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

Report No. 99900038/80-01 Program No. 51300

Company: Ishikawajima-Harima Heavy
Industries Co., Ltd.
1, Shin-Nakahara-Cho
Isogo-Ku, Yokohama, Mail No. 235, JAPAN

Inspection Conducted: January 28-February 1, 1980

Inspectors: I. Barnes 2-21-80
I. Barnes, Contractor Inspector Date
Components Section II
Vendor Inspection Branch

Approved By: D. M. Hunnicutt 2/21/80
D. M. Hunnicutt, Chief Date
Components Section II
Vendor Inspection Branch

Summary

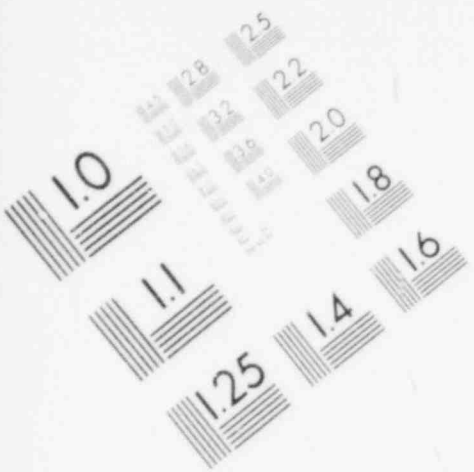
Inspection on January 28 - February 1, 1980 (99900038/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, and applicable codes and standards; including action on previous inspection findings, internal audits, joint fitup and welding record review, design control, procurement control and radiographic examination. The inspection involved forty (40) inspector-hours on site.

Results: In the six (6) areas inspected, no deviations or unresolved items were identified in one (1) area; with the following deviations and unresolved item identified in the remaining areas:

Deviations: Internal Audits -Frequency of performance of internal audits and inability to verify QAD follow-up on corrective action implementation are not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section 14 of the QA Manual (Notice of Deviation, Item A).

Joint Fitup and Welding Record Review - Failure to perform at least weekly monitoring of welding material control activities is not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section 7 of the QA Manual (Notice of Deviation, Item B).



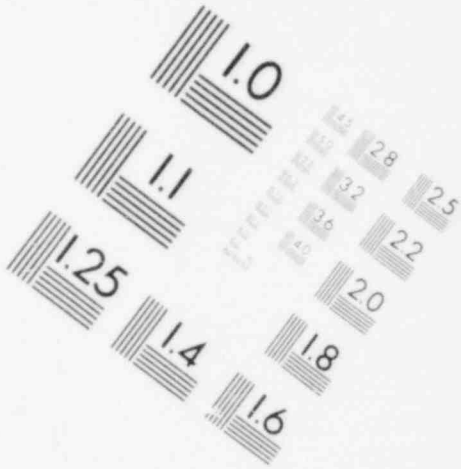
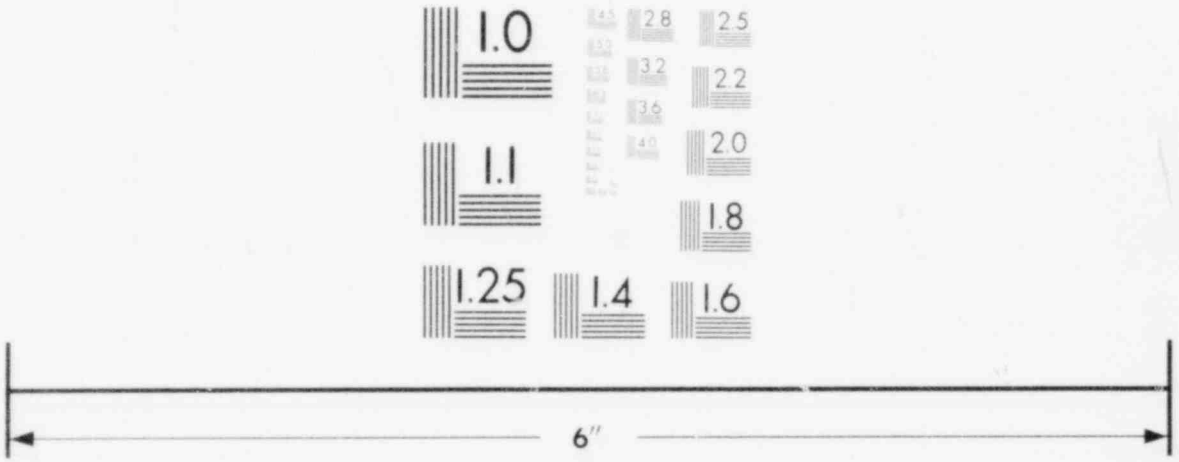
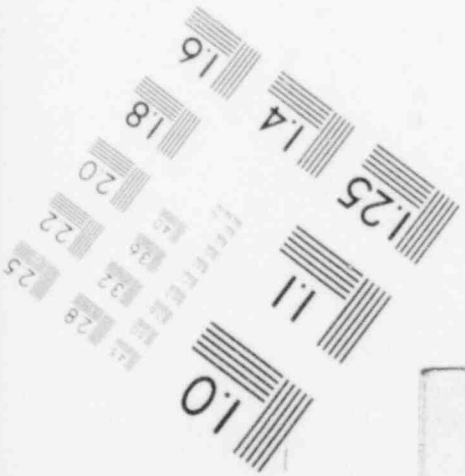
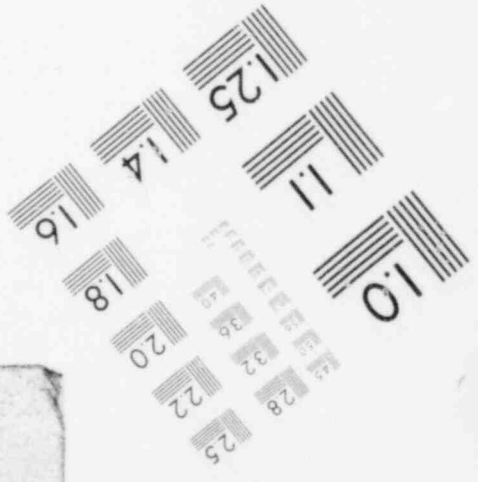


IMAGE EVALUATION
TEST TARGET (MT-3)



MICROCOPY RESOLUTION TEST CHART





Procurement Control - Placement of a vendor on the Approved Vendor List without registering limitations on scope of authorization is not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section 4 of the QA Manual (Notice of Deviation, Item C). Failure to obtain a vendor report relative to an identified nonconformity is not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section 4 of the QA Manual (Notice of Deviation, Item D).

Design Control - Non-use of document revision check lists relative to design changes resulting from changes in customer requirements is not in accordance with Criterion V of 10 CFR 50, Appendix B, and Section 3 of the QA Manual (Notice of Deviation, Item E).

Unresolved Items: Radiographic Examination - Inability to verify Level II radiograph personnel had detected at least 90% of known indications present in practical qualification test (Details, G.3.b).

DETAILS SECTION

A. Persons Contacted

*M. Amano, General Manager, Nuclear Power Division
*K. Takagi, Deputy Division Manager, Nuclear Power Division
J. Asai, Superintendent, Yokohama No. 3 Works
*K. Tomita, Manager, Quality Assurance Group, Quality Assurance Department, Nuclear Power Division
*H. Kumano, Section Manager, Quality Assurance Group, Quality Assurance Department, Nuclear Power Division
*R. Ichikawa, Department Manager, Quality Control Department, Yokohama No. 3 Works
A. Sato, Section Manager, Production Engineering Department, Yokohama No. 3 Works
*M. Akiyama, Section Manager, Equipment Design Department, Nuclear Power Division
S. Arai, Design Engineer, Equipment Design Department, Nuclear Power Division
*K. Maki, QA Engineer, Quality Assurance Group, Quality Assurance Department, Nuclear Power Division
K. Hashimoto, Welding Engineer, Production Engineering Department, Yokahoma No. 3 Works
M. Maeda, Welding Engineer, Production Engineering Department, Yokohama No. 3 Works
*Y. Nakada, QA Engineer, Quality Assurance Group, Quality Assurance Department, Nuclear Power Division
*T. Sakamoto, Staff Member, Procurement Group
*K. Seki, QA Engineer, Quality Assurance Group, Quality Assurance Department, Nuclear Power Division
*Y. Shinohara, Welding Engineer, Production Engineering Department, Yokohama No. 3 Works
T. Mizukami, Level III Examiner, Quality Control Department

*Denotes those persons attending the exit meeting.

B. Action on Previous Inspection Findings

(Closed) Deviation (Notice of Deviation, Inspection Report No. 79-02): Inclusion of a material manufacturer on the Approved Vendors List prior to resolution of deficiencies observed during a survey of the manufacturer.

The inspector verified that the committed addition to the Vendor Survey Report had been performed and that training actions were complete and documented.

C. Internal Audits

1. Objectives

The objectives of this area of the inspection were to:

a. Ascertain that a system has been prescribed and documented for auditing, which is consistent with the commitments of the QA program.

b. Determine that the system has been properly and effectively implemented.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section 14, Revision 1, of the QA Manual, "Quality Assurance Audit and Surveillance."

b. Examination of audit check lists used to perform audits in 1979 of the Equipment Design Department, Production Control Department, Pipe Shop, Heavy Vessel Workshop and the Production Engineering Department.

c. Verification that the audit check lists provided for adequate measurement of departmental compliance with the documented QA program.

d. Review of team leader qualifications and team orientation records.

e. Verification of reporting of audit results to responsible levels of management.

f. Review of follow-up actions regarding implementation of agreed corrective actions for audit findings.

g. Review of audit frequencies relative to QA program commitments.

3. Findings

a. Deviation from Commitment

See Notice of Deviation, Item A.

b. Unresolved Items

None.

D. Joint Fitup and Welding Record Review

1. Objective

The objective of this area of the inspection was to determine if production welding was controlled in accordance with the Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) QA program and applicable ASME Code requirements.

2. Method of Accomplishment

The preceding objective was accomplished by:

a. Review of welding control program defined in Section 7, Revision 1, of the QA Manual.

b. Examination of IHI fabrication plan for equipment hatch manufacture with respect to:

(1) Definition and control of sequencing of manufacturing operations to provide for compliance with ASME Code Section III fabrication and examination requirements.

(2) Performance of required ASME Code nondestructive examinations of welds.

(3) Compatibility of welding procedure qualifications with manufacturing operations.

c. Review of production welding records, relative to compliance with welding procedure specification (WPS) essential and nonessential variables, for the following welds in the WPPSS Unit 1 equipment hatch:

(1) Head longitudinal seam.

(2) Head to flange circumferential seam.

(3) Temporary head lifting lugs.

(4) Shell longitudinal seam.

(5) Shell spider support pads.

d. Verification of compliance of welding materials used in fabrication with the requirements of the applicable WPS, Section III of the ASME Code and customer purchasing specification, PUSP-1, Revision D.

e. Verification that welders and welding operators utilized for the above welding operations had been appropriately qualified in accordance with the requirements of Section IX of the ASME Code.

f. Review of QC welding monitoring records.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item B.

b. Unresolved Items

None.

c. Comments

Absence of production welding activities during the inspection precluded direct inspection of welding compliance with QA program requirements.

E. Procurement Control

1. Objectives

The objectives of this area of the inspection were to verify that IHI had established and implemented a system for the procurement of components materials and services, which assured conformance with specified requirements and included appropriate provisions for source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit and examination of items upon delivery or completion.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section 4, Revision 1, of the QA Manual, "Procurement Control."

b. Review of Section 5, Revision 1, of the QA Manual, "Material Control."

c. Review of Section 11, Revision 1 of the Manual, "Nonconformity Control."

d. Review of purchase orders and purchase specifications applicable to materials used in equipment hatch manufacture, including:

(1) SA 516 Grade 60 shell and head plate.

(2) SA 516 Grade 60 head flange material.

(3) SA 516 Grade 60 temporary attachment material.

(4) SA 320 Grade L43 bolts.

(5) O-rings.

(6) SFA 5.1 E7016G electrodes.

(7) SFA 5.18 E70S-G wire.

(8) Type Y-DM3 submerged arc wire and Type NF-310 submerged arc flux.

e. Verification of inclusion of material requirements contained in customer specifications PUSP-1, Revision D, and 9779-213.

f. Examination of vendor approval status at time of procurement.

g. Examination of Certified Material Test Reports and Receiving Inspection Reports for the referenced materials with respect to:

(1) Evidence of IHI review and approval.

(2) Compliance with procurement requirements.

(3) Verification of material identity at receipt relative to identity on accompanying Certified Material Test Report.

h. Examination of vendor survey records for those companies not holding an appropriate ASME Certificate.

i. Examination of material nonconformance report status for U.S. contracts.

j. Discussion with cognizant personnel concerning IHI criteria used to determine need and criteria for source inspection.

3. Findings

a. Deviations from Commitment

(1) See Notice of Deviation, Item C.

(2) See Notice of Deviation, Item D.

b. Unresolved Items

None.

c. Source Inspection Requirements

Source inspection needs do not appear to be determined by IHI in respect to any formalized criteria, in that the documented QA program does not describe the basis for determination of source inspection applicability. Discussions with IHI QC personnel, who are responsible for performing source inspections, also failed to reveal any clear definition of how a determination of source inspection need is made. This subject is considered to be a programmatic weakness and will be re-examined during a future inspection.

F. Design Control

1. Objectives

The objectives of this area of the inspection were to verify that IHI had established and implemented a system for control of design activities and interfaces consistent with applicable regulatory and ASME Code requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of the design control system contained in Section 3 of the QA Manual.

b. Review of Pittsburgh Des-Moines Purchase Order No. 11-00000-32977, dated May 3, 1977, and subsequent Change Orders 1 through 9.

c. Review of United Engineers and Constructors Specification 9779-213, "Containment Liner," Section 13D, "Design of Equipment Hatch."

d. Examination of Design Planning Document 021K004C.

e. Verification of performance of design reviews relative to customer input changes.

f. Examination of Material List, Document No. 029K001B.

g. Verification of approval of purchase specifications by QA and approval by Production Engineering of purchase specifications for welding materials.

h. Verification of approval of nondestructive examination procedures by IHI Level III Examiner.

i. Verification of correct shop drawing and procedure control.

3. Findings

a. Deviation From Commitment

See Notice of Deviation, Item E.

b. Unresolved Items

None.

G. Radiographic Examination

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

a. Radiographic examination procedures were in accordance with applicable ASME Code requirements.

b. Radiographic examination is performed in accordance with approved procedures by appropriately qualified personnel.

2. Method of Accomplishment

The preceding objectives were accomplished by:

a. Review of Section 10, Revision 1, of the QA Manual, "Examination, Test and Inspection."

b. Review of Procedure No. 062K168B, "Containment Mechanical Penetrations Nondestructive Examination Procedure."

c. Review of Document No. 1BR-M09-80103(E), Revision 1, "Written Practice of Training and Qualification for Nondestructive Examination Personnel."

d. Examination of radiographs applicable to Weld Joint No. WZ02-1 on penetration Work No. 5501-402 (WPPSS Unit 5).

e. Review of nondestructive examination report for Weld Joint WZ02-1, with respect to technique used relative to requirements of Procedure No. 062K168B.

f. Examination of qualification records for the personnel who performed the radiographic examination and film interpretation.

3. Findings

a. Deviation from Commitment

None.

b. Unresolved Items

Paragraph 8.6.4 in SNT-TC-1A requires, relative to the practical examination administered to nondestructive examination personnel, that at least 90% of the known indications be found. Examination of the practical test records for two (2) Level II radiographic personnel showed a documentation format, which precluded verification that they had detected at least 90% of the known indications. The test results had been graded by the Level III Examiner to show the number of indications of different defect types, which the personnel had failed to detect. The known number present for a given defect type was not recorded, however, preventing calculation of the percentage identified. The inspector was additionally informed during the inspection, that records had not been maintained that would allow present calculation of personnel performance. This item is considered unresolved pending verification of

compliance with SNT-TC-1A requirements for qualification of radiographic examination personnel.

H. Exit Meeting

A post inspection exit meeting was hold on February 1, 1980, with the management representatives denoted in paragraph A. above. The inspector summarized the scope and findings of the inspection. Management acknowledged the statements of the inspector made with respect to the findings as presented to them and affirmed their commitment to and support of the QA program.