

ORGANIZATION: HOKE INCORPORATED  
SPARTANBURG, SOUTH CAROLINA

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|---|--|------------------------------|
| REPORT NO.: 99901205/90-01  | INSPECTION DATE: September 17-20, 1990   | INSPECTION ON-SITE HOURS: 87 |
| CORRESPONDENCE ADDRESS: Hoke Incorporated<br>899 Simuel Road<br>P. O. Box 4866<br>Spartanburg, South Carolina 29303   |  |                              |
| ORGANIZATIONAL CONTACT: Barry L. Taylor, General Manager<br>TELEPHONE NUMBER: (803) 574-7960  |  |                              |
| NUCLEAR INDUSTRY ACTIVITY: Hoke Incorporated (HI) is a manufacturer of American Society of Mechanical Engineers (ASME) Code Section III, Class 1, 2 & 3 valves, valve parts, and appurtenances and is a material supplier of ferrous and nonferrous bars, threaded fasteners, forgings, seamless fittings, and seamless tubular products. HI also manufactures and supplies non-ASME code, non-pressure boundary parts and items, such as valve stems and actuators, for safety-related components. |  |                              |
| ASSIGNED INSPECTOR:   | <u>Steven M. Matthews</u><br>Steven M. Matthews, Reactive Inspection<br>Section No. 1 (RIS-1), Vendor Inspection<br>Branch (VIB) | <u>12/7/90</u><br>Date       |
| OTHER INSPECTOR(S):   | Larry L. Campbell, RIS-1, VIB<br>Michael G. Gorman, NRC, Region II   |                              |
| APPROVED BY:  | <u>Udis Potapovs</u><br>Udis Potapovs, Chief, RIS-1, VIB   | <u>12-19-90</u><br>Date      |
| INSPECTION BASES AND SCOPE:<br>A. <u>BASES:</u> 10 CFR Part 21, 10 CFR Part 50, Appendix B, and ASME Code Section III<br>B. <u>SCOPE:</u> To assess the implementation of the HI quality program in selected areas, including control of materials, special processes, and inspection.  |  |                              |
| PLANT SITE APPLICABILITY: All plants with HI valves.  |  |                              |

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A. VIOLATION:

Contrary to Section 21.21, "Notification of failure to comply or existence of a defect," of 10 CFR Part 21, HI limited the bases for implementation of procedure HQI-147, "Reporting of Defects and Noncompliance," Revision B, dated April 19, 1989 to the evaluation of or informing licensees or purchasers of only those nonconformances that affect the pressure boundary integrity of safety-related components. HI procedure HQI-147, as described above, failed to provide for the evaluation of or informing licensees or purchasers of deviations, as defined in Section 21.3, "Definition," of 10 CFR Part 21, as a departure from the technical requirements included in a procurement document. Therefore, HI procedure HQI-147 described above did not provide for the evaluation of or informing licensees or purchasers of all departures from the technical requirements included in a procurement document. (90-01-01)

B. NONCONFORMANCES:

1. Contrary to Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50, HI failed to establish and implement a quality program comprising all those planned and systematic actions necessary to provide adequate confidence that non-pressure boundary, non-ASME Code parts or components will perform their safety-related function. (90-01-02)
2. Contrary to Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50, and Subsections 2.3, "Personnel Involved in Activities Affecting Quality, Indoctrination & Training," and 2.4, "Qualification of Inspection & Test Personnel," and 10.2, "Inspector Qualification," of the HI Nuclear Quality Assurance Manual (NQAM), Edition 3, "ASME Section III, Division 1, Nuclear Line Valves," Revision No. 17, dated August 10, 1989, HI failed to indoctrinate and train the Manager of Quality Control/Spartanburg, South Carolina (MQC), the Lead Quality Control Inspector (LQCI), and two Level II QCIs. These individuals were performing activities affecting quality and were not trained in the requirements of 10 CFR Part 21 and HI procedure HQI-147, "Reporting of Defects and Noncompliance," and the annual performance evaluation required for each individual to maintain their qualification to perform activities affecting quality had expired in July 1990 and had not been performed as of September 20, 1990. (90-01-03)

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3. Contrary to Criterion III, "Design Control," of Appendix B to 10 CFR Part 50, and Subsection 3.3, "Engineering Drawings," of the HI NQAM, HI failed to comply with the minimum ASME Code required fillet weld leg length on the socket welded joint attaching the valve body and tube nipples on ASME Code Section III, Class 2 valves, HI Part No. N9303Q8Y37, for Beaver Valley Unit 1, purchase order (PO) No. D038012. (90-01-04)
4. Contrary to Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50, and Subsection 4.1.2, "Scope of Work and Technical Requirements," of the HI NQAM, two examples were identified where HI failed to include the requirements necessary to assure adequate quality in the documents for the procurement of material used in the assembly of ASME Code Section III, Class 2 hermetically (bellows) sealed instrument valves for Beaver Valley Unit 1, PO No. D038012. (90-01-05)
  - a. HI failed to include the quality requirement for the acetone, procured on HI PO No. 41987, to be free of halogens. Acetone is the cleaning media required by HI procedure HPS-85, "Cleaning for Nuclear Service (or Oxygen Applications)," Revision H, dated June 27, 1988, and used to clean the valve body and tube nipple subassemblies.
  - b. HI failed to include the requirements for lot classification and level of testing required by ASME Code Section II, Specification SFA-5.01 on HI PO No. 38235 for the procurement of weld filler material used to weld the tube nipples and valve body subassemblies.
5. Contrary to Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50, and the following:
  - a. Contrary to Subsection 5.2, "Engineering Specifications and Procedures," and Subsection 5.4, "Standards," of the HI NQAM, three examples were identified where HI either failed to prescribe activities affecting quality or failed to include the appropriate acceptance criteria in documents necessary to assure satisfactory accomplishment for ASME Code Section III, Class 2 hermetically (bellows) sealed instrument valves for Beaver Valley Unit 1, PO No. D038012. (90-01-06)
    - i. HI failed to prescribe the fillet weld leg length on HI assembly drawings No. N81575-1, Revision A, dated May 17, 1983 and No. N9303Q8Y37, Revision G, dated February 12, 1986 for socket welded valve body to tube nipple subassemblies.



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- ii. HI failed to prescribed the visual and dimensional inspection requirements of HI procedure HQI-132, "Weld Inspection Procedure (ASME Section III)," Revision B, dated April 17, 1989 on Nuclear Traveler No. NA0020 for the assembly and welding of the valve body and tube nipples.
  - iii. HI failed to prescribe the proof-flushing requirements of HI procedure HPS-85, "Cleaning for Nuclear Service (or Oxygen Applications)," Revision H, dated June 27, 1988 on Nuclear Traveler No. NA0020 to comply with the requirement that item surfaces after cleaning shall be free of cleaning media.
- b. Contrary to Subsection 6.2, "Specification Revision Authorization," and Subsection 6.6.1, "Specification and Procedure Revisions," and Subsection 9.4 "Nondestructive Examination," of the HI NQAM, two examples were identified where HI failed to accomplish activities affecting quality in accordance with established procedures that assure that revisions were reviewed for adequacy and approved by the same organizations that performed the original review. (90-01-07)
- i. HI failed to document revisions to procedure HPT-N145, "Liquid Penetrant Examination Procedure (Visible Dye, Solvent Removal Method) in accordance with ASME Code Sections III and V," Revision U, dated February 21, 1989 in accordance with established procedures by not providing evidence of a documented review and approvals of the Nuclear Order Administrator (NOA), Conformance Engineer, Corporate Director of Quality, Manufacturing Engineer, and the qualified NDE Level III Examiner for Revisions A through U.
  - ii. HI failed to document revisions to procedure HWS-NI, "Procedure specification for Gas Tungsten Arc Welding (GTAW) in accordance with ASME Section III & IX, Single-welded Butt and Fillet Joints, .062" to .308" thickness P8 to P8," Revision L, dated August 9, 1988 in accordance with established procedures by not providing evidence of a documented review and approvals of the NOA, Conformance Engineer, Corporate Director of Quality, and Manufacturing Engineer for Revisions A through L.
6. Contrary to Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50, and Subsection 8.4, "Age-Controlled Items," of the HI NQAM, HI failed to implement established measures to prevent the use of potentially

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defective "O" rings, that may have exceeded their shelf life, in safety-related components. A combined total of 280 "O" rings from seven part numbers were stored in the nuclear material storage area and had not been inspected every three months or recorded in the "O" Ring Log Book. The quality characteristics of these "O" rings and the ability of the "O" rings, and all components supplied with "O" rings from this inventory, to perform their safety-related function is indeterminate. (90-01-08)

7. Contrary to Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50, and Subsection 9.1.1, "The Nuclear Traveler," and Subsection 9.4.1, "Qualification and Testing of Personnel," of the HI NQAM, two examples were identified where HI failed to establish measures to assure that nondestructive examinations were controlled and accomplished by qualified personnel using procedures in accordance with applicable codes and specifications. Additionally, HI performed cleaning as a special process in the manufacture and assembly of nuclear valves, parts, and appurtenances. However, cleaning was not addressed in the HI NQAM. See Nonconformance 90-01-02 for a discussion of the inadequacies of the NQAM. Three examples were identified where HI failed to establish measures to assure that cleaning was controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes and specifications imposed on HI by Beaver Valley Unit 1, PO No. D038012. (90-01-09)
  - a. HI failed to evaluate HI procedures HPT-N145, "Liquid Penetrant Examination Procedure, (Visible Dye, Solvent-Removable Method) in accordance with ASME Code Sections III and V," Revision U, dated February 21, 1988 and HQI-183, "Written Practice for the Qualification and Certification of Nondestructive Examination (NDE) Personnel," Revision A, dated August 3, 1990 and failed to reconcile the differences between the 1984 Edition of SNT-TC-IA used by HI and the 1975 Edition of SNT-TC-IA required by the licensees PO.
  - b. HI accepted and certified the qualifications of an NDE Level III Examiner for PT examinations that contained the following deficiencies: (a) the certification did not reference the written practice/procedure to which the Level III was qualified; (b) the certification did not reference the applicable edition of SNT-TC-IA to which the Level III was qualified; and, (c) the HI certification letter for the NDE Level III was not signed by the Senior Vice-President as required by Subsection 9.4.1, "Qualification and Testing of Personnel," of the HI NQAM.

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- c. HI failed to comply with the pH and conductivity requirements for demineralized rinse water as specified in ANSI N45.2.1, "Cleaning of Fluid Systems and Associated Components During Construction of Nuclear Power Plants," and NRC Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water Cooled Nuclear Power Plants," as specified in Addendum 1, dated February 14, 1985 of the licensee's Design Specification No. 2BVS-679, "Specification for Hermetically Sealed Instrument Valves," imposed in the licensee's PO. HI also failed to measure the values of and prescribe the quality standards for chloride, fluoride, sulfide, silica, and turbidity of the demineralized rinse water as described in HI procedure HPS-85, "Cleaning for Nuclear Service," Revision H, dated June 27, 1988.
- d. HI failed to measure the values of and prescribe the quality standards for halogen contamination of the acetone cleaning media as required in HI procedure HPS-85 described above.
- e. HI failed to perform proof-flushing of nuclear valve internal cavities to ensure that surfaces were free of cleaning media as required by ANSI N45.2.1 and imposed by the licensee's PO.

C. UNRESOLVED ITEM:

NONE

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

NONE

E. INSPECTION FINDINGS AND OTHER COMMENTS:

1.0 Entrance and Exit Meetings

The NRC inspectors informed HI management and staff of the intended scope of the inspection, outlined areas of concern and areas to be inspected and assigned to each team member, participated in a plant tour, and established working interfaces for each team member during the entrance meeting on September 17, 1990. On September 20, 1990, the NRC inspectors summarized the inspection findings, observations, and concerns to HI senior management during the exit meeting.

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## 2.0 Background

The HI corporate offices and valve parts manufacturing facility is located at 1 Tenakill Park, Cresskill, New Jersey. Design, purchasing, manufacturing, quality assurance, process inspection, receiving inspection, and shipping of parts to the Assembly and Test Facility are performed at this location. All items are shipped to the HI Assembly and Test Facility at Spartanburg, South Carolina after acceptance by Corporate Quality Control. The Assembly and Test Facility of HI is located at 899 Simuel Road, Spartanburg, South Carolina. Assembly and test operations including welding, parts storage and inventory control, quality control, nondestructive testing, final inspection, ASME Code stamping and certification, and shipping to customers are all performed at this location.

HI maintains two quality programs at the Assembly and Test Facility. The first quality program is documented in the HI Nuclear Quality Assurance Manual (NQAM), Edition 3, "ASME Section III, Division 1, Nuclear Line Valves," Revision No. 17, dated August 10, 1989. This program addresses the quality requirements for an ASME "N" Certificate of Authorization expiring November 27, 1992 for ASME Code Section III, Class 1, 2 & 3 valves at the Cresskill, New Jersey location with quality assurance, welding, nondestructive examination, assembly, testing & ASME Code certification at the Spartanburg, South Carolina location. This program also addresses the quality requirements for an ASME "NPT" Certificate of Authorization expiring November 27, 1992 for ASME Code Section III, Class 1, 2 & 3 valve parts and appurtenances; and as a material supplier of ferrous and nonferrous bars, threaded fasteners, and forgings at the Cresskill, New Jersey location with quality assurance, welding, nondestructive examination, testing and ASME Code certification at the Spartanburg, South Carolina location.

The second quality program is documented in the the Nuclear Fittings Quality Assurance Manual (NFQAM), ASME Section III, Subsection NCA-3800, Revision No. 10, dated October 6, 1989. This program addresses the quality requirements for an ASME Quality System Certificate (QSC) expiring November 27, 1992 for a material supplier of ferrous and nonferrous bars, forgings, seamless fittings, and seamless tubular products at the Spartanburg, South Carolina location with vendor qualification and procurement performed at the Cresskill, New Jersey location.



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The ASME QSC program is used to supply flareless tube fittings under the trade name Gyrolok. The Gyrolok tube fitting is a two ferrule design available in sizes from 0.0625 inch to 1.0 inch outside diameter tubing.

### 3.0 Inspection of 10 CFR Part 21, Compliance

The NRC inspectors reviewed Hoke Quality Instruction (HQI)-147, "Reporting of Defects and Noncompliance," Revision B, dated April 19, 1989. HQI-147 is the HI procedure that implements the requirements of Section 206 of the Energy Reorganization Act of 1974 and Section 21.21, "Notification of failure to comply or existence of a defect," of 10 CFR Part 21. Section 3.0, "Notification," of HQI-147 provides for any individual to notify, in writing, the HI Chief Executive Officer of any nonconformance affecting a pressure boundary safety-related component. The NRC inspectors concluded from this review that HQI-147 is limited to the evaluation of or informing licensees or purchasers of only those nonconformances that affect the pressure boundary integrity of safety-related components. HQI-147 described above failed to provide for the evaluation of, or informing licensees or purchasers of deviations, as defined in Section 21.3, "Definitions," of 10 CFR Part 21, as a departure from the technical requirements included in a procurement document. According to HQI-147 described above a departure from the technical requirements included in a procurement document that does not affect the pressure boundary integrity of a safety-related component would not be evaluated nor would licensees or purchasers be notified of the deviation. Therefore, HI procedure HQI-147 described above did not provide for the evaluation of, or informing licensees or purchasers of all departures from the technical requirements included in a procurement document that affect non-pressure boundary, non-ASME Code safety-related components. The safety significance of this failure by HI is that all deviations required by 10 CFR Part 21 have not been evaluated and licensees or purchasers have not been informed. As a result, Violation 90-01-01 was identified in this area of inspection.

### 4.0 Inspection of 10 CFR Part 50, Appendix B, Compliance

This area of the inspection focused on HI's implementation of the HI NQAM and any other quality program used by HI to meet the quality assurance criteria requirements of 10 CFR Part 50, Appendix B for non-pressure boundary, non-ASME Code parts and subassemblies of line valves and other safety-related components for which HI does not invoke the quality requirements of the HI NQAM program. Section B, "Terms and Definitions," of the HI NQAM states that non-ASME Code parts or subassemblies may not



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have been manufactured under identical controlled manufacturing procedures established by the HI NQAM and further provides that the HI NQAM program may not be invoked for non-pressure boundary, non-ASME Code parts such as valve actuators.

The NRC inspectors attempted to review the quality program that implements the 10 CFR Part 50, Appendix B requirements for the non-pressure boundary, non-ASME Code safety-related parts and components that are not manufactured under the controls of the HI NQAM program. The Manager of Quality Control/Spartanburg, South Carolina (MQC) did not produce the quality program requested by the NRC inspectors, and during a telephone conversation with the Director of Quality/Cresskill, New Jersey (DOQ), the NRC inspectors were told that the quality program requested was not documented. The DOQ further stated that to document a quality program to meet the requirements of 10 CFR Part 50, Appendix B would require using portions of the HI NQAM supplemented with other procedures.

The quality program, requested by the NRC inspectors, that comprises and documents all those planned and systematic actions necessary to provide adequate confidence that a non-pressure boundary, non-ASME Code components will perform satisfactorily did not exist. Implementation of such a quality program was not observed during the inspection. Therefore, the NRC inspectors concluded that HI did not have a quality program that implements the 10 CFR Part 50, Appendix B quality assurance requirements necessary to provide adequate confidence that non-pressure boundary, non-ASME Code safety-related parts and components will perform satisfactorily. As a result, Nonconformance 90-01-02 was identified in this area of inspection.

#### 5.0 Indoctrination and Training

The NRC inspectors reviewed the indoctrination and training records of the MQC, the Lead Quality Control Inspector (LQCI), and two other Level II QCIs performing activities affecting quality. This review determined that as of September 20, 1990, the MQC who had been in this position for three months and had not received indoctrination or training in the requirements of the HI NQAM, NQAM, 10 CFR Part 21, HI procedure HQI-147, "Reporting of Defects and Noncompliance," and 10 CFR Part 50, Appendix B. Also, the LQCI and the two Level II QCIs had not received indoctrination or training as of September 20, 1990 in the requirements of 10 CFR Part 21, HI procedure HQI-147, as described above, and 10 CFR Part 50, Appendix B. This review also determined that the annual performance evaluation for all individuals performing activities affecting quality had expired in July 1990. According to

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Subsection 2.4, "Qualification of Inspection & Test Personnel," of the HI NQAM these individuals should be considered disqualified and require requalification before performing activities affecting quality. Requalification of these individuals had not been accomplished as of September 20, 1990. As a result, Nonconformance 90-01-03 was identified in this area of inspection.

#### 6.0 Design Control

Duquesne Light Company's purchase order (PO) No. D038012, dated March 19, 1987, ordered HI Part No. N9303Q8Y37, Revision G, 0.5 inch austenitic stainless steel hermetically (bellows) sealed instrument valves and imposed the requirements of 10 CFR Part 21, Stone & Webster Engineering Corporation's Nuclear Safety-Related Design Specification No. 2BVS-679, with Addendum No. 1, dated February 14, 1985, and ASME Code Section III, Class 2, 1977 Edition through the Summer 1979 Addenda. The valves were for Beaver Valley Unit 1. HI developed Project Plan No. 1338, Revision A, dated October 26, 1989 to produce the valves.

The NRC inspectors evaluated, as part of the above order, the valve body to tube nipple assembly for valve serial No.s 293 and 296 fabricated in accordance with Nuclear Traveler No. NA0020 and HI Drawing No. N81575-1, "Body & Nipples," Revision A, dated May 17, 1983. This evaluation determined that HI failed to comply with the minimum fillet weld size requirements for socket welded joints (tube nipple to valve body) required by ASME Code Section III, Paragraph NC-3661.2, "Socket Welds," and Figure NC-4427-1 of the 1977 Edition through the Summer 1979 Addenda. HI engineering drawings failed to assure compliance with the ASME Code and the Weld-End Prep requirements on page 1-17 of the licensee's Design Specification No. 2BVS-679, Addendum 1, dated February 14, 1985 and the requirements of Subsection 3.3 of the HI NQAM.

- a. HI Drawing No. N81069-1, Revision A, dated June 1, 1983, "Body, 1/2 IPS Sch. 80, Butt Weld Ends," contained a note that the valve body is suitable for a 0.75 inch outside diameter (OD) tube with a 0.083 wall thickness in a butt welded configuration and is also suitable for a 0.50 inch OD tube in a socket welded configuration. The tube nipple to valve body assembly Drawing No. N81575-1 described above required a socket weld joint using the 0.50 inch OD tube. Drawing No. N81069-1 specified a valve body weld-prep land dimension of 0.047 to 0.077 inch. This weld-prep land dimension (0.047 to 0.077 inch) represented the maximum fillet weld leg length that could be achieved for the socket welded joint. However, the 1977 Edition through the

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Summer 1979 Addenda of ASME Code Section III required a minimum fillet weld leg length of 0.125 inch for socket welded joints.

- b. HI Drawing No. N9303Q8Y37, Revision G, dated February 12, 1986, "Class 2 Valve, Bellows, Plug Type, Forged Globe Pattern, 5/16" Orifice Dia., ANSI-1500, 1/2 OD x 0.095 Wall Tube Nipples, S.W. Ends," and HI Drawing No. N81575-1 described above provided fabrication details to weld the 1/2 inch OD tube nipple to the valve body. Each drawing described the weld by using an equal leg length fillet weld symbol but did not specify the fillet weld leg length dimension to be accomplished.

As discussed in paragraphs 6.0.a. and b. above, HI failed to comply with the minimum ASME Code required fillet weld leg length and therefore failed to comply with the ASME Code requirements imposed on HI by the licensee's PO. As a result, Nonconformance 90-01-04 was identified in this area of inspection.

#### 7.0 Procurement Document Control

The NRC inspectors reviewed two HI POs for material used in the manufacturing and assembly of the hermetically (bellows) sealed instrument valves, HI part No. N9303Q8Y37, for Beaver Valley Unit 1, PO No. D038012. This review revealed two examples where requirements necessary to assure that adequate quality was not included in the documents for the procurement of materials as required by Subsection 4.1.2, "Scope of Work and Technical Requirements," of the HI NQAM which states that all technical and quality requirements must be specified on the PO.

- a. HI PO No. 41987 issued to Southchem of Duncan, South Carolina for 55 gallons of acetone was reviewed. Acetone was the cleaning media specified in HI procedure HPS-85, "Cleaning for Nuclear Service (or Oxygen Applications)," Revision H, dated June 27, 1988. Procedure HPS-85 described above states in paragraph 2.4 that the acetone shall comply with federal specification No. O-A-51, "Technical Grade," and in paragraph 1.1 states that the degreasing agent (acetone) will not contain halogens. However, HI PO No. 41987 did not invoke any of these quality requirements and had not been reviewed and approved by the DOQ Cresskill, New Jersey, as required by Subsection 4.1.7 of the HI NQAM.
- b. HI PO No. 38235 issued to ARCOS Corporation was also reviewed by the NRC inspectors. HI PO No. 38235 was issued on June 20, 1989 for two spools of stainless steel weld filler material wire, 316L alloy, 0.045 inch OD, with certification required for the wire



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chemical analysis in accordance with ASME Code Section II, Class 1, 1986 Edition through the 1988 Addenda, NB-2400, SFA-5.9 including delta ferrite determination. However, HI failed to include in the PO the requirements of ASME Code Section II, Specification SFA-5.01, "Filler Metal Procurement Guidelines," which requires in Paragraph 1 list the specific details needed for the procurement of filler metal consist of (a) the lot classification and (b) the level of testing.

This review concluded that the requirements necessary to assure adequate quality acetone and welding wire was not included in the procurement documents reviewed. As a result, Nonconformance 90-01-02 was identified in this area of inspection.

#### 8.0 Instructions, Procedures, and Drawings

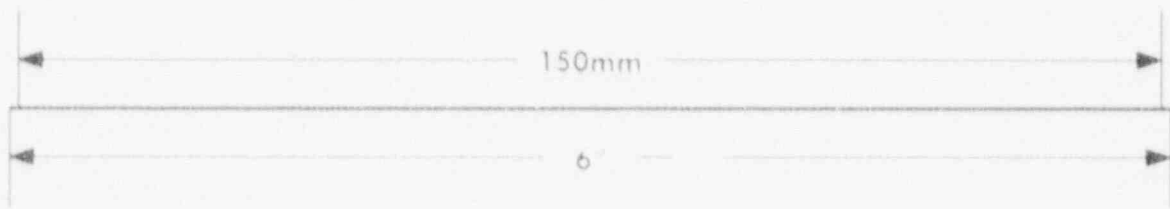
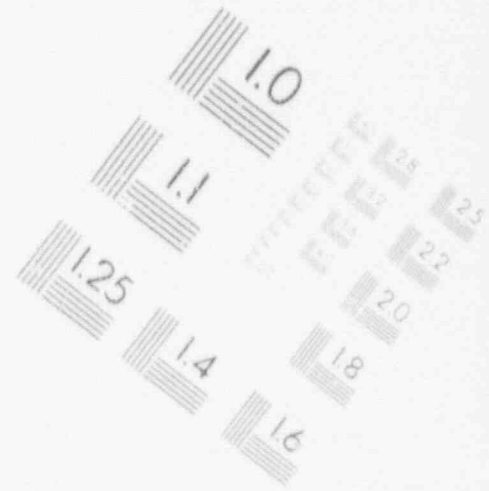
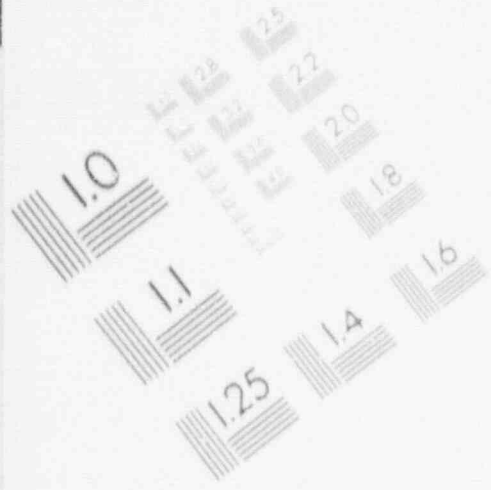
The NRC inspectors reviewed the following instructions, procedures, and drawings during the course of this inspection:

| <u>DOCUMENT NO.</u> | <u>TITLE</u>   | <u>REVISION</u> | <u>DATE</u> |
|---------------------|--|-----------------|-------------|
| N/A                 | HI NQAM  | Revision 17     | 8/10/89     |
| N/A                 | HI NFQAM   | Revision 10     | 10/6/89     |
| HQI-123             | Training of Production Personnel for Concern of Product Quality  | Revision D      | 4/17/89     |
| HQI-128             | Education and Training of Management and Supervisory Personnel for the Nuclear Quality Program   | Revision C      | 4/17/89     |
| HQI-132             | Weld Inspection Procedure (ASME Section III)   | Revision B      | 4/17/89     |
| HQI-139             | Certification of Inspection & Test Personnel   | Revision B      | 8/9/89      |
| HQI-147             | Reporting of Defects and Non-compliance  | Revision B      | 4/19/89     |
| HQI-183             | Written Practice for The Qualification and Certification of Nondestructive Examination (NDE) Personnel (PER SNT-TC-IA 1984 & MIL-STD-271F) | Revision A      | 8/3/90      |



# 1

## IMAGE EVALUATION TEST TARGET (MT-3)



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| <u>DOCUMENT NO.</u> | <u>TITLE</u>  | <u>REVISION</u> | <u>DATE</u> |
|---------------------|---|-----------------|-------------|
| HPS-1               | Engineering Process Specification<br>Solvent Vapor Degreasing   | Revision K      | 6/24/88     |
| HPS-9               | Engineering Process Specification<br>Cleaning of Parts and Cylinders for<br>Oxygen & Nitrogen Systems                             | Revision E      | 8/9/88      |
| HPS-22              | Permissible Contamination Limits,<br>Liquid Oxygen System Components  | N/A             | 9/30/63     |
| HPS-29              | Engineering Process Specification<br>Cleaning For Oxygen Service Previous-<br>ly Assembled 4111, 4151, and 4171<br>Bellows Valves | Revision A      | 1/23/68     |
| HPS-78              | Materials Identification Marking,<br>Electro Etch, Vibro Tool and Die<br>Stamping (MIL-STD-792-Para. 5.2,<br>5.1 and 5.5)         | Revision H      | 4/14/89     |
| HPS-85              | Cleaning For Nuclear Service (or<br>Oxygen Applications)  | Revision H      | 6/27/88     |
| HPS-96              | Procurement Specification for<br>Operator Assemblies for CRFBR Program  | Revision A      | 9/28/77     |
| HPS-123             | Cleaning for Nuclear Service  | Revision A      | 8/8/84      |
| HPS-129             | Gravimetric Analysis Method for<br>Determining The Organic Residue of<br>Freon and Freon-Acetone Cleaning<br>Solvents             | Revision A      | 12/29/86    |
| HPS-144             | Cleaning of Valves, Fittings and Parts<br>and Cleanliness Control Per MIL-STD-767<br>Requirements                                 | N/A             | 1/25/89     |
| HPS-147             | Electrochemical Etching Method of<br>Identification Marking   | Revision E      | 9/7/89      |

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| DOCUMENT NO. | TITLE   | REVISION      | DATE     |
|--------------|---|---------------|----------|
| HPT-N145     | Liquid Penetrant Examination Procedure (Visible Dye, Solvent-Removable Method) in accordance with ASME Code Sections III and V  | Revision E    | 5/23/72  |
| HWS-N1       | Procedure Specification for Gas Tungsten ARC Welding (GTAW) in accordance with ASME Section III and IX, Single-Welded Butt and Fillet Joints, .062" to .308" Thickness P8 to P8                         | Revision L    | 8/9/88   |
| 1388         | Project Plan for PO No. D038012   | Revision A    | 10/26/89 |
| N81575-1     | Drawing, "Body & Nipples"   | Revision A    | 5/17/85  |
| N95501-145   | Drawing, "Nipples, Tube 1/2 OD x 0.095 W.T"   | Revision A    | 5/13/86  |
| N81069-1     | Drawing, "Body 1/2 IPS sch.80 Butt Weld Ends"   | Revision A    | 6/1/83   |
| N9303Q8Y37   | Drawing, "Class 2 Valve, Bellows, Plug Type, Forged Globe Pattern, 5/16" Orifice Dia, ANSI-1500, 1/2 OD x 0.095 Wall Tube Nipples   | Revision G    | 2/12/86  |
| NA0020       | Nuclear Traveler  | Revision A    | 4/17/90  |
| S.O. 0167044 | Nuclear Traveler  | N/A           | 3/16/90  |
| 2BVS-679     | Stone & Webster Engineering Corporation, Nuclear Safety Related Design Specification, Hermetically Sealed Instrument Valves, ASME Code, Section III, Class 2, 1977 Edition thru the Summer 1979 Addenda | Addendum No.1 | 2/14/85  |

This review revealed three examples where HI either failed to prescribe activities affecting quality necessary to assure compliance with ASME Code requirements or customer specifications or failed to include the appropriate

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acceptance criteria to assure that activities affecting quality had been satisfactorily accomplished as required by Subsection 5.2, "Engineering Specifications and Procedures," and Subsection 5.4, "Standards," of the HI NQAM. These are examples where HI failed to accomplish activities affecting quality in accordance with HI established procedures.

- a. HI Nuclear Traveler No. NA0020 controlled the assembly, of the valve body and tube nipples per HI Drawing No. N81575-1 described above for hermetically (bellows) sealed instrument valves in accordance with ASME Code Section III, Class 2, 1977 Edition through the Summer 1979 Addenda. The assembly of the valve body and tube nipples was accomplished by inserting a tube nipple into the inlet side and outlet side of the valve body, forming a socket welded joint on each side of the valve. The socket welded joint was depicted on Drawing No.s N81575-1 and N9303Q8Y37 with an equal leg length fillet weld symbol without a specified leg length dimension. Therefore, the drawings described above, did not prescribe the appropriate acceptance criteria needed to determine that the required fillet weld had been satisfactorily accomplished.
- b. HI procedure HQI-132, "Weld Inspection Procedure (ASME Section III)," Revision B, dated April 17, 1989 established visual and dimensional acceptance criteria for weld inspection. This procedure is applicable to ASME Code Section III weldments. A review of HI Nuclear Traveler No. NA0020 determined that the traveler did not address visual or dimensional inspection of the welds attaching the tube nipples to valve body and HI procedure HQI-132 was not referenced on the traveler. The NRC inspectors determined that visual and dimensional inspections, necessary to comply with ASME Code requirements invoked on HI by the licensee's PO were not prescribed on the traveler or any other document. The NRC inspectors were informed by the HI LQCI responsible for Nuclear Traveler No. NA0020, that he could not remember if he had inspected the valve body to tube nipple fillet welds. Since the traveler did not specify a visual examination of the fillet welds, the NRC inspectors requested that the HI LQCI to perform a visual examination on two of the four tube nipple to valve body subassemblies. The NRC inspectors observed the HI LQCI measuring and examining the fillet welds on Serial Nos. 393 and 296. Serial No. 296 had a minimum fillet weld leg length of 0.125 inch, however, the size of the two fillet weld leg lengths on serial no. 393 could not be determined due to the polished area of the weld and adjacent base material in preparation for liquid penetrant examination.



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- c. HI Nuclear Traveler No. NA0020 specified at Operation No. 020, "Clean," and referenced HI procedure HPS-85, "Cleaning for Nuclear Service (or Oxygen Applications)," Revision H, dated June 27, 1988. Duquesne Light Company PO No. D038012 for Beaver Valley Unit 1 in Section P1.1, "Cleanliness," paragraph (3) states that item surfaces after cleaning shall be free of cleaning media. However, paragraph 6.1, "Applicability," of HI procedure HPS-85 states that the provisions for flushing components after cleaning applies only when proof-flushing is specified on the nuclear traveler. Proof-flushing was not specified on the traveler or performed by HI. Compliance with the licensee's PO requiring item surfaces after cleaning to be free of cleaning media was not assured by HI and the NRC inspectors determined that compliance with the cleanliness requirements of the licensee's PO was not prescribed to assure satisfactory accomplishment.

This review concluded that activities affecting quality and appropriate acceptance criteria was not prescribed or included in documents necessary to assure satisfactory accomplishment. As a result, Nonconformance 90-01-06 was identified in this area of inspection.

#### 9.0 Document Control

During the course of the inspection it was determined that two HI procedures which prescribed activities affecting quality and with multiple revisions did not document evidence that the procedures had been reviewed and approved by the same organization that performed the original review and approval. The procedures also did not document compliance with the applicable provisions of the HI NQAM as follows: Subsection 6.6.1, "Specification and Procedure Revisions," states that revisions must be initiated by the Nuclear Order Administrator (NOA), who is responsible for obtaining approvals of the Conformance Engineer and the Corporate Director of Quality; Subsection 6.2, "Specification Revision Authorization," (SRA) states that when an SRA is used to revise specifications and procedures then approval by the Manufacturing Engineer is also required; and, Subsection 9.4, "Non-Destructive Examination," states that all NDE procedures must be approved by a Qualified NDE Level III Examiner.

- a. The NRC inspectors reviewed HI procedure HPT-N145, "Liquid Penetrant Examination Procedure (Visible Dye, Solvent-Removable Method) in accordance with ASME Code Section III and V," Revision U, dated February 21, 1989. The original issue was dated October 6, 1971 and was prepared by the Project Engineer and approved by the Nondestructive Examination (NDE) Level III Examiner and the Director of Engineering. However, Revisions A, dated January 20, 1971 through Revision U, dated

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February 21, 1989 reflect the approval initials of only a single individual.

- b. The NRC inspectors reviewed HI procedure HWS-NI, "Procedure Specification for Gas Tungstem Arc Welding (GTAW) in accordance with ASME Section III & IX, Single-welded Butt and Fillet Joints, .062" to .308" Thickness P8 to P8," Revision L, dated August 9, 1988. The original issue was dated October 13, 1972 and was prepared by the Project Engineer and approved by the Director of Engineering and one other individual. However, Revisions A, dated September 20, 1973 through Revision L, dated August 9, 1988 reflect the approval initials of only a single individual.

As a result, Nonconformance 90-01-07 was identified in this area of inspection.

#### 10.0 Identification Control of Material and Parts

This area of inspection reviewed the implementation of the HI material identification and material control program. The areas reviewed are described separately as follows.

##### 10.1 Material Identification

The NRC inspectors reviewed Nuclear Traveler No. NA0020 to determine whether or not the die stamping of numbers on the subassemblies comply with the requirements of HI procedure HPS-78, "Material Identification Marking-Electric Etch, Vibro Tool and Die Stamping," Revision H, dated April 14, 1989. Operation No. 080 on the traveler specified a QCI review of the paperwork to record heat numbers, serial numbers and the traveler number on the box label and the stamp label. The traveler did not specify that the inspection requirements of procedure HPS-78, Section 4.1.1.a, which states that impression depth shall be limited to 0.010 inch should be verified by a QCI. Discussions with QCI and craft personnel determined that even though the stamped impression depth was not prescribed on the traveler, QCI personnel did inspect all die stamping on nuclear items. The NRC inspectors also determined from discussions with HI personnel and after reviewing the shop activities that HI did fully comply with the provisions of procedure HPS-78, Section 4.1.1.d requirement that prohibits the die stamping method of marking on tube and pipe parts.

##### 10.2 Material Control

HI staff advised the NRC inspectors that all parts and materials for nuclear line valves are either purchased by or manufactured by HI in

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Cresskill, New Jersey and shipped to HI in Spartanburg, South Carolina for storage and inventory control prior to use in valve assemblies or shipment to customers. A review of this area of inspection identified the following example where HI failed to implement established measures to prevent the use of incorrect or defective materials and parts.

The NRC inspectors reviewed the storage and control of age-controlled "O" rings used in nuclear valves. All parts and subassemblies for nuclear items are stored in a locked and secure, segregated area of the material and parts storage warehouse. The NRC inspectors identified the following "O" rings for nuclear valves stored in the designated nuclear parts storage area.

| <u>Part No.</u> | <u>Quantity</u> |
|-----------------|-----------------|
| H58-350-50      | 2               |
| H58-114-50      | 88              |
| H58-112-50      | 89              |
| H58-156-50      | 5               |
| H58-019-50      | 87              |
| H58-240-50      | 3               |
| H58-342-50      | 6               |

A review of the "O" Ring Log Book determined that the "O" rings listed above were not recorded in the "O" Ring Log Book and had not been inspected every three months to determine their shelf life based on the "O" ring cure date as required by Subsection 8.4, "Age-Controlled Items," of the HI NQAM. During an interview with the Lead Inventory Control Clerk, who maintained the "O" Ring Log Book, the NRC inspectors learned that the "O" rings listed above had not been identified by HI in Cresskill, New Jersey as "O" rings that should be controlled in accordance with Subsection 8.4, "Age-Controlled Items," of the HI NQAM. "O" rings from this inventory had been supplied with safety-related components. The Lead Inventory Control Clerk added that the age-controlled items that are recorded in the "O" Ring Log Book are not located in the designated nuclear parts storage area. The NRC inspectors concluded that HI failed to implement established measures to prevent the use of potentially defective "O" rings, that may have exceeded their shelf life. A combined total of 280 "O" rings from seven part numbers were stored in the designated nuclear parts storage area and had not been inspected every three months or recorded in the "O" Ring Log Book. The quality characteristics of these "O" rings and the ability of the "O" rings, and all components that had been supplied with "O" rings from this inventory, to perform their safety-related function was indeterminate. As a result, Nonconformance 90-01-08 was identified in this area of inspection.

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### 11.0 Control of Special Processes

The NRC inspectors reviewed the special processes used in the HI assembly and test of safety-related items. The review of three of those special processes (Welding, Nondestructive Examination, and Cleaning) and the conclusions of the NRC inspectors is described as follows.

#### 11.1 Welding

The NRC inspectors reviewed Nuclear Traveler No. NA0020 for Beaver Valley Unit 1, PO No. D038012 which prescribed HI Welding Procedure Specification (WPS) HWS-NI, "Gas Tungsten Arc Welding (GTAW) in accordance with ASME Sections III and IX, Single-Welded Butt and Fillet Joints, .062" to .308" Thickness, P8 to P8," Revision L, dated August 9, 1988 to perform the welding of the tube nipples to valve body. Procedure HWS-NI appeared to be adequate to perform the required fillet welds. The qualifications of the welding operator (Stamp No. KS), who welded the tube nipples to valve body were reviewed and found to comply with the requirements of ASME Code Section IX, 1986 Edition through the 1989 Editions. The NRC inspectors also reviewed the qualifications of welding operators (Stamp No.s DH, PL, and RC), and found their qualifications to comply with the requirements of procedure HWS-NI and ASME Code Section IX.

The NRC inspectors reviewed the welding operator's log and determined that ARCOS weld filler material, Heat No. YT-5831, 316L, .045 inch wire was used to weld the tube nipples to valve bodies on traveler No. NA0020. The NRC inspectors requested a copy of the PO for the procurement of the ARCOS weld filler material. The conclusions developed from the review of the PO is discussed in Section E.7.0 of this report.

#### 11.2 Nondestructive Examination

- a. Liquid penetrant (PT) nondestructive examination (NDE) was not performed by HI during the inspection, therefore, the NRC inspectors interviewed the PT Level II Examiner and a PT examination trainee. The NRC inspectors discussed the requirements for PT examinations performed on nuclear items and the degree of participation by the trainee in the PT examination process. Based on discussions with these individuals the NRC inspectors determined that the trainee did perform the cleaning operation and the application of various solutions under the direct supervision of the Level II PT Examiner. The trainee did not evaluate the acceptability of the PT examination results.



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The NRC inspectors reviewed an example of the PT Examination Log, chosen at random, that reflected the activities of a trainee. The following PT examinations performed in June 1990 were reviewed:

| <u>Traveler No.</u> | <u>Level II Examiner</u> | <u>Part Description</u> | <u>Trainee</u> | <u>Date Performed</u> |
|---------------------|--------------------------|-------------------------|----------------|-----------------------|
| N2713               | S.L.                     | Body                    | None           | 6/4/90                |
| N3163               | S.L.                     | Stem                    | S.H.           | 6/4/90                |
| N3835               | S.L.                     | Housing                 | S.H.           | 6/4/90                |
| N3164               | S.L.                     | Bonnet                  | S.H.           | 6/5/90                |
| N3036               | S.L.                     | Body                    | S.H.           | 6/6/90                |
| N3029               | S.L.                     | Body                    | S.H.           | 6/11/90               |
| N2717               | S.L.                     | Upper stem              | S.H.           | 6/13/90               |

The NRC inspectors also reviewed the qualification and certification records for the Level II PT Examiner and found that they comply with the requirements of procedure HQI-183, "Written Practice for The Qualification and Certification Examination (NDE) of Nondestructive Personnel (Per SNT-TC-IA, 1984 Edition and MIL-STD-271F)," Revision A, dated August 3, 1990. Based on the review of the PT examination records, the qualification and certification records of the Level II PT Examiner, and discussions with HI personnel, the NRC inspectors determined that the PT examinations reviewed were evaluated by a qualified Level II PT Examiner and that the PT reports were also approved and signed by a Level II PT Examiner.

The NRC inspectors requested the PT Level II Examiner to demonstrate the method used to check the ultraviolet light intensity (called black light) used in the fluorescent dye penetrant process. The Level II PT Examiner satisfactorily demonstrated the ability to check the black light intensity. The instrument used to check the black light intensity was calibrated on June 11, 1990, with a recalibration due date of December 31, 1990.

- b. The NRC inspectors review of NDE procedures and the qualification and certification records of the NDE Level III Examiner revealed two examples where HI failed to comply with the licensee's PO requirements as described below.
1. HI Nuclear Traveler No. NA0020 for the welding of tube nipples to the valve body for ASME Code Section III, Class 2, hermetically

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(bellows) sealed instrument valves for Beaver Valley Unit 1, PO No. D038012, specifies at Operation No. 060 to penetrant inspect welds in accordance with HI procedure HPT-N145, "Liquid Penetrant Examination Procedure, (Visible Dye, Solvent-Removable Method) in accordance with ASME Code Sections III and V," Revision U, dated February 21, 1989. Beaver Valley Unit 1, PO No. D038012 requires that the valves comply with ASME Code Section III, Class 2, 1977 Edition through the Summer 1979 Addenda which adopts the 1975 edition of SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing." However, HI procedure HPT-N145 described above requires in paragraph 2.3 that this procedure shall be performed only by personnel qualified to the standards of SNT-TC-1A (1984). HI procedure HQI-183, "Written Practice For The Qualification and Certification of Nondestructive Examination (NDE) Personnel," Revision A, dated August 3, 1990 has been revised to meet the requirements of the 1984 edition of SNT-TC-1A. HI failed to evaluate HI procedure HPT-N145 and HQI-183 described above and failed to reconcile the differences between the 1984 edition and the 1975 edition of SNT-TC-1A in order to assure compliance with the licensee's PO.

2. The review of NDE also included an evaluation of the NDE Level III Examiner's qualification and certification records. HI subcontracts with Applied Technical Services, Incorporated of Greenville, South Carolina for the services of an NDE Level III Examiner for the certification of Level II PT examiners. A review of the NDE Level III Examiner's qualification and certification records revealed the following deficiencies: (a) the records did not reference the written practice or procedure to which the Level III was qualified; (b) the records did not reference the applicable edition of SNT-TC-1A to which the Level III was qualified; and, (c) the HI certification letter for the NDE Level III was not signed by the Senior Vice-President as required by Subsection 9.4.1, "Qualification and Testing of Personnel," of the HI NQAM.

These are two examples where HI failed to establish measures to assure that nondestructive examinations are controlled and, accomplished by qualified personnel in accordance with the licensee's PO and the applicable codes.

### 11.3 Cleaning

The NRC inspectors reviewed the HI procedures and controls for the cleaning of nuclear items during manufacture and assembly. The areas

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reviewed revealed three examples where HI failed to establish measures to assure that cleaning is controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes and specifications as described below.

- a. The cleaning requirements for the ASME Code Section III, Class 2 hermetically (bellows) sealed instrument valves for Beaver Valley Unit 1, PO No. D038012 invoked in the licensee's Stone and Webster Design Specification No. 2BVS-679, "Specification for Hermetically Sealed Instrument Valves," Addendum 1, dated February 14, 1985. The manner in which these nuclear items were to be cleaned was described on page 1-23 of the Design Specification, which states that all cleaning shall be performed in accordance with ANSI N45.2.1, "Cleaning of Fluid Systems and Associated Components During Construction of Nuclear Power Plants," and NRC Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water Cooled Nuclear Power Plant," and any additional requirements contained in the Design Specification. These additional requirements pertaining to the cleaning of valves are listed in ANSI N45.2.1. The ANSI N45.2.1 specification requires that the selection of water quality for a specific application is made by the organization responsible for the cleaning operations unless otherwise specified, and in this case cleaning was considered part of the manufacturing process per the Beaver Valley Unit 1, PO No. D038012.

Consistent with these requirements, demineralized water should be used as a final flushing media for components that must meet Class B cleanliness requirements, as defined in Section 3.1.2 of ANSI N45.2.1. Listed in Section 3.2 of ANSI N45.2.1 are the following water quality standards for demineralized water:

|                      |                                    |
|----------------------|------------------------------------|
| pH at 77°F           | 5.5 to 8                           |
| Chloride             | Less than 1 ppm                    |
| Fluoride             | Less than 1 ppm                    |
| Sulfide              | Less than 3 micromho/cm            |
| Conductivity at 77°F | Less than 3 micromho/cm            |
| Silica               | Less than 0.05 ppm                 |
| Turbidity            | Less than 1 Jackson Turbidity Unit |

HI procedure HPS-85, "Cleaning for Nuclear Service," Revision H, dated June 27, 1988 was prescribed on the traveler for the in-process

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and final cleaning. HI procedure HPS-85 described above did not comply with the requirements listed above for demineralized rinse water in that the pH value was required to be in the range of 6.0 to 8.0 and the maximum conductivity was stated as 20 micromho/cc (micromho/cc is not the proper unit for expressing conductivity of water and should be expressed in micromho/cm). The demineralized rinse water was not evaluated by HI to determine the values of chloride, fluoride, sulfide, silica, and turbidity and the standards for these elements were not prescribed in procedure HPS-85 as required by ANSI N45.2.1 and the licensee's PO. Interviews with supervisory management of the cleaning operations revealed that they did not know the purpose of the installed water treatment system in the cleaning area, and what parameter was measured by an installed indicating instrument associated with the system, and when the water treatment equipment required maintenance or was no longer able to perform its intended function. In addition, HI did not have records of water quality measurements or maintenance of the water treatment system.

The deficiencies described above are collectively considered one example where HI failed to establish measures to assure that cleaning was controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes and specifications and the requirements of the Beaver Valley Unit 1 PO.

- b. HI procedure HPS-85 described above indicates in paragraph 1.1 that the degreasing agent (acetone) will not contain halogens and paragraph B.2.1 indicates that finished products are packed with a tag which states, "Cleaned in Halogen free solutions for nuclear applications per HPS-85." However, the acetone used to degrease components was not evaluated by HI for halogen contamination and procedure HPS-85 described above did not provide for the evaluation of the acetone cleaning media for halogen contamination. HI procedure HPS-85 states that components intended for nuclear service shall not come in contact with cleaning solutions containing halogens. However, there is no assurance that the acetone cleaning media did not contain halogens.

The failure to control halogen contamination of the acetone cleaning media was another example where HI failed to establish measures to assure that cleaning was controlled and accomplished using qualified procedures.

- c. ANSI N45.2.1 prescribes provisions for proof-flushing components with internal cavities (such as valves) to ensure that surfaces are free from the undesirable presence of residual cleaning media and contamination prior to shipping. HI procedure HPS-85 described above



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prescribed in Section 6.0 requirements for proof-flushing components and established methods to ensure the purity of the flushing media. The NRC inspectors found that neither the cleaning operator, the hydrostatic test operator, or their respective supervisors had knowledge of the requirements for proof-flushing internal cavities of valves and stated that proof-flushing had not been performed on nuclear valves.

The failure to perform proof-flushing of nuclear valve internal cavities was another example where HI failed to establish measures to assure that cleaning was controlled and accomplished by qualified personnel in accordance with applicable codes and specifications.

- d. To ensure cleanliness of freon and freon-acetone used as a cleaning solvent, HI procedure HPS-129, "Gravimetric Analysis Method for Determining the Organic Residue of Freon and Freon-Acetone Cleaning Solvents," Revision A, dated December 29, 1986, describes a test method to determine the total organic contamination of the freon and freon-acetone cleaning solvents. The test was to be performed on a monthly basis. The results of the test was logged, along with the calculations used to achieve the test results. The NRC inspectors found that the log contained test results beginning in April 1989 through June 1989, but did not contain documented test results for July and September through December 1989 or March through September 1990. The equipment required to perform the test, including a laboratory balance and weights, was readily available in the work area and was included in the calibration program. After evaluating the reasons for the numerous monthly omissions in the log book, the NRC inspectors determined that the person responsible for performing the contamination test had not been trained to conduct the procedure, was not confident that the test results obtained were valid, and stated that when the responsible supervisor had been notified of these concerns, the supervisor directed the individual to, "just put something down," in the log. This individual stated that the supervisor's direction was not followed and further indicated, "that would be lying and would not be right."

After further evaluation the NRC inspectors determined that procedure HPS-129 did not apply to licensee nuclear orders. According to HI staff, components for NRC licensees were not cleaned in freon and/or freon-acetone (halogenated) solutions. However, the NRC inspectors found numerous orders for other customers where components were cleaned in these halogenated solutions, such as Electric Boat and Newport News. These components may be intended for nuclear service

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and halogen residue is extremely undesirable due to the increased likelihood of stress corrosion cracking which may be induced by halogen contaminants.

The findings described in Section 11.3, "Cleaning," paragraphs a., b., and c. above are three examples where HI failed to establish measures to assure that cleaning was controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes and specifications. As a result of these findings and the findings described in Section 11.2, "Nondestructive Examination," Nonconformance 90-01-09 was identified in this area of inspection.

F. PERSONNEL CONTACTED:

|                      |   |
|----------------------|---|
| *# Barry Taylor      | Plant Manager                                     |
| *# Ronald E. Lewis   | Manager of Quality/Spartanburg                    |
| *# Joel Bolton       | Lead Quality Control Inspector                    |
| o Richard F. Johnson | Nuclear Order Administrator/Cresskill             |
| o Ronald J. Williams | Director of Quality/Cresskill                     |
| # John Hess          | Personnel Manager                                 |
| Barry Gilmore        | Assembly Manager                                  |
| Lou Cartegena        | Assembly Supervisor                               |
| # Paul Lee           | Maintenance Manager                               |
| Kathy Underwood      | Quality Control Inspector, Level II               |
| Michael L. Easler    | Quality Control Inspector, Level II               |
| Peggy Kimbrell       | Lead Inventory Control                            |
| Richard Gardner      | Receiving Inspector                               |
| Penny Crump          | Assembler   |
| Joesaphine Lender    | Assembler and Liquid Penetrant Trainee            |
| Kathy Shockley       | Welder  |
| Shirley Lewis        | Assembler and Level II, Liquid Penetrant Examiner |
| Connie Burrell       | Cleaner   |

- \* Attended the entrance meeting
- o Contacted via telephone only
- # Attended the exit meeting