

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

Report No. 99900116/79-01

Program No. 51300

Company: Bunker Ramo Corporation  
Amphenol North America Division  
Sams Operation  
9201 Independence Avenue  
Chatsworth, California 91311

Inspection Conducted: February 20-23, 1979

Inspector:

J.R. Agee  
J. R. Agee, Contractor Inspector, Vendor  
Inspection Branch

March 15, 1979  
Date

Approved by:

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

3/15/79  
Date

Summary

Inspection on February 20-23, 1979 (99900116/79-01)

Areas Inspected: Implementation of QA Manual to ASME Code and customer requirements including: authorized nuclear inspector; inspection to a previously reported item under 10 CFR 50.55(e); design control; customer contracts; Quality Assurance Manual/Program. The inspection involved twenty-six (26) inspector-hours on site.

Results: In the five (5) areas inspected one (1) deviation was identified in one (1) area.

Deviations: Quality Assurance Manual/Program - Quality Assurance Department personnel had not received specific auditor training.

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Details Section

A. Persons Contacted

- \*E. R. Beaupre, Director of Program Management
- \*J. K. Cameron, Engineering Director
- J. Rouser, Quality Assurance Engineer
- L. K. Stupay, Vice President, Engineering
- \*G. W. Vocicerath, Director of Marketing
- \*B. J. Wagner, Director of Manufacturing
- \*H. D. Wright, Quality Assurance Manager

\*Attended the exit interview.

B. Authorized Nuclear Inspector

1. Objectives

The objectives of this area of the inspection were to meet the Authorized Nuclear Inspector (ANI) and determine the extent of his activities related to the design, manufacture, inspection, and testing of electrical penetration assemblies (EPAs) for use in Class 1E applications in commercial nuclear power facilities.

2. Method of Accomplishment

The preceding objectives were accomplished by discussions with the ANI and review of his log which revealed his activities start with the shop order (S.O.) in which he:

- a. Reviews the design drawings with traveler.
- b. Verifies drawing revision number.
- c. Verifies design drawings are the same as those referenced in the related stress report.
- d. Witnesses Bunker Ramo affix serial numbers to equipment parts.
- e. Verifies identity of hold points on the Manufacturing and Inspection Traveler (MIT).
- f. Signs-off on S.O. when individual parts are completed per the S.O.
- g. Allows no drawing changes without re-review of the S.O.

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- h. Witnesses all final pneumatic tests.
- i. Applies "NPT" stamp.

The present log contains the identity of all electrical penetration assemblies (EPAs) and material traceability to ASME Boiler and Pressure Vessel Code, Section III, Class MC, fabricated and pneumatically tested since January 6, 1976.

3. Results

The ANI activities appear to meet criteria stated in ANSI N626.0-1974. However, a detailed survey of the ANI's activities was not conducted with the ANI during this inspection.

C. Inspection to a 10 CFR 50.55(e)

1. Objectives

The objectives of this area of the inspection were to:

- a. Review records,
- b. Examine manufacturing, inspection, and test practices,
- c. Discuss Bunker Ramo (Amphenol Sams) planned actions to correct the reported defective EPAs and
- d. Identify Bunker Ramo planned activities to prevent recurrence of anomalies identified with certain EPAs at the Midland site.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussions with Engineering and QA personnel familiar with details of the Midland facility defective EPAs. These persons stated that the crimped lugs from which certain cables were pulled free by manual pull tests, were insulated lugs required by the customer. The use of insulated lugs for this use is an uncommon practice.
- b. Examination of the production pneumatic and manual crimping tools used. Reviewed the calibration history and records cards for these crimping tools and determined there was no

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evidence that the tools had been out of calibration or tolerance and there had been no cause to replace any of the tools.

- c. Review of a tabulation prepared by Bunker Ramo of the affected EPA's with identity of the terminal boxes, module pin numbers and the number of conductors by wire size. An in-plant analysis had isolated and identified the wire sizes that most frequently pulled free.
- d. Verified that Bunker Ramo plans to replace suspect lugs already identified at the Midland site and any additional lugs that may be identified as a result of future scheduled manual pull tests to be conducted at the Midland site.
- e. Verified that Bunker Ramo plans to include in its manufacturing practices a requirement for a manual pull test on all cables to which lugs have been crimped. The pull test is currently not required by Code in the manufacture of EPAs

### 3. Results

Bunker Ramo has been responsive to correction of the identified field anomaly and has initiated manufacturing practices to preclude future occurrences.

### D. Design Control

#### 1. Objectives

The objectives of this area of the inspection were to:

- a. Verify that design qualification testing per "Generic I Qualification Test Procedure for Nuclear Power Generating Station Electric Penetration Assemblies" reported in NRC Inspection Report No. 77-02 had been initiated and/or completed.
- b. Review test data and results of the test referenced in paragraph a, above.
- c. Determine the design qualification status of Bunker Ramo EPA's to the criteria of currently applicable codes and standards.

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2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussions with engineering management personnel concerning the current status of the Bunker Ramo Generic EPA's.
- b. Review of Qualification Specification 123-2159, Revision 4, dated August 16, 1978, entitled, "Generic I Qualification Test Procedure for Nuclear Power Generating Station Electrical Penetration Assemblies." This specification was submitted to the various environmental, physical, and electrical test facilities for their use in their respective portions of the qualification tests.
- c. Review of fifteen (15) drawings which were issued with the above (referenced in paragraph b) specification. These drawings represent the prototype EPA from which production units will be manufactured, contingent upon satisfactory qualification test results. These drawings include the following:
  - (1) NPD 1243, Top Assembly, Generic I, 18 IPS.
  - (2) NPD 1237, Header Plate Assembly.
  - (3) NPD 1254, Junction Box Assembly.
  - (4) NPD 1233-02, Handling and Test Fixture.
  - (5) NPD 1238-02, Pressure Vessel.
  - (6) NPD 1241, Header Plate, 12 IPS.

3. Findings

a. Deviations

None.

b. Unresolved Item

All of the required qualification tests for the Generic I EPAs have been conducted and completed. Raw data from these tests is currently being analyzed for presentation in the final qualification test report which is scheduled for publication by or during the second quarter, 1979. Since the Generic EPA qualification test report was

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incomplete and not available for review, it will be reviewed during subsequent inspection.

E. Customer Contracts

1. Objectives

The objectives of this area of the inspection were to:

- a. Review current contracts (customer purchase orders) to verify that applicable Codes and standards had been imposed on Bunker Ramo.
- b. Verify that products (EPAs) released for shipment are typical of production units for which prototype units have been fully qualification tested.
- c. Verify the status of qualification test reports for Generic I EPA's.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Determining that final qualification reports, indicating that Generic I EPA's are certified as fully qualified as Class IE products for nuclear applications, were not complete and would not be complete before EPAs for certain nuclear contracts were scheduled for shipment.
- b. Review of the Customer Purchase Order No. CP-0460 dated October 10, 1977, which required shipment of fully qualified Class 1E EPA's by February 1979.
- c. Verifying that approval for partial shipment of the EPAs for the P.O. (paragraph b above) was made per customer approval, TWX 10 324 dated September 15, 1978, which states in part, "We will accept delivery of . . . prior to receipt approved test data if the BIL test results are stasured (sic) satisfactory . . . ."
- d. Verifying that partial shipment of the EPAs for the above P.O., was made per customer Quality Assurance Release No. 2516 dated February 6, 1979. Specific Bunker Ramo part and material numbers include EPA No. 1 E59, P/N 50020445-01 and AS 176-53, respectively.

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- e. Review of Customer P.O. 10466-E-035-1, Revision 2, dated November 7, 1978. This P.O. includes technical specifications requiring compliance to such applicable Codes and standards as IEEE, ANSI, NEMA, ASTM, ASME, and IPCEA. Some of specific standards include IEEE-317(1976), -323(1974), -344(1975), and -383(1974). Initial shipment of the EPA's for this P.O. is scheduled for March 1979.

3. Findings

a. Deviations

None.

b. Comments

Same as Item D.3.b. of this report.

F. Quality Assurance Manual/Program

1. Objectives

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

- a. QA Manual has been maintained current per commitment.
- b. Program has been implemented in such areas as auditing, training, receiving inspection and measuring, and test equipment per commitment.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, specifically the following sections:
  - (1) 1.4.2 Quality Assurance Organizational Responsibilities.
  - (2) 5.6 Receiving Inspection.
  - (3) 6.0 Identification and Control of Material.
  - (4) 7.0 Control and Items Manufacturing Processes.
  - (5) 10.0 Control of Measuring and Test Equipment.

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(6) 13.0 Nonconforming Materials or Items.

(7) 16.0 Audits.

- b. Verifying the QA Manual generally addresses the appropriate criteria of 10 CFR 50, Appendix B, and the ASME Code, the QA Manual was revised January 5, 1979, in preparation for the ASME survey conducted in February 1979, for renewal of Certificate of Authorization Number N-1314. The survey results were satisfactory and the reviewed Certificate of Authorization is forthcoming.
- c. Verifying by review of on-going practices in the receiving inspection area that materials are compared and dimensionally checked with purchase requirements and related drawings. Mill Certified Material Test Reports have been provided and meet material specifications, Nuclear Quality Assurance Engineer records the AS (Amphenol Sams) serial/traceability number in the Certified Material Test Report, acceptable materials are tagged as accepted and forwarded to nuclear assigned stock, and the nonconforming items are identified and tagged as "rejected" and segregation in a locked segregated area for disposition.
- d. Verifying the record system for maintaining calibration, storage, location of test measuring instruments is being properly administered. Approximately thirty (30) instruments in the receiving inspection, final assembly and test area were examined and compared with related calibration labels and records. No anomalies were identified. Categories of instruments examined included power and manual crimping tools, cabled master cable testers, corona test set, mass spectrometer, gas leak tester, vacuum test pump and roughing station, surface plates, dial gauges, micrometers, plug gauges, Rockwell Hardness tester, and height gauges.
- e. Review of audit files containing internal and management audit reports. Verified that audits have been completed on a timely scheduled basis using prepared checklists.
- f. Review of quality assurance department training records which indicated that periodic group training sessions are conducted on the QA Manual chapters.
- g. Review of six (6) manufacturing department personnel training records which indicated that each operator had

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been provided on-the-job training for their respective currently occupied positions. Each record card was dated with a description of the training received and the classification of the task the operator is permitted to perform.

h. Review of manufacturing instructions.

3. Findings

a. Deviations

(See Enclosure.)

b. Comments

Recent EPA design changes have resulted in equipment modifications which require revision and updating of manufacturing instructions. On a temporary basis the manufacturing instructions have been improvised on an as-needed basis. The formal revision of all affected manufacturing instructions are in progress and will be further reviewed in a subsequent inspection.

G. Exit Interview

The inspector met with management representatives denoted in paragraph A at the conclusion of the inspection on February 23, 1979, at the Chatsworth Plant. The inspector summarized the scope and findings of the inspection related to the following areas:

1. Inspection to a 10 CFR 50.55(e).
2. Design Control.
3. Customer Contracts.
4. Quality Assurance Manual/Program related to
  - a. Receiving Inspection.
  - b. Identification and Control of Materials.
  - c. Control Manufacturing Processes.
  - d. Control of Measuring and Test Equipment.

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e. Nonconforming Materials.

f. Audits.

The Management representatives had no comments in response to the items discussed.

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