

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

Report No. 99900080/80-01

Program No. 51300

Company: Copes Vulcan, Incorporated
Post Office Box 577
Lake City, Pennsylvania 16423

Inspection Conducted: August 11-14, 1980

Inspector: I. Barnes 9-12-80
for R. E. Oller, Contractor Inspector Date
Components Section II
Vendor Inspection Branch

Approved by: I. Barnes 9-12-80
I. Barnes, Chief Date
Components Section II
Vendor Inspection Branch

Summary

Inspection on August 11-14, 1980 (99900080/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B criteria, and other NRC requirements including: action on previous inspection findings, manufacturing process control, welding control, qualification of NDE personnel, and follow-up on a 10 CFR 50.55(e) report regarding Sequoyah Units 1 and 2. The inspection involved 25 inspector hours on site.

Results: In five (5) areas inspected, no deviations or unresolved items were identified. The following was identified.

Followup on TVA 10 CFR 5.55(e) Report Involving Incorrect Weights for Two (2) Copes Vulcan Valves Furnished by Westinghouse for Sequoyah Units 1 and 2.

On February 11, 1980, TVA made a final report that two (2) Copes Vulcan Inc. (CVI) valves furnished by Westinghouse (W) for Sequoyah 1 and 2 safety related systems had an actual weight of 405 pounds while the CV drawing showed a weight of 240 pounds. The erroneous valve weight could have resulted in installed supports which were inadequate to perform their required safety functions. A rerun of the piping system load analysis using the corrective valve weight and application of the resulting new loads in support calculations demonstrated the adequacy of the existing supports.

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The followup inspection at CVI established that the discrepancies in weight were due to variations in calculational techniques. CVI has recalculated the weights and centers of gravity, based on actual weights of valves identical to the Sequoyah 1 and valves. This information has been transmitted to W. W is compiling a list of all CVI valves requiring recalculated weights. Other CVI customers have requested recalculated valve weights. CVI is supplying this information on a case by case basis as requested. (Details Section paragraph G.)

DETAILS SECTIONA. Persons Contacted

P. Davis, Welding Engineer
J. Gliifford, Sales Engineering Coordinator
*R. Lawson, Director of Engineering
N. Mattson, Manager of Contract Engineering - Valves
*D Mays, Quality Control Manager
*P. Peoples, President
*E. Piolet, Supervisor of QC Engineering
J. Reed, Manager of Design
C. Roney, Maintenance Foreman
J. Schreiber, Welding Foreman

*Attended the exit meeting.

B. Action on Previous Inspection Findings

1. (Closed) Deviation A (Report 79-01): Failure to perform and document nondestructive testing of lifting hooks every six (6) months and a monthly visual inspection of cables, belts, and slings and eyebolts in accordance with procedure No. 61-5.1.1. The NRC inspector found that in accordance with Copes Vulcan response letter dated August 8, 1979 that Manufacturing Procedure No. 61-5.1.1 was revised on 8/7/79 to include a new frequency of semi-annual inspection of cables, slings, belts, hooks, and eyebolts. Review of the Maintenance Departments records of inspection showed corrective action was implemented for the above lifting devices by performing semi-annual inspections since June 1979. Further review showed that preventive action was implemented by including the above items in the internal audit performed on July 2, 1979 and at frequent occasions during the period of January through August 8, 1980.

C. Review of Vendor's Activities1. Objective

The objective of this area of the inspection was to assess Copes Vulcan's (CV) nuclear valve manufacturing activities and their impact on future NRC inspections.

2. Method of Accomplishment

The preceding objective was accomplished by:

- a. Discussions with cognizant personnel.

- b. Review of the CV's following ASME Certificates of Authorization:
 - (1) No. N-1542 "N" symbol for Class 1, 2, and 3 valves.
 - (2) No. N-1843 "NPT" symbol for Class 1, 2, and 3 valve parts and appurtenances.
- c. Review of the different customer specifications for control valves consisting of a C. F. Braun Specification 400-25, Revision 4 covering valves for TVA's Hartsville and Phipps Bend sites, and a Westinghouse Equipment Specification No. G-678844, Revision 2 applicable to valves for several sites including Shearon Harris Units 1, 2, 3, and 4, Byron Station, Braidwood Units 1 and 2, and Marble Hill Units 1 and 2.
- d. Review of a list of current in-process valve orders.
- e. Observations of activities in various shop areas such as receiving machining and valve assembly.

3. Findings

- a. Within this area of the inspection, no deviations or unresolved items were identified.
- b. Other Findings - Comments
 - (1) The majority of commercial nuclear valve supplied by CV are control valves.
 - (2) CV hold; valid ASME "N" and "NPT" symbols authorizations. Both of these authorizations expire on August 19, 1983.
 - (3) The in-process work load on domestic commercial nuclear valves is low.

D. 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 procedure No. 1-6.07, Revision 9, "Operation and Route Sheet."
- b. Observation of 13 ASME III Valve bonnets in the machining process for Job No. 20-95407, and review of the accompanying parts Operation and Route (O&R) sheets (travelers) and QC Inspection Point tags for inclusion of required information and signoffs by CVI personnel.
- c. Observation of four (4) ASME III valve bonnets in the machining process for Job No. 20-95413, and review of the accompanying O&R sheets and QC Inspection Point tags for required information and signoffs.
- d. Observation of an assembled valve, shop order Item 4-2, Job No. 20-95397, and review of the accompanying Assembly Route (AR) sheet (traveler) for required information and CVI personnel and Authorized Nuclear Inspector (ANI) signoffs.
- e. Review of 35 O&R sheets for recently completed ASME III valve parts on Job. No. 20-95407 for parts such as stems, locking pins, spring rings, bushings, shield plates, retaining rings, cages, plugs, bonnets and bodies for required information and signoffs.
- f. Review of six (6) Assembly Route (AR) sheets for completed ASME III valves on Job No. 20-95405 for required information and signoffs.
- g. Review of 30 O&R sheets for completed ASME III valve parts for Job No. 20-95405 for required information and signoffs.

- h. Review of six (6) AR sheets for completed ASME III valves on Job No. 20-95399: for required information and signoffs.
- i. Review of Manufacturing Procedure No. 1.2.187, Revision 10, "Assembly of D-100 Valves and Actuators."
- j. Discussions with cognizant personnel.

3. Findings

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

E. Welding Control

1. The objectives of this area of the inspection were to verify that the following activities were controlled in accordance with applicable NRC and ASME Code requirements.
 - a. A system has been established to assure that welding is controlled in accordance with the applicable codes.
 - b. The welding procedure specifications (WPS) used in production welding are prepared, qualified and controlled in accordance with the QA program.
 - c. That welding materials purchase, acceptance, storage, issuance and use are controlled and documented in accordance with detailed procedures.
 - d. The welders are qualified in accordance with the ASME code.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual procedure No. 1-6.09, Revision 7, "Control of Welding and Hardsurfacing."
- b. Review of the following approved production welding procedure specifications (WPS) and the related procedure qualification records (PQR):
 - (1) WPS No. 10-181, Revision 0, for SMAW-Manual; joining base materials of P-1, Gr.1 to P-8, Gr.1, and PQR No. 21.

- (2) WPS No. 12-153, Revision 0, for SMAW-Manual, joining base materials of P-1, Gr.1 to P-5, Gr. 2, and PQR No. 24.
 - (3) WPS No. 10-112, Revision 0, for SMAW-Manual, joining base materials of P-1, Gr.2 to P-1, Gr. 2, and PQR No. 6.
 - (4) WPS No. 20-881, Revision 0, for GTAW Manual, joining base materials of P-8, Gr.1 to P-8, Gr. 1, and PQR No. 38.
 - (5) WPS No. 50-801, Revision 0, for FGW (Oxyacetylene)-Manual for hardsurfacing of P-8, Gr.1 base material with Stellite, and PQR No. 16.
- c. Review of approved Manufacturing Procedure No. 61-5.2.1, Revision 3, "Control of Coated Electrode Drying Oven."
 - d. Observation of the locked welding materials storage and distribution facilities including ASME Section III coated and bare welding rod materials.
 - e. Observation of the calibration and physical status of three (3) ASME III welding rod hot ovens, including the rod therein, located in the above facilities.
 - f. Examination of a "Weld Rod Inventory Log", and a "Weld Material Distribution Log."
 - g. Observation of stored test "Mock-up" plate material used in the qualification of procedures and welders.
 - h. Review of QC approved records of welder performance qualification and certification for nine (9) welders.
 - i. Review of welder's qualification continuity records entitled "Welder Qualification Retention Log" covering the period of January through June, 1980."

3. Findings

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

F. Qualification of NDE Personnel

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 measures to control the qualification of nondestructive examination (NDE) personnel has been documented.
- b. The above system has been implemented such that the subject personnel are properly qualified in accordance with NRC, ASME Code and the manufacturer's requirements.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the QA Manual procedure No. 1-6.08, Revision 6, "Indoctrination and Training of Personnel," paragraph 4.0, "Nondestructive Examination."
- b. Review of Procedure No. 50-5.27.22, Revision 5, "SNT-TC-1A Nondestructive Testing Personnel, Certification Procedure on Requirements for Training, Examination and Certification (Liquid Penetrant)."
- c. Review of Procedure No. 50-5.27.25, Revision 1, "Maintenance of Personnel Eye Examinations."
- d. Review of records of SNT-TC-1A qualification, certification and eye examination for five (5) CVI Level II Liquid Penetrant (PT) personnel; one (1) L-III Examiner in PT, and a subcontractor L-III Examiner in the NDE techniques of MT, PT and RT.

3. Findings

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

G. Followup on 10 CFR 50.55(e) Report by TVA Concerning Two (2) Air Operated Copes Vulcan Valves Furnished by Westinghouse For Sequoyah Units 1 and 2

1. Introduction

On January 1, 1980, by telephone report and on February 11, 1980, by written report, the NRC was notified by Tennessee Valley Authority pursuant to 10 CFR 50.55(e) that two (2) air operated Copes Vulcan valves (Unit Tag No. 2-1A78 RE Location 9967 and 9985) were supplied by Westinghouse for Sequoyah Units 1 and 2. The valve weights were specified on the Copes Vulcan drawing as 240 pounds, whereas the actual

weight was approximately 405 pounds. The erroneous valve weight could therefore have resulted in installed supports which could be inadequate to perform their required safety functions. Corrective action was accomplished by rerun of the piping system load analysis using the correct valve weight. The resulting new loads were then applied in support calculations and the existing supports were found to be adequate.

2. Objectives

The objectives of this area of the inspection were to ascertain whether or not Copes Vulcan had:

- a. Performed an evaluation of the cause of the incorrect weights for the valves, including making an assessment of generic considerations relative to other nuclear power plant units.
- b. Assigned responsibility and implemented a plan of corrective action.

3. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussions with cognizant personnel.
- b. Review of a copy of TVA's telephone report dated January 11, 1980 to the NRC, and a written final report dated February 11, 1980, covering the Sequoyah 1 and 2 valve construction deficiency.
- c. Review of Westinghouse (W) Equipment Specification G-677422, Revision 1 dated 7-12-72, "Control Valves, Class I, II, and III of ASME Pump and Valve Code for Nuclear Power" for Sequoyah Units 1 and 2, and the referenced W Drawing No. 271C096 "Standard Drawing Format for Air-Operated Valves," to determine what valve weight data was required by W for the Sequoyah valves.
- d. Review of Westinghouse P. O. 546CC187021-BN dated 1-30-74, Specification Sheet 706, Revision 0, for Items 6 and 7, Locations Nos. 9967 and 9985 to verify the identification of the Sequoyah valves as indicated by CVI 2IA78RG instead of the TVA reported identity of 2IA78RE.
- e. Review of CVI Drawing L-170202, Revision 3 dated 1/24/80, "Model D-100-160 Operator, 2" Class 1500 A.N.S.I. STD Valve Assembly," to verify the Sequoyah recalculated valve weight of 345 ± 10% lbs.
- f. Review of a CVI "Document Submittal" list dated 4-22-80 to W for 42 Sequoyah valve drawings covering recalculated valve weights and center of gravities.

- g. Review of a CVI supplemental "Document Submittal" list dated 5-5-80 to W for eight (8) additional Sequoyah valve drawings covering recalculations.
- h. Review of CVI letters dated April 22, 1980 and April 24, 1980 to W for CVI Job Nos. 95162 and 95166, Alabama Projects, covering recalculation of valve weights and center of gravities.
- i. Review of CVI letter dated June 20, 1980, to W concerning CVI's method of recalculating valve weight and center of gravities, and the basis for providing this service.
- j. Review of a CVI drawing transmittal letter dated 6-11-80, to Gilbert Associates, Inc. listing the CVI valve drawings for the R. E. Ginna unit for which valve weights and centers of gravity were added.
- k. Review of a CVI Telex, dated 4-29-80 to W providing weights and center of gravities for four (4) valve drawings for the North Anna Unit.
- l. Review of CVI Telex, dated 5-5-80 to W providing weights and center of gravities for four (4) valve drawings for Florida Power and Light Company's Turkey Point Unit.
- m. Discussions concerning the possible need for CVI to report the valve weight problem to the NRC OIE pursuant to 10 CFR Part 21 requirements.
- n. Observation of CVI's posted copy of: 10 CFR Part 21, Section 206 of the Energy Reorganization Act of 1974, and CVI's procedure for reporting Part 21 incidents.

4. Findings

- a. Within this area of the inspection, no deviations were identified.
- b. Other Findings - Comments

As a result of review of records and discussions with cognizant CVI personnel, the following information was obtained:

- (1) CVI indicated that the discrepancies in valve weights were due to variations in calculational techniques used by different engineers.

- (2) The W equipment specification G-677422 and Drawing No. 27C096 showed Sequoyah valve specification requirements for weight were for approximate weights only.
- (3) The Sequoyah valve weight discrepancies are being resolved by CVI's supplying Westinghouse with recalculated valve weights and center of gravity based on weights derived from actual weights of identical valves.
- (4) CVI indicated, Westinghouse is compiling a list of all previously supplied CVI valves which may require recalculated weights and center of gravities.
- (5) An evaluation of other CVI customer contracts was not made during this inspection with respect to purchase specification valve weight criteria and potential for similar discrepancies to those identified by TVA at Sequoyah. This activity will be performed at a followup inspection, in order that the generic aspects of the identified weight discrepancies can be fully assessed.

H. Exit Interview

1. The inspector met with the persons denoted in Paragraph A, at the conclusion of the inspection on August 14, 1980.
2. The following subjects were discussed.
 - a. Areas Inspected.
 - b. Action on the previously identified deviation.
 - c. Inspection findings identified in this report.
3. Managements questions related to the above subjects.