

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

REPORT OF VID INSPECTION

Inspection Report No. 99900021/76-02 Docket No. 99900021
Company Name: Pullman Kellogg Company Program No. 44020
Post-Office Box 1007
Address: Williamsport, PA 17701
Type of Inspection: Implementation of ASME Accepted QA Manual
Date(s) of Inspection July 26-29, 1976
Date(s) of Previous Insp. January 20-22, 1976
Lead Inspector: *H. W. Roberds* Date 8/16/76
H. W. Roberds, Contractor Inspector, VI Branch
Accompanying Inspector(s): *I. Barnes* Date 8/16/76
I. Barnes, Contractor Inspector, VI Branch

Date _____

Date _____

Date _____

Date _____
Reviewed By: *D. M. Hunnicutt* Date 8/16/76
D. M. Hunnicutt, Chief, Components Section II, VI Branch

SUMMARY OF FINDINGS

A. Deviations from Commitments

1. Inadequate control of grinding wheels on stainless steel welds and weld preparations to preclude possible contamination. (Details Section I, paragraph 4.c.)
2. Lack of controls with respect to identification, storage, handling and issue of submerged arc welding fluxes. (Details Section II, paragraph 3.c.(1).)
3. Unauthorized change of welding process without required amendment of welding procedure specification. (Details Section II, paragraph 3.c.(2).)
4. Failure to comply with amperage requirements of applicable welding procedure specification. (Details Section II, paragraph 3.c.(3).)
5. Inadequate compliance with QA Manual commitments relative to adequacy of controls of postweld heat treatment temperature and temperature uniformity. (Details Section II, paragraph 4.c.(1).)
6. Monitoring of accumulated postweld heat treatment time not performed with respect to qualification times of applicable base materials, welding procedures and welding materials. (Details Section II, paragraph 4.c.(2).)

B. Vendors Action on Previously Identified Deviations

1. Item 1 of Report Number 99900021/76-01, Summary of Findings, is resolved. (Details Section I, paragraph 3.c.(1).)
2. Item 2 of Report Number 99900021/76-01, Summary of Findings, is resolved. (Details Section I, paragraph 3.c.(2).)
3. Item 3 of Report Number 99900021/76-01, Summary of Findings, is resolved. (Details Section II, paragraph 2.c.(1).)
4. Item 4 of Report Number 99900021/76-01, Summary of Findings, is resolved. (Details Section II, paragraph 2.c.(2).)
5. Item 5 of Report Number 99900021/76-01, Summary of Findings, is resolved. (Details Section II, paragraph 2.c.(3).)

C. Status of Previously Reported Unresolved Items

There were no previously reported unresolved items.

D. Other Significant Findings

1. Current Findings

- (a) Issue #4, dated March 1, 1976, of the Quality Assurance Manual was approved by the Authorized Inspection Agency on April 26, 1976. To date, this manual has not been implemented for any work currently undergoing fabrication.
- (b) Paragraph 3.4 of Section XIV in QA Manual, Issue #4, contains a statement, which permits deviation from ASME, Section III, requirements with respect to postweld heat treatment qualification times for ferritic weld materials, i.e. ferritic weld material tests are specifically exempted from receiving at least 80% of the time at temperature to be applied to the production component or assembly.
- (c) Issue #4 of the QA Manual does not fully address the corrective action requirements of NA-4730. (See Details Section II, paragraph 5.c.)
- (d) Issue #4 of the QA Manual does not address or consider with respect to control of heat treatment practices, the effects of section thickness on time at which component temperature achieves the required temperature range relative to furnace temperature.

2. Unresolved Matters This Inspection

None.

E. Management Interviews

A management interview was held on July 15, 1976, at the Pullman Kellogg facility in Williamsport, Pennsylvania. The results of the inspection were discussed with the following management representatives:

Edward F. Gerwin, Chief Engineer
Richard T. Walter, Assistant Plant Manager
Thomas Daniels, QA/QC Supervisor
Jacob Krommenhoek, Production Manager
Kenneth A. Swisher, QA Engineer, Central Staff
Vernon W. Messner, Code Engineer
Frank J. Richards, Welding Engineer

Robert I. Boyer, Welding Procedures Administrator
Lynn A. Crist, Administrative Assistant
Joseph A. Koch, Jr., Manager, Manufacturing Engineering
Arthur E. Duncan, Production Manager
Robert N. Babcock, Purchasing Manager
Harold F. McGraw, Authorized Inspector, Hartford Steam Boiler
J. H. Khandhar, Authorized Inspector, Hartford Steam Boiler
R. E. Emrich, Authorized Nuclear Inspection Supervisor, Hartford
Steam Boiler

1. Management was informed that the implementation of their ASME accepted Quality Assurance Manual had been inspected in the following areas:
 - (a) Manufacturing Process Control (Details Section I, paragraph 4.).
 - (b) Nondestructive Examination (Details Section I, paragraph 5.).
 - (c) Welding (Details Section II, paragraph 3.).
 - (d) Heat Treatment (Details Section II, paragraph 4.).
 - (e) Nonconformance and Corrective Action (Details Section II, paragraph 5.).
2. Management was informed of the deviations from commitments described in paragraph A.
3. Management was informed of the status of the previous identified deviations in paragraph B.

DETAILS SECTION I

(Prepared by H. Roberds)

1. In addition to those persons listed in the management interview section of this report, the following persons were contacted:

J. E. McLaughlin, Layout Foreman
T. C. Bartlett, Junior QA Engineer
J. Eiswerth, NDE Level II

2. General

This inspection was conducted to verify that the Pullman Kellogg Company, Williamsport plant (PKPA), Quality Assurance Program as described in the ASME accepted Quality Assurance Manual is being implemented and gives reasonable assurance that parts and/or components manufactured under this program will comply with applicable codes and standards.

3. Vendors Action on Previously Identified Deviations

References: IE Report Number 99900021/76-01 and PKPA response letter dated April 12, 1976.

- a. Inspection Objective

The objective of this inspection was to verify that PKPA had initiated the corrective actions identified in the response letter to the Nuclear Regulatory Commission, dated April 12, 1976.

- b. Inspection Objective Accomplished by:

- (1) Review of Report Number 99900021/76-01.
- (2) Review of Sections I and VI of the QA Manual, dated March 1, 1976, issue number 4.
- (3) Review of PKPA's response letter dated April 12, 1976.
- (4) Review of seven process sheets randomly selected at various stages of the fabrication process.

c. Inspection Findings

- (1) Report Number 99900021/76-01, Item 1, of attached enclosure.

It was verified that PKPA had implemented the corrective action identified in their response letter dated April 12, 1976. This item is closed.

- (2) Report Number 99900021/76-01, Item 2, of attached enclosure.

It was verified that PKPA had implemented the corrective action identified in their response letter dated April 12, 1976. This item is closed.

4. Manufacturing Process Control

a. Inspection Objective

The objective of this inspection was to verify that PKPA had implemented control of manufacturing processes as delineated in Sections VI, IX, X, and XIV of the ASME accepted QA Manual.

b. Inspection Objective Accomplished by:

- (1) Review of Sections VI, IX, X, and XIV of the QA Manual.
- (2) Review of Project Procedure Manual.
- (3) Selective review of Process Sheets at various work locations.
- (4) Observation of work in progress.
- (5) Interviews with cognizant personnel.

c. Inspection Findings

With the exception of the following deviation, it was established that PKPA had implemented the control of manufacturing processes as outlined in the Quality Assurance Manual.

Although the most recent Quality Assurance Manual and the applicable Project Procedure Manual do not relate to the control of grinding wheels on stainless steels in terms of contamination potential, the QA/QC supervisor informed the inspector that grinding wheels were controlled and identified for "stainless steel use only" by color coding.

Contrary to the above, the inspector observed a grinding wheel being used on a stainless steel weld, that was not identified by any form of color coding.

5. Nondestructive Examination (Radiography, Magnetic Particle and Dye Penetrant)

a. Inspection Objective

The objective of this inspection was to verify that FKPA had implemented the controls of Nondestructive Examination as delineated in Section IX of the ASME accepted QA Manual.

b. Inspection Objective Accomplished by:

- (1) Review of Section IX of the QA Manual.
- (2) Review of procedure number IX-RT-1 (Radiography Procedure).
- (3) Review of procedure number IX-MT-1 (Magnetic Particle Examination).
- (4) Review of randomly selected radiographs and radiographic inspection reports.
- (5) Observation of work in progress.
- (6) Interviews with cognizant personnel.

c. Inspection Findings

The objective of this inspection was met with no deviations from commitments identified within the scope of this inspection.

6. Authorized Inspector (AI) Activities

a. Inspection Objective

The objective of this inspection was to verify that (1) the AI activities included established verification points for fabrication processes, (2) these activities were being documented, and (3) the AI was auditing implementation of the QA Manual.

b. Inspection Objectives Accomplished by:

- (1) Review of Section XIV of the QA Manual.

(2) Examination of process sheets.

(3) Interview of the AI.

c. Inspection Findings

The AI is certified as a Nuclear Authorized Inspector and is performing the first two items identified in the inspection objective. The AI had not completed any audits of the various elements for implementation of the QA Manual at the date of this inspection.

DETAILS SECTION II

(Prepared by I. Barnes)

1. Additional Persons Contacted

J. Butler, Welding Foreman

2. Vendor Action on Previously Identified Deviations

References: IE Report Number 99900021/76-01 and Pullman Kellogg response letter dated February 4, 1976. Letter from J. H. Tillou dated March 26, 1976, and Pullman Kellogg response letter dated April 12, 1976.

a. Inspection Objective

The objective of this inspection was to verify that Pullman Kellogg (PKPA) had initiated the corrective actions identified in the response letters to the Nuclear Regulatory Commission, dated February 4, 1976, and April 12, 1976.

b. Inspection Objective Accomplished by:

- (1) Review of QA Manual, Section XV, dated March 1, 1976, entitled, "Non-Conforming Materials, Parts or Components."
- (2) Review of QA Manual, Section VII, dated March 1, 1976, entitled, "Control of Purchased Material, Equipment and Services."
- (3) Review of AIA approval for alternate forms used by PKPA.
- (4) Observation of receiving inspection area.
- (5) Review of Receiving Inspection Procedure, ES-722/10-8.
- (6) Interviews with cognizant technical and management personnel.

c. Inspection Findings

- (1) Report Number 99900021/76-01, Details Section III, Paragraph 3.c.(1)

It was verified that PKPA had initiated the corrective actions identified in their response letter dated April 12, 1976. This item is closed.

- (2) Report Number 99900021/76-01, Details Section III, Paragraph 3.c.(2)

It was verified that PKPA had initiated the corrective actions identified in their response letter dated February 4, 1976. This item is closed.

- (3) Report Number 99900021/76-01, Details Section III, Paragraph 3.c.(3)

It was verified that the PKPA, February 4, 1976, response to this item was in accordance with their program commitments. This item is closed.

3. Welding

a. Inspection Objective

The objective of this inspection was to verify that PKPA had implemented the system for control of welding as defined in both ASME accepted QA Manuals (i.e. currently implemented 1972 QA Manual and ASME accepted 1975 Manual).

b. Inspection Objective Accomplished by:

- (1) Review of 1972 QA Manual, Section 3, dated July 25, 1972, "Procurement Control."
- (2) Review of 1972 QA Manual, Section 5, dated July 25, 1972, "Welding Quality Assurance."
- (3) Review of QA Manual, Issue #4, Section VII, dated March 1, 1976, "Control of Purchased Material, Equipment and Services."
- (4) Review of QA Manual, Issue #4, Section IX, dated March 1, 1976, "Control of Special Processes."
- (5) Examination of weld history records and observation of welding operations on selected assemblies from Contract Numbers 8416, 8740, and 7935.
- (6) Review of welding procedure specifications P1-OB-F4-5G, P8-K-F5-SAW-14-1G, and P1-K1-F6-SAW-29-1G, which were used for welding operations witnessed on referenced contract numbers.

- (7) Examination of supporting procedure qualification records for referenced welding procedure specifications.
- (8) Review of qualifications for welders used on assemblies from referenced contract numbers and tracking system used for verification of qualification status.
- (9) Review of consumables certification data for welding materials used in witnessed welding operations.
- (10) Review of purchasing specifications for welding materials.
- (11) Observation of welding materials storage areas and review of system for approval and release to the shop.
- (12) Review of QA Manual, Issue #4, Section VIII, dated March 1, 1976, "Identification and Control of Materials, Parts and Components."

c. Inspection Findings

Within the scope of this inspection, the following three (3) deviations from commitment were identified and discussed with management:

- (1) Paragraph 5.1.2 of the 1972 QA Manual, Section 5, states in part with respect to storage of welding materials, ". . . Admittance to the storeroom is restricted to authorized management and storeroom personnel only"

Paragraph 5.3.2 of the 1972 QA Manual, Section 5, states in part with respect to issue of welding materials, ". . . To obtain inserts and welding materials, the welding supervisor will complete the type and size columns for the assigned weld on the Weld History Record and initial in the last column. The welder or welding operator presents the Weld History Record to the storeroom clerk who inserts the heat, lot, or code number of the items furnished"

NB-4411 of ASME, Section II, states in part, ". . . Suitable identification, storage, and handling of electrodes, flux and other welding materials shall be maintained"

Contrary to the above, the required control of submerged arc fluxes was not being maintained with respect to identification, storage, handling and issue, as evidenced by the following observations made by the inspector:

- (a) Submerged arc fluxes were being stored in an open, uncontrolled area with ready access to any personnel.
 - (b) Fluxes were being obtained from storage on the basis of verbal instructions from the welding supervisor and not on the basis of a properly completed Weld History Record.
 - (c) Identification control on the shop floor was primarily by an accounting number designation, which signified flux type but not lot number.
 - (d) Adjacent flux storage units were observed on the shop floor, both of which were marked "Stainless Steel" on the lid. The inspector was informed that they were used for storage of different types of flux. The labels on the units were covered with dirt and so located as to prevent ready visible identity of the flux type and lot number to be stored in the particular container.
- (2) The Weld History Record for Assembly Mark Number 2-CC-5R, Contract Number N-8416, referenced P1-OB-F4-5G as the applicable welding procedure specification (WPS) for welds "E" and "F."

Sheet 3 of WPS P1-OB-F4-5G required the root bead to be deposited using 0.035 in. E60S-3 wire by the gas metal arc weld process, with the remaining beads to be deposited by the shielded metal arc weld process using 1/8 in. and 5/32 in. E7018 electrodes.

ASME, Section IX, QW-201.1, states in part, ". . . Changes may be made in the nonessential variables . . . provided such changes are documented . . . either in an amendment to the original WPS, or a new WPS."

Contrary to the above, the root bead was deposited using a 3/32 in. E7018 electrode by the shielded metal arc weld process, without amendment of the WPS to reflect the non-essential variable changes, i.e. size of electrode, ranges of amperage and voltage.

- (3) The Weld History Record for Assembly Number IMSOSAD10-302, Contract Number 7935, referenced P1-K1-F6-SAW-29-1G as the applicable welding procedure specification (WPS) for weld "A."

Sheet 3 of WPS P1-K1-F6-SAW-29-1G required Pass No. 1 to be made by the gas tungsten arc process at an amperage range of 90-120 amps.

Contrary to the above, the inspector observed Pass No. 1 being made in weld "A" with the power source set at 205 amps.

4. Heat Treatment

a. Inspection Objective

The objective of this inspection was to verify that PKPA had implemented the system for control of heat treatment, as defined in both ASME accepted QA Manuals.

b. Inspection Objective Accomplished by:

- (1) Review of 1972 QA Manual, Section 8, dated July 25, 1972, "Heat Treating."
- (2) Review of QA Manual, Issue #4, Section IX, dated March 1, 1976, "Control of Special Processes."
- (3) Review of QA Manual, Issue #4, Section XIV, dated March 1, 1976, "Inspection, Test and Operating Status."
- (4) Review of furnace charts for Run Numbers 6788, 6789, and 6790.
- (5) Visual observation of work in progress and interviews with cognizant technical and management personnel.

c. Inspection Findings

Within the scope of this inspection, the following two (2) deviations from commitment were identified and discussed with management:

- (1) Paragraph 2.6 of Section IX in the QA Manual, Issue #4, states in part, ". . . To assure that required metal temperature for heat treatment is attained, at least once every three months a typical furnace load is heat treated with thermocouples attached to the parts and recorded on an independent multipoint potentiometer."

Paragraph 8.3 of Section 8 in the 1972 QA Manual states in part, ". . . On a periodic basis, thermocouples are attached to components to record actual metal temperature. These are compared with furnace temperatures to determine furnace temperature uniformity."

Paragraphs NB/NC/ND-4621 in ASME, Section III, state, "Post-weld heat treatment (PWHT) may be accomplished by any suitable methods of heating and cooling, provided the required heating and cooling rates, metal temperature, metal temperature uniformity, and temperature control are maintained."

Contrary to the above, PKPA did not attach thermocouples as required by the QA Manuals to provide required evidence of metal temperature and metal temperature uniformity, as evidenced by:

- (a) Only one furnace record (Run 6789, July 19, 1976) was located by the staff, which would allow comparison of component temperature against furnace temperature. In this particular record, thermocouples had been placed only on a single component, which precludes meaningful assessment of furnace temperature uniformity.
 - (b) No other evidence or records were made available to the inspector, which would confirm that an ongoing review was made of the adequacy of heat treatment practices with respect to required metal temperature and metal temperature uniformity.
- (2) Paragraph 3.4 of Section XIV in the QA Manual, Issue #4, states in part, "As part of the final review, the QA Engineer or his designated representative will verify that the total heat treatment time at temperature applied to test specimens representing each part in the assembly is at least equal to 80% of the total time at temperature applied to the component or assembly"

NB/NC/ND-4333 of ASME, Section III, states in part with respect to heat treatment of ferritic procedure qualification welds, ". . . The postweld heat treatment time at temperature shall be at least 80% of the maximum time to be applied to the component weld material."

NB/NC-2431.1(c) states in part with respect to the general test requirements for ferritic weld materials, ". . . The post weld heat treatment holding time shall be at least 80% of the maximum time to be applied to the weld metal in production application."

Contrary to the above requirements, monitoring of component accumulated postweld heat treatment time was not currently being performed with respect to the qualification time requirements of applicable base materials, weld metals and welding procedures.

It was additionally noted by the inspector that no instructions are provided to heat treat personnel, with respect to the permissible thickness range of a given material type that can be charged in a single furnace run.

5. Nonconformances and Corrective Action

a. Inspection Objective

The objective of this inspection was to verify that PKPA had implemented the system for control of nonconformances as defined in both ASME accepted QA Manuals.

b. Inspection Objective Accomplished by:

- (1) Review of the 1972 QA Manual, Section 11, dated July 25, 1972, "Non-Conformities and Corrective Action."
- (2) Review of QA Manual, Issue #4, Section XV, dated March 1, 1976, "Non-Conforming Materials, Parts or Components."
- (3) Review of QA Manual, Issue #4, Section XVI, dated March 1, 1976, "Corrective Action."
- (4) Review of QA Procedure XV-1 (Preliminary), dated July 23, 1976, "Procedure For Handling Non-Conformances (Shop)."
- (5) Examination of Defective Material Report (DMR) Numbers 4421-V, 4432-B, 4472-V, 4487, 4490-S, 4499-S.
- (6) Examination of Nonconformance Report Numbers 1000-S, 1001, and 1004-S.
- (7) Interviews with cognizant technical and management personnel.

c. Inspection Findings

Within the scope of this inspection, no deviations from QA Manual commitments were identified.

The QA Manual, Issue #4, is not considered to fully address the requirements, however, of NA-4730 with respect to corrective action. Paragraph 2.2 of Section XVI commits determination of cause of nonconformances by QA manager quarterly review of Nonconformance Reports (NCR) and Audit Reports. Nonconformance Reports are issued for only those conditions determined by the QA manager to be a major nonconformance. Major nonconformances are defined in QA procedure XV-1 as those nonconformances requiring corrective action, which involves weld repair of the base material and/or affects the physical properties of the base material. This represents only a limited part of the criteria required by NA-4730 to be investigated for cause and corrective actions instituted to preclude repetition.

An example of the reason for concern is illustrated by DMR #4499-S, which was initiated shortly before this inspection. This DMR related to the discovery by QA documentation personnel of the presence of a welded tee in a nuclear assembly, which was neither stamped with the appropriate nuclear stamp nor possessed a manufacturer's data report certified for ASME, Section III, application. This had been classified as a minor nonconformance and by the QA Manual, would not require further review for significance by the QA manager.

The preliminary QA procedure, XV-1, dated July 23, 1976, does require all NCR's and DMR's to be reviewed quarterly by the QA manager for quality significance. This review is to be documented by a narrative report to the plant manager and general manager of quality assurance. No report had been written for other than vendor nonconformances, as of the time of this inspection.