

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

Report No. 99900225/80-01

Program No. 51400

Company: The Foxboro Company  
Highland Plant  
38 Neponset Avenue  
Foxboro, Massachusetts 02035

Inspection at: 600 North Bedford Street  
East Bridgewater, Massachusetts

Inspection Conducted: March 17-21, 1980

Inspectors: *D M Hunnicutt* 4/1/80  
*for* W. E. Foster, Contractor Inspector Date  
Components Section II  
Vendor Inspection Branch

*D M Hunnicutt* 4/1/80  
D. M. Hunnicutt, Chief Date  
Components Section II  
Vendor Inspection Branch

Approved by: *D M Hunnicutt* 4/1/80  
D. M. Hunnicutt, Chief Date  
Components Section II  
Vendor Inspection Branch

Summary:

Inspection on March 17-21, 1980 (99900225/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria, and applicable codes and standards, including follow-up on inspector identified deviations; follow-up on inspector identified problems and unresolved items; and manufacturing process control. The inspection involved fifty-six (56) inspector-hours on site and three (3) inspector-hours at the motel by two (2) NRC inspectors.

Results: In the three (3) areas inspected, the following five (5) deviations; one (1) unresolved item; and one (1) follow-up item were identified:

Deviations: Follow-up on Inspector Identified Deviations-hardware standard had not been revised as specified, and audits had not been conducted minimally in Department No. 704 as committed to in The Foxboro Company corrective action response letter dated October 14, 1977 (See Notice of Deviation, Item A).

Manufacturing Process Control-practices were not consistent with Criterion V of Appendix B to 10 CFR 50; and Section D, paragraph II, of the Operation and Maintenance Procedure No. 14100 YF, dated March 1976 (See Notice of Deviation, Item B); Section E., paragraphs 2 and 4 of the Operations and Maintenance Procedure No. 14101 BK, dated June 21; July 29 and 30; and August 2, 1976 (See Notice of Deviation, Item C); paragraph F.3. of Department Procedure No. 52.2L, dated January 31, 1980, and Sequence No. 5 of Quality Control Inspection Instruction No. 24100 LQ, Revision B, dated April 28, 1976 (See Notice of Deviation, Item D); and Operation Control and Maintenance Procedure No. 14100yB Revision B, dated March 27, 1979 (See Notice of Deviation, Item E).

Unresolved Item: Manufacturing Process Control-available records did not indicate that Quality Control monitored and reviewed all process tools and equipment used in manufacturing (See Details Section, paragraph D.3.b).

Follow-up Item: Manufacturing Process Control-drawings in use in the cable area were not consistent in specifying overall cable lengths (See Details Section, paragraph D.4).

DETAILS SECTIONA. Persons Contacted

- R. Chapman, Methods Engineer
- \*L. Cote, Supervisor-Quality Control Engineering
- W. A. Ferbert, Process Operator-Wave Solder
- F. W. Gracia, Foreman-Etched Circuit Board Processing
- F. R. Jeffe, Group Leader-Equipment Maintenance
- A. C. Johnson, Engineer-Senior Quality Control
- \*F. H. Leathers, Corporate Quality Assurance-Field Operations
- L. A. Neves, Inspection Specialist
- R. Payne, Engineer-Senior Manufacturing
- J. Pinto, Foreman-Cable Area
- \*J. F. Timmons, Engineer-Senior Quality Control
- T. H. Vincent, Engineer-Associate Quality Control
- \*E. D. Westhaver, Manager-Quality Control

\*Attended Exit Interview.

B. Follow-up on Items of Noncompliances/Deviations1. Objectives

The objectives of this area of the inspection were to verify that the vendor had taken the corrective actions and preventive measures stated in their correspondence to IE regarding items of noncompliances/ deviations.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Reviewing Highland Hardware Standard No. 14200 AH, Revision B, dated December 13, 1977, to verify the standard had been revised to require a minimum of one and one-half thread protrusion for all nuts and bolts regardless of use or configuration.
- b. Reviewing audit reports for 1978 for Department Nos. 704, 706, 708, and 776, to verify a minimum of four audits per year had been conducted to ensure that inspectors were doing a proper inspection job.
- c. Reviewing Workmanship Manuals at Inspection Stations in Department Nos. 704, 708, 710, and 773, to verify that copies of

Hardware Standard No. 14200 AH, Revision B, dated December 13, 1977, had been distributed to the inspectors.

- d. Reviewing internal audit checklists to verify an item had been added to the checklist to ensure instructions were present at the work station.

### 3. Findings

- a. (Closed) Deviation (Inspection Report No. 77-01): Evaluation of preventive measures commitment contained in The Foxboro Company letter of September 14, 1977, was not conclusive in determining that instructions be present at the cable assembly operation, had been added to the internal audit checklist which was completed on July 15, 1977. However, it was apparent that the internal audit checklists require documentation review at the manufacturing departments.
- b. (Open) Deviation (Inspection Report No. 77-01): Evaluation of corrective action and preventive measure commitment contained in The Foxboro Company letter of October 14, 1977, revealed that Hardware Standard No. 14200 AH, Revision B, dated December 13, 1977, added "except when such projection interfered with the design function." This phrase conflicts with the cited letter, which states in part, "The corrective action taken was to revise the workmanship standard to require 1-½ minimum thread protrusion for all nuts and bolts regardless of use or configuration."

Further, the letter stated, "In addition, the inspectors will be subject to a minimum of four audits per year to ensure that they are doing a proper inspection job." A review of the audit schedule and reports for 1978 revealed that inspectors in Department No. 704 had not been audited four times (See Notice of Deviation, Item A).

### C. Follow-up on Inspector Identified Problems and Unresolved Items

#### 1. 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:

Reviewing The Quality Program Manual, Issue 6 and Issue 7 dated September 1978 and February 1980, respectively; and Authorized Procedure No. 10.06, dated March 1, 1979. This review was to verify the documents agreed on departmental responsibility for worksheet initiation.

### 3. Findings

(Closed) Unresolved Item (Inspection Report No. 77-01): The above documents identify the Industrial Engineering Department as having responsibility for worksheet initiation.

## 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) The Quality Program Manual, Issue 7, dated February 1980, sections 5, 9, 10, 11, and 14.
  - (2) Department Procedure Nos.
    - (a) 20.04L, dated November 13, 1979-Production Department Distribution of Approved Workmanship Standards . . . ,
    - (b) 54.52L, dated July 1, 1974-QC Documentation Control Procedure,
    - (c) 54.57L, dated March 17, 1975-QC Review of Route Cards,
    - (d) 52.03L (S), dated May 28, 1971-Roving Inspection,
    - (e) 54.40L, dated March 8, 1974-Product Verification: Inspection/Test,

- (f) 50.08L, dated April 26, 1973-Status of Inspection,
  - (g) 54.24L, dated February 15, 1974-Control/Issuance of QC Stamps, and
  - (h) 52.2L, dated January 31, 1980-Manufacturing Inspection Acceptance.
- (3) Authorized Procedure Nos.
- (a) 54.74, dated October 2, 1979-QC Inspection Instructions,
  - (b) 40.18, dated November 12, 1979-Highland Workmanship Standard Procedure,
  - (c) 48.10, dated August 24, 1977-Industrial Engineering Documentation,
  - (d) 48.12, dated April 17, 1979-MØ7Ø Request Cards and Route Sheets,
  - (e) 43.03, dated February 3, 1978-Highland Plant Special Processes,
  - (f) 40.06, dated July 12, 1978-Process Controls for Production Equipment Used in Manufacturing,
  - (g) 54.44, dated August 4, 1978-Manufacturing Processes Monitor: Quality Control, and
  - (h) 40.10, dated September 21, 1978-Highland Test Function.
- (4) Operation and Maintenance Procedure Nos.
- (a) 14100 YF, dated March 1976-Sequencing Machine,
  - (b) 14101 BK, dated June 21; July 29, 30; and August 2, 1976-Component Insertion Machine, and
  - (c) 14100 YB, Revision B, dated March 27, 1979-Wave Solder and Cleaning Process.
- b. Observation of transformer manufacturing, cable fabricating, and instrument assembling to verify appropriate documents were at the work sites and were being used.
- c. Reviewing chemical and metallurgical laboratory reports to verify that conductance tests had been accomplished as required.



### 3. Findings

#### a. Deviations From Commitment

- (1) See Notice of Deviation, Item B.
- (2) See Notice of Deviation, Item C.
- (3) See Notice of Deviation, Item D.
- (4) See Notice of Deviation, Item E.

#### b. Unresolved Item

Authorized Procedure No. 54.44, dated August 24, 1978, requires that Quality Control monitors and reviews (audits) all process tools and equipment used in manufacturing. Audits are required to be performed quarterly.

The NRC inspector reviewed Quality Control audit reports for the period September 1978 through February 1980 but could not determine the total number of process tools and equipment that had been audited. This inability was the result of available records identifying only that equipment which displayed problems.

### 4. Follow-up Item

The NRC inspector observed that a marked-up drawing, (BØ136EC, Revision B, dated June 15, 1977), was in use in the cable fabrication area. The mark-up was the computation necessary to determine the overall length of the cable which was not included in the drawing. It was also noted that a different drawing, in the area, provided overall lengths for the numerous wires it addressed.

During a subsequent inspection, the NRC inspector will follow-up to determine why the inconsistency exists.

### E. Exit Interview

1. The inspector met with management representatives denoted in paragraph A. above at the conclusion of the inspection on March 21, 1980.
2. The following subjects were discussed:
  - a. Areas inspected.
  - b. Deviations identified.

- c. Unresolved Item identified.
- d. Follow-up Item identified.
- e. 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.

Additionally, management representatives were requested to notify Region IV in writing if dates require adjustment, commitments require modification, etc.

- 3. Management representatives acknowledged the comments made by the inspector.