rework of cable for the Grand Gulf Nuclear Generating Station had been qualified.

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DETAILS SECTIONA. Persons Contacted

E. J. D'Aquanno, Manager - Product Development
R. J. Gehm, Engineer - Product Design
*G. G. Littlehales, Manager - Quality Assurance
E. S. Reed, Vice President and General Manager

*Attended Exit Interview.

B. Follow-up on Regional Requests1. Background

- a. The Mississippi Power and Light Company had notified the Office of Inspection and Enforcement, Region II, on March 21, 1980, of a potentially reportable deficiency at the Grand Gulf Nuclear Generating Station. The deficiency concerned unqualified cable insulation repairs in 600 volt cable manufactured by The Rockbestos Company.
- b. The Arizona Public Service Company had notified the Office of Inspection and Enforcement, Region V, of a reportable deficiency at the Palo Verde Nuclear Generating Station. The deficiency concerned factory repair of the conductor, insulation, and jacket of a non-class IE, 600 volt, 350 MCM, 1/c power cable manufactured by The Rockbestos Company. The inspector was informed of this situation, during the course of the inspection, by Rockbestos personnel.
- c. The Cleveland Electric Illuminating Company had notified the Office of Inspection and Enforcement, Region III of a reportable deficiency at the Perry Nuclear Generating Station. The deficiency concerned slits in the jackets of Class IE small power and control cables manufactured by The Rockbestos Company. The inspector was informed of this situation, during the course of the inspection, by Rockbestos personnel.

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 action and preventive measures, (2) generic implications had been assessed, and (3) the program had been implemented:
- (1) Section 17 of the Quality Manual, dated January 1978,
 - (2) The following sections of the Cable Rework Manual:
 - (a) A, Part 2, Issue C, dated August 6, 1980, entitled - Procedure for Staggered Brazing,
 - (b) B, Part 2, Issue N, dated November 4, 1980, entitled - XLPE Primary Insulation (Nuclear Application), and
 - (c) B-EG, Part 2, Issue C, dated December 3, 1979, entitled - Irradiation Cured Polyethylene Primary Insulation - East Granby Plant.
 - (3) Qualification Reports for:
 - (a) KXL-420 Insulation Rework With Chemically Cross-Linked Firewall III Insulation, dated July 10, 1980 for Palo Verde Nuclear Generating Station, and
 - (b) Firewall III Class IE Electric Cables With Chemically Cross-Linked Insulation With Factory Insulation Rework, Revision 2, dated November 15, 1980.
 - (4) The Rockbestos Company Test Report, dated August 23, 1979, regarding hypalon cable jacket with wall thickness reduced below the specified minimum and its attached letter to the Cleveland Electric Illuminating Company concerning the Perry Nuclear Power Plant.
 - (5) The Rockbestos Company letters to the Office of Inspection and Enforcement, Region I, dated February 4, and March 18, 1980, regarding potential Part 21 reports on slits in cable jackets and qualification of insulation rework.
 - (6) The Rockbestos Company letter, dated November 20, 1980, to Bechtel Power Corporation and its attached test plan for qualification of KXL-420 rework material and KXL-760 insulation used in cables furnished to the San Onofre Nuclear Generating Station.

- (7) The Rockbestos Company letter, dated April 8, 1980, to Arizona Public Service Company, Subject: 50.55(e) Reportable Condition Relating to Class IE, 600 Volt Power Cable.
- (8) Internal Memoranda, dated -
 - (a) July 7, 1980; To: E. S. Reed; From: G. G. Littlehales; Subject: Nuclear Insulation Rework,
 - (b) October 29, 1980; To: R. A. Barnhart; From: G. A. Meinsen; Subject: Zumbach Eccentricity Gauge - Nuclear Patch Test,
 - (c) November 12, 1980; To: R. A. Barnhart, F. C. Schwelm; From: G. G. Littlehales; Subject: Nuclear Insulation Rework,
 - (d) October 19, 1979; To: Attendees, F. R. Postma; From: G. G. Littlehales; Subject: Cable Repairs, and
 - (e) February 5 and 15, 1980; To: R. A. Barnhart, F. C. Schwelm; From: G. G. Littlehales; Subject: Conductor Brazing and Repairing of Insulation and Jackets on Nuclear Cables.
- b. Observing inspection for jacket slits on Perry Nuclear Power Plant cables at the North Haven facility.
- c. Observing the removal of the jacket mold at the New Haven and East Granby plants.
- d. Observing the insulation rework areas at the New Haven and East Granby plants.

4. Findings

a. Comments

- (1) Personnel at The Rockbestos Company informed the inspector that they were unaware of the Potentially Reportable Deficiency Report filed by Mississippi Power and Light Company regarding the Grand Gulf station. The report indicated a concern relative to cable insulation repairs that had not been qualified in accordance with IEEE 383; however, the report failed to identify the material used for the repair. A Qualification Report on Firewall III Class IE Electric Cables using Chemically Cross-linked Insulation with Factory Insulation Rework, Revision 2, dated November 15, 1980, attests to satisfactory accomplishment of the qualification testing to IEEE 383-1974 of one sample each of a control cable and a power cable.

The control cable was a single conductor, size 12 AWG, 600 volt and the power cable was a single conductor, size 6 AWG, 600 volt. Both specimen were coated with flame retardant chemically cross-linked polyolefin insulation (KXL-760) and factory insulation rework with the KXL-760 material.

- (2) Personnel at The Rockbestos Company informed the inspector that the Arizona Public Service Company had filed a reportable deficiency report regarding the Palo Verde station. The report indicated that qualification testing had not been conducted for a factory repaired conductor, insulation and jacket. A copy of the report was provided to the inspector. The Rockbestos Company letter, dated April 8, 1980, to the Arizona Public Service Company, indicated concern with some of the statements and provided clarification.
- (3) Personnel at The Rockbestos Company informed the inspector that The Cleveland Electric Illuminating Company had filed a reportable deficiency report regarding slits in conductor jackets at the Perry Nuclear Power Plant. An agreement between the two companies resulted in The Rockbestos Company inspecting the delivered reels of cables for slits in the jackets. The inspection is being conducted in North Haven with completion expected by the end of 1980. To date, the depth of the observed slits has not compromised the integrity of the insulation of the inner conductors. Further, the inspector was informed that cables with slits in the jackets would be replaced with new cable.
- (4) The inspector was informed that inspection of jacketed cable had been instituted in the manufacturing process. In addition, the jacket mold stripping tooling has been re-designed and is in limited use during the de-bugging phase. Efforts are underway to implement improved controls (training, tooling, equipment, facilities, etc.) of insulation rework and brazing activities. In the interim, the following activities are prohibited on nuclear orders: (1) insulation repairs, (2) brazing (splicing) of insulated conductors, and (3) brazing of bare conductors after issuance from bare wire stores.
- (5) Efforts are underway to conduct additional qualification tests of insulation rework. Tests will be conducted on various cables with insulation reworked with various materials, and insulation of 20 and 30 mils thicknesses.

b. Deviations From Commitment

None.

c. Unresolved Item

Apparently, most of the cable was supplied for the Grand Gulf Nuclear Generating Station during a time when insulation rework was performed with cross-linked polyethylene, designated as KXL-420. There was no apparent indication that this material had undergone a qualification test for the Grand Gulf station, or that other qualification test data had been correlated to its environmental profile. The inspector was informed that qualification testing would be performed or data from previous tests would be correlated to the Grand Gulf environmental profile.

As a result of the foregoing, the inspector was unable to determine that insulation rework with KXL-420 material, had been qualified for the Grand Gulf station. Accomplishment of the qualification test or correlation to the Grand Gulf environmental profile will be evaluated during a future inspection.

d. Follow-up Item

During a subsequent inspection, the inspector will: (1) assess the effectiveness of controls of the jacketing and rework (insulation and brazing) operations, and (2) evaluate the status of qualification testing related to insulation rework.

C. Implementation of 10 CFR Part 211. 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 21.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

a. Reviewing the following customer orders to verify the equipment was safety related and 10 CFR 21 had been invoked:

- (1) Bechtel Power Corporation Purchase Order No. 9645-E-031.3, dated April 2, 1975, selected revisions through No. 15, dated December 10, 1979, and the attendant specification, and
- (2) Arizona Public Service Company Purchase Order No. 10407-13-EM-058, dated October 4, 1976, selected revisions through No. 5, undated (accepted by Rockbestos on March 18, 1980), and the attendant specification.

- b. Reviewing Quality Procedure No. Q-27, dated December 8, 1977, entitled - Procedure for Reporting and Evaluating Deviations From Technical Requirements Which Could Create a Substantial Safety Hazard in Nuclear Safety Related Cable, to verify that procedures had been adopted.
- c. Observing posting at the New Haven and East Granby plants to verify accomplishment in accordance with 10 CFR 21.

3. Findings

In this area of the inspection, no deficiencies or unresolved items were identified.

D. Manufacturing Process Control

1. Objectives

The objectives of this area of the inspection were to verify that measures had been established and documented to control manufacturing, inspection and test activities. Also, to verify these activities had been accomplished in accordance with the established and documented measures. Additionally, verification of indication of mandatory hold points in appropriate documents.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing the following documents to verify measures had been established and documented to control manufacturing, inspection and test activities:
 - (1) Quality Manual, dated January 1978, Section 6, entitled - Instructions, Procedures, and Drawings,
 - (2) Quality Procedures, Nos. -
 - (a) Q-2, Revision 5, dated May 12, 1980, entitled - Sampling of High - Temperature (Class H) Single Conductor (Unshielded, Unjacketed) items for Lab Testing,
 - (b) Q-3 (reissued), dated August 23, 1978, entitled - Procedure for Spark Testing,
 - (c) Q-10, Revision 7, dated December 13, 1979, entitled - Traceability,

- (d) Q-16, Revision 7, dated January 2, 1980, entitled - Final Inspection Procedure,
- (e) Q-19, Revision 5, dated July 10, 1980, entitled - Laboratory Sample Testing of Production Orders and Lots, and
- (f) Q-31, dated December 5, 1979, entitled - Review of Controlled Stamps to Determine Clarity and Useability.

3. Findings

The inspector lacked sufficient time to complete this area of the inspection.

E. Exit Interview

- 1. The inspector met with Mr. G. G. Littlehales at the conclusion of the inspection on November 21, 1980.
- 2. The following subjects were discussed:
 - a. Areas inspected.
 - b. Unresolved Item identified.
 - c. Contractor response to the report.
- 3. Mr. Littlehales suggested clarifications/modifications of some of the comments. The inspector agreed.