2/18/82
D. Collins

A-12

HAYWARD TYLER PUMP COMPANY

INSPECTION AND INVESTIGATION STATUS SUMMARY

A. Initiating Allegations

1. Failure of Hayward Tyler Pump Company (HTPC) upper management to support and/or enforce the QA program.

2. Use of Eastman 910 adhesive (Crazy Glue) in pump assembly.

3. Removal of records from main office prior to a February 1980 NRC inspection, in order to prevent NRC review of the records.

4. No qualified QC welding inspector on the second shift between December 1978 and February 1980.

5. Typing in November 1979 of approximately 200 route sheets from original handwritten copies, with either non-signoff of route sheet operations, or falsification of individual signatures.

B. Inspection Finding

1. Reference Document - VPB Report 99900345/82-02.

2. Established Deficient QA Program Areas

a. Major - Significant deficiencies were identified in the implementation of the HTPC QA Program in the areas of:

(1) Indoctrination and training;

(2) Manufacturing Process Control;

(3) Handling of Engineering Change Requests; and

(4) Management corrective action on identified QA deficiencies.

b. Minor - Examples of deficiencies of lesser apparent significance were also identified in regard to:

(1) Control of welding materials, welder and welding procedure qualification; and

(2) Documentation of equipment calibration.

3. Summary of Major Findings

a. Indoctrination and Training (Report Reference: Item A, Notice of Nonconformance)

Training schedules for 1982 and the past 3 years were not consistent with QA program requirements in regard to Job Classifications designated for training and type of training given. Only about one-half of 1981 scheduled training was actually completed with none of the required training for manufacturing personnel performed. Training of Methods Technicians (responsible for preparation of manufacturing route sheets which are used to control manufacture, inspection and test) in 1980 in Process Control and Nonconformities could not be verified as having been performed, although indicated by the 1980 training schedule as having been completed.

b. Manufacturing Process Control (Report Reference: Items D, E, F, and G, Notice of Nonconformance)

(1) Performance of manufacturing and QA/QC operations was not in mandatory sequence required by route sheets. Impossible dates for completion of operations; e.g. Insertion of studs in holes accomplished prior to date the stud holes were drilled and tapped. Performance of welding on an impeller with bypass of prior QC mandatory inspection operations for cleanliness and control of welding.

(2) Non-signoff of manufacturing operations on route sheets for pumps which had been shipped to site.

(3) Failure of route sheets to control and document history of all operations.

Examples:

(a) O-ring manufacture not controlled by a route sheet. NOTE: This pertains to the allegation on use of Eastman 910 Adhesive. Adhesive is used in the manufacture of rubber O-rings.

(b) Informal changes made to part dimensions from requirements specified by applicable drawing listed by route sheet. Changes were made without prior submittal and approval of an Engineering Change Request for a drawing revision.

(4) Non-signoff of inspection operations on Route Sheets for pumps which had been shipped.

c. Handling of Engineering Change Requests (Report Reference: Item B, Notice of Nonconformance)

Numerous instances were identified where processing of Engineering Change Requests did not comply with QA program review and approval requirements.

d. Management Corrective Action on Identified QA Deficiencies (Report Reference: Item C, Notice of Nonconformance)

Corrective actions were not implemented by appropriate management with responsibility for shop compliance with QA program manufacturing process control provisions, as evidenced by manufacturing process control implementation being identified as discrepant in each six month QA Manager report to senior management for the time period from December 2, 1977 to June 30, 1981.

C. Investigative Findings

1. Reference Document VPB Report No. 99900345/82-01

2. Specific Findings

a. Allegation A.1 (Report Reference: Details, paragraph 2, page 4).

Eight signed sworn statements were executed which stated certain HTPC upper management personnel failed to support or enforce the QA program. Additional interviews of 12 other individuals resulted in each stating that the identified upper management did not support the QA program. Specific examples were given to the NRC investigators of failures to implement the QA program, including:

(1) Flame and/or mechanical straightening of pump shafts between 1978 and 1981, with no route sheet issued and no QA/QC procedures;

(2) Unauthorized changes to part dimensions because of assembly fit up problems (See VPB Report 99900345/82-02, Notice of Nonconformance, Item F);

(3) Welding without route sheets available (See VPB Report 99900345/82-02, Notice of Nonconformance, Item D) and improper identification of personnel performing welding.

b. Allegation A.2 (Report Reference: Details, paragraph 2, page 7)

One sworn statement and three additional interviews confirmed Eastman 910 and/or Duro Super Glue adhesive were used to bond the joint in rubber O-rings. This was identified as a manufacturer's suggested procedure and was accomplished without identification of the operation on a route sheet or use of a written procedure. (See VPB Report No. 99900345/82-02, Notice of Nonconformance, Item F).

c. Allegation A.3 (Report Reference: Details, paragraph 2, page 8)

One sworn statement was executed which stated that the individual assisted in moving boxes of records to a car in February 1980, and interpreted comments made as indicating the purpose of the move was to preclude NRC inspection of the records. Interviews of two individuals who were located where the records were originally maintained, failed to produce confirmation of the identity of the person who had moved the records. It was additionally stated that the records in question were copies of data packages and were believed to have been moved to achieve a better "cosmetic" appearance. Interviews of NRC inspectors who had made prior inspections at HTPC did not produce any information to indicate any denial of access to requested records had ever occurred.

d. Allegation A.4 (Report Reference: Details, paragraph 2, page 9)

Inspection identified a QC inspector, who was certified as being qualified as a welding inspector, was employed by HTPC in the identified time frame. This individual was not assigned to the second shift. Interviews of three QA/QC personnel indicated second shift inspections were performed on a call in basis.

e. Allegation A.5 (Report Reference: Details, paragraph 2, page 9)

Interviews established a change was made ~~to typewritten~~ by typing route sheets because of legibility problems. Review of route sheets for the identified time frame showed no evidence of falsification and the original handwritten route sheets were maintained stapled to the typewritten issue.

D. Analysis of Inspection and Investigation Results

Analysis of the inspection and investigation results contained in VPB Report Nos. 99900345/82-01 and 82-02 indicates the following conditions existed at HTPC from 1977 through 1981:

1. A lack of upper management support for the QA program, with resultant implementation deficiencies.

2. HTPC employees engaged in manufacturing activities do not have a good understanding of the QA program and have received inadequate training in this regard.

3. Review of route sheets strongly suggests various shortcuts were taken in the past with respect to QA program manufacturing process control provisions. The apparent motivation for these shortcuts would appear to be related to maximizing shipment of pumps from the facility. Examples of practices that are believed to have occurred are:

   a. On route sheets pertaining to multiple items, parts were individually taken to completion of a specific operation and then processed further without the route sheet or other paperwork being available, as opposed to completing an operation for all the parts covered by the route sheet and then moving all of the parts to the next scheduled operation.

   b. Route sheets for different manufacturing stages are believed to have been used concurrently to minimize move and machine setup time.

   The methodology used by HTPC and QA program requirements require the completion of successive route sheets and would totally preclude performance of individual operations on the route sheets. This practice would explain the date inconsistencies observed in operation signoffs.

c. Undocumented dimensional changes to parts were established to have occurred following identification of assembly fit-up problems, without Engineering review or apparent actions by QA/QC personnel to identify nonconforming conditions.