

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

Report No. 99900712/80-01

Program No. 51400

Company: Systems Control  
Division of M. J. Electric, Inc.  
PO Box 788  
Iron Mountain, Michigan 49801

Inspection Conducted: March 25-26, 1980

Inspectors: *D. M. Hunnicutt* 4/11/80  
for L. E. Ellershaw, Contractor Inspector Date  
Components Section II  
Vendor Inspection Branch

Approved by: *D. M. Hunnicutt* 4/11/80  
D. M. Hunnicutt, Chief Date  
Components Section II  
Vendor Inspection Branch

Summary

Inspection on March 25-26, 1980 (99900712/80-01)

Areas Inspected: Implementation of 10 CFR 50 Appendix B criteria, and applicable codes and standards including: quality assurance program review; internal audits; welding material control; document control; joint fitup and welding; equipment calibration; and visual examination of welds. The inspection involved sixteen inspector-hours on site.

Results: In the seven areas inspected, seven deviations from commitment were identified. There were no unresolved items.

Deviations: organization - the QA/QC Manager is also the Project Engineer on one nuclear job, which precludes the required independence during document reviews and approvals (Notice of Deviation, Item A). Internal Audits - internal audits were not conducted of all departments (Notice of Deviation, Item B.1.). Weld Material Control - required material certifications were not available for weld wire which had been issued to the shop (Notice of Deviation, Item B.2.).

Document Control - the review and approval blocks on subsequent revisions to

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Deviation, Item B.3.). Joint Fitup and Welding - welding was not being performed in accordance with the required welding procedure specifications (Notice of Deviation, Item B.4). Equipment Calibration - ammeters and voltmeters in welding power sources are not calibrated and neither are the tong meters which should be used to monitor welding activities (Notice of Deviation, Item B.5.). Visual Examination of Welds - welds have been accepted by Systems Control and their customer which do not meet the acceptance criteria of AWS D1.1-75 Code (Notice of Deviation, Item B.6.).

DETAILS SECTION

(Prepared by L. E. Ellershaw)

A. Persons Contacted

- \*W. J. Brule - President, M. J. Electric, Inc.
- \*D. J. Brule - Vice President, Operations
- \*L. A. Capra - Senior Vice President  
J. Clifford, QC Inspector
- \*J. E. Pezzullo - QA/QC Manager

\*Attended exit meeting (see paragraph J.).

B. Initial Management Meeting (IMM)

The objectives of the IMM were to meet with Systems Control (SC) Management and establish lines of communication, acquaint them with the NRC organization, its policies and Vendor Inspection Program, explain our inspection basis and manner of reporting, and explain the issuance and contents of the White Book.

Discussion with management revealed SC is fabricating numerous instrument panels, and cable trays and hangers, with approximately 70-75% of their business devoted to commercial nuclear use and about 50% designated as safety related.

C. Quality Assurance Program Review1. Objective

The objective of this area of the inspection was to review the documented quality assurance (QA) program with respect to completeness of and methods used for addressing the QA criteria of Appendix B to 10 CFR 50.

2. Method of Accomplishment

- a. Examination of the SC QA Manual, revision 9, dated August 1, 1979.
- b. Review of procedures used for the control of welding, documentation control, calibration, and inspection.
- c. Examination of system requirements relative to documentation and control of material identity and manufacturing processes.
- d. Discussions with cognizant personnel.

3. Findingsa. Deviation From Commitment

See Notice of Deviation, Item A.

b. Unresolved Item

None.

D. Internal Audits1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for conducting internal audits in accordance with the QA Manual and applicable NRC requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section XVIII, "Audits".
- b. Review of Procedure No. 129, revision 1 dated July 2, 1979, "Internal Audit Procedure."
- c. Examination of internal audits performed on January 3, 1979, July 31, 1979, and January 4, 1980.
- d. Discussions with cognizant personnel.

3. Findingsa. Deviation From Commitment

See Notice of Deviation, Item B.1.

b. Unresolved Item

None.

E. Welding Material Control1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for the identification and

control of welding materials in accordance with the QA Manual and applicable NRC requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section VII, "Control of Purchased Material, Equipment and Services."
- b. Review of Procedure No. 110, revision 2 dated December 3, 1979, "Purchasing Procedure."
- c. Observation of welding materials being used in production welding.
- d. Review of purchase order requirements and certified material test reports.
- e. Review of several customer specifications relative to QA requirements and records.
- f. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item B.2.

b. Unresolved Item

None.

F. Document Control

1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for review and approval of documents including subsequent revisions in accordance with the QA Manual and applicable NRC requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section VI, "Document Control."

- b. Observation of drawings being used in the fabrication shop.
- c. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item B.3.

The following observations were made relative to the revision blocks on the indicated drawings, all of which were stamped "Nuclear Safety Related."

- (1) Drawing 53079-56: The original issue was dated 11-9-79 and signed off by the draftsman, a checker, engineering, and quality control. Revision 1, with an issue date of 1-21-81, (sic) was signed only by the draftsman. Revision 2, with an issue date of 3-10-80, was signed only by the draftsman. There was a "QC and Approved For Construction" stamp on revision 2, signed off by the Chief Draftsman and QC on 3-17-80. Both revision 1 and 2 were in the shop.
- (2) Drawing 53079-S5: The original issue was dated 11-9-79 and signed off by the draftsman, checker, engineering, and QC. Revision 1, with an issue date of 1-21-80, was signed off only by the draftsman. Revision 2 did not have an issue date and was signed off only by the draftsman. There was a "QC and Approved For Construction." stamp on revision 2, signed off by the Chief Draftsman and QC on 3-17-80.
- (3) Drawing 85078-52: The original issue was dated 10-30-79 and signed off by the draftsman, checker, engineering, and QC. Revision 1 had no issue date and was signed off only by the draftsman. There was a "QC and Approved For Construction" stamp on the revision 1, signed off and dated 2-21-80.
- (4) Drawing 85078-S1: The original issue of the drawing was dated 10-30-79, and signed off by the draftsman, checker, engineering, and QC. Revision 1, with an issue date of 1-26-80, was signed off only by the draftsman. Revision 2 had no issue date and was signed off only by the draftsman on 3-12-80. There was a "QC and Approved For Construction" stamp on revision 2, signed off and dated 3-12-80.

- (5) Drawing 6577-W3: The original issue was signed off by the draftsman and engineering on 1-26-79, and by QC on 7-3-79. Revision 1, was signed and dated by draftsman and engineering on 2-20-79. Revision 2, was signed and dated by draftsman and engineering on 6-4-79. Revision 3, was signed and dated by draftsman, checker, and engineering on 11-21-79. Revision 4, was signed off and dated by draftsman, checker, and engineering on 3-7-80. Revision 4 was stamped "QC and Approved For Test" by Engineering and QC, and dated 3-18-80.

b. Unresolved Item

None.

G. Joint Fitup and Welding

1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for the control of joint fitup and welding in accordance with the QA Manual and applicable NRC requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section IX, "Control of Special Processes."
- b. Observation of in-process welding and comparing the WPS requirements with the parameters as established by the welders.
- c. Review of AWS D1.1-75 requirements.
- d. Discussion with cognizant personnel.

3. Findings

a. Deviation From Commitment

Structural Welding Code AWS D1.1-75 Section 5, paragraph 5.5.2 states in part, "The changes set forth in 5.5.2.1 through 5.5.2.5 shall be considered essential changes in a welding procedure and shall require establishing a new procedure by qualification . . . ."

Paragraph 5.5.2.3, Gas Metal Arc Welding states in part, "A change of more than 10 percent above or below the specified mean amperage for each diameter electrode used. . . . An increase of 25 percent or more, or a decrease of 10 percent or more in the rate of flow of shielding gas or mixture."

Therefore, because of the actions described in Item B.4, it would appear that the WPSs must be requalified under those same conditions, otherwise the welds will be in violation of the AWS D1.1-75 code.

b. Unresolved Item

None.

H. Equipment Calibration

1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for the control and calibration of equipment in accordance with the QA Manual and applicable NRC requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section XII, "Control of Measuring and Test Equipment."
- b. Review of Procedure No. 124, "Calibration of Measurement and Test Equipment," revision 3 dated December 3, 1979.
- c. Observation of welding power source ammeters and voltmeters, and tong meters.
- d. Use of two tong meters in an attempt to verify the accuracy of the meters.
- e. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item B.5



e. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item B.5

It was determined through discussions, that the ammeters, voltmeters, and tong meters have not been calibrated by SC.

The inspector and QC Manager, each equipped with tong meters, serial numbers AM 43766 and AX 43774 respectively, attempted to ascertain the validity of readings as shown by the power source ammeters while in use.

The following results were obtained:

<u>Item</u>	<u>Amperage Reading</u>
1. Welding Power Source Ident. No. SCD 1829	130
Tong Meter S/N AM 43766	160-170
Tong Meter S/N AX 43774	150
2. Welding Power Source Ident. No. SCD 1838	130-140
Tong Meter S/N AM 43766	150-160
Tong Meter S/N AX 43774	150-160
3. Welding Power Source Ident. No. SCD 1828	180
Tong Meter S/N AM 43766	120
Tong Meter S/N AX 43774	120
4. Welding Power Source Ident. No. SCD 1845	190
Tong Meter S/N AM 43766	220
Tong Meter S/N AX 43774	220

The results of the above comparisons, would also indicate a lack of an effective welder monitoring programs as defined by Procedure No. 128, revision 2 dated December 3, 1979, "In-Process Inspection Procedure," which includes the use of Form CP-2A, "Checklist For In-Process Inspection" revision 0 dated 6-7-77.

b. Unresolved Item

None.

I. Visual Examination of Welds

1. Objectives

The objectives of this area of the inspection were to verify that SC had implemented the requirements for defining and inspecting against, acceptance criteria during visual examinations of welds in accordance with the QA Manual and applicable NRC and AWS Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of QA Manual Section X, "Inspection."
- b. Review of Procedure No. 136, "Quality Control Point No. 2 Procedure," revision 1 dated 1-29-79.
- c. Observation of SC QC and customer accepted Instrument Rack, identified as 1PL84JB for Job No. 6577.
- d. Review of associated fabrication inspection forms for the above instrument rack.
- e. Discussions with cognizant personnel.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item 6.

Instrument Rack 1PL84JB had originally been accepted by SC on Quality Control Point #2 - Fabrication Inspection dated 1-7-80. The rack was subsequently rejected by their customer. After weld repairs were performed, SC accepted the rack on 3-10-80. The Inspection Agency for SC's customer, accepted the rack on 3-20-80.

The inspector observed a weld joint, identified on drawing 6577-W5 as Welding Detail No. 3, as exhibiting lack of fusion. It should be noted that the inspectors observation (3-26-80) took place after the rack had been painted, whereas the acceptance of the rack occurred prior to painting. There are occasions when painting enhances the detection of certain defects.

b. Unresolved Item

None.

J. Exit Meeting

An exit meeting was held at the conclusion of the inspection on March 26, 1980, with the management representatives denoted in paragraph . above. The scope and findings of this inspection were summarized, and management was informed that additional documentation review would continue after the inspector returned to the Region IV office. Management acknowledged the comments relative to the findings.