

UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Construction Inspection

IE Inspection Report No. 050-346/77-09

Licensee: Toledo Edison Company
Edison Plaza
300 Madison Avenue
Toledo, OH 43652

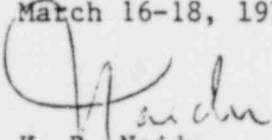
Davis-Besse Nuclear Power Station
Unit 1
Oak Harbor, OH

License No. CPPR-80
Category: B

Type of Licensee: PWR (B&W) 2772 MWt, 926 MWe

Type of Inspection: Special Announced at B&W Lynchburg

Dates of Inspection: March 16-18, 1977

Principal Inspector: 
K. R. Naidu

4/1/77
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: 
E. L. Jordan, Chief
Engineering Support Section

4/5/77
(Date)

8002050729

SUMMARY OF FINDINGS

Inspection Summary

Inspection of March 16-18, 1977, (Unit 1, 77-09): Selective review of supporting documents to assure that the original procurement and subsequent modifications to the Velan valves with Kieley-Mueller operators and the High Pressure Injection pump forced lube oil system, were in accordance with established procedures, specifications and applicable 10 CFR 50, Appendix B criteria.

Items of Noncompliance

None.

Licensee Action on Previously Identified Enforcement Items

Not reviewed.

Other Significant Items

A. Systems and Components

None.

B. Facility Items (Plans and Procedures)

None.

C. Managerial Items

None.

D. Deviations

None.

E. Status of Previously Reported Unresolved Items

None.

Management Interview

- A. The following persons attended the Management Interview at the conclusion of the inspection:

Babcock & Wilcox (B&W) Lynchburg

C. A. Armantrout, QA Engineer
H. Fires, Engineer, Stress Analysis
S. H. Klein, Manager, QA Engineering
J. A. Lauer, Project Manager
A. L. Mackinney, Manager, Quality Assurance Department

Toledo Edison Company (TECo) Toledo

E. M. Wilcox, Field Quality Assurance Representative

- B. Matters discussed and comments made on the part of the management personnel were as follows:

The inspector requested that B&W furnish TECo the following documents for NRC review at Davis-Besse site:

1. A Velan purchase order to Kieley-Mueller (KM) for the valve operators. (Paragraph 1.c.(1), Report Details)
2. Objective evidence such as inspection/audit reports to demonstrate that the original documents supporting KM certificates of conformance for KM operators, yoke material and replacement stems. (Paragraph 1.c.(2), Report Details)
3. Audit review of the documentation of those valves which were classified as essentiality Level III during procurement to determine whether the data packages are complete.

Subsequent to the inspection, B&W informed TECo in their letter BWT/QA-13 dated March 22, 1977 that the data packages of the subject valves were reviewed and determined that the valves with "Essentiality Level III" contain seismic qualifications and material certifications. The inspector has no further questions on this subject. (Paragraph 1.c.(3), Report Details)

4. Audit review of the test reports of those valves which were procured without specifying valve closure times to determine whether the closing times comply with Table 6-8 of the Davis-Besse Unit 1 FSAR.

Subsequent to the inspection, B&W in a letter BWT/QA-13 dated March 22, 1977, informed TECo that valve MU-HV38, a Seal Return Isolation Valve, had a closing time of 14.6 second which exceeded the prescribed 10-12 seconds closing time indicated in Table 6-8 of the FSAR, and that their NSS Design Unit evaluated the closing time and determined it adequate. The inspector has no further questions on this subject. (Paragraph 1.c.(4), Report Details)

5. Additional documents such as material certificates for the components used for the field modification of the High Pressure Injection pump forced lube oil system.

The B&W personnel stated that they would obtain the above documents and furnish them to TECo.

REPORT DETAILS

Persons Contacted

The following persons other than those listed under the Management Interview section of this report, were contacted during this inspection.

Babcock & Wilcox (B&W) Lynchburg

S. Funkhauser, Manager, Stress Analysis
L. P. King, Manager Fluid Systems Engineering
S. A. Lamana, Engineer, Fluid Systems

Results of Inspection

1. Review of B&W QA Records

a. Inspection Objectives

To ascertain by review of supporting documentation that the following components were designed, fabricated, procured and modified in accordance with specifications, applicable 10 CFR 50, Appendix B requirements and to assure that they will satisfactorily perform in their intended services.

- (1) Seven (7) valves manufactured by Velan with pneumatic operators supplied by Kiely-Mueller, identification numbers MU-HV 3, 33, 38, 66A, 66B, 66C and 66D.
- (2) Two (2) high pressure injection pumps including modifications to the forced bearing lubrication system performed in the field. (Field Change #100)

b. Inspection Objective Accomplished By:

- (1) Review of the following correspondence.
 - (a) B&W letter BWR-130 dated October 1, 1976, to TECo stating that Kiely-Mueller supplied cast iron yokes for the valve operators instead of cast steel; that replacement cast steel yokes would be supplied.
 - (b) B&W letter BWT-1429 dated November 17, 1976, to TECo stating that B&W supplied valves were not properly supported during installation; suggested that Bechtel review the installation of these valves and operators to ensure that they are supported as required by the vendor supplied drawings.

- (c) B&W letter dated November 18, 1976, to the site Manager enclosing the packing list for Field Change #100.
- (d) B&W letter BWT-1442 dated December 13, 1976, to TECo stating that seismic analysis reports on valves and operators for the valves in question including material certifications will be available by December 22, 1976.
- (e) B&W letter BWT-1452 dated January 12, 1977, to TECo explaining the concerns related to inadequate documentation on Field Change #100 and seismic calculations for the 7 valves.
- (f) TECo letter to B&W dated January 13, 1977, conveying excerpts of NRC/TECo telecon dated January 11, 1977.
- (g) B&W letter BWT-1456 dated January 14, 1977, to TECo answering concerns expressed in the TECo letter dated January 11, 1977.
- (h) B&W letter BWT-1461 dated January 18, 1977 to TECo replying to TECo's concerns relating to the forces on the actuator stem.
- (i) TECo letter TBW-439 dated February 1, 1977, answering B&W letter BWT-1461 dated January 18, 1977, repeating their concern that the diameter of the threads of the actuator stem to the valve stem was not capable of withstanding the calculated 10,000 pound force.
- (j) B&W letter BWT-1473 dated February 9, 1977, clarifying the subject matter in letter BWT-1452 dated January 12, 1977.
- (k) B&W letter BWT/QA-8 dated February 9, 1977, to TECo stating that the documents certifying the components for the FC #100 Rev. 3, modification would be sent to the site.
- (l) TECo letter TBW-441 dated February 15, 1977, to B&W requesting new seismic documentation to cover the change to the stem coupling (valve stem to actuator stem).

- (m) B&W letter BWT-1486 dated February 28, 1977, to TECo stating that both cast iron and cast steel yokes were considered in the seismic analysis; the conservative value for the modulus of elasticity for cast iron yokes was used in the calculations and that correcting the error would be inconsequential.
 - (n) B&W letter BWT-1465 dated January 26, 1977, to TECo correcting certain statements made in their earlier letter BWT-1442 dated December 13, 1976.
- (2) Review of the specifications for the following:
- (a) Basic valve, 1025/0469 dated April 28, 1969.
 - (b) Motor operator, 1027/0369 dated March 10, 1969.
 - (c) General for auxiliary equipment, CS-3-106 dated June 14, 1968.
 - (d) Quality Assurance, 1152/1069 dated October 10, 1969.
 - (e) Seismic requirements, 1107/NSS-14 dated April 24, 1970.
 - (f) Centrifugal pumps for safeguard service, 1130/NSS-14/1069.
- (3) Review of the following Purchase Orders:
- (a) PO #02261 4LS dated September 14, 1970, for the valves.
 - (b) PO #2260 ILV dated September 10, 1972, for the HPI pumps.
 - (c) Change Order #13 to implement FCN for Forced Lube Oil modification system.
- (4) Review of the following sections of B&W QA manual/QA specifications - 19A-N.
- (a) Procedure 19A-3A dated June 5, 1970.
 - (b) Section 3.3-B&W-NPGD Procedure - Nuclear Systems Engineering Design Document Check Procedures (1G (15)2 - 5.7.1) dated October 19, 1970.

- (c) Procedure 19A-6A Control of Purchased Materials Equipment and Services Evaluation of subcontractors and service.
 - (d) Procedure 19A-6B, Periodic Supplier Audit.
 - (e) Procedure 19A-6C, Source Surveillance.
 - (f) Preparation of QA Data Packages.
- (5) Review of the following B&W Inspection Reports (IR) of Velan Valves.
- (a) IR #02: Valve MU-HV38 - Tests were witnessed on March 27, 28 and 29 for hydro, seat leak, operational and minimum wall thickness.
 - (b) IR #03: Valve MU-E7 66A, B&D - hydro operational, visual, dimensional, minimum wall thickness were inspected. RT of the disc reviewed. All three valves were found satisfactory.
 - (c) IR #04: Valve MU-HV66C - hydro, operational, completed visual, dimensional, minimum wall thickness were inspected. Reviewed RT film on the disc.
- (6) Review of the following B&W audits of Velan Engineering Company, Montreal, Canada.
- (a) Audit Report dated September 23, 1970.
 - (b) Audit Report dated December 14, 1970.
 - (c) Audit Report dated January 27, 1972.
 - (d) Audit Report dated February 9, 1972.
 - (e) Audit Report dated February 11, 1972.
 - (f) Audit Report dated August 30, 1972.
 - (g) Audit Report dated January 14, 1974.
- (7) Discussions with B&W personnel.

c. Inspection Findings

- (1) A Velan purchase order to KM for the valve operators was not available to substantiate B&W statement (Paragraph 2, BWT-1456 dated January 14, 1977) asserting that Velan attaches the B&W equipment specification to their purchase order to their vendor KM.
- (2) Documents were not available at B&W to demonstrate that B&W reviewed original documents supporting the KM certificates of conformance (COCs) for the KM operator, the yoke material and replacement stems.

Neither the audit reports nor the inspection reports referenced above, indicated that the above (l.c.(1) and l.c.(2)) were verified as required by B&W QA Program.

B&W stated that they would review the original documents supporting the COCs.

- (3) The valve tabulation sheets attached to the drawings/specifications 1025/049 dated April 28, 1969, indicated that several valves such as MU-HV4, MU-HV10A, 10B which are necessary for operation during a seismic event (as indicated in Paragraph 1, in B&W letter #1442 dated December 2, 1976) were classified as "Essentiality Level III" which does not require the vendor to follow a QA program.
- (4) B&W engineering Change No. SC 119 covered the revision of the Valve Tabulation Sheet to reflect the change from "Electrical Motor Operated" control to piston operated solenoid controlled valves even though the change underwent the prescribed review, as indicated by the required signoffs, several items such as cycle time, make, model and type for operator were not included in the data sheets. The inspector inquired how B&W planned to verify that the procured valves met the closing times specified in Table 6-8 of the FSAR.
- (5) The design change documents for the Field Change Notice (FCN) #100 including subsequent revisions contained the necessary design review sign offs of B&W Lynchburg personnel. It was stated that eventhough B&W Canada was the original designer and manufacturer of the HPI pump, B&W Lynchburg reviewed and approved the FCN maintaining liason with the

manufacturer; the components were supplied by B&W Canada. The seismic reports on the HPI pump and the components used for the FCN #100, Rev. 1 through 3, were considered complete. However, the site QA documents require to be upgraded to include all applicable documents such as material certifications.