

VENDOR INSPECTION REPORT

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

Report No. 99900057/78-01

Program No. 44060

Company: The William Powell Company
Plant No. 2
3233 Colerain Ave.
Cincinnati, Ohio 45214

Inspection Conducted: July 25-28, 1978

Inspectors:

D. M. Hunnicutt
for R. E. Otter, Contractor Inspector, Vendor
Inspection Branch

8/10/78
Date

R. L. Brown
R. L. Brown, Contractor Inspector, Vendor
Inspection Branch

8/10/78
Date

Approved by:

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

8/10/78
Date

Summary

Inspection on July 25-28, 1978 (99900057/78-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, criteria and applicable codes, including design control consisting of design management - verification and document control, audits, training, manufacturing process control, equipment calibration, testing of completed products, and action on previous inspection finding. The inspection involved fifty-six (56) inspector-hours on site by two (2) inspectors.

7810110225

Results: In the seven (7) areas inspected, no deviations were identified in five (5) areas. The following were identified in the remaining two (2) areas:

Deviations: Equipment Calibration: calibration requirements were not fully implemented for four (4) different types of measuring devices in accordance with Criterion XII. Training: Inspector training sessions were not documented as required in accordance with Criterion II.

Unresolved Item: Temperature uniformity surveys of heat treating furnaces had not been performed, but had been contracted to be done (Details Section I, paragraph D.3.b.).

DETAILS SECTION I

(Prepared by R. E. Oller)

A. Persons Contacted

D. Berger, Supervisor, Radiography
L. Carboni, Bonded Area Inspector
*A. Clark, AI Trainee, HSB I&I Co.
R. Cochran, Metallurgical Technician
J. Ford, Nuclear Assembly & Final Dimensional Inspector
D. Hall, Supervisor, Test Department
W. Hasselbusch, Supervisor, NDE
C. Hensley, Supervisor, Weld Shop
*E. Hoeffler, Assistant QA Manager
*H. Knock, QA Manager
D. Marsh, NDE Inspector
*W. McClure, Plant Manager
*B. Montana, ANI, HSB I&I Co.
M. Roundtree, Supervisor, Boreing Mill & Shaper Department
R. Ross, NDE Level III Examiner
R. Smith, NDE Technician
*J. Williams, Project QA Engineer
*E. Winterfeldt, Corporate QA Manager
*R. Witteride, Chief Inspector

*Denotes presence at exit interview.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 77-02): Failure to use a voltage range of 10-15 volts while welding with 3/32" diameter filler wire, as required by procedure WPWS 2/14601 on work for Order No. 696C. The inspector found that the welding machine was examined by the Technical Service Department and the volt meter was found to be improperly wired, but the correct voltage output of the machine was not affected. The wiring problem was corrected. To prevent recurrence, the weld shop supervisors and inspectors were instructed to monitor welding operations to assure that welding procedure requirements are met. All of the above actions were documented.
2. (Closed) Deviation (Report No. 77-02): Failure to verify that the metal deposition rate during hardfacing was as required by specification No. WPWS 2/14201. The inspector found that the

subject specification was revised to delete the reference to metal disposition rate which was considered unnecessary. Also, a memorandum dated March 9, 1978, was issued to the welding supervisor to reemphasize the departmental inspectors responsibilities.

C. Manufacturing Process Control

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME code requirements.

- a. A written system has been established to assure that manufacturing processes are controlled in accordance with applicable codes.
- b. Measures have been established and implemented to control the manufacturing processes by use of process sheets, travelers, checklists or procedures.
- c. The process sheets, travelers, checklists or shop procedures used included: the document numbers and revisions to which the processes, inspections or tests conformed; the results of completion of the specific operations; the signature, initials or stamp of the manufacturer's responsible representative and date were shown for operations completed, and the signature, initials or stamp of the Authorized Inspector and date, were shown for activities he witnessed.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual Article 5 "Production and Manufacturing Controls", to verify that adequate controls for manufacturing process control are documented.
- b. Observation of the following in process valve components in departments as noted, and review of the indicated process control documents consisting of Rework Routers (travelers), Trouble Analysis Reports and Part Drawings, to verify that the work is controlled and signed off as it is satisfactorily completed.

- (1) 18", 600 # pressure seal valve body.
Boring Mill Department.
Assembly Rework Router for Order ASO-771C Part CM-2919B.
TA-4364B and TA-4375B.
Part Drawing No. 112446.
- (2) 14", 600 # W. E. Gate Valve Body.
Boring Mill Department.
Production Rework Router for Order ASO-742C, Part CM-8945.
TA-5118B.
Part Drawing No. 111570.
- (3) Valve Disc.
Boring Mill Department.
Production Rework Router for Order ASO-735C, Part CM-728B.
Part Drawing No. 107057.
- (4) 18", 600 # Gate Valve Bonnet.
First Floor Weld Shop.
Production Rework Router for Order ASO-996-C, Parts
Nos. CM-3106B and CM-3107B.
TA-7516B, TA-8264B and TA-8302B.
Part Drawing No. 111899.
- (5) 6", 900 # "Y" Globe Valve Body.
Dye Penetrant Inspection Shop.
Production Rework Router for Order ASO-128C.
Part No. CM-3151B.
T. A. 8675B.
Part Drawing No. 106863.
- (6) 12", 600 # W. E. Gate Valve Body.
Final Inspection Shop
Production Rework Router for Order ASO-774C
Part No. CM-3014B.
TA-3310 and TA-7252.
Part Drawing No. 112148.
- (7) 12" x 10" x 12", 300 # W. E. Gate Valve Body.
Final Inspection Shop.
Production Rework Router for Order ASO-1127C
Part No. CM-3121B.
TA-8107.
Part Drawings No. 113618 and No. 113619.

- c. Discussions with cognizant personnel.

3. Findings

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

D. Equipment Calibration

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME Code Requirements:

- a. A written system has been established to assure that equipment calibration is performed and controlled in accordance with applicable codes.
- b. A written procedure has been developed and approved which contains provisions to assure that tools, gages, instruments and other inspection, measuring and testing equipment and devices used in activities affecting quality, are of the proper range, type and accuracy, and are calibrated and properly adjusted at specified periods or use intervals.
- c. The devices are identified in the documented system and/or procedure and are calibrated in accordance with the system and procedure.
- d. The calibration is performed against certified measurement standards which have known relationship to National Standards, where such standards exist.
- e. The control measures include provisions for test equipment identification and calibration status by marking, or on records traceable to the equipment.
- f. The Manufacturer determined and implemented corrective action for materials and items checked using measurement or testing equipment later found to be out of calibration.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual Article 6, paragraph 6.4 "Calibration Control" to verify that adequate controls for equipment calibration are documented.
- b. Review of the following standard Powell Specifications to verify that these procedures prescribe a system for equipment calibration which is consistent with the commitments of the QA program.
 - (1) No. WPEC 2/103, Revision 0, "Procedure . . . for the Calibration and Maintenance of Heat Treating Furnace Systems."
 - (2) No. PS-104-1C, Revision 3, "Calibration of Pressure Gages."
 - (3) No PS-104-2, Revision 1, "Hardness Testing Equipment."
 - (4) No. PS-104-4, Revision 1, "Calibration of Welding Generators."
 - (5) No. PS-104-6, Revision 5, "Inspection Gage and Measuring Equipment Calibration."
 - (6) No. PS-104-8, dated May 17, 1972, "Calibration of Surface Pyrometers."
 - (7) No. PS-104-10, "Calibration of Welding Electrode Drying Ovens."
 - (8) No. WPEC-102, dated March 30, 1977, "Calibration of Densitometers."
 - (9) No. PS-104-7D, Revision 1, "Verification of Ultra-sonic Instrumentation Performance Characteristics."
- c. Observation of the calibration status and review of records for the following measuring and testing devices, to verify that the devices are calibrated and records are maintained as required:
 - (1) Heat Treatment Furnaces and recorders for furnaces Nos. 5550, 5437, 5784, 5533, and 5777.
 - (2) Five (5) welding electrode ovens.

- (3) Welding generators Nos. 5417, 5679, 5752, 5761 and 9149.
- (4) Welding Argon gas flow meters located in the first floor weld shop and in the hardfacing department.
- (5) Surface Pyrometers No. 5905 and 5906 and the "Sargent Welch" standard reference thermometer catalog No. 80265-C.
- (6) Hardness Testers No. 5200 and No. 5574.
- (7) Magnetic Particle Test Machines No. 5788 and No. 5737; Production Yokes No. 5956 and 5957, and reference Weights Nos. Y10A, Y10B, Y40A, and Y40B.
- (8) Dimensional measuring devices consisting of; micrometers, wall thickness calipers, vernier calipers and plug gages.
- (9) Master and CM Pressure Gages.
- (10) Dead Weight Tester calibrated weights.
- (11) McBeth Densitometer Model 301; the working kodak density step table and the reference NBS step tablet.
- (12) Ultraviolet Light (black light) Model B-100, and Ultraviolet Meter, SN-5662, used for calibration of black light.
- (13) Ultrasonic Tester Immersion Unit Magnaflux, Model PS-902, the manual ultrasonic tester Branson Model 301, and various ultrasonic transducers.

d. Discussions with cognizant personnel.

3. Findings

a. Deviations from Commitments

See Enclosure, Item A. (During the inspection, the vendor completed immediate corrective action, but did not indicate steps to prevent recurrence.)

b. Unresolved Item

Powell Specification WPEC 2/103, Revision 0 dated August 1, 1977, requires that each furnace employed for heat treatment, shall be subject to a furnace temperature uniformity survey

once every two (2) calendar years minimum, by subcontracted outside source. During examination of furnaces numbers 5550, 5437, 5784, 5533 and 5777 in Plant 2, the inspector was informed that temperature surveys had not been run on these furnaces, but that contracting of this service was in process. Review of Powell Purchase Order #4733-2 showed the contract had been awarded. This item remains unresolved pending completion of the survey and its verification during a subsequent NRC inspection.

E. Testing of Completed Products

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with applicable NRC and ASME Code requirements.

- a. A written system has been established to assure that final parts inspection, assembly, pressure tests, and functional tests are controlled in accordance with applicable procedures, specifications, and drawings.
- b. Final inspection of parts, final assembly, pressure tests and functional tests are performed in accordance with approved procedures, instructions, specifications or drawings.
- c. The results of tests are documented and reviewed for acceptability.
- d. The test equipment is calibrated where required.
- e. The assembling, tests and inspections are performed by qualified personnel.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual Article 6, paragraphs 6.2.2 "Assembly" and 6.3.1 "Testing" to verify that adequate controls for final inspection, assembly and testing of completed products are documented.

- b. Review of the approved Powell Specification WPTS 2/803, Revision 1 "Pressure Testing for compliance with Section III of ASME B&PV Code," and WPTS 2/806, Revision 0, "Performance Testing for Air Cylinder Operated Valves" to verify that these procedures (used on the following observed hydrostatic tests of a completed valve in one case, and on a combination hydrostatic and cyclic test on another completed valve) prescribed systems for these tests which were consistent with the commitments of the QA program.
- c. Observation of the hydrostatic test of a 24" 3051 W. E. Globe Valve Order ASO-113C using procedure WPTS 2/803, and review of the controlling: Assembly Router and Test Procedure-Data Sheet, to verify that the test was conducted and the results were recorded in accordance with the prescribed procedure by qualified personnel.
- d. Observation of the combined cyclic and hydrostatic pressure tests of an air cylinder operated valve for Order ASO-804C using procedures WPTS 2/803, Revision 1 and WPTS 2/806, Revision 0, and review of the controlling Assembly Router and Test Procedure - Data Sheet, to verify that the test was conducted and the results were recorded in accordance with the prescribed procedures by qualified personnel.
- e. Observation of the calibration status of the pressure gages used for the above tests, to verify that the gages were calibrated.
- f. Observation of the Bonded Storage area for storage of finished nuclear CM valve components and discussions with the Bonded Area Inspector with regard to final inspection and assembly release of nuclear valves, to verify that: storage, final inspection and assembly release of parts were performed in accordance with the QA program.
- g. Observation of a completed valve held for final dimensional inspection, and review of the related Assembly Router, Drawings, Material Specification Sheet, and Critical Dimension Sheet, for Order ASO-118C, Figure 19051Y; to verify that all of the completed assembly operations were properly identified and signed or stamped for acceptance.
- h. Discussions with cognizant personnel.

3. Findings

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

F. Exit Interview

1. The inspectors met with management representatives denoted in paragraph A, at the conclusion of the inspection on July 28, 1978.
2. The following subjects were discussed:
 - a. Status of corrective action for previous inspection findings.
 - b. Failure to have performed temperature uniformity surveys on the heat treatment furnaces.
 - c. Failure to have fully implemented the calibration requirements for four (4) different types of measuring and/or testing devices.
 - d. Failure to properly document inspector training sessions.
3. The manufacturer's representatives were asked to formulate the corrective action response to deviations in accordance with the three (3) conditions identified in the inspection report cover letter.
4. Management's comments were generally related to clarification of the findings.

DETAILS SECTION II

(Prepared by Ross L. Brown)

A. Persons Contacted

V. Bauer, Engineering Document Control Clerk
G. W. Feldkamp, Sr., Assistant Chief Engineer
W. C. Hasselbusch, NDE Supervisor
*E. J. Hoeffler, Jr., Assistant Manager of QA
D. E. Joeheak, Draftsman
*H. Knock, Manager of QA
J. F. Loftus, Corporate Chief Engineer
D. W. Mowery, Sr., Manager of Technical Service
R. J. Ross, NDE, Level III
*E. E. Winterfeldt, Corporate Manager of QA and Technical Service
*R. J. Witteride, Chief Inspector

*Attended Exit Interview.

B. Design Control

1. Objectives

The objectives of this area of the inspection were:

- a. To ascertain that procedures have been prepared and approved by the vendor to prescribe a system for design process management which is consistent with the commitment.
- b. To ascertain that procedures have been prepared and approved to prescribe a system for design verification which is consistent with the commitments.
- c. To ascertain that procedures have been prepared and approved by vendor to prescribe a system for design document control which is consistent with the commitments.
- d. To determine that the design control procedures are being properly and effectively implemented by the vendor or contractor.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. The review of the Wm. Powell Co. (WP) Quality Assurance Manual (QAM) Articles 2 and 3.
- b. Review of the customers Purchase Order 9645-M-242.0, Revision 0 through 23.
- c. Review of the customer design and technical specifications (two (2) documents).
- d. Review of the WP customer document distribution control log.
- e. Review of one miniature (drawing) Revisions 0 and 3.
- f. Review of one materials list Revisions 0 and 3.
- g. Review of one design analysis report (stress).
- h. Review of document control log book.
- i. Review of one Engineering data sheet.
- j. Review of one drawing and material list.
- k. Review of four (4) customer letters of document approvals.
- l. Review of two (2) document requisition slips.
- m. Review of six (6) recall reply slips.
- n. Review of Engineering Procedure "Nuclear Valve Training/ Review Program.
- o. Review of six (6) controlled document receipt forms.

3. Findings

No deviations or unresovled items were identified in this area of the inspection.

C. Audits

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with the QA Manual and applicable NRC and ASME Code requirements:

- a. A written system has been established to assure that audits (internal and external) are performed and controlled in accordance with applicable codes to verify compliance with all auditable aspects of the QA program.
- b. Planned and periodic audits are performed in accordance with written procedures or checklists by qualified personnel not having direct responsibilities in the areas being audited.
- c. Audit results are documented and reviewed by management having responsibility in the area audited.
- d. Followup action, including reaudit of deficient areas, is taken where indicated.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the WP Quality Assurance Manual, Revision 3, Article 10.
- b. Review of the WP internal audit procedure.
- c. Review of 1977 and 1978 audit schedule (internal and external).
- d. Review of ten (10) audit checklists.
- e. Review of three (3) internal audit reports.
- f. Review of three (3) followup internal audit reports.
- g. Review of six (6) auditor's qualification.
- h. Review of two (2) QA Manager's monthly Quality Assurance Summary Report to upper management with copies to each department manager.
- i. Review of four (4) external audit reports including one reaudit.
- j. Review of Approved Controlled Material Suppliers List to verify external audit schedule.
- k. Review of external audit checklist.

1. Review of training session records for four (4) hourly auditors.

3. Findings

No deviations or unresolved item were identified in this area of the inspection.

- D. Orientation and Training

1. Objectives

The objectives of this area of the inspection were to verify that the following items were controlled in accordance with the QA Manual and applicable NRC and ASME Code requirements:

- a. A written system has been established to assure that indoctrination training of personnel performing activities affecting quality is implemented in accordance with applicable codes.
- b. Appropriate written agenda are used.
- c. Records of training sessions agenda and attendance are maintained.
- d. The agenda includes subject matter adequate to provide an understanding of the general and detailed aspects of the QA program, codes, standards and applicable technical disciplines.
- e. The instructors are suitably qualified.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of WP QA Manual, Revision 3, Articles 1 and 8.
- b. Review of the WP written practices.
- c. Review of three (3) training procedures.
- d. Review of orientation and training schedule.
- e. Review 1977-1978 training session attendance lists.

- f. Review of three (3) training sessions class agenda.
- g. Review of four (4) engineering personnel training records.
- h. Review of the indoctrination records for the Corporate Chief Engineer and Manager of Engineering Service.
- i. Review of Training Program Outline for Inspectors PS-114.1.
- j. Review of the nondestructive testing personnel qualification lists (Level I, II, and III).
- k. Review of Level I, II and III examination question.
- l. Review of internal and external auditors authorization.

3. Findings

a. Deviation

See Enclosure, Item B.

b. Unresolved Items

None.