

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

Report No. 99900398/80-01

Program No. 51400

Company: General Electric Company
Wire and Cable Business Department
1285 Boston Avenue
Bridgeport, Connecticut 06602

Inspection Conducted: May 5-9, 1980

Inspector: D. M. Hunnicutt 5/20/80
for W. E. Foster, Contractor Inspector Date
Components Section II
Vendor Inspection Branch

Observer: D. M. Hunnicutt 5/20/80
for A. B. Bennett, Senior Electrical Engineer Date
Division of Reactor Construction Inspection

Approved by: D. M. Hunnicutt 5/20/80
D. M. Hunnicutt, Chief Date
Components Section II
Vendor Inspection Branch

Summary:

Inspection on May 5-9, 1980 (99900398/80-01).

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria, and applicable codes and standards; including follow-up on inspector identified unresolved item; manufacturing process control; and change control. The inspection involved forty-four and one-half inspector-hours on site by two NRC inspectors.

Results: In the three areas inspected, no unresolved items were identified; the following three deviations were identified:

Deviations: Manufacturing Process Control - practices were not consistent with Criterion V of Appendix B to 10 CFR 50; paragraphs 1.1, 1.3.3, and 2.11.6.1 of Section 1.4, Issue A, dated March 7, 1966, of the Product Design Engineering Manual (See Notice of Deviation, Item A); and Bridgeport Manufacturing Instructions No. 8, Section 2, dated October 8, 1975 (See Notice of Deviation, Item B).

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Change Control - practices were not consistent with Criterion V of Appendix B to 10 CFR 50; and paragraph 2.1 of Section 1.9, Issue A, dated October 19, 1964, of the Product Design Engineering Manual (See Notice of Deviation, Item C).

Unresolved Items: None.

DETAILS SECTIONA. Persons Contacted

- *A. C. Bruhin, Manager - Product Development
- *D. G. Connelly, Manager - Quality Control
- *H. J. Cunha, Manager - Requisition and Specification Engineering
- *J. W. Fillmore, Manager - Bridgeport Cable Plant
- J. R. Galloway, Manager - Industrial and Utility Sales
- *W. J. Gartin, General Manager
- *S. Hamilton, Manager - Engineering
- *C. Hayner, Manager - Manufacturing
- R. Hopkins, Engineer - Quality Control, Wire Mill
- E. R. Kingsbury, Engineer - Product Development
- T. K. Kurien, Engineer - Quality Control, Compounding and Incoming Material
- M. Mosley, Engineer - Product Development and Test
- R. N. O'Donoghue, Engineer - Product Design
- *L. S. Skorzowski, Manager - Test and Quality Assurance
- *J. E. Sweeney, Engineer - Senior Quality Control

*Attended Exit Interview.

B. Follow-up on Inspector Identified Problems and Unresolved Items1. Objectives

The objectives of this area of the inspection were to verify that inspector identified problems and unresolved items, during previous inspections, had been corrected and resolved satisfactorily.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing General Electric Company, Wire and Cable Business Department's (GEC Co WCBD) letters, dated April 21 and 29, 1980, to Bechtel Power Corporation; Subject: San Onofre Nuclear Generating Station Unit Nos. 2 and 3.
- b. Discussing acceptability/non-acceptability of splicing with cognizant personnel.
- c. Reviewing Bechtel Power Corporation's letter (Log BA-5777), dated April 22, 1980, to GEC Co WCBD; Subject: Southern California Edison Company San Onofre Nuclear Generating Station, Units 2 and 3 and its enclosure entitled - Supplier Deviation Disposition Request, Bechtel SDDR No. 2053 (GEC Co WCP) No. 33) dated April 22, 1980.

- d. Reviewing Franklin Research Center's Final Report No. F-C5285-1 (PRELIMINARY); Subject: Qualification Tests of Electrical Cables in a simulated Loss-of-Coolant (LOCA) Environment.
- e. Reviewing Franklin Research Center's letter, dated February 27, 1980 to GECO WCBP; Subject: Qualification Testing of EP Neoprene Electrical Cables, FRC Project C5285.
- f. Reviewing GECO WCBP's Product Development Report No. PD-7-80, dated March 11, 1980, which addressed thermal tests of reworked conductors and insulation.

3. Findings

(Closed) Unresolved Item (Inspection Report No. 79-01): The inspector verified that Note No. 8 of the Contingent Purchase Order Release had been modified to read: "Single and/or multi-conductor cable lengths will not be joined to obtain shipping cable length requirements except in accordance with Bridgeport Manufacturing Instruction #13, Section 7-0."

4. Other Related Findings

- a. The Franklin Research Center's letter of February 27, 1980, indicated that two of the five specimen failed to maintain the electrical load during the 33-day exposure to the qualification test environment. This failure is attributed to probable faulty vessel penetrations.
- b. Power cable (600 volts) with vulkene supreme insulation will be supplied to Bechtel/Southern California Edison Company for San Onofre Nuclear Generating Stations, Unit Nos. 2 and 3. The change of insulation material is identified in Contingent Purchase Order Release No. 304-11-024 and Supplier Deviation Disposition Request (SDDR) No. 2053. Bechtel has approved the SDDR and is scheduled to issue Memorandum of Change No. 19 to Purchase Order No. D4103051. Qualification testing had been successfully accomplished on lengths of cable insulated with the vulkene supreme material. The test specimens were constructed with brazed joints and patched insulation.

C. 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

een 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) Wire and Cable Business Department's Quality System Manual, Revision A, dated June 9, 1978; Sections 5.0; 8.0; 9.0; 10.0; 11.0; and 14.0.
 - (2) Product Design Engineering Manual, Section Nos. -
 - (a) 1.4, Issue A, dated March 7, 1966 - Product Design Specifications,
 - (b) 1.4A, Issue A, dated February 22, 1977 - Product Design Specifications - New Products, and
 - (c) 1.4B, Issue A, dated February 22, 1977 - Product Design Specifications - Requiring Traceability.
 - (3) Bridgeport Manufacturing Instructions, Nos. -
 - (a) 1, Section 8-0, dated March 21, 1980 - Clerical Procedures and Routines Inspection Status Routine,
 - (b) 1, Section 16, dated March 21, 1980 - Clerical Procedures and Routines Inspection Plan Procedure.
 - (c) 6, Section 15, dated August 20, 1970 - Wire Drawing WF-14 Intermediate Wire Drawing Machine,
 - (d) 2, Section 78, dated June 21, 1967 - Operating Procedure for Quality Spark Test and Inspect Operations,
 - (e) 2, Section 90, dated December 9, 1975 - Operating Procedure for Quality Electroplating Lines,
 - (f) 2, Section 98, dated October 30, 1975 - Operating Procedures for Quality Niehoff M-5 Wire Drawing Machine,

- (g) 7, Section 4, dated February 20, 1975 - Annealing Bell Annealing - 0,
 - (h) 8, Section 2, dated October 8, 1975 - Tinning Electroplating,
 - (i) 25, Section 2, dated February 13, 1979 - Testing Preparation of Cable Ends for Power Cable Rated up to 35 KV;
 - (j) 25, Section 35, dated December 11, 1979 - Testing Insulation Resistance,
 - (k) 25, Section 38C, dated February 11, 1980 - Testing Conductor Resistance,
 - (l) 30, Section 16-0, dated August 23, 1965 - Quality Control Inspection Procedure (QCIP) Determination of Cross-Section Area of Stranded Conductors,
 - (m) 30, Section 19-0, dated March 26, 1963 - QCIP Vulkene Cure Test,
 - (n) 31, Section 12, dated July 14, 1970 - Quality Control Laboratory Procedures for Sampling, Testing, and Releasing Vulkene Compound, and
 - (o) 11, Section 81, sheet 11, dated August 23, 1979 - Tubing Operating Instructions Compound 3067.
- (4) Materials Analysis and Testing Procedure No. 010-A, dated December 5, 1969 - Determination of Cure with Monsanto Rheometer, and
 - (5) Temporary Standing Instruction No. T3067-25-01C, dated March 21, 1980.
- b. Observing the following activities to verify that tasks were being accomplished in accordance with established and documented measures: Engineering Control of Custom Order Product Design Specifications; Wire Drawing; Wire Annealing (Bell); Wire Tinning; and Testing of Vulkene Supreme Compound.

3. Findings

a. Deviations From Commitment

- (1) See Notice of Deviation, Item A.

(2) See Notice of Deviation, Item B.

b. Unresolved Items

None.

D. Change Control

1. Objectives

The objectives of this area of the inspection were to verify that measures had been established to control changes to software and hardware. Also, to verify the measures for software changes included provisions for review, approval, and distribution to and usage at the location where the prescribed activity is performed. An additional phase was to verify the measures had been implemented.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing the following documents to verify measures had been established to control changes to software and hardware:
- (1) Wire and Cable Business Department's Quality System Manual, Revision A, dated June 9, 1978; Sections 3.0; 6.0; and 15.0.
 - (2) Product Design Engineering Manual, Section Nos. -
 - (a) 1.4, Issue A, dated March 7, 1966 - Product Design Specifications,
 - (b) 1.5, Issue A, dated January 5, 1965 - Product Design File,
 - (c) 1.9, Issue A, dated October 19, 1964 - Engineering Change Authorization, and
 - (d) 1.10, Issue A, dated March 16, 1965 - Alteration Notice.
 - (3) Bridgeport Manufacturing Instructions Nos. -
 - (a) 1, Section 5-0, dated March 24, 1980 - Clerical Procedures and Routines Drawing and Change Control,

- (b) 20, Section 12, dated December 17, 1976 - Quality Control Procedures Quality System Manual Control, and
- (c) 1, Section 12, dated April 11, 1980 - Clerical Procedures and Routines Bridgeport Manufacturing Instructions.

b. Reviewing the changes and attendant documentation on the following to verify that established measures had been implemented:

- (1) Section 1.7, page 5, Issue D, dated April 27, 1970; Section 1.8, Issue D, dated May 11, 1970; Section 7.1, page 7, Issue B, dated April 30, 1973.

The sections are part of the Product Design Engineering Manual.

- (2) Engineering Change Authorization Logs for 1970, 1973, and 1980.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item C.

b. Unresolved Items

None.

E. Exit Interview

- 1. The inspector met with management representatives denoted in paragraph A. at the conclusion of the inspection on May 9, 1980.
- 2. The following subjects were discussed:
 - a. Areas inspected.
 - b. Deviations identified.
 - c. Contractor response to the report.

The contractor was requested to structure his response under headings of corrective action, preventive measures, and dates for each deviation.

Comments by management representatives were generally related to clarification of the findings.