

UNITED STATES NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Construction Inspection

IE Inspection Report No. 050-346/76-25

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, Announced

Dates of Inspection: November 30, December 1, 2 and 14-16, 1976

Principal Inspector: *C. C. Williams*  
C. C. Williams

*2-1-77*  
(Date)

Accompanying Inspectors: *F. J. Jablonski*  
F. J. Jablonski

*2-1-77*  
(Date)

*K. R. Naidu*  
K. R. Naidu

*2-2-77*  
(Date)

*C. M. Erb*  
C. M. Erb

*2/2/77*  
(Date)

*D. W. Hayes*  
D. W. Hayes

*2-2-77*  
(Date)

Other Accompanying Personnel: U. Young Park, Ohio Power Siting  
Commission (December 1, 1976 only)

Reviewed By: *R. F. Heishman*  
R. F. Heishman, Chief  
Reactor Construction and  
Engineering Support Branch

*2/3/77*  
(Date)

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## SUMMARY OF FINDINGS

### Inspection Summary

Inspection on November 30, December 1 and 2, and 14-16, 1976 (76-25): Review of resolution of previously identified: (1) noncompliance and other unresolved matters, (2) reportable items per 50.55(e) and (3) IE Bulletins and Circulars. Review status of nonconformance reports, design changes and construction completion punch list items. Two items of noncompliance were identified regarding testing after modification, and correction of audit findings. One deviation was identified regarding design controls relative to electrical cable installed in raceways.

### Enforcement Action

#### Infractions

- A. Contrary to 10 CFR Part 50, Appendix B, Criterion XI, and the Toledo Edison Company Specification 7749-E-20, Section 16.3, 16.4 and 16.5, a test program was not established to perform tests to demonstrate that Class 1E battery chargers and regulated rectifiers would perform satisfactorily in-service, after extensive rework and modifications had been performed (Paragraph 2, Section III, Report Details)
- B. Contrary to 10 CFR Part 50, Appendix B, Criterion XVI and the Toledo Edison Company FSAR Chapter 17, Subsection 17.1.2.16, the licensee failed to ensure that adequate corrective action was taken by the Heating, Ventilating and Air Conditioning Contractor, Lumm-Irsay relative to deficient items identified in audit reports. (Paragraph 4.c, Section IV, Report Details)

### Licensee Action on Previously Identified Enforcement Items

- A. Borated Water Storage Tank Failure to Report (IE Inspection Reports No. 050-346/76-02 and No. 050-346/76-13)

The licensee's final report in accordance with 10 CFR 50.55(e), dated September 15, 1976, satisfactorily outlined the corrective action and provided measures for the redesign and repair of the borated water storage tank. Review of the repair records, QA/QC documentation and observation of the repair activity (in process and final) showed that all commitments were met. This matter is resolved.

B. Inadequate Inspection (IE Inspection Report No. 050-346/76-18)

The corrective action, as outlined in the Toledo Edison Company (TECO) letter of November 24, 1976, in response to Region III letter and report dated October 20, 1976, was determined to be adequately documented; however, no action had been implemented. This matter will be reviewed further during a subsequent inspection.

C. Inspection Status (IE Inspection Report No. 050-346/76-18)

The corrective action, as outlined in the TECO letter of November 24, 1976, in response to Region III letter and report dated October 20, 1976, was determined to be inadequate. The licensee was so notified in Region III's letter dated December 15, 1976.

D. Sealant Material Specification Requirements (IE Inspection Reports No. 050-346/76-13, Item A3, and No. 050-346/76-18, Paragraph 2.a)

In reference to boot material, silicon rubber specification and material certifications, the corrective action has been completed and adequately documented. Corrective action relative to the PCA certification remains open. (Paragraph 1, Section II, Report Details)

E. Qualification, Indoctrination and Training Records and Requirements (IE Inspection Reports No. 050-346/76-13 and No. 050-346/76-18)

Review of records and discussion with Bisco and TECO QA/QC personnel resulted in the finding that qualification and training records are available and acceptable for both QA/QC and production personnel. This matter is closed.

Licensee Action on Previously Identified Deviations

A. Electrical Fire Barriers (IE Inspection Reports No. 050-346/76-02 and No. 050-346/76-18)

This matter remains open until all criteria has been finalized by the licensee and accepted by the Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation. At that time, fire barrier installations will be verified by IE inspectors. To date, no fire barriers have been installed. (Paragraph 6.d., Section III, Report Details)

B. Inappropriate Specification Change (IE Inspection Report No. 050-346/76-18)

This item involves support of vertical run electrical cable within conduit. The licensee's position as stated in the TECO letter of November 24, 1976, is acknowledged. Region III's position as stated in the referenced report remains unchanged. This matter has been referred to IE:HQ for resolution as stated in the Region III letter dated December 15, 1976.

C. Reactor Vessel Particulate Monitor (IE Inspection Reports No. 050-346/76-13 and No. 050-346/76-18)

This item remains open. Examination of the corrective action outlined in the licensee's letter dated August 30, 1976, is incomplete. Separate from the above matter but related, examination by Region III personnel of the modifications to the vent stack sensing line for the particulate monitoring system has not been completed. The general aspects of the previously identified findings, i.e., acceptable dimensions and configurations for instrument tubing, is being pursued by the appropriate Region III personnel with headquarters staff. This matter will be reviewed during a subsequent inspection.

Other Significant Findings

A. Systems and Components

1. Unresolved Item

Documentation is required to establish the capability of gasket type "Closel-Neoframe" (used between duct work sections in high radiation areas) to withstand radiation and/or high temperatures without deleterious effects. (Paragraph 4.e., Section IV, Report Details)

2. Unresolved Item

Installation of hangers and anchors for large and small piping is significantly incomplete in that over two thousand remain to be inspected, modified as necessary and reinspected for acceptability. The licensee's representatives are to provide Region III construction with an assessment of the impact of these outstanding items on their licensing goals and an estimated completion date. This matter will be reviewed during subsequent Region III construction inspections.

3. Unresolved Item

Modification of the lubrication systems for the high pressure injection pumps was required because of bearing temperature problems. (Paragraph 2, Section I, Report Details)

4. Unresolved Item

The actuator yoke on valve MU-HV66B, reactor coolant pump seal injection isolation valve, failed on two separate occasions. Also, although not contributing to the failures, investigation of this matter by the licensee indicated that the yoke material for this valve and six other similar valves may not have met seismic requirements. (Paragraph 3, Section I, Report Details)

5. 10 CFR 50.55(e) Reports (Review of Corrective Action)

- a. The control rod drive circuit breaker problem final report dated July 23, 1975, was reviewed and is considered resolved. (Paragraph 5, Section III, Report Details)
- b. The General Electric circuit breaker power sensor problem final report dated August 6, 1976, was reviewed and is considered resolved. (Paragraph 5, Section III, Report Details)
- c. The Westinghouse Electric Corporation circuit breaker auxiliary relay problem reported on September 24, 1976, is considered resolved. (Paragraph 5, Section III, Report Details)
- d. The repair inspection records, procedures, and other documentation associated with inadvertent excessive heating of the pressurizer spray line spool mark 72, were examined, found acceptable and in accordance with the TECO final report dated September 17, 1976. This matter is resolved.
- e. The documentation relative to repair of the main steam piping deficiency associated with the 1-B steam generator as outlined in final report dated December 9, 1976, was reviewed and found to conform to the commitments. This matter is resolved.



- f. The corrective actions and documentation relative to the deficiencies involving ITT Grinnell Figure 200 Hydraulic snubbers as reported by TECO letter dated July 30, 1976, were reviewed and found completed. This matter is resolved.
- g. Relative to the reactor coolant pumps 1A1, 1A2, and 1B1, the inspector reviewed the final report dated April 12, 1976, and examined the records associated with this repair activity including the hydrostatic test report dated September 9, 1976, (Serial No. 32108). The repair activity and the reviewed records met the requirements of the commitment. This matter is resolved.
- h. The final report and repair and inspection records regarding the deficiencies related to the No. 1 personnel lock, the equipment hatch and the emergency lock seal welds were reviewed and the final workmanship observed. All items examined met the requirements of the commitment. This matter is resolved.

B. Facility Items (Plans and Procedures)

- 1. Possible Damage to Cable Installed in Conduit (IE Inspection Report No. 050-346/76-11)

Former electrical contractor employees expressed a concern that cable jacket insulation may have become damaged (by the pull rope) during installation into conduit that was already full or nearly full. To evaluate this possibility each cable contained in two 4-inch conduits, identified as having a high percentage of fill, are to be "high potential" tested to 10,000 volts for five minutes. The NRC inspector is to witness the testing presently scheduled for mid-January 1977.

- 2. Containment Vessel Protective Coatings

As documented in IE Inspection Report No. 050-346/76-08 (item 3 Management Interview) six items remained to be resolved in regard to the subject matter. During the current inspection these six items were reviewed and were determined to be satisfactorily resolved. This matter is considered closed. (Paragraph 1, Section I, Report Details,

3. Changes to Electrical Inspection Procedures (IE Inspection Report No. 050-346/76-11)

Former employees of the electrical subcontractor expressed concern that inspection procedures were changed such that acceptance criteria became less stringent. Two frequently changed procedures were selected and the history of the changes were reviewed. The conclusion from the results of the review was that required inspection criteria had not been compromised. (Paragraph 4, Section I, Report Details)

C. Managerial Items

Mr. U. Young Park, a Nuclear Engineer with the State of Ohio Power Siting Commission, accompanied the inspectors during one day of this inspection (December 1, 1976).

D. Deviations

Contrary to Section 8, Paragraph 8.3.1.2.22 of the Final Safety Analysis Report (FSAR) and Paragraph 5.19.3.1.C of I chtel Engineering Procedure Manual, Revision 2, dated November 5, 1976, the licensee failed to indicate, or otherwise assure, that design controls adequately considered provisions of publication IPCEA-P-46-426 relative to power and control cable installed in raceways, including tray, wireway, and conduit, especially those which were installed previous to November 5, 1976. (Paragraph 3, Section III, Report Details)

E. Status of Previously Reported Unresolved Items

1. Inappropriate Closure of Nonconformance Reports (NCRs) (IE Construction Reports No. 75-03 through No. 76-15)

This matter is resolved. Review of documentation from CVI Corporation as referenced in Bechtel letter File No. 1527 which relates to retesting and evaluation of the filters demonstrates adequate corrective action.

2. Equipment Secured by "Hilti-Kwik" Devices (IE Inspection Reports No. 050-346/75-10 through No. 050-346/76-18)

This item is considered resolved. (Paragraph 4.a, Section III, Report Details)

3. Motor-Operated Valves (IE Construction Inspection Reports No. 050-346/75-15 through No. 050-346/76-18)

This matter is resolved. Review and examination of Bechtel letter dated August 14, 1976, File No. 1527 and referenced documentation relating to the seismic requirements and qualification for valves supplied to Specification No. 7749-M-213AQ-40-1 confirmed that the requirements have been met.

4. Reactor Protection and Safeguard System Cabinets (IE Inspection Reports No. 050-346/75-23, No. 050-346/75-24, No. 050-346/76-02, No. 050-346/76-13 and No. 050-346/76-18)

This item was examined, however, it remains unresolved.

5. Identification Requirements of IEEE 279 (IE Inspection Reports No. 050-346/76-02, No. 050-346/76-13 and No. 050-346/76-18)

This item is resolved. (Paragraph 4.b, Section III, Report Details)

6. Unclear QA Program Requirements (IE Inspection Reports No. 050-346/76-13 and No. 050-346/76-18)

Review of the licensee's and the contractors response to this matter clarified and resolved some of the issues. The items remaining to be resolved are identified herein. (Paragraph 2, Section II, Report Details)

7. Questionable Lack of Instrument Calibration (IE Inspection Reports No. 050-346/76-13 and No. 050-346/76-18)

As previously reported (IE Inspection Report No. 050-346/76-03 Paragraph 1.c.(1).(c)) the Bisco Electro-Mechanical device used to blend the silicone material, has an array of speed and temperature measuring devices which were not calibrated. Subsequent to this finding the Bisco and licensee representatives explained that while these devices are present and in use, the quality of the product is established at the start of each blend and periodically throughout the operation by proof test of the material. Upon this basis the results of the proof testing provides adequate assurance that only conforming materials are used. This matter is resolved.



8. Inadequate Certification Document (IE Inspection Report No. 050-346/76-13)

This matter is resolved. (Paragraph 2, Section II, Report Details)

9. Raceway Overfill Limits (IE Inspection Report No. 050-346/76-18)

This item is considered to be a deviation. See item D, above.

10. Failure to Establish Control System (IE Inspection Report No. 050-346/76-18)

One of the two mechanical contractors performing EIR rework did not develop a system to identify and document rework performed in accordance with the recommendations of Engineering Inspection Reports. This item remains open. (Paragraph 1, Section IV, Report Details)

#### 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
- R. E. Blanchong, Construction Superintendent
- M. D. Calcamuggio, Plant Electrical Systems Engineer
- G. W. Eichenauer, Quality Assurance Engineer
- J. M. Lastovka, CEI/TECO Senior Electrical Engineering (Quality Assurance)
- J. D. Lenardson, Quality Assurance Manager
- C. R. Domeck, Project Engineer
- C. T. Daft, Field Quality Assurance Specialist

##### Bechtel Corporation (Bechtel)

- R. Rosenthal, Project Manager (Gaithersburg)
- C. L. Huston, Field Construction Manager
- P. P. Anas, Project Engineer (Gaithersburg)
- C. D. Miller, Assistant Project Engineer (Gaithersburg)
- J. A. Yesko, Engineering Inspection Team Member (Gaithersburg)
- F. R. Britnell, Project Quality Assurance Engineer
- W. C. Lowery, Quality Assurance Engineer
- J. W. Fay, Project Engineer
- J. D. Heaton, Project Field Quality Control Engineer

Babcock and Wilcox (B&W)

R. E. Donovan, Nuclear Services Engineer

B. Matters discussed during the interview were as follows:

1. Items of noncompliance identified during the inspection. (Enforcement Items, Report Summary)
2. Status of previously identified items of noncompliance. (Licensee Action Enforcement Items and Deviations, Report Summary)
3. Unresolved items and deviations identified during the inspection. (Significant Findings, Report Summary)
4. Status of corrective actions relative to the special electrical inspection. (Paragraph 2 and 3, Section IV, Report Details)
5. The inspector reviewed the concerns expressed by former employees of the electrical contractor relative to possible jacket insulation damage to cables during installation into highly filled conduit. (See item 10, page 7 of IE Inspection Report No. 050-346/76-11) In response to these concerns the licensee proposed to "hi-pot" test each cable contained in two conduits (Nos. 27708A and 36919B) identified by the NRC inspectors as having a high percent of fill. The 10,000 volt test voltage is to be held for 5 minutes with acceptance criteria to be that specified by the cable manufacturer. The inspector asked to be notified prior to start of the test so he may witness the testing operations.
6. The inspector stated that a system to identify and document rework on EIRs was not developed by Grinnell and therefore this item remains open. (Paragraph 1, Section IV, Report Details)

The inspector stated that the status of 84 EIRs were reviewed and 41 of them were determined to be closed. The inspector stated that he observed the work performed by Lumm-Irsay relative to the installation of seismic Class I supports for HVAC duct work and identified an item of noncompliance relative to inadequate corrective action on items identified during TECO audits. Items identified during the audits included inadequate inspection of welds, and inadequate training/indoctrination of QC technicians. In addition, the suitability of gasket type "Closel-Neoframe" for use in radiation environment is considered unresolved. (Paragraph 4, Section IV, Report Details)

7. The inspector stated that he reviewed the documentation and where appropriate and possible, observed the repair activity associated with finalized 10 CFR Part 50.55(e) reports. Six (6) of these are considered to be resolved. Further, the inspector stated that he reviewed the corrective action relative to the noncompliance and unresolved matters associated with Bisco. Most of these issues have been resolved, however, several items are still in process of resolution.

The inspector reported that he observed the work activity relative to the preparation of piping welds for In-service inspection and the general housekeeping in the plant. It was noted that various cable trays were in need of removal of debris, but the general conditions were acceptable.

The inspector further stated that during the next inspection the Region III inspectors will include review of a large portion of the licensee's and contractors documents reporting nonconforming conditions and field changes to design documents for proper resolutions and implementation.

The inspector stated that the status of the large pipe hanger and anchor inspection and re-fit program does not appear to be commensurate with the licensee's licensing goals in that a substantial amount of work remains to be done.

The licensee acknowledged the above remarks and stated that appropriate action will be taken to address (where required) each of these issues.

8. The inspector stated that the B&W records of the preservice inspection to ASME Section XI, 1971 edition, were acceptable. Preparation for inspection of Class 2 and Class 3 components and piping are underway. The inspector stated that any required preparation of welds for in-service inspection should be done prior to startup. The amount of insulation to be removed over welds to allow UT inspection did not seem to have been communicated to the insulators, and a second removal operation was underway during this inspection.

The program for Class 2 and Class 3 preservice inspection is dependent upon results of NRR review of the licensee's proposal, which will be set up according to ASME Section XI, 1974 edition, Summer 1976 addenda. The inspector stated that a weld identification number must be stenciled, or otherwise marked, on all Classes 1, 2 and 3 welds subject to in-service inspections.

## REPORT DETAILS

### Section I

Prepared by D. W. Hayes

#### Persons Contacted

The following persons in addition to those listed in the Management Interview section of this report were contacted.

#### Toledo Edison Company

E. M. Wilcox, Field QA Specialist

#### Bechtel Corporation

W. C. Lowery, Electrical Quality Assurance Engineer

#### 1. Containment Vessel Protective Coatings

As a result of allegations, an inspection was performed which identified a number of deficiencies in the Quality Assurance program for containment vessel protective coating activities. The status of the licensee's corrective action as of May 13, 1976, in regard to this matter is documented in IE Inspection Report No. 050-346/76-08. At that time six items remained to be resolved (item 3, Management Interview). During the current inspection these six items were reviewed. The results which were considered to be satisfactory are documented below:

##### a. Adherence Tests and Evaluation Results for Previously (Before July 22, 1974) Coated Concrete Surfaces Within Containment

Testing and evaluation of coatings systems applied to concrete were conducted in a similar manner as for coatings applied to the steel containment structure. Also, the same consulting engineering firm, Kenneth Tator Associates (KTA) performed the work. (See IE Inspection Report No. 050-346/76-08)

Two coating systems were specified for the concrete walls within the containment, one for the wainscot and one for above the wainscot. The wainscot consisted of Nu-klad 110AA epoxy surfaces, topped with two coats of Amercoat 66 (a polyamide cured epoxy). The wall area above the wainscot although

specified to receive one 5 mil coat of Amercoat 66 generally received two 5 mil coats.

The same three tests used to evaluate the coating on the steel containment vessel (Elcometer Adhesion, Knife Adhesion and Cross-Hatch Adhesion) were also used to evaluate the adhesion of the coatings applied to the concrete. These tests are described in IE Inspection Report No. 050-346/76-08, page 10.

Two hundred test sample locations were randomly selected, one hundred within the wainscot and one hundred above.

Acceptance criteria was primarily based on the Elcometer Adhesion Test, which is the adhesion test specified by ANSI N 5.12-1974, "Protective Coating Systems for the Nuclear Industry." Paragraph 6.4 of this standard requires a minimum adhesion by this method of 200 pounds per square inch.

The Cross-Hatch Adhesion Tests were considered ineffective because of the difficulty in cutting through the coating system into the concrete substrate, which in turn was due to the irregular nature of the poured concrete surface and rapid dulling of the cutting blades. Where it was possible to cut through the the coating the adhesion gradings were higher than the minimum required for acceptance.

The Knife Adhesion Test is the most subjective of the three techniques and this coupled with the difficulty in testing over concrete substrate made it impossible to numerically quantify test results. In every case where the coating system could be delaminated from the substrate the underside of the paint chips thus removal had concrete on them (i.e., the delamination was not an adhesive delamination between the coating and the substrate).

Two of the test sample sites (both outside the wainscot) failed to meet the criteria for the Elcometer Adhesion Test (200 psi). These areas, one about 150 square feet and the other less than 10 square feet, were repaired.



- b. Review of coating repairs of sample sites, areas damaged during construction and areas identified during the test program as not meeting requirements

With minor exceptions repair of the subject areas have been completed. The repairs were inspected by the licensee and the IE inspector and were considered to be satisfactory and consistent with specification and procedure requirements.

- c. Review of spectrographic analysis of selected samples from the containment vessel coatings to verify that coating material used was as specified

The results of the infrared spectroscopic analysis of the coating samples were reviewed. Infrared spectra of the samples were obtained in the region 4000 to 400  $\text{cm}^{-1}$  using a Perkin-Elmer Model 735 double-beam spectrophotometer. The results showed that the coating materials applied were essentially those specified and tested as meeting design basis accident requirements. Two of the Amercoat 66 samples were spectrographically different than the other Amercoat samples. Analysis indicated the difference was due to minor changes in the extender content. Both the coating manufacture and the consultant stated to the licensee that the change would not affect the adhesion or performance of the coating.

- d. Review of Design Basis Accident Testing Results

In addition to the adhesion tests, coating thickness readings were taken at each sampling site. At several of the sample sites the average coating thickness was measured to be greater than specified and for which design basis accident (DBA) testing data was available. Specimen coupons representative of the thicker coatings were tested in accordance with and met DBA requirements of ANSI N101.2-1972.

- e. Review of Qualification Records for Testing Personnel

The qualification records for the consultant engineer's testing personnel were reviewed. Qualifications met requirements of ANSI N45.2.6 and were consistent with established procedures.

- f. Final Examination of Coated Surfaces Within Containment

The coating systems applied to both the surfaces on the steel containment vessel and concrete surfaces within containment

were thoroughly examined by the licensee, consultant engineer and by the inspector following completion of the containment pressure proof testing. No cracking, peeling, flaking or other evidence of loss of adhesion or deterioration of the coatings was observed. The only observable irregularity was microscopic cracks in some localized areas in the concrete coatings. These were believed to be present prior to the pressure test and due to volumetric change in the concrete. The consulting engineer checked the coating adhesion in the immediate vicinity of these cracks and found the adhesion to be excellent. The coating could not be removed without chipping the concrete. In the areas examined by the inspector the cracks were verified as originating in the concrete.

2. High Pressure Injection Pump Modifications

The licensee reported pursuant to the requirements of 10 CFR 50.55(e) that as a result of pre-operational testing a forced lubrication system was found to be required for the two high pressure injection pumps. Field change FC-100 was issued to the site on November 3, 1976, by B&W for the work. Seismic and other quality documentation relative to the modification has not been received. The licensee issued Nonconformance Report (NCR) No. 203-76, dated November 18, 1976, and the modification work was allowed to start with final acceptance by TECO conditioned on subsequent receipt of satisfactory documentation. Modification work is now nearly completed.

3. Seal Injection Isolation Valve MU-HV66B

The licensee reported pursuant to 10 CFR 50.55(e), that on two occasions the actuator yoke for the reactor coolant pump seal injection isolation valve (MU-HV66B) broke while the valve was being stroked closed (i.e., 100 psig air applied to actuator).

The licensee's final report dated December 3, 1976, indicated that investigation and findings in regard to this matter did not identify a single factor as directly causing the yoke breakage. Conclusion was that stress introduced by the seismic restraint on the actuator in combination with improper position of the hand wheel operator when the 100 psig air was applied to the actuator caused the failures.

The licensee corrective action to preclude future yoke failures for this valve and three other identical valve installations will be reviewed during a subsequent inspection.

The MU-HV66B valve and six other similar valves were supplied to the Toledo Edison Company by B&W as part of the NSS System. The valves were manufactured by the Velan Valve Company (Velan) and use a Kieley and Mueller, Incorporated pneumatic actuator assembly. During the investigation of this matter Kieley Mueller informed the Toledo Edison Company that Velan had requested a standard actuator assembly which was a cast iron yoke for these seven valves. Normally Kieley and Mueller supplies a steel yoke when the application has seismic requirements which is the case for these valves (and other safety related valves used at Davis-Besse). The B&W engineering specification for these valves included seismic requirements. The licensee has replaced the cast iron yokes with steel yokes. The seven valves, which are the only valves at the Davis-Besse facility with Kieley and Mueller actuators, are identified as MU-HV3, HV33, HV38, HV66A, HV66B, HV66C and HV66D.

In response to NRC concerns the licensee initiated action with the Babcock and Wilcox Company to determine:

- a. If seismic requirements were included in the purchase order for the valves and for the actuators.
- b. Who performed the seismic calculations for the valves, if the calculations were reviewed as required by Criterion III, and if adequate controls exist to assure that yoke material used is consistent with seismic requirements.
- c. If Criterion VII requirements were met on receipt of these valves by B&W.
- d. If similar discrepancies may exist for other safety related valves purchased by B&W that have remote operated actuators.

The licensee was also informed that based on their finding further review may be required for other valves with remote actuators and which must operate during or after a postulated accident.

4. Changes to Electrical Installation Inspection Procedures

During the investigation into allegations made by former QC Inspectors of the electrical subcontractor several concerns relative to the adequacy of various electrical installations were expressed. (See IE Inspection Report No. 050-346/76-11). One of these concerns was that when QC electrical inspectors identified problems the inspection procedure was changed such that inspection in the problem areas was no longer required. (See item 14 on page 7 of the referenced report).

Two frequently changed inspection procedures (No. EI4-7a.001 and No. EI4-7c.001) were selected from those listed below and the history and reasons for the revisions were reviewed. The conclusion from the review is that the changes did not compromise required inspection criteria established by applicable specifications.

#### Electrical Installation Inspection Procedures

<u>Procedure No.</u>	<u>Equipment or Activity Covered</u>	<u>Number of Revisions as of 11/30/76</u>
EI4-7a.001	Tray and Wireway	7
EI4-7a.002	Conduit	4
EI4-7a.003	Hangers and Supports	3
EI4-7a.04	Raceway Junction Boxes	3
EI4-7a.005	Anchor Bolts	2
EI4-7b.001	Motors	0
EI4-7c-001	Pulling of Cable	9
EI4-7c.002	Terminations	2
EI4-7c.003	Terminations	10
EI4-7c.004	Terminations	3
EI4-7c.005	Terminations	3
EI4-7c.006	Cable Assemblies	1
EI4-7d.001	Switchgear	1
EI4-7e.001	MCCS	2
EI4-7f.001	Substations	0
EI4-7g.001	Terminal Boxes, Cabinets, etc.	4
EI4-7g.002	Local Control Stations	1
EI4-7h.001	Station Batteries	1
EI4-7i.001	Battery Chargers	0
EI4-7j.001	120vac Power	0
EI4-7k.001	Penetration Flanges	1
EI4-7k.002	Penetration Assemblies	0
EI4-7k.003	Penetration Terminal Boxes	1

#### Procedures selected for review:

EI4-7a.001 - Installation Inspection Procedure for Trays and Wireways Carrying Essential Cables.

EI4-7c.001 - Installation Inspection Procedure for Pulling of Essential Cable.

## REPORT DETAILS

### Section II

Prepared by C. C. Williams

#### Persons Contacted

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

#### Brand Industrial Services, Inc. (Bisco)

H. J. Russel, Site Manager  
W. Zmed, QC Inspector

#### ITT Grinnel Company (Grinnell)

D. R. Giguere, QC Manager  
J. M. Pomrink, QC Engineer

#### Inspection Results

##### 1. Sealant Material Specification and Certification Requirements

Review of the subject specification (Contract 7749-FSC-34, Specification 7749-M-255), boot and silicon rubber material certifications and Bechtel NCR No. 1133, showed that corrective action has been completed to an adequate extent. However, an adequate certification for the Portland Cement Association hose-stream test report dated July 28, 1976, was not available. The licensee indicated that the revised document had been requested and would be available at the site.

Bechtel NCR No. 1133 will remain open until the process of either revising Specification No. 7749-M-255 relative to the criteria for the "Flood Test" and "Air Test", or accommodating the actual test criteria in another manner is completed. This NCR (No. 1133) and the PCA certification addenda will be reviewed during a subsequent inspection.



2. Unclear QA Program Requirements

The following items remain to be resolved: The Bisco QA program contains a Matrix showing its relationship to 10 CFR Part 50 Appendix B, however, this does not in itself constitute a commitment to conform to these requirements. The licensee indicated that the necessary corrective action would be taken.

The Bisco QA program addresses the "Responsibility" for the qualification and training personnel. However, it does not clearly address the requirement for the use of adequately trained and indoctrinated QA/QC and production personnel. The licensee and the Bisco representative indicated that corrective action in accordance with Bisco letter dated August 16, 1976, is in progress.

The two items above will be reviewed during a subsequent inspection. The remaining issues identified in IE Inspection Report No. 050-346/76-13, paragraph 1c.(1)(1) and (b) were clarified and resolved by further review and discussion with the licensee and Bisco representatives. These items include adequate corrective action taken relative to the Bisco Material Certification document.

## REPORT DETAILS

### Section III

Prepared By: F. J. Jablonski 12-23-76  
F. J. Jablonski (Date)

Reviewed By: E. L. Jordan 2/2/76  
E. L. Jordan (Date)

### Persons Contacted

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

#### Bechtel Corporation (Bechtel)

R. E. Glass, Lead Electrical Field Engineer  
T. Horst, Lead Civil Field Engineer

#### Johnson Controls Company (Johnson)

R. W. Jones, Quality Assurance Representative  
R. Reau, Quality Engineer  
C. M. Egasti, Lead Mechanical Engineer

### Inspection Results

#### 1. General

The purpose of the inspection was to review licensee actions relative to: previously identified enforcement matters and unresolved items; status of previously reported 10 CFR 50.55(e) items; status of items identified by NRC's Office of Nuclear Reactor Regulation (NRR); and various miscellaneous items.

#### 2. Enforcement

In accordance with provisions of 10 CFR 50.55(e) the licensee reported to the NRC that during startup testing of battery chargers and regulated rectifiers, numerous deficiencies were identified including voltage oscillations, inability to provide rated voltage at full load current, inability to limit current at full load, inadequate transfer switch capacity and excessive output voltage ripple.

Extensive rework and modifications were accomplished and the licensee reported that "the equipment was retested for compliance with the specification and passed."

The IE inspector reviewed various vendor trip report records and other data indicating that work had been performed during a period between May 1975 and November 1975. None of the documentation provided assurance that provisions of Bechtel Specification No. 7749-E-20, Sections 16.3, 16.4 and 16.5 had been met, and contrary to 10 CFR 50, Appendix B, Criterion XI, a test program including procedures and acceptance criteria to assure and demonstrate that the battery chargers and regulated rectifiers would perform satisfactorily in-service and not exhibit any of the problems as originally reported had not been established. This matter was identified to be an infraction. Cognizant licensee personnel were so advised.

NOTE: The licensee reported that the battery chargers were manufactured by Cyberex. The IE inspector determined that, in fact, Powertronic Equipment Limited of Scarborough, Ontario Canada was the manufacturer-supplier. The licensee was advised that one of the purposes for reporting items in accordance with 10 CFR 50.55(e) is to identify possible generic problems. Future information must be as accurate as possible.

### 3. Deviation

As reported in IE Inspection Report No. 050-346/76-18, Unresolved Item No. 1, conduit fill limits did not appear to be adequately controlled. In accordance with commitments to the NRC in the above report, the licensee performed an audit dated October 27, 1976, relative to Section 5.19 of Bechtel's "Engineering Procedures Manual" (EPM) Revision (1). The audit findings appeared to be consistent with Revision (1), i.e., physical considerations for the installation of cable in raceway. However, provisions of EPM Section C19, Revision 2, dated November 5, 1976, specifically Paragraph 5.19.3.1.c, were not included as part of the audit. Paragraph 5.19.3.1.c references the Insulated Power Cable Engineers Association (IPCEA) publication No. P-46-426 which is also specified in the Final Safety Analysis Report (FSAR) Paragraph 8.3.1.2.22.

Relative to power and control cable routed through raceway including tray, wireway or conduit especially prior to November 5, 1976, the licensee was unable to provide any approved design measures or controls used to verify that provisions of both the FSAR and IPCEA were being considered. This item was elevated from unresolved to a deviation. Cognizant licensee personnel were so advised.

4. Unresolved Items (Status)

- a. Fischbach and Moore procedure QWS-III requires that all wedge type anchor bolts used to secure Class 1E panels be torqued to specified values. Because of inaccessibility or failure of the bolts to torque properly, certain engineering evaluations and recommended repairs were necessary.

The inspector reviewed nonconformance reports (NCR) 1095 and 1096 relative to panel Nos. C-5702 through C-5722 and 5755C/D, 5756 C/D, 5762C/D and 5763C/D. NCR dispositions and evaluations were appropriate. Anchor bolt clips and kick plates were installed in accordance with drawings FSK-C-841 and FSK-C-844. This item is resolved.

- b. The inspector observed Class 1E instruments at various elevations and locations of the shield building, auxiliary building and service water pump house. In most locations identification tags had been attached in accordance with Specification No. 7749-M 029 and in compliance with IEEE 279. (Identification has not been reported to be complete by the licensee) This item is resolved, however, further observations will be made by IE inspectors during final walk down inspections.

5. 10 CFR 50.55(e) Reports

- a. The inspector determined that the control rod drive circuit breaker problem reported to the NRC by the licensee on May 8, 1975 and July 23, 1975 was properly resolved in accordance with Babcock & Wilcox Field Change No. 68, i.e.:

- (1) two additional AC circuit breakers were added;
- (2) circuit breakers C4603, C4606, C4806, and C4612 were secured to the base in accordance with drawings C-218 and C-220;
- (3) plug and fillet welding was performed in accordance with welding procedure SWP-105;
- (4) weldor "EL" was qualified to SWP-105 as evidenced by review of the "90 day log." Welder identification was affixed to the instrument detail sheets 1 and 2 of C4603 and C4606;
- (5) test procedures 330-01, 330-04, and 600-23, and station procedure 1105-09 included revisions to verify that electrical changes were properly made. Testing of the components and systems was in progress;
- (6) the circuit breakers were seismically tested in accordance with Paragraph 3.2.2.2 of IEEE 344-1971.

- b. The inspector determined that the General Electric circuit breaker power sensor problem reported to the NRC by the

- d. Class 1E redundant channel separation, - Item Nos. 6 and 15, Visit - summary of meeting with TECO on October 28, 1976; NRC letter Stolz to Roe dated November 9, 1976; TECO letter Roe to Stolz dated November 23, 1976; and FSAR revision 24 will be used when closing out this matter. (OPEN)
- e. Item No. 16, Visit - No design or physical changes relative to the installation of redundant level instrumentation for the service water intake canal were evident. (OPEN)

7. Miscellaneous

- a. The inspector observed separation and protection of Class 1E instruments and sensing lines at various elevations and locations of the shield building, auxiliary building and service water pump house. It was evident that instrument barriers and sensing line protection were being installed. It was observed by the IE inspector that instruments numbered LT SP9A3 and LT SP9A4 required both instrument barriers and sensing line protection. It was also observed that instruments numbered LT SP9B2 and LT SP9B4 required sensing line protection. Both problems were appropriately documented on Johnson Controls Company drawings IF-LT-SP9A6 through A9 and IFB-LT-SP9B2-4. Work has yet to be done. Further observations will be made during final walk down inspections by IE inspectors.
- b. Corrective action relative to IE Circular No. 76-02 was appropriately documented on a Maintenance Work Order No. AST File Copy, November 24, 1976. Detailed instructions have been provided, however, no work has been accomplished. It is anticipated that work will be completed before fuel loading. (OPEN)



REPORT DETAILS

Section IV

Prepared By:

K. R. Naidu

2/2/77  
(Date)

Reviewed By:

E. L. Jordan, Chief  
Engineering Support Section

2/2/77  
(Date)

Persons Contacted

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

Bechtel Corporation (Bechtel)

Engineering Inspection Team, Gaithersburg Power Division (EIT)

J. R. DeVoge, Civil Engineer  
J. Guss, Civil Engineer  
R. E. McDonald, Civil Engineer

Bechtel Site

R. Kies, Mechanical Engineer, Site

ITT Grinnell (Grinnell)

J. Duderstadt, Mechanical Engineer  
D. Giguere, QC Supervisor

Lumm-Irsay (LI)

F. J. Fischback, Quality Control Technician  
T. E. O'Connell, Project Manager  
D. M. Steindam, Quality Control Technician

1. Review of Systems Developed By Mechanical Contractors to Close EIRs

During a previous inspection it was identified that two mechanical contractors involved with rework for closure of Engineering Inspection Report (EIR) Series 5000 had not developed systems to identify and document rework performed in accordance with recommendations of

Engineering Inspection Reports. During the current inspection, the inspector established the heating, ventilating and air conditioning (HVAC) contractor Lumm-Irsay (LI) developed a system to document the rework. This subject is dealt further in paragraph 4 of this report. A system was not developed by ITT Grinnell (Grinnell) the piping contractor. The licensee stated that some of the problems identified in the EIRs involved upgrading of existing pipes to seismic Category I and were being reworked as solutions to pipe stress analysis of mathematical problems. However, no cross reference had been established between EIRs and the problem solutions. In the absence of such a cross reference, the inspector could not establish whether any rework was accomplished on items identified in the EIRs.

Prior to the conclusion of the inspection, a Bechtel Gaithersburg representative stated that a system encompassing the following will be developed.

- a. A cross reference between the mathematical analysis of the stress model, the pipe involved and the relevant EIR.
- b. Notify Grinnell to implement the necessary work.
- c. From the weekly progress report establish the status of completion of the problem number and the EIR.
- d. Provision for Bechtel Construction Management to notify the Engineering Inspection Team (EIT) to inspect the completed work.

This item is considered open and the corrective action taken will be reviewed during a subsequent inspection.

## 2. Review of Status of EIR Items

### a. Summary

The inspector randomly selected 87 EIRs (5000 Series) and through review of records established that the following 41 EIRs were reported closed.

5001	5251	5331
5023	5253	5438
5033	5281	5482
5034		5458
5038	5288	5516

5039	5290
5054	5308
5056	5362
5057	5384
5063	5388
5073	5397
5108	5404
5138	5406
5171	5408
5181	5413
5193	5416
5198	5418
5220	5419
	5420

b. Method of Resolution

Records available with the Engineering Inspection Team (EIT) indicated that the methods used to close EIRs included the following:

- (1) Letters from Bechtel Gaithersburg Power Division (GPD) that justified no further modification was necessary based on engineering calculations.
- (2) Resolution by Bechtel GPD engineers stationed at site, that based on calculations/considerations after physical verifications in the field no further action was necessary. The cognizant engineering personnel indicated that the field resolutions were based on guidelines established by their Gaithersburg personnel titled "Guidelines For High Energy And Seismic Class II Piping," and CEP-CS-1 "Procedure For Design Of Class I Electrical Conduit Supports." The Engineering personnel providing these resolutions were stated to be Civil Engineering graduates with more than 3 years of design experience and therefore their qualifications were considered to be adequate. Calculation records were available at site.
- (3) Resolutions which required field modifications based on either (1) or (2) mentioned above.

3. Verification of Resolutions by Field Observation

Resolution of the EIRs indicated below required no modifications. By observation in the field, the inspector verified and determined

that the resolutions were adequate in that the conclusions arrived at by the cognizant engineering personnel were within the established guidelines mentioned in paragraph 2.

EIR	5063	Room 105
EIR	5056	Room 105
EIR	5111	Room 500
EIR	5137	Room 328
EIR	5220	Room 405
EIR	5384	Room 215
EIR	5397	Room 429
EIR	5317	Intake Structure

4. Review of Rework by Lumm-Irsay (LI)

a. System for Rework

A system titled "Procedure For Approval And Distribution Of Seismic Design And Analysis Reports For Seismic Supports" dated November 30, 1976, was developed by LI, to identify and document the rework performed to meet the recommendations identified in EIRs. The system appears to be adequate to provide sufficient documentation of the rework in an auditable form. In summary, the procedure states that Bechtel field engineer prepares a Field Change Notice (FCN) to LI translating the EIR recommendations for installing seismic Class I (S/I) supports for existing HVAC duct work. LI in turn requests Flour Pioneer Incorporated (FPI) their A/E to design a suitable S/I support for the position of duct work. FPI provides the design to LI who in turn insert the Quality Requirements and process the design document through Bechtel for review and approval. Rework is accomplished as per the approved design and the necessary documentation is maintained by LI QC personnel.

b. Observation of Work in Progress

The inspector observed the installation of Seismic Class I supports as shown in Sketch FSK-M-839 RWO in Rooms 500 and 501 at elevation 603'. Welding was completed on 3 supports. Approved welding procedures (WP) which were available indicated that the WPs were qualified to American Welding Society AWS D1.0-69. Visual inspections of the welds were being performed to LI QC Manual Section 5.

c. Discrepancies in LI QA Requirements

The inspector determined through review of TECO Audit Reports and discussions with TECO QA personnel that TECO failed to take prompt corrective action on items identified in the Audit Reports. Areas of deficiencies identified in TECO audits included inadequate training and indoctrination of the QC technician and inadequate inspection requirements of welding process. The LI replies did not appear to indicate intentions to take appropriate corrective actions. The inspector informed the licensee that failure to ensure that prompt corrective action was being taken was an item of noncompliance/infracton and was contrary to the requirements of 10 CFR 50, Appendix B, Criterion XVI. Examples are provided in succeeding paragraphs.

(1) Inadequate Welding Inspection Requirements

Review of TECO audits indicated that TECO identified that LI welding inspections were not in compliance with AWS D1.0-69 Section 605 as was stated in the WPs. Records indicated that instead of improving the welding inspections, LI revised the WP deleting the AWS D1.0-69 inspection requirements and substituting LI QA Manual, Section S5 inspection requirements which requires visual inspection for alignment, undercut size, length and location of welds and slag removal. Additional criteria to the QA manual requirements provided in AWS D1.0-69, which were deleted, included the following:

- (a) Verifying the use of approved welding procedures.
- (b) To observe at suitable intervals the welding technique and the performance of each welder that applicable requirements are met.
- (c) The inspector shall make certain that electrodes are used only in the positions and with the type of welding current and polarity for which they are classified.
- (d) To identify with a distinguishing mark the welds inspected.

Adequate justification for the removal of the AWS D1.0-69 inspection requirements were not provided although Bechtel GPD approved the revised WP.



(2) Inadequate Indoctrination of QC Technicians

The inspector established from discussions with the QC Technician, who inspected the welds on rework, that he was not provided with formal indoctrination or training. Review of TECO audits indicated that the lack of formal indoctrination/training was identified. The LI response to this subject was inadequate. The inspector informed the licensee representative that corrective action was not taken to ensure that the contractor-LI complied with 10 CFR 50, Appendix B, Criterion II by providing necessary indoctrination and training to the QC technicians to assure that suitable proficiency was achieved to qualify them to perform quality inspections on safety related items. The inspector also discussed the requirements for maintenance of qualification records for LI inspection personnel.

d. Inadequate Control of Welding

Discussions with TECO and Bechtel personnel indicated that suitable tests and measurements were not made to establish that the welding machines were delivering the output as indicated on the dial setting. For instance, a calibrated tong type ammeter was not used to measure the welding machine current output to verify whether the actual current output matched the indicating dial setting on the machine. Similarly the voltage was not verified. Verifying the accuracy of voltage and current is necessary to satisfy the criteria mentioned in Paragraph 4.c.(1) Subsections (b) and (c). (Unresolved)

e. Documentation on Gasket Material Type Closel - Neoframe/ Unresolved Item

The inspector was informed that gasket material type Closel - Neoframe was used between duct work sections as seals. Information relative to this type of gasket withstanding specified radiation and/or temperature levels inside the containment (for safety related items) without deleterious effects was not readily available. The inspector informed the licensee that this would be considered unresolved pending receipt of further details on the suitability of the gasket material to the environment.

licensee on August 6, 1976, was properly resolved. The inspector reviewed revisions to TECO procedure MC 7000.01 with revised acceptance criteria and TECO file 300.301.Q1387 which contained test data sheets indicating that testing of the new power sensors was in progress. The file also contained component (power sensor) certifications.

- c. The inspector determined that the Westinghouse Electric Corporation (Westinghouse) circuit breaker auxiliary relay problem reported to the NRC by the licensee on September 24, 1976 was properly resolved in that based upon further information to Westinghouse, the auxiliary relay was, in fact, seismically qualified. This information is documented in Westinghouse letter Erber to Anas (Bechtel) dated October 26, 1976.

6. Licensing Concerns (Status)

- a. Item No. 11, Summary of Site Visit, October 6, 7, and 8, 1976 (Visit) - Barriers between redundant circuits in manhole 30C1 had not been installed. (OPEN)
- b. Item No. 12, Visit - All control rod drive power supply breakers have been installed. (See item 5.a above)

The inspector reviewed specification change letter No. 6214 directing the electrical contractor to color code conduit per drawings E302A sheet 1C, and E11A sheet 21, Revision 2. Fischbach and Moore Installation Procedure E14-6A-002, Revision 5, and Inspection Procedure E14-7A-002, Revision 5 requires that conduit be inspected for proper color coding and at least once for short sections and/or at 15 foot intervals. The inspector determined that the program was acceptable and observed that conduits were being appropriately color coded. Observations were made at various elevations and locations of the shield building, auxiliary building and service water pump house. This matter is closed, however, further observations will be made by IE inspectors during final walk down inspections. (CLOSED)

- c. Item No. 14, Visit - The licensee has not provided a physical drawing of the Main Steam Isolation Valve solenoid control valve arrangement describing channel separation and barriers. (OPEN)

5. Review of Rework by ITT Grinnell (Grinnell)

a. Status of Rework

As stated earlier in Paragraph 1, Section IV of this report, the extent of rework completed to meet the recommendations of the EIR could not be established. A cross-reference between the EIR and the relevant mathematical analysis of the pipe model is being developed by Bechtel. Grinnell stated that such cross reference would facilitate rework information retrieval for audit purposes.

b. Review of Proposed Rework

Discussions with the licensee personnel indicated that the proposed rework involved upgrading existing installed pipe to seismic Class I. The Grinnell QC Manager stated that typical upgrading of installed pipe to seismic Category I included the following:

- (1) Performing NDE on welds between anchor points - magnetic particle tests or liquid penetrant tests on 4" diameter and larger (Radiography for Seismic I and Nuclear Class).
- (2) Install hangers.
- (3) Provide mill certifications on the pipe.
- (4) Assemble QA records on the welds.

The rework accomplished will be reviewed during subsequent inspections. During the current inspection it was determined that IE Report No. 050-346/76-18 erroneously stated that EIR 5072 was completed. Rework recommended in EIR 5072 involves upgrading several pipe sections by Grinnell and is not complete.

## REPORT DETAILS

### Section V

Prepared By:

E. L. Jordan  
for C. M. Erb

2/2/77  
(Date)

Reviewed By:

E. L. Jordan  
E. L. Jordan, Chief

Engineering Support Section

2/2/77  
(Date)

### Persons Contacted

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

#### Toledo Edison Company (TECO)

T. Hart, Quality Assurance - Mechanical

#### Babcock & Wilcox (B&W)

T. McDermott, Nondestructive Test - In-Service

### Results of Inspection

#### 1. Review of Program

The preservice inspection program for Class 1 components and piping was completed before this inspection. Region III inspectors had already evaluated the program in 1975 and 1976. NRC reference 10 CFR Part 50, Section 55.55a(g) requires that the licensee perform a preservice inspection of Class 2 and Class 3 components and piping. The licensee has sent their proposal for this inspection to NRC for approval. This preservice inspection will be conducted in accordance with ASME Section XI, 1974 edition and summer 1976 addenda.

#### 2. Procedures and Records of Components

The inspector examined the data reports for the following components and found them to conform to ASME 1971 Section XI, Winter addenda.

Reactor Pressure Vessel

Circle Seam No. 169-170  
Circle Seam No. 181

Procedure - UT

No. 102, 101 (111R2 ARIS)  
No. 102, 101 (111R2 ARIS)

The individual reactor pressure vessel rings are formed in a ring and have no welds; thus, only circumferential welds make up the vessel. ARIS refers to the automatic scanning device which scans from the inside surface of the vessel using water as the couplant. The weld joining the bottom head to the upper part of the vessel could not be reached with the ARIS, so this weld was done by manual UT.

The inconel steam generator tubes were eddy current tested prior to inclusion in the generator, so no UT tests were required during the preservice inspection. The pressurizer was UT examined from the outside using a manual UT method with acceptable results. However, there were a number of laminations which were evaluated before acceptance. The reactor vessel head studs, part MK-25, were inspected using Procedure ISI 104. The studs were also visually inspected using Procedure No. 350, and magnetic particle inspected, Procedure No. 253. Nuts, part MK-26, were UT inspected to Procedure ISI 105 and also visually and magnetically inspected.

The primary coolant pump casing contains two welds which could not be UT inspected. Radiographs were taken and were used for a base line. After plant operation, when radiation would interfere with subsequent radiography, B&W are recommending a penetrant test examination.

3. Procedures and Records Piping Welds

The following weld records were examined and found to meet Section XI and procedure requirements.

<u>Weld Identification</u>	<u>System</u>	<u>Inspection</u>
MK-65 to MK-45	Recirculation	UT and Visual
Safe End	Recirculation	UT and Visual
WS-5 and 1-33	High Pressure Injection	PT
11 Welds	Pressure Surge Line	UT and PT
20 Welds	Decay Heat	UT and Visual
4 Welds	Support Makeup H <sub>2</sub> O	PT and Visual
4 Welds	Pressurizer Relief	PT and Visual

No repair welds were required for any inspected components or piping.