

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

Report No 99900358/79-01

Program No. 51400

Company: ESB, Incorporated
Exide Industrial Battery Division
101 Gibraltar Road
Forsham, Pennsylvania 19044

Inspection
Conducted: May 1-4, 1979

Inspectors: D. M. Hunnicutt 5/17/79
for W. E. Foster, Contractor Inspector Date
Vendor Inspection Branch

D. M. Hunnicutt 5/17/79
D. M. Hunnicutt, Chief, Components Date
Section II, Vendor Inspection Branch

Approved by: D. M. Hunnicutt 5/17/79
D. M. Hunnicutt, Chief, Components Date
Section II, Vendor Inspection Branch

Summary:

Inspection on May 1-4, 1979 (99900358/79-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria, and applicable codes and standards, including organization; procurement document control; and change control. An initial management meeting was also conducted. The inspection involved thirty-six (36) inspector-hours on site by two (2) NRC inspectors.

Results: In the three (3) areas inspected, no apparent deviations or unresolved items were identified in two (2) areas; the following deviation and unresolved items were identified in the remaining area.

Deviation: Change Control - Measures had not been established to identify personnel authorized to review, approve and release engineering documents

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as required by Criterion VI of Appendix A to 10 CFR 50, and paragraph 3.4.1 of the Quality Assurance Manual (Enclosure).

Unresolved Items: Change Control - (1) The QA Manual and a QC procedure are not consistent regarding personnel authorized to initiate quality documents; (2) QA approval of manufacturing requirements appear on design notices rather than on manufacturing requirements; and (3) Engineering documents are distributed in accordance with a distribution list other than the one identified in a design engineering procedure (Details Section I, paragraph B.3.b.).

Details Section I

(Prepared by W. E. Foster)

A. Persons Contacted

- *A. P. Abbott, Executive Director - Marketing
- W. J. Horner, Supervisor - Design
- *W. E. M. Jones, Chief Engineer
- C. R. McAdoo, Engineer - Documentation
- *C. K. McManus, Market Manager - Stationary
- D. E. Mulford, Manager - Product Development
- R. H. Schweers, Supervisor - Operations
- H. L. Sherwood, Manager - Process Control
- *M. M. Stanton, Director - Design Engineering
- E. M. Strohlein, Manager - Application and Service
- *R. B. Thomas, Assistant Director - Purchasing
- *A. J. Ushka, Director - Quality Assurance
- *J. F. Vinkler, Manager - Quality Assurance (Horsham)
- *G. R. Wallis, Vice President and General Manager
- A. G. Warne, Director - Purchasing

*Attended Exit Interview

B. Change Control1. Objectives

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

- a. Design changes, including field changes, had been approved by the organization that originated the design, or a designated responsible organization.
- b. Measures had been established to control deviations from quality standards which had been specified and made a part of design documents.
- c. Measures had been established to control changes to documents, such as instructions, procedures, and drawings, which prescribed all activities affecting quality and assured that changes had been:

- (1) Reviewed for adequacy and approved for release by authorized personnel,

611 067

- (2) Distributed to and used at the location where the prescribed activity is performed,
 - (3) Reviewed and approved by the organizations that performed the original review and approval, or a designated responsible organization.
- d. Measures had been established to control materials, parts, or components which did not conform to requirements.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the following customer orders and attendant documents to verify that requirements for software and hardware changes had been invoked.
 - (1) The Cleveland Electric Illuminating Company Contract Number P-1480-B, Confirmation of Award Letter, dated September 15, 1977; and
 - (2) Stone and Webster Purchase Order Number NA-3192, dated July 26, 1978.
- b. Review of the following documents to verify objectives 1a. through 1d. above:
 - (1) Quality Assurance Manual, Revision 8, dated January 27, 1979; Sections 3, 5, 6, 10, 11, and 15.
 - (2) Quality Control Procedures, Numbers 55.0, dated January 28, 1976; 62.0, dated December 31, 1975; and 62.1, dated October 10, 1977.
 - (3) Design Engineering Procedures, Numbers S-25.08.1, dated July 18, 1973; S-25.08.2, dated July 18, 1973; S-25.10, dated November 1974; S-25.10.1, dated October 1973; S-25.11, dated October 1973; S-25.11.1, dated May 2, 1975; and S-25.13.1A, dated February 1977.
 - (4) Design Notices and related documents for: Bill of Material (BM) No. 67167, dated July 18, 1977; BM 69642-HS, dated February 15, 1978; Drawing Numbers MC-82288/96, dated May 13, 1976; MC-82284, dated May 12, 1976.

- (5) Manufacturing Requirements Nos. 102 - Section 2.2(R)(S), dated January 26, 1979; 101 - Section 1(R), dated July 12, 1978; and 103 - Section 1(S), dated March 2, 1979.
- (6) Temporary Manufacturing Requirements Numbers: 14.1, dated May 16, 1978; 17.1, dated March 3, 1977; and 18.1, dated May 6, 1977.
- (7) Engineering Specification Number 6.5.0, dated September 28, 1978.
- (8) Purchase Requirements Numbers: 1 Section 1, dated November 18, 1976; 1 Section 3, dated March 28, 1978; and 23 Section 1, dated January 30, 1979.

3. Findings

a. Deviation from Commitment

- (1) See Enclosure.
- (2) Informal, undated, handwritten procedures existed for controlling temporary manufacturing requirements, purchase requirements, and manufacturing requirements. Also, the review/approval block for these documents indicated position titles of reviewers/approvers.

b. Unresolved Items

- (1) An inconsistency exists between paragraph 6.4.2 of Revision 8 of the Quality Assurance Manual, dated January 27, 1979, and paragraph 5.1 of Quality Control Procedure Number 55.0, dated January 28, 1976. The latter indicates that quality documents shall be prepared by any responsible QA personnel while the former indicates quality documents shall be initiated by any responsible person.
- (2) Paragraph 5.4 of Quality Control Procedure Number 55.0, dated January 28, 1976, indicates QA approval shall appear on documents identified as: Manufacturing Requirements, Temporary Manufacturing Requirements, Engineering Specifications, and Purchase Requirements. However, QA approval signature appears on the Design Notices for Manufacturing Requirements rather than on the Manufacturing Requirement.

- (3) Routine Orders, Design Notices, Bills of Material, Assembly and Tray Drawings are distributed in accordance with a Distribution List other than the one identified in Design Engineering Procedure Number S-25.11.1, dated May 2, 1975.

c. Comments

- (1) The Cleveland Electric Illuminating Company letter to ESB, Incorporated, dated September 15, 1977, confirms award of contract P-1480-B and requires implementation of Exide's Quality Assurance Manual, Revision 7, dated May 5, 1977. The Quality Assurance Manual is currently at Revision 8, and Revision 7 had not been maintained on distribution for implementation on contract P-1480-B.
- (2) The identified customer orders invoked the requirements for control of changes to software and hardware.

C. Exit Interview

1. The inspectors met with management representatives denoted in paragraph A. at the conclusion of the inspection on May 4, 1979.
2. The following subjects were discussed:
 - a. Areas inspected.
 - b. Deviation identified.
 - c. Unresolved items identified.
 - d. Response to the report.

Exide Management was requested to structure their response under headings of corrective action, preventive measures, and dates for the deviation.

3. Management comments were related generally to clarification of the findings.

Details Section II

(Prepared by D. M. Hunnicutt)

A. Persons Contacted

*A. J. Ushka, QA Director
D. J. Bouquard, Senior Buyer

*Denotes those persons who attended exit interview.

B. Initial Management Meeting1. Objectives

The objectives of this meeting were to accomplish the following:

- a. To meet with the Exide Power Systems Division (Exide) management and those persons responsible for the administration of the Quality Assurance Program, and to establish communications channels.
- b. To determine the extent of Exide's involvement in the commercial nuclear power plant business.
- c. To discuss NRC direct inspection program, including the Licensee Contractor and Vendor Inspection Program (LCVIP) organization, the Region IV organization and the related NRC organization.
- d. To describe the LCVIP inspection methods and documentation requirements, including inspection reports, the "White Book," Public Document Rooms and the response requirements for identified deviations and unresolved items.

2. Method of Accomplishment

The preceding objectives were accomplished by discussions during the meeting on May 2, 1979, as summarized in the following paragraphs:

- a. The Vendor Inspection Branch (VIB) organization and related NRC and Inspection and Enforcement office (ISE) organizations were described and identified.
- b. The LCVIP function was described, including why it was established, the VIB objectives, the implementation structure and the applicable program requirements related to Exide.

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- c. The conduct of VIB inspections was described and how the VIB inspections are documented, including the inspection report; Vendor responses to the Notice of Deviations; how proprietary information is handled; the Public Document Room; and the "White Book."
- d. The purposes and scopes of VIB scheduled inspections at Exide's two (2) manufacturing facilities during the weeks of May 14 and 28, 1979.

3. Findings

- a. Exide management acknowledged the above discussions and Exide's obligations in the supply of safety-related equipment to the commercial nuclear industry.
- b. Exide management discussed their organization, product lines, outlined their quality assurance program and how it is structured, the Quality Assurance Manual, and tests of their safety-related batteries, battery racks and other items related to batteries.
- c. Exide management stated that two (2) additional isolation bolts had been or will be installed in safety-related battery racks (Class IE) to isolate, in two (2) cell increments, the build up of horizontal momentum in a series of battery cells in each battery rack step during a postulated seismic event. They further stated that this two (2) bolt isolation bar is not required for structural integrity, but only for the isolation of momentum and that the structural integrity will not be affected by this addition to the Class IE battery racks.
- d. Exide management discussed a test program that had been completed at the Wyle Laboratory facilities at Huntsville, Alabama, during the week of February 26, 1979. They offered to show the film taken during the tests to document simulated seismic testing of a battery system.

Note: On May 3, 1979, the inspectors reviewed this documentary film on simulated seismic testing of a multi-celled battery under load. The film showed in detail various simulated seismic testing on a two (2) dimensional computer operated shaker table. After completing the first series of testing, the batteries were turned 90 degrees on the shaker table and the testing sequence repeated.

Records indicate that all tests were conducted with the test multi-celled battery under a load condition. The computer operated shaker table was operated under random conditions to more closely simulate seismic movements than can be simulated by a sinusoidal method of testing. A complete series of seismic tests were performed on the multi-celled battery. Testing was conducted at various speeds and amplitudes with a maximum amplitude of 10 times gravity (10g).

The records and film indicate that the multi-celled battery functioned as designed under the various test conditions.

C. Organization

1. Objectives

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

- a. Authority and duties of persons and organizations performing activities affecting safety-related functions had been clearly established and delineated in writing:
- b. Performers of the quality assurance functions had sufficient authority and freedom to:
 - (1) Identify quality problems.
 - (2) Initiate, recommend and/or provide solutions to identified problems, and
 - (3) Verify implementation of solutions.
- c. The individuals responsible for assuring effective execution of any portion of the quality assurance program had independence from those directly responsible for performing the specific activity.

2. Methods of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the following customer orders and attendant documents to verify that organization requirements had been invoked:
 - (1) PO Number KY-16948, dated July 3, 1978.

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- (2) PO Number KY-19260, dated December 5, 1978.
- (3) PO Number KY-20922, dated March 21, 1979.
- (4) PO Number KY-2755, dated April 13, 1979.
- b. Review of Exide Industrial Battery Division (Exide) Quality Assurance Manual, Section 1, Revision 8, dated January 27, 1979.
- c. Review of Exide Quality Assurance Manual, Section 6, Revision 8, dated January 27, 1979.
- d. Review of Exide Organizational Charts.
- e. Review of Quality Control Procedure, Administrative, dated August 1, 1977.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.

D. Procurement Document Control

1. Objectives

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

- a. Procedures had been prepared and approved by Exide which prescribed a system for procurement document control that is consistent with NRC rules and regulations and Exide's commitments to customers as established in the Exide QA Manual and related documents.
- b. The procurement document control procedures are properly and effectively implemented by Exide.

2. Method of Accomplishment

The objectives of this area of the inspection were accomplished by:

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- a. Review of Exide Quality Assurance Manual, Section 4, Revision 8, dated January 27, 1979.
- b. Review of Approved Vendor List (thirty (30) vendors on current list) dated January 1, 1979.
- c. Review of the following Purchase Orders (PO):

<u>PO Number</u>	<u>Date of PO</u>	<u>Items covered by PO</u>
KY-16948	July 3, 1978	"F" Line batteries
KY-19260	December 5, 1978	Part 82874 of "C" Line batteries
KY-20922	March 21, 1979	Separator MAX Part 82302
HO-2894	April 23, 1979	Trays, No. 61046 with covers, and change order related to change in number of trays

- d. Review of Quality Control Procedure 30.8, "Vendor QC Seismic Racks", dated August 1, 1977. This procedure delineates controls that apply to seismic racks requirements to meet Exide and/or customer requirements.
- e. Review of Quality Control Procedure 30.9, "Seismic Rack Welding Requirements and Welder Qualifications", dated November 1, 1978. The purpose of this procedure is to establish welding requirements and welder operator qualifications for fabrication of battery racks.
- f. Review of Quality Audit performed at the Kim Manufacturing Company, Dowingtown, Pennsylvania on June 1, 1977.
- g. Review of materials test date for first quarter 1979 (Amerace).
- h. Review of Material Test Reports (MTR) file for Amerace Corporation for 1979 (January 1 through April 30, 1979).
- i. Review of Quality Audit for Mack Molding, dated August 15, 1979.
- j. Review of MTR file for Mack Molding for 1979 (January 1 through April 30, 1979).

- k. Review of Vendor Quality Program Survey (St. Joe Minerals Corporation) dated May 26, 1976.
- l. Discussions with cognizant management personnel on QA functions related to procurement document control.

3. Findings

Within this area of the inspection, no deviations or unresolved items were identified.