

February 8, 2002

Mr. Bob Newkirk  
Henry Pratt Company  
900 Depot Avenue  
Dixon, IL 61021

SUBJECT: NRC INSPECTION REPORT 99901349/2002-201 AND NOTICE OF  
NONCONFORMANCE

Dear Mr. Newkirk :

On January 28-30, 2002, the U.S. Nuclear Regulatory Commission (NRC) performed an inspection at the Henry Pratt Company manufacturing facility in Dixon, Illinois. The enclosed report presents the findings of that inspection. The inspection was conducted to review selected portions of your quality assurance program, and its implementation, as it relates to the supply of valves to the nuclear industry. This inspection specifically reviewed activities related to welding of nuclear grade valves, qualifications of the welders, and control of nonconforming material.

During this inspection, the inspectors found the implementation of your quality assurance program failed to meet certain NRC requirements. Specifically, the inspection identified that Henry Pratt did not meet its quality assurance requirements with regard to the qualification of welders and the disposition of nonconforming material. These nonconformances are cited in the enclosed Notice of Nonconformance (Enclosure 1), and the circumstances surrounding them are described in detail in the enclosed report (Enclosure 2). You are requested to respond to the nonconformances and should follow the instructions specified in the enclosed NON when preparing your response.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC's Public Document Room.

Sincerely,  
ORIGINAL SIGNED BY TRQ

Theodore R. Quay, Chief  
Equipment and Human Performance Branch  
Division of Inspection Program Management  
Office of Nuclear Reactor Regulation

Docket No. 99901349

Enclosures: 1. Notice of Nonconformance  
2. Inspection Report 99901349/2002-201

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IEHB R/F

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Accession # ML

OFFICE	DIPM:IEHB	E	NRR	DE:EMCB	DIPM:IEHB		
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DATE	02/07/02		02/07/02	02/07/02	02/08/02		

OFFICIAL RECORD COPY

## NOTICE OF NONCONFORMANCE

Henry Pratt Company  
Dixon, Illinois

Docket No. 99901349

Based on the results of an inspection conducted on January 28-30, 2002, it appears that certain of your activities were not conducted in accordance with NRC requirements.

- A. Criterion IX, "Control of Special Processes," of 10 CFR Part 50, Appendix B, states, in part, "Measures shall be established to assure that special processes, including welding...are controlled and accomplished by qualified personnel using qualified procedures..."

Section 10, "Welding Control and Heat Treatment," of the Henry Pratt Company Quality Assurance Manual (QAM) states that the Manufacturing Supervisor is responsible for "...assignment of qualified welders." That section also specifies the requirements for welder qualification and maintaining welder qualification as well as maintaining associated records.

Contrary to the above, the NRC inspectors found that Henry Pratt had permitted an unqualified welder to perform weld operations on a nuclear valve, job number DD570-2. The welder receive his formal qualification approximately two weeks after the weld had been performed. (99901349/02-201-01)

- B. Criterion XV, "Nonconforming Materials, Parts or Components," of 10 CFR Part 50, Appendix B, states, in part, "Measures shall be established to control materials, parts or components which do not conform requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition... Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

Section 5.8.2 of the Henry Pratt Company's QAM requires that, when a non-conformance is simple machining or grinding within drawing tolerance, the inspector shall coordinate the corrective action, reinspect, and record the final disposition on the "In Process Inspection Record" or "Final Part Inspection Checklist/Record."

Contrary to the above, the NRC inspectors found that Henry Pratt failed to document the final disposition of a nonconforming nuclear component associated with Pratt Shop Order No. DD626-1. (999-1349/02-201-02).

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Chief, IEHB, Division of Inspection Program Management, Office of Nuclear Reactor Regulation, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each nonconformance: (1) a description of steps that have been or will be taken to correct these items; (2) a description of steps that have been or will be taken to prevent recurrence; and (3) the dates your corrective actions and preventive measures were or will be completed.

Dated at Rockville, Maryland  
this \_\_\_\_\_ day of February 2002

Enclosure 1

**U.S. NUCLEAR REGULATORY COMMISSION**  
**OFFICE OF NUCLEAR REACTOR REGULATION**

Report No: 99901349/2002-201

Organization: Henry Pratt Company

Contact: Bob Newkirk, Plant Manager  
(815) 284-3328

Nuclear Activity: Manufacturer and supplier of valves used in nuclear applications.

Dates: January 28-30, 2002

Inspectors: Gregory C. Cwalina, Senior Operations Engineer  
Joseph Petrosino, Inspector  
Thomas McLellan, Materials Engineer

Approved by: Theodore R. Quay, Chief  
Equipment and Human Performance Branch  
Division of Inspection Program Management

## 1 INSPECTION SUMMARY

On January 28-30, 2002, the U. S. Nuclear Regulatory Commission (NRC) performed an inspection of the Henry Pratt Company, Dixon, Illinois (Pratt). The inspection reviewed selected portions of the Pratt quality assurance program, and its implementation, as it relates to the supply of valves to the nuclear industry. Specifically, the inspection reviewed activities related to Pratt's welding, welder qualifications, and identification and control of nonconforming material for valves which had been supplied to the nuclear industry.

The inspection bases were:

- 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
- 10 CFR Part 21, "Reporting of Defects and Noncompliance."
- Henry Pratt Company Quality Assurance Manual (QAM)

During this inspection, two nonconformances were identified. These issue are discussed in sections 3.3 and 3.5.

## 2 STATUS OF PREVIOUS INSPECTION FINDINGS

This was the first inspection performed at the Henry Pratt Company Dixon facility.

## 3 INSPECTION FINDINGS AND OTHER COMMENTS

### 3.1 Background

The Henry Pratt Company (Pratt) holds Certificates of Authorization from the American Society of Mechanical Engineers (ASME) to manufacture Class 1, 2, and 3 N-Stamp butterfly valves and NPT-Stamp appurtenances. The Pratt nuclear butterfly valves are used in containment purge isolation, essential service water and safety-related cooling water systems in both pressurized and boiling water reactor designs. Butterfly valve sizes range from 3 to 144 inches.

### 3.2 Review of Welding Procedures and Practices

#### a. Scope

The inspectors reviewed Pratt procedures and requirements associated with the supply of safety-related valves to the nuclear industry. Documents reviewed included welding procedures, customer purchase order requirements, and related commercial grade dedication activities.

b. Observations and Findings

The inspectors reviewed weld procedure WP-1, "General Welding and Repair Procedure Specification for Nuclear Valves," Revision B, dated October 15, 1996. The inspectors noted that the Weld Procedure Specification Table listed 15 inactive weld procedures and did not include 2 active weld procedures. In addition, various sections provided guidance or addressed submerged arc welding, a technique no longer used at Pratt. The inspectors discussed the discrepancies with the Pratt staff responsible for WP-1. The Pratt staff indicated that they were aware of the discrepancies and that the procedure was scheduled to be revised before the next ASME survey. The inspectors were aware that an ASME survey is scheduled for the near future and are satisfied that Pratt will make the necessary revisions to the procedure in a timely manner.

c. Conclusions

Based on their review of documentation associated with the issue and interviews with personnel, the inspectors concluded that the discrepancies noted in WP-1 constitutes a weakness in the Pratt quality assurance program. Based on the Pratt commitment to correct the procedure prior to the scheduled ASME survey, no further action is necessary.

3.3 Review of Welder Qualification Records and Associated Documents

a. Scope

The inspectors reviewed documents related to the qualification of personnel as welders to determine the adequacy of Pratt's welder qualification program.

b. Observations and Findings

Pratt currently has 13 active weld procedures for their nuclear valves. The inspectors selected weld procedures (WP) 4-4308N (Gas Metal-Arc Welding - GMAW) and 7-4308N (Gas Tungsten-Arc Welding - GTAW), both of which specified the welding requirements for welding Inconel 625 Overlay on Stainless Steel. The inspectors determined the two weld procedures adequately specified the information necessary to perform the subject welds. The inspectors did not identify any concerns with regard to the selected weld procedures.

The inspectors then reviewed the qualifications of the two welders who were listed as qualified to perform the above weld procedures. Pratt keeps an active list of qualified weld procedures and associated qualified welders on their "Monthly Qualified Procedures and Welders List." The most recent list, dated January 7, 2002, lists Welder A as qualified for WP4-4308N on January 31, 2000 and for WP7-4308N on February 10, 2000. Welder B is listed as qualified for both procedures on February 10, 2000. The inspector reviewed the weld procedure log and noted that, for WP4-4308N, welder A showed two separate qualifications, the first, a faxed copy dated January 31, 2000 and the second, a printed version dated February 10, 2000. Pratt staff stated that the faxed version was received from the qualification vendor on that date and is considered the date of qualification. The printed version was the date that Pratt

prepared their record copy. The inspectors noted that two copies with different dates were confusing. Pratt agreed and stated that their record copy should be dated the same as the official qualification.

The inspectors then reviewed the qualification information for the two welders. Both had performed qualification welds which were analyzed by an independent laboratory, Conam Kawin, Inc. The weld test plates had been sent via purchase orders UCO5498, dated January 27, 2000, UCO5500, dated January 31, 2000, and UCO5503, dated February 3, 2000. The Conam Kawin reports showed that welder A was qualified to WP4-4308N on January 31, 2000 and to WP7-4308N on February 3, 2000. Welder B was qualified to WP4-4308N on January 31, 2000, and to WP7-4308N on February 10, 2000. The inspectors pointed out the discrepancies in dates from the Current Qualified Procedures and Welders List. Pratt staff agreed that they needed to be consistent as to the actual welder qualification dates.

The inspectors then reviewed documentation to verify that welder qualifications had been maintained. Section 10, "Welding Control and Heat Treatment," of the Henry Pratt Quality Assurance Manual (QAM) requires that a Welder Performance Continuity Record (WPC) be maintained and updated monthly for the welder supervisor to record the welding processes used by each welder during the month. If a welder has not performed a welding process for a period of six months, the welder shall lose his qualifications for that process and will need to be requalified. The inspectors reviewed the WPCs for welders A and B. For welder A, the inspectors noted that the WPC showed a performance record from January 2000 to the present. However, there was no weld performance record prior to January 2000. The inspector also noted that the WPC showed a record entry of January 28, 2000 for welder A for both the GMAW and GTAW processes. Those weld performance dates preceded the actual recorded qualification date for that welder. The inspector also noted that the WPC contained a record of weld performance for the GTAW process for welder A for several years prior to the qualification date. Discussions with the Pratt staff indicated that the WPC is based on performance of a particular type of weld. The WPC maintains qualifications for all procedures that use that weld type. Welder A had been qualified to other GTAW procedures for several years, thus the WPC showed a continuity record for the GTAW process, although there was no record of qualification for the WP7-4308N. (Note: the inspectors did not identify any instance in which welder A performed work under WP7-4308N while not qualified.) With regard to the welder A being noted on the continuity log prior to his official qualification, the inspectors noted that he had been qualified to a similar weld procedure (WP4-4308N-1) in 1980. The weld engineer was aware of welder A's earlier qualification for a GMAW type weld and had placed welder A on the WPC based upon that knowledge. However, he was not aware of the QAM requirement calling for requalification if the WPC record shows a lapse of six months. When the discrepancy was pointed out, Pratt staff agreed that the WPC for welder A should not have been logged prior to his new qualification.

The inspector's also reviewed the WPC for welder B. In this case, the WPC showed a weld record for both the GMAW and GTAW processes dating back several years. Since these contradicted the qualification date stated on the qualified welders list, the staff questioned the basis for the WPC entries. Pratt staff were able to demonstrate that welder B had originally qualified for WP7-4308N (GTAW) in May 1975. The welder qualification record had been updated to reflect the newest qualification. However, the inspectors were not able to identify any previous qualification of welder B on WP4-4308N prior to the latest qualification date of February 10, 2000. Again, the WPC log showed a continuous qualification to the GMAW process based on the welder's original qualification to another procedure. The inspectors pointed out the necessity of maintaining the welder qualification records to a particular procedure as well as a process. Pratt assured the inspectors that they currently review the welder qualifications to both the procedure and the process prior to assigning work.

Based on the discrepancies identified between the welder qualifications and the WPC records, the inspector's reviewed shipping records to determine if either welder had performed welds to these procedures recently. Pratt staff identified that shop order DD570, Line items 2 and 3 had been welded using the selected procedures. The inspectors reviewed the Fabrication and Inspection records for both items. Item DD570-2 had been welded to WP4-4308N on January 16 and 17, 2000, by welder A. Item DD570-3 had been welded to WP7-4308N on January 13, 2000, by welder B. In both cases the weld date preceded the actual welder qualification date. The inspectors informed Pratt that the records indicated that the welds for job DD570 had been performed by welder who had not yet been qualified to those procedures.

During the discussion of this item, Pratt informed the inspectors that they had identified the welder qualification issue at the time of the weld. Pratt decided to allow the welders to perform the weld and also weld the qualification test coupons during the same time frame. Pratt stated they held delivery of the valves until they had received notification of the welders' acceptable qualifications. The inspectors noted that shipping records indicated the valve had been sent to the customer on February 2, 2000. As noted above, welder A had been qualified to WP4-4308N (Item DD570-2) on January 31, 2000. However, welder B had not been qualified to WP7-4308N (Item DD570-3) until February 10, 2000, after the valves had been shipped. Therefore, the records indicate that welder A had been qualified prior to the valves being shipped. Although the weld had actually been performed prior to the qualification, there was evidence that the welder had been qualified to similar procedures in the past. In the case of welder B, the records indicate that he had been qualified to the appropriate procedure for many years prior to the welding. The inspectors informed Pratt that welders should be qualified to the applicable procedure prior to any welds being performed. Although the evidence supports the fact that shop order DD570-2 welds had been performed by an unqualified welder, based upon the welder performance and qualification records, the inspectors did not identify any safety concerns.

In addition, the inspectors noted that Pratt had issued a Certificate of Conformance to the purchaser noting that the valves had been supplied in accordance with the applicable Pratt QAM. The inspectors informed Pratt that the performance of welds by an unqualified welder constituted a deviation as defined in 10 CFR Part 21 and Pratt



needed to perform an evaluation of the deviation in accordance with Part 21 and their procedures.

c. Conclusions

Based on the above, the inspectors concluded that an unqualified welders performed work on a nuclear safety-related valve. This issue forms the basis for Nonconformance 99901349/02-201-01.

3.4 Review of Welding Control Requirements

a. Scope

Discussions were conducted with Pratt welding personnel and supervision to determine whether they were satisfactorily implementing their QA Manual weld control requirements for the manufacture of safety-related butterfly valves.

b. Observations and Findings

The inspectors reviewed selected portions of Pratt's QA Manual Section 10.0, "Welding Control and Heat Treatment," dated April 1, 2000, requirements and reviewed a sample of weld control records and shop travelers. The inspectors determined that the welding supervisor adequately controls the issuance of welding base metal and delineation of the correct weld process required on shop fabrication documents. The inspectors also conducted discussions with the weld engineer, weld supervisor and shop welders regarding the control and use of welder's identification stamps. The inspectors determined that good welder identification stamp control was apparent by the Pratt personnel.

c. Conclusions

Based on the inspector's review of associated documents and discussions with Pratt personnel, it was concluded that Pratt is adequately controlling filler metal issuance, delineation of the applicable weld procedure and control of welder's identification stamps.

3.5 Review of the Disposition of Nonconforming Material

a. Scope

The inspectors reviewed Henry Pratt Valve Company documents for nonconforming material associated with manufacturing nuclear qualified butterfly valves. Documents reviewed included Nonconformance Material Reports, Final Documentation Packages, Nuclear Quality Assurance Manual, Nuclear Quality Technical Procedures, and Quality Assurance Procedures (QAP) 5, "In Process and Final Part Inspection of Nuclear Projects," and 39, "Technical Justification and Design Report Reconciliation of NonConformances."

b. Observations and Findings

The inspectors reviewed a sample of Nonconformance Material Reports (NMRs), and interviewed selected Pratt staff. The inspectors noted that the NMRs contain a section for noting, "Rework, Purchasing Instructions." After questioning the inconsistent entries in this field, the inspectors were told that the Nonconformance Material Reports were recommendations and not resolutions to the disposition of the nonconformance components. The inspectors selected NMR No. 9632 pertaining to Pratt Shop Order No. DD626-1. The NMR stated that a 7/8-9 threaded hole on the flange face of the valve body was stripped and not suitable for use. In addition, the QA inspector who prepared the NMR recommended that the valve body be scrapped and the other parts be salvaged. The NMR did not note the final disposition of any of the items. The inspectors reviewed the Final Documentation Package for Pratt Shop Order No. DD626-1 to determine if the package contained the final disposition of the nonconforming component. The inspectors found that the package did not contain any information regarding the disposition of the valve body.

The inspectors questioned both the Senior Inspector and Plant Superintendent (former QA manager) as to the disposition of the valve body. To the best of their knowledge the non-conformance was caused by an eye bolt that cross threaded the first two or three threads of the hole. They believe the hole was re-tapped and the surface of the body was refinished and entrance of the hole was re-beveled. The inspectors inquired, if the Henry Pratt Valve Company ever welded a threaded bolt hole and then drill and tap the hole. The Plant Superintendent informed the inspectors that this method of repair would not be cost beneficial. The labor to weld, drill, tap the hole, refishing the valve body surface, and hiring of a contractor to perform a non-destructive examination (NDE) on the weld repair would cost more than manufacturing a replacement valve body.

The Henry Pratt Valve Company's Nuclear Quality Assurance Manual, Section 5.8.2 requires that when a non-conformance is simple machining or grinding within drawing tolerance, the inspector shall coordinate the corrective action, reinspect, and make the final disposition on the "In Process Inspection Record" or "Final Part Inspection Checklist/Record." In addition, Quality Procedure QAP 5, and QAP 39 requires documentation of the disposition of a non-conformance of a nuclear component. Each Quality Procedure has specific forms to record in-process inspection and nonconformances. The inspectors were unable to determine the disposition of the non-conformance valve body from reviewing the documentation in the Final Documentation Package for Pratt Shop Order No. DD626-1. The documentation was incomplete and Henry Pratt Valve Company staff could not explain why the disposition of the valve body was not noted in the subject package.

c. Conclusion

Based on the review of documentation associated with Pratt Shop Order No. DD626-1 the inspectors concluded that Pratt failed to document the disposition of the subject nonconforming component and follow their QA manual and procedures for manufacturing nuclear components. This issue forms the basis for Nonconformance 99901349/02-201-02.

3.6 Review of 10 CFR Part 21 Control

a. Scope

The inspectors reviewed the Pratt procedure that was developed to implement the requirements of Section 206 of the Energy Reorganization Act of 1974, observed Pratt's required Part 21 posting and conducted interviews with Pratt personnel.

b. Observations and Findings

The inspectors reviewed Pratt's QA Procedure (QAP) 33, "Reporting of Defects and Noncompliance for Safety Related Basic Components," dated April 1, 2000, and conducted discussions with the QA staff regarding the adequacy of the procedure, the Part 21 requirements, Part 21 posting, and potential 10 CFR Part 21 deviation evaluations. The QAP-33 procedure was found to satisfactorily address the requirements of Part 21. The posting was found to be out of date but after discussions with the Pratt QA staff, the posting was updated and the revised documents were posted.

c. Conclusions

Based on their review of Pratt's part 21 program, the inspector's concluded that the Part 21 program was satisfactorily established and implemented.

PARTIAL LIST OF PERSONS CONTACTED

Bob Newkirk	Plant Superintendent
Rod Burnette	Manager, Quality Assurance
John Barris	Manager, Manufacturing Engineering
Brian Welty	Manufacturing Supervisor Welding
Thomas Phelps	Senior Inspector
Greg Cavanaugh	Industrial and Weld Engineer
Christina Welker	Quality Assurance Specialist

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

99901349/02-201-01	NON	Unqualified welder
99901349/02-201-02	NON	Nonconforming material disposition

Closed

None

Discussed

None