UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Construction Inspection

IE Inspection Report No. 050-346/75-15

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

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

License No. CPPR-80
Category: B

Type of Licensee: B&W PWR 871 MWe

Type of Inspection: Routine, Unannounced

Dates of Inspection: July 29 - 31, 1975

Principal Inspector: K. R. Naidu — 8/12/75 (Date)

Accompanying Inspectors: C. M. Erb — 8/18/75 (Date)

J. C. LeDoux

Other Accompanying Personnel: None

Reviewed By: for J. C. LeDoux — 8/19/75 (Date)
Senior Inspector
Construction and Engineering
Support Branch

SUMMARY OF FINDINGS

Inspection Summary

Inspection of July 29 - 31, (75-15): Special piping. Selectively reviewed piping installed relative to the decay heat removal system and the let-down system, equipment specifications, and documentation. Review included selective examination of QA documentation for seismic Class 1 piping installed by Grinnell Corporation (Grinnell), observation of welding operations, selective review of hanger installation, and examination of discrepancy reports and corrective action taken on them. One (1) item of noncompliance was identified relative to the protection of installed safety related items.

Enforcement Action

A. Items of Noncompliance

1. Violations

None.

2. Infractions

Contrary to 10 CFR Part 50, Appendix B, Criterion XIII, construction scaffolding was found resting on the stem of decay heat removal pump discharge valve No. DH44, and the bonnets of bypass line valves B59-4 and B59-5 were being supported by wire fastened to line 10BHCC-50. (Report Details, Section I, Paragraph 2)

This infraction was identified by the IE inspectors and had the potential for causing, or contributing to, an occurrence with safety significance.

Licensee Action on Previously Identified Enforcement Matters

Not applicable for this inspection.

Other Significant Findings

A. Systems and Components

Unresolved Items

1. Documentation is required which will verify that motor operators for valves purchased by either Bechtel Corporation (Bechtel) or Babcock & Wilcox Company (B&W) will meet the

specified containment radiation levels. (Report Details, Section I, Paragraphs 3.b and 4.b)

2. Verification is required that the valves supplied to Bechtel Specifications No. 7749-V-213A and No. 7749-V-213B were indeed designed and manufactured for 129°C temperature and 45 psig. (Report Details, Section I, Paragraph 3.a)

3. A procedure to identify and document the installation of temporary pipe hangers is required in order to: (a) distinguish them from permanent hangers, and (b) to verify that they have been removed after the completion of construction activities.

B. Facility Items

Not applicable for this inspection.

C. Managerial Items

Not applicable for this inspection.

D. Noncompliance Identified and Corrected by Licensee

Not applicable for this inspection.

E. Deviations

None.

F. Status of Previously Report Unresolved Items

Not applicable for this inspection.

Management Interview

A. The following persons attended the management interview at the conclusion of the inspection.

Toledo Edison Company (TECO)

L. E. Roe, Vice President - Facilities Development
E. G. Novak, General Superintendent - Power Engineering and Construction
J. D. Lenardson, Quality Assurance Manager
E. A. Wilcox, Field Quality Assurance Specialist
C. T. Daft, Quality Assurance Engineer

Bechtel Corporation (Bechtel)

C. L. Huston, Field Construction Manager
J. D. Heaton, Project Quality Control Engineer
P. R. Britnell, Project Quality Assurance Engineer
P. P. Anas, Project Engineer - Gaithersburg
C. E. Bald, Manager - Project Operations (Gaithersburg).

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

1. The inspector stated that conditions noted during the inspection indicated that adequate precautions to protect installed safety related items had not been taken. This was considered an apparent item of noncompliance of 10 CFR Part 50, Appendix B, Criterion XIII, requirements. (Report Details, Section I, Paragraph 2)

2. The inspector stated, and the licensee agreed, that there was no documentation that the electric motor operators used on valves installed inside the containment were certified to meet specified radiation and high temperature environment as specified in the FSAR. The licensee stated that corrective action has been initiated. Results of the corrective action will be reviewed during a subsequent inspection. (Report Details, Section I, Paragraphs 3.b and 4.b)

3. Relative to the subject of verifying that the necessary correct documentation is being received onsite for materials purchased, the inspector discussed apparent lack of guidance to the field QC personnel. The licensee stated that he will review this matter and arrange to provide necessary training to the construction field QC personnel.

4. The inspector stated that specifications for valves 213A and 213B appeared to contain a discrepancy in the temperature and pressure values. The A-E's representative handed the inspector copies of two letters written on the same day, addressed to the respective manufactures, informing them of the corrections and further stated that necessary verifications would be made, to ascertain from the vendors, that the valves would meet the revised criteria. The inspectors stated that the verifications would be reviewed during a subsequent inspection. (Report Details, Section I, Paragraph 3.a)

5. The inspector stated that, on July 30, 1975, and again on July 31, he observed two welders who were working on a 36" steam penetration weld discarding electrode stubs on the

floor of the scaffold. The licensee representative stated that such practice did not conform to their procedures. He said that further effort would be made to enforce segregation and retrieval of welding electrode stubs.

6. The inspector noted that a number of temporary supports and hangers had been installed. The temporary hangers could not be identified, except by the fact that documentation was not found in the files.

   The inspector stated that a positive means of identifying temporary supports or hangers requiring revision should be implemented. Metal tags could be used in this area.

   The licensee stated that a revised procedure for installation and inspection of hangers was in process. He stated that tagging of temporary hangers appeared to be desirable. The inspector stated that this item would be examined during a subsequent inspection.

7. The inspector asked whether unsage of a .005" lead screen between the films, when using radiographic double film technique, had been approved by Bechtel. The usual .010" lead screens were being used on the front and back of the films. The licensee stated that this practice had been approved by Bechtel.

8. The inspector stated that in at least two instances holes of hanger support plates appeared to have been enlarged by the use of flame cutting and inquired whether any directive was issued to the contractor since the previous inspection forbidding the use of flame cutting. The licensee's representative replied that a new procedure for hanger installation was under preparation and that this item would be addressed.

REPORT DETAILS

Section I

Prepared By: K. R. Naidu

Persons Contacted

The following persons, in addition to those listed in the Management Interview Section of this report, were contacted during this inspection.

Babcock and Wilcox Company (B&W)

W. R. Klingler, Project Manager
J. W. Marshall, Quality Control Supervisor

Results of Inspection

1. General

The inspection covered the piping and welding procedures, practices, and requirements of two randomly selected systems, i.e., decay heat removal and let-down systems. Neither of the systems were considered to be complete. Some of the piping spool pieces had not been installed. The majority of supporting equipment appears to have been installed.

2. Protection of Safety Related Items

During the inspection, the inspectors observed and brought to the licensee's attention the following conditions, that were noted in the auxiliary building, where some of the emergency core cooling system pumps were installed:

a. Construction scaffolding was found resting on the stem of decay heat removal pump discharge line valve No. DH44.

b. In the adjacent room, the bonnets of bypass line valves B59-4 and B59-5 were being supported by wire fastened to line 10BHCC-50.

c. A section of a 12" pipe was inadequately supported, due to the incomplete installation of seismic hanger 33C-GCB-7-H8. The bottom channel appeared to be in place, but the hanger rod support was not installed.

d. At the time of inspection, the coupling flanges between decay heat removal pump 1B and the motor were not adequately covered to prevent damage. Prompt, corrective action was taken on this item, and the assemblies were adequately covered the next day.

e. A section of hanger 40-HCC-34-H2 had been cut and left unrestrained. Though the hanger itself was not a safety related item, the free, unrestrained ends appeared to cause a potential hazard to other safety installed piping in the vicinity.

f. A set of stainless steel studs were found without proper identification lying on the floor of the pipe tunnel carrying the core flooding pipe to the reactor pressure vessel.

g. Holes of the support plate of hanger 33B-GC-B10-H15 (E61151) appeared to have been enlarged by the use of flame cutting.

The inspectors stated that these conditions were considered as unacceptable and appeared to be in noncompliance of the requirements of 10 CFR Part 50, Appendix B, Criterion XIII.

In this connection, the inspector stated that the site inspection personnel appeared to be inadequately trained to identify such deviations. Training would be useful because many field engineers have been recently transferred to the QC Department. The licensee's representative stated that he would review this with the contractor's management personnel.

3. Review of Valve Specifications

The following specifications were reviewed relative to the technical requirements as required in the Davis-Besse Unit 1 FSAR and for testing, and QA documentation.

M304 - Technical Specification Main Steam Isolation Valve Assembly

M213A - Technical Specification for Nuclear Gate Globe and Check Valves 2" and smaller.

MD213B - Design Specification for Nuclear Globe and Check Valves 1500 psi, 2" and smaller.

E11 - Technical Specification for Small Electric Motors

D36 - Technical Specification for Electric Wiring and Control.

M215 - Technical Specification for Nuclear Butterfly Valves.

M319 - Technical Specification for Ball and Butterfly Valves.

M222 - Design Specification for Containment Vacuum Relief Valves.

M314 - Design Specification Miscellaneous Nuclear Control Valves.

a. Incorrect Temperature and Pressure Valves

The inspector noted that in paragraph 7.4.1 line 4, of Bechtel Specifications 213A and 213B, the valves were required to be designed for 65.5°C temperature and ± 3 psig, and these appeared to be contrary to the values stated in table 7-4, page 7-87 of the D-B FSAR. The Bechtel project engineer (who was onsite during the inspection) verified this matter with his staff in Gaithersburg and informed the inspector that the specification was in error and issued letters to the vendors, I. C. Velan Montreal, Canada, and Leatherman and Company; Detroit, Michigan, informing them of the correct values which are 129°C temperature and 45 psig. The inspector expressed concern whether the valves which were already installed in the plant were, in fact, designed from the corrected temperature and pressure. The Bechtel project engineer stated he would obtain such verification from the vendors.

b. Documentation on Electric Motor Operators (Bechtel Purchase)

The inspector stated that, though Specification E11 for small electric motors was attached to Specification MD213B, the individual valve specification sheets did not appear to indicate the special requirements for electrical motor operators (EMO's) which would withstand high radiation and temperature without deleterious effects and operate under those conditions. Purchase orders for the valve operators were not available at the site, since the valve manufacturer purchased the EMO's directly from Limitorque. The inspection was unable to find documentation that the EMO's supplied were designed and manufactured with the same type of components used on those which successfully withstood high radiation and temperature conditions. The Bechtel representative stated that he would discuss this matter with the valve manufacturer to obtain verification and necessary documentation on the EMO's.

4. Review of Documentation on Equipment (B&W Purchase)

The inspector selectively reviewed the documentation on decay heat injection isolation valve HV 1B, PO item 14 of PO 0226141, decay heat pump and the motor.

a. Stem Material Specifications

The specification for the valves appeared to contain applicable criteria relative to materials and testing. Material, chemical, and physical certifications appeared to meet the applicable ASTM standards specified in the FSAR. The inspector noted that the stem conformed to ASTM A-461, Type 630, material instead of ASTM A-461, Type 460, as stated in table 5-19 on page 5-88 of the FSAR. The Bechtel representative stated that this was a typographical error, and the material should have been specified as ASTM A-461, Type 630, and that this item will be corrected in the next revision. The inspector determine from the ASTM Standards that specification for ASTM A-461 type 460 does not exist.

b. Documentation on EMO's

The inspector determined that certifications on the EMOs that it will withstand specified radiation levels without deleterious effects were not obtained. The Quality Assurance Data Sheet, which provides guidance on the certifications to be submitted by the vendor, did not mention such a certification requirement. The inspector reviewed the standard specification for remotely operated valves for auxiliary systems and determined that the data sheet for electric motor operators for valves in paragraph 1.2 stated that: "IEEE INSG/TCS SC-2, Equipment Qualification Testing Report Proposed Guide for Qualification Testing of Motors for Service in Nuclear Power Plant Engineering Features" was not applicable. However, on the same page, below the radiation level and life cumulative dosage, valves were furnished. The licensee stated that he will investigate this matter, to verify whether the EMO's supplied would meet the environmental conditions and, if affirmative, will obtain necessary documentation. This matter will be reviewed during a subsequent inspection.

c. Documentation on Residual Heat Removal Pump and Motor

The inspector selectively reviewed the documentation on the pump and motor and determined that the material, physical, and chemical certifications met the applicable ASTM standards.

However, the inspector noted that the specification indicated that the ambient temperture for the pump motor was 40°C, which appeared to be lower than the design temperature stated in table 7-4 on page 7-87, Revision 6, dated 1974, of the FSAR, Environmental Conditions for Instrumentation and Controls. The Bechtel representative referred the inspector to page 9-101, Revision 1, of the FSAR, which indicates the maximum design temperature in the emergency core cooling system rooms to be 104°F which appeared to comply with the 40°C ambient temperature.

REPORT DETAILS

Section II

Prepared By: C. M. Erb

Persons Contacted

The following persons, in addition to individuals listed under the Management Interview Section of this report, were contacted during the inspection

ITT-Grinnel Company (Grinnell)

D. Giguere, Quality Assurance/Quality Control Manager
T. Martin, Welding Engineer
W. Swift, Quality Control Engineer
H. Kindt, Piping Superintendent
P. Norman, Supervisor - Nondestructive Examination

Results of Inspection

1. Qualifications for Fabrications and Installation of Piping

Grinnell, who has contracted to manufacture and install most of the piping at the Davis-Besse site, has been issued the following ASME Code stamps for work onsite:

a. NA - January 7, 1974 - January 7, 1977

b. NPT - January 7, 1974 - January 7, 1977

c. N - March 4, 1974 - March 4, 1977

2. Main Steam System

The installation welds in the main steam system are nuclear Class 2 and were made by B&W from the generator to the first isolation valve. Grinnell performed the welding from this point to the turbine and also welded the safety valves into their header.

The main steam piping is made to the following specifications and and sizes.

Specifications	Size
ASTM A155, Grade KS-70	36' x 1.055
A-106-B	24" x Schedule 60 (.968)
ASTM A155, Grade KC-7	26" x .798 minimum wall
ASTM A155, Grade KC-70	33-5/8 x 2-3/8, safety valve header

The following welding procedures were used in installing the main steam and feedwater system. These procedures were qualified and properly signed off.

Procedure	Process	Remarks
1-04-2	Tungsten Insert Gas (TIG)	Open butt, 37½° level
1-41-2	TIG and Shield Metal Arc	J-prep with insert
1-01-1	Shield Metal Arc (SMA)	Fillets

The inspector examined one 36-inch weld in process, and found the welding was being performed in accordance with specification requirements. Since these welds are over 3/4" in thickness, they are preheated and stress relieved. The preheat is 200°F minimum, and the stress relief specified is 1100°-1250°F. The inspector examined the stress relief records for two welds and found them to meet specification requirements.

The Hartford Steam Boiler Insurance Company is the 3rd Party inspector for B&W, Grinnell, Chicago Bridge & Iron Company and Johnson.

The authorized inspector for TECO on piping is the Home Insurance Company.

3. Essential Service Systems, Piping and Valves

The inspector examined documentation and welds for the following stainless steel systems.

Identification	
33B-6	Three ground welds, Class 1
33B-19A	One weld unground
33C-HCB-2	Repaired and approved
B23-2	Velan Check valve
V20-4	Velan gate valve
33-C-13, Weld C-142	Three-inch HPCI
TE-33A-60	Weld SWE

Radiographs of several welds were examined, and the quality appeared to meet ASME Section III requirements.

4. Qualification of Welders and NDE Personnel

The inspector examined the welder performance qualifications and found them to be in order. There were three Level II radiographic inspectors and one Level III. The welding engineer is responsible for fit-up, alignment, and visual inspection of the weld. The NDE supervisor is responsible for radiography and penetrant test of the welds.

The inspector examined calibration records and found that the thermometers for the weld rod ovens were checked every six months, and stickers on the equipment verified this. The stress relief temperature recording devices were checked every six months using an L & N potentiometer.

A Sturdevant torque wrench, Model S1200-1, Serial No. 7084462, had been checked by TECO, and a tabulation of readings against the master wrench was available.

5. Hangers

The inspector noted an Audit Finding Report (AFR) made by the licensee in Grinnell.

QC-FF-109-St is the control document, but a revised procedure is in process. Hangers are not always available when pipe must be hung, which necessitates making and installing a temporary hanger. Any hangers which require revision must be redesigned or reanalyzed, and this can result in considerable loss of time in making the revised installation. It was recommended that temporary hangers be tagged as such and that every effort be made to minimize time loss between design (Bechtel and Grinnell) and availability of hanger hardware.