

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

Report No. 99900701/80-01

Program No. 51300

Company: Power Piping Company  
829 Beaver Avenue  
Pittsburgh Pennsylvania 15233

Inspection at: Donora Plant

Inspection Conducted: January 7-11, 1980

Inspectors:

H. W. Roberds  
H. W. Roberds, Contractor Inspector  
Components Section II  
Vendor Inspection Branch

2-26-80  
Date

U. Petapovs  
U. Petapovs, Chief  
Vendor Inspection Branch

2-27-80  
Date

J. P. Durr  
J. P. Durr, Reactor Inspector  
Region I

2-26-80  
Date

Approved by:

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

2-26-80  
Date

Summary

Inspection on January 7-11, 1980 (99900701/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria and applicable codes and standards; including initial management meeting, follow-up on 10 CFR Part 21 report, manufacturing process control, welding material control, joint fitup and welding, and special processes personnel qualification

(nondestructive examination). The inspection involved sixty-six (66) inspector-hours on site by three (3) NRC inspectors.

Results: In the six (6) areas inspected, no apparent deviations or unresolved items were identified in three (3) areas; the following deviations and unresolved items being identified in the remaining areas:

Deviations: Manufacturing Process Control - Minimum preheat for a tack welding operation not in accordance with Criterion V of 10 CFR 50, Appendix B and Process Control Sheet 1017-012-04 (Notice of Deviation, Item A) and placement of penetrament not in accordance with Criterion V of 10 CFR 50, Appendix B and Article 2, Section V of the ASME Code. (Notice of Deviation, Item B).

Welding Material Control - Documentation of issued welding electrode not in accordance with Criterion V of 10 CFR 50 Appendix B and Section D-QA-10 of the QA Manual. (Notice of Deviation, Item C).

Joint Fitup and Welding - Documentation of welders number and weld filler metal not in accordance with Criterion V of 10 CFR 50 Appendix B and Section D-QA-7 of the QA Manual (Notice of Deviation, Item D).

Unresolved Item - It could not be ascertained that localized metal temperature did not exceed the maximum temperature specified for cold bending operation (Detail Section D.3.b).

DETAILS SECTION

(Prepared by U. Potapovs, H. Roberds, and J. P. Durr)

A. Initial Management Meeting1. Objectives

The objectives of this meeting were to accomplish the following:

- a. To meet with Power Piping management personnel and those persons responsible for the administration of the Quality Assurance program, and to establish channels of communications.
- b. To determine the extent of the company's involvement in the commercial nuclear business.
- c. To explain the NRC direct inspection program including the LCVIP organization, and the Region IV VIB inspection methods and how inspections are documented.
- d. To describe the NRC position and evaluation of the ASME inspection system.

2. Method of Accomplishment

The preceding objectives were accomplished by a meeting with Power Piping management personnel on January 7, 1980. The following is a summary of the meeting and items that were discussed:

- a. Personnel in attendance
  - W. R. Patterson, Executive Vice President
  - W. R. Good, Corporate Director of Quality Assurance
  - T. L. Bradshaw, Quality Control Manager
  - L. Leininger, Chief Engineer
  - G. L. Cole, Welding Engineer
  - J. A. Perozzi, Shop Superintendent
  - T. L. Mueller, Quality Assurance Engineer
  - M. Kulp, Quality Control Receiving Supervisor
  - F. Altimore, Quality Control Coordinator
  - R. Moran, Quality Assurance Training Supervisor
  - D. Charley, In-Process Section Supervisor
- b. The Vendor Inspection Branch organization was described, the geographic location and the relationship to Office of Inspection and Enforcement at NRC Headquarters.

- c. The LCVIP program was described including the reasons why the program was established, the program objectives, the program implementation and personnel organizational structure.
- d. The explanation of how inspections are performed, how the results are documented and reported, how proprietary information is handled, what the response to reports should include and general information relative to the White Book.

### 3. Results

Management acknowledged the presentation and provided the following information relative to the company's nuclear activities and products.

- a. Power Piping, Donora Plant, holds valid ASME Certificates of Authorization Number N1623 which expires on January 7, 1980 with a letter of extension to February 15, 1980.
- b. The Authorized Inspection Agency in the Hartford Steam Boiler Inspection and Insurance Company which provides a resident Authorized Nuclear Inspector service.
- c. Power Piping has one nuclear contract to fabricate Class 1, 2, and 3 piping sub-assemblies for the Beaver Valley nuclear power plant which consist of approximately 35% of the production work at Donora plant.

### B. Persons Contacted

W. R. Patterson, Executive Vice President  
 H. R. Wood, Corporate Director of Quality Assurance  
 T. L. Bradshaw, Quality Control Manager  
 J. A. Perozzi, Shop Superintendent  
 D. Leininger, Chief Engineer  
 G. L. Cole, Welding Engineer  
 M. Kulp, QC Receiving Section Supervisor  
 T. L. Mueller, Quality Assurance Engineer  
 F. Altimore, Quality Control Coordinator  
 R. Moran, Quality Assurance Training Supervisor  
 D. Charley, In-Process Section Supervisor  
 J. Husar, Project Engineer

### C. Follow-up on 10 CFR Part 21 Report

#### 1. Introduction

Power Piping Company (PPC), Pittsburgh, PA, submitted a 10 CFR Part 21 report to the USNRC on September 19, 1979, relative to pipe

spools supplied by PPC for use in Beaver Valley Power Station Unit two (2) which were fabricated by personnel whose welding qualifications did not comply with the requirements of the ASME Boiler and Pressure Vessel Code, Section III and IX as defined in procurement specification. The discrepancy was related to welders not qualified for pipe sizes less than 2 7/8" in diameter, welding machine operators qualifications and multi-process welder qualification which was discovered by members of Duquesne Light Company Vendor Surveillance Group while performing shop inspections.

## 2. Objectives

The objectives of this inspection were to verify that:

- a. The reported discrepancy was accurate and complete.
- b. PPC had made an adequate evaluation of all items that may have been effected.
- c. PPC had initiated appropriate corrective action and adequate steps to prevent recurrence.

## 3. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of Power Piping Company 10 CFR 21 Report dated September 19, 1979.
- b. Review of Nonconformance and Disposition Report dated 9/18/79.
- c. Review of list of welders qualified for pipe sizes less than 2 7/8" in diameter.
- d. Review of tabulation of pipe spool welded by personnel not qualified for the process used.
- e. Discussions with cognizant personnel.

## 4. Findings

- a. 121 pipe spools were effected, involving 182 welds. 146 welds were weldolets and couplings less than 2 7/8 inch in diameter and 36 welds were pipe butt welds and weld build-up of the weld prep ends. Corrective actions to be taken are as follows:

- (1) The butt welds will be qualified by radiographic examination to the acceptance criteria ASME Section III .

- (2) The welds will be ground out and rewelded by qualified welders or welding operators.

As of January 2, 1980, corrective action had been completed on 31 pipe spools involving 34 welds. 90 pipe spools still outstanding with 36 currently being repaired. 54 of the pipe spools are still at the site waiting shipment or radiography of the effected welds.

- b. As a result of PPC investigation, three (3) welding operators and twenty-four (24) welders were not qualified in full compliance with Section IX of the ASME Code. Corrective actions taken are as follows:

- (1) Qualify the welder/welding operator by radiographic examination of production welds as allowed by QW-304 and QW-305 of Section IX of the ASME Code within the same essential variables as that of effected welds.
- (2) Qualify welders for pipe size less than 2 7/8" diameter in accordance with paragraph QW-452, table QW-452.3 of Section IX of the ASME Code.

Corrective action of qualification and/or requalification of welders and weld operators were completed as of the date of this inspection.

#### 5. Comments

Power Piping Company gave an estimated corrective action completion time of 120 days or January 17, 1980. As of January 2, 1980 approximately 20% of effected welds had been corrected, therefore, the corrective action completion date should be revised.

#### D. Manufacturing Process Control

##### 1. Objectives

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

- a. A system had been established for the control of manufacturing processes, which is consistent with applicable regulatory and ASME Code requirements.
- b. The system was implemented.

## 2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of Section D-QA-7, revision 4, of the Quality Assurance Manual, "Fabrication."
- b. Review of Section D-QA-9, revision 3, of the Quality Assurance Manual, "Nondestructive Examination."
- c. Review of Section D-QA-10, Revision 3, of the Quality Assurance Manual, "Welding."
- d. Examination of Shop Fabrication Sheets and In-Process Control Sheets for piping subassemblies with respect to:
  - (1) Definition and control of sequencing of manufacturing operations to provide for compliance with ASME Section III Code fabrication requirements.
  - (2) Compliance with designated hold points.
  - (3) Performance of required nondestructive examinations at appropriate times.
  - (4) Completeness of operation signoff.
  - (5) Evidence of fabrication in-process inspections and performance consistent with QA program commitments.
  - (6) Use of appropriate welding procedure specifications.

## 3. Findings

### a. Deviations from Commitments

- (1) See Notice of Deviation, Item A.
- (2) See Notice of Deviation, Item B.

### b. Unresolved Item

Section D-QA-12 of the QA Manual, paragraph 3.1 defines cold bending as that done with a metal temperature not to exceed 100°F below the lower critical temperature of the material to be bent.

With the present method of manual heating with a torch and monitoring of metal temperature with an optical pyrometer it could not be ascertained that localized metal temperatures did not exceed the maximum temperatures specified for cold bends of stainless materials due to the rapid heat the metal mass.

#### 4. Comments

Examination of partially completed and completed pipe spool fabrications disclosed that the majority of nuclear class 1, 2, and 3 pipe weld preparations were built-up with weld metal. The build-up is adjacent to the weld preparation and extends 360° around the outside diameter (OD) and is several inches wide. The reasons stated for the OD weld buildup was to prevent encroachment on the minimum pipe weld requirements as a result of the ID counterbore operation. This manufacturing practice is of concern for the following reasons:

- a. It would appear that the shoulder of the weld may interfere with the volumetric in-service ultrasonic inspection, if the contact method was utilized.
- b. Of specific concern is the possibility of a wide band of sensitization on the ID of the pipe on AISI type 304 and 316 stainless steel pipe of wall thickness less than one (1) inch as a result of the heat input from the weld build-up on the OD.
- c. Unless specific instructions are issued to check material thickness at the end of the counterbore, the minimum wall requirement could be exceeded, in that controlled drawings, SK-101 and SK-103 do not specify a maximum depth for the counter bore operation.

#### E. Welding Material Control

##### 1. Objectives

The objectives of this area of the inspection was to determine if welding material purchased, acceptance, storage, and handling was in accordance with the PPC QA program and applicable ASME Code requirements.

##### 2. Method of Accomplishment

The preceding objective was accomplished by:



- a. Review of Section D-QA-4, revision 4, of the Quality Assurance Manual, "Procurement."
- b. Review of Section D-QA-7, revision 4, of the Quality Assurance Manual, "Fabrication."
- c. Review of Section D-QA-10, revision 3, of the Quality Assurance Manual, "Welding."
- d. Examination of weld material storage area including electrode ovens for material identification and temperature control.
- e. Examination of portable ovens at six (6) weld stations and accompanying welding electrode requestion slips.
- f. Examination of procurement and material certification for E-7018 electrode control No. E68 and E64.
- g. Review of approved vendor list.

3. Findings

- a. Deviation from Commitments  
See Notice of Deviation, Item C.
- b. Unresolved Items  
None.

F. Joint Fitup and Welding

1. Objectives

The objective of this area of the inspection was to determine if production welding was controlled in accordance with PPC Quality Assurance program and applicable ASME Code requirements.

2. Method of Accomplishment

The preceding objective was accomplished by:

- a. Review of Section D-QA-10, revision 3 of the Quality Assurance Manual, "Welding."
- b. Review of Section D-QA-7, revision 7, of the Quality Assurance Manual, "Fabrication."

- c. Review of weld Procedure Specification, 10015 revision 2.
- d. Review of weld Procedure Specification, 8021A.
- e. Observation of SMAW and TIG process being performed on production welding.

3. Findings

a. Deviation from Commitments

See Notice of Deviation, Item D.

G. Special Processes Personnel Qualifications (Nondestructive Examination)

1. Objectives

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

- a. The employee, Power Piping Company (PPC) has developed a written practice for control and administration of NDE personnel training, examination and certification in accordance with applicable NRC and ASME Code requirements.
- b. Personnel records are complete and are current.
- c. Personnel performing nondestruction examination are qualified for the method used and have current eye examinations as defined in SNT-TC-1A.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual, Section D-QA-9, revision 3, "Nondestructive Examination."
- b. Review of five personnel certification and qualification record packages including results of eye examinations.
- c. Interviews with cognizant personnel.

3. Findings

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

H. Exit Meeting

A post inspection exit meeting was held on January 11, 1980 with the following management and customer representatives:

R. A. Patterson, President, PPCo.  
W. R. Patterson, Executive Vice President, PPCo  
A. J. McGlynn, Asst. to Board Chairman, PPCo.  
H. R. Good, Corporate Director Quality Assurance, PPCo.  
R. Coupland, Director SQC, Duquesne Light Co.  
D. Rohn, QC Engineer, Duquesne Light Co.  
J. Voelxen, Piping Engineer, Stone and Webster  
A. L. Bradshaw, QC Manager, PPCo.  
T. W. Duman, Director Contract Admin. PPCo.  
D. Leininger, Chief Engineer PPCo.  
J. Husar, Nuclear Project Engineer PPCo.  
J. A. Perozzi, Shop Superintendent PPCo.  
G. L. Cole, Welding Engineer PPCo.

The inspectors summarized the scope and findings of the inspection. Management acknowledged the statements of the inspectors with respect to the findings as presented to them and affirmed their commitment to the quality assurance program.