

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 050-329/74-10

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Licensee: Consumers Power Company  
1945 West Parnall Road  
Jackson, Michigan 49201

Midland Plant, Units 1 and 2  
Midland, Michigan

Licenses No. CPPR-81  
and No. CPPR-82  
Category: A

Type of Facility: PWR (B&W) - Unit 1, 492 Mwe  
Unit 2, 818 Mwe

Type of Inspection: Routine, Announced

Dates of Inspection: October 2 and 3, 1974

Dates of Previous Inspection: August 27 and 28, 1974 (Construction)

Principal Inspector: *R. A. Rohrbacher*  
R. A. Rohrbacher

*10/25/74*  
(Date)

Accompanying Inspectors: *T. E. Vandel*  
T. E. Vandel

*Oct 25, 74*  
(Date)

*I. T. Yin*  
I. T. Yin

*Oct. 25, 74*  
(Date)

Other Accompanying Personnel: D. M. Hunnicutt

Review By: *D. W. Hayes*  
D. W. Hayes, Senior Reactor Inspector  
Construction Projects

*10/25/74*  
(Date)

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SUMMARY OF FINDINGS

Enforcement Action

A. Violations

No violations of AEC requirements were identified during the current inspection.

B. Safety Matters

No safety matters were identified during the current inspection.

Licensee Action on Previously Identified Enforcement Action

No previously identified enforcement matters remain unresolved.

Design Changes

The licensee has evaluated and approved a change in concrete aggregate specifications and included these changes in Amendment No. 27 to the Midland PSAR. These changes are being evaluated by the Directorate of Licensing (L) at the present time. (Paragraph 4, Report Details)

Unusual Occurrences

None identified.

Other Significant Findings

A. Current Findings

1. Project Status

The licensee estimated current project status to be as follows:

Engineering - 43% complete  
Construction - 8.8% complete

The approximate amount of concrete placed to date is as follows:

Unit 1 - 5,740 cubic yards  
Unit 2 - 11,800 cubic yards  
Common facilities - 9,000 cubic yards

The Unit 2 reactor pressure vessel, pressurizer, steam generators, and reactor coolant piping are scheduled to be shipped to the construction site prior to the end of 1974.

2. Nonconformance Report Review

Nonconformance reports, received by RO from Consumers Power Company (CP) under cover letter dated May 24, 1974, were reviewed to ascertain their significance. From this review, four nonconformance reports (NCR's) were selected for detailed review at the construction site. The results of this review are contained in Attachment A to this report.

B. Unresolved Matters

No new unresolved matters were identified during the inspection.

C. Status of Previously Reported Unresolved Matters

1. Bechtel Corporation (Bechtel) Quality Audit Findings (QAF) No. C-3-3 (RO Inspection Reports No. 050-329/74-08 and No. 050-330/74-08)

This QAF identified a lack of procedure relative to reviewing and approving field prepared requisitions for Q-list materials. A resolution to this QAF has been developed by Bechtel, and this matter is considered to be resolved. (Paragraph 7, Report Details)

2. Site Requalification Activities (RO Inspection Reports No. 050-329/73-05 and No. 050-330/73-05; No. 050-329/74-04 and No. 050-330/74-04)

CP and Bechtel reports of inspection and evaluation of stored materials, components, and in-place structures were previously reviewed by the inspector. Recent reports of inspection and evaluation of in-place components were reviewed during the current inspection. This activity is being implemented in an adequate fashion, and the matter is considered to be resolved. (Paragraph 2, Report Details)

Management Interview

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

Consumers Power Company (CP)

S. H. Howell, Vice President  
G. S. Keeley, Director of Quality Assurance Services  
T. C. Cooke, Project Superintendent  
H. W. Slager, Project Quality Assurance Supervisor  
J. L. Corley, Field Quality Assurance Engineer

Bechtel Corporation (Bechtel)

W. E. Ferris, Quality Assurance Supervisor  
W. F. Holub, Project Quality Assurance Engineer  
B. A. Burgener, Project Quality Control Supervisor  
J. P. Connolly, Project Field Quality Control Engineer  
J. F. Newgen, Field Superintendent  
T. C. Valenzano, Project Field Engineer  
G. L. Richardson, Lead Field Quality Assurance Engineer  
W. J. Key, Quality Assurance Engineer

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

1. Those present were informed that T. E. Vandell would be the RO:III reactor inspector for construction for the Midland Plant in the immediate future. In addition, the present RO organizational structure was discussed briefly.
2. The inspector stated that he had reviewed activities and records for the containment liner plate protective coatings and had no further questions at this time. (Paragraph 1, Report Details)
3. Changes to concrete aggregate specifications and related background information were discussed. The inspector stated that he had reviewed the PSAR changes (in Amendment No. 27), the Bechtel report on this subject, and had discussed these changes with L and CP personnel. CP stated that some additional tests are yet to be completed, but no problems are anticipated by either Bechtel or L relative to this matter. Subsequent to this inspection, L informed RO:III that no immediate problems are apparent and that a final review by L of this change is expected in the near future.
4. The inspector stated that, although the Bechtel welding procedures and materials control relative to the containment liner welding appeared adequate, some difficulty was encountered in retrievability of documents. The inspector indicated that CP might want to review the procedure involved. The licensee acknowledged this comment. (Paragraph 3, Report Details)
5. Nondestructive examination specifications, covering areas of MT, PT, RT and technician qualifications were reviewed and were considered to meet applicable requirements.
6. The inspector stated that several preselected nonconformance reports were reviewed and discussed with CP and Bechtel personnel, that the Bechtel field file of nonconformance reports for the last three months were reviewed on a random sample basis, and that he had no further questions.

## REPORT DETAILS

### Persons Contacted

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

#### Consumers Power Company

R. E. Whitaker, Field Quality Assurance Coordinator  
D. E. Horn, Field Quality Assurance Coordinator  
B. H. Peck, Field Supervisor

#### Bechtel Corporation

L. R. Albert, Lead Civil Quality Control Engineer  
H. L. Boleen, Quality Control Engineer  
R. L. Anderson, Office Engineer/Quality  
A. L. Boulden, Lead Welding Quality Control Engineer

### Results of Inspection

#### 1. Liner Plate Protective Coating Activities

A review was performed of Containment Liner Plate Protective Coating Specification No. 7220-C-110, Revision 6, dated September 19, 1974. The review included: (1) requirements for subcontractor furnished data and samples; (2) method and time for primer and surface coating curing; (3) Containment Vessel Liner Plate surface preparation specifications; (4) reference standards and applicability of these reference standards; (5) materials requirements; (6) Handling and storage requirements; (7) painter qualifications, including subcontractor QA manual for qualification of QA Engineering and QA personnel; (8) Inspection and testing requirements and calibration of test equipment and traceability of all applicable records; and (9) QA submittals to the contractor prior to start of work.

A review of the subcontractors QC Manual for the installation of protective coatings at the Midland facilities was performed. The review included: (1) Issue No. 6 of the subcontractors QC Manual approved on September 13, 1974; (2) Procedure 3232, BCPØ6, dated September 12, 1974, (3) Procedure 3232, BCPØ 2b dated September 27, 1974; and (4) Procedure 3232, BCPØ 3b, dated September 25, 1974.

Application of the primer coating to the containment vessel liner plating is just starting. Reviews to determine the degree of implementation of the procedures and evaluation of the painting will be accomplished during subsequent inspections.

## 2. Site Requalification Activities

The licensee arranged for specialists from Bechtel to inspect and evaluate the condition of stored materials, components, and in-place structures to determine restoration and requalification needs to assure that specification requirements would be met. This activity was started in May 1973 and is nearing completion. Reports of the above activity were periodically reviewed by the inspector during previous inspections.

During the current inspection, recent Bechtel reports relative to inspection and evaluation of in-place structures and components were reviewed, including concrete, reinforcing steel, anchor bolts, and water stops. In addition, a Bechtel matrix of components, requirements, status of activities completed, and applicable documentation was reviewed. This activity is being accomplished in an adequate manner, and the inspector had no further questions.

## 3. Containment Liner Welding

A review was performed of the containment liner welding for Units 1 and 2. The review included: (1) review of QC system relative to welding, nondestructive testing, and recording of information, (2) review of welding records, and (3) observations of welding performance. The results of the review are as follows:

a. Review was performed of the general welding specifications, the six welding procedures authorized for use on the containment liner plate welding fabrications, and the weld procedure qualification documentation. No problem areas were identified, and the welding procedures were determined to be properly qualified. The Bechtel documents reviewed included:

- (1) General Welding Standard GWS - Structural, Revision 0, dated April 9, 1973.
- (2) Welding Standard Performance Specification WQ-F-1, Revision 0, dated August 1, 1973.
- (3) Post Heat Treatment of Field Weld, PHT-500, Revision 0, dated May 25, 1973.
- (4) Post Weld Heat Treatment of Field, PHT-501, Revision 0, dated April 16, 1973.
- (5) Welding Standard, WD-1, Revision 0, dated September 1973.
- (6) Welding Standard, WFMC-1, Revision 0, dated May 1973.

- (7) Welding Specification 7220-C-111, Revision 5, dated July 10, 1974.
- (8) Welding Procedures No. PI-Ac-Lh, Revision 0; No. PI-A-Lh, Revision 0; and No. PI-S, Revision 0, dated May 6, 1974.
- (9) Specification Change Notices:
  - (a) C-111-4009, dated August 22, 1974; allows use of welding procedure PI-F (A-CO<sub>2</sub>)-3u, dated September 22, 1974.
  - (b) C-111-4007; allows use of welding procedures PI-F (CO<sub>2</sub>) (structural) Revision 0, and PI-F(G) (structural) Revision 0.

b. Nondestructive examination specifications were reviewed by the inspector. The review covered inspection specifications of:

(1) x-ray and gamma-ray radiographic examination of welds in nuclear components, vessels, and piping fabricated by Bechtel and its subcontractors, (2) magnetic particle examination, (3) liquid penetrant examination, (4) qualification and testing of personnel, and (5) interpretation standards of radiographs. The specifications were determined to be written in accordance with the requirements of the applicable codes, such as ASME Sections I, III, V, VIII and ANSI Codes B31.1.0 and B31.1.7.

The following documents were reviewed:

(1) Bechtel Nondestructive Examination Standard Procedure Specifications:

- (a) RT-XG-1, Revision 0, dated March 26, 1973;
- (b) RT-X-G-2, Revision 0, dated January 22, 1973;
- (c) GR-NDT, General Requirements, Revision 2, dated November 15, 1971;
- (d) MT-P-1, 2 Revision 0, dated May 18, 1973.

(2) Bechtel NDE Standard Performance Specifications:

- (a) NEPQ-MT (Levels I and II), Revision 0,
- (b) Personnel Qualification, dated June 26, 1973,
- (c) NEPQ-MT, MP methods that meet SNT-TC-1A, Supplement B.

c. A record review was conducted for a selected liner plate fabrication picked at the site for investigation. The following information was reviewed and found adequate:

- (1) File numbers coincide with ID numbers on the liner plate. Records showed work has been done. Records also contained as-built markups and slab and heat numbers of the added plates.
  - (2) A trace of a Mill Test Report (MTR) verified slab materials of indicated heat number are in compliance with the ASTM specified.
  - (3) The repair requirements shown in NCR No. 121 indicated assembly No. S5-1-U-2, at elevation 744' 6", was repaired in accordance with the specified repair procedures, 7220-C-111, Appendix B, Revision 3, and prewelding was inspected by approved NDT methods. Work acceptance was signed by engineering and responsible QC personnel on July 29, 1974.
  - (4) Qualification of the welders who performed the liner plate repair work were checked by the inspector. Records showed that these men have either passed the exact test required for such operation or equivalent tests with a higher degree of requirements.
  - (5) Qualification of NDT technicians were checked by the inspector. Records of four (4) such persons have shown competent levels and passing grades in different examination areas, such as MT, PT and RT. The Bechtel standard performance specification for determining the abilities of Bechtel personnel to properly perform and interpret required testings appeared to be satisfactory.
- d. The weld material control was inspected at the weld rod issue station, and it was determined that the procedural controls are being followed as follows:
- (1) No persons, other than those authorized, are permitted inside the storage room. An authorized personnel name list is posted on the door.
  - (2) Welders are not allowed to obtain more than one (1) type of electrode at one particular time.
  - (3) Upon issuing the electrodes, an issue slip must be accompanied containing such information as rod material, size, welding procedure, heat number and authorized approval signatures.
  - (4) Only one type of welding electrode is permitted to be stored in one electrode stabilized oven.



- (5) Color codes and tags are employed on electrodes and their shipping boxes.
- (6) Rod oven heat temperature is calibrated every three (3) months.
- (7) Damaged, coated rod is bent and dumped, together with stubs, into a disposal container. Such a container features trap openings on locked tops.

4. Concrete Aggregate Specifications

Due to the recent difficulty in obtaining concrete aggregate meeting the fines specification (ASTM C-33) for the Midland project, Bechtel made an engineering evaluation which indicated that increased fines, within certain limits of type and amount, would not be detrimental to the concrete. CP and Bechtel have discussed the proposed specification and PSAR changes with L. The technical and background information is included in a Bechtel report, titled "Use of Coarse Aggregate With Varied Percentage of Material Passing the #200 Sieve", dated July 24, 1974. The licensee has evaluated and approved these changes, which are included in Amendment No. 27 to the Midland PSAR. These changes are being evaluated by L at the present time.

5. Third-Party Review of QA Program for Midland Plant Construction

A licensee representative described the activities of an outside consulting agency in evaluating the CP QA program. The representative said that the consultant is utilized to: (1) perform overall QA program audits, (2) review CP audits of contractors performance to date, and (3) revise the QA manual.

A number of recommendations relative to CP policies, the QA program, and the necessary procedures are under consideration by CP management at the present time.

6. Babcock and Wilcox Company (B&W) Corrective Action Status

An apparent error was identified during an RO review of a technical specification, relative to the manufacture of reactor pressure vessels for the Midland Plant, at a B&W facility located in Mt. Vernon, Indiana (RO Inspection Reports No. 050-329/74-09 and No. 050-330/74-09). During this inspection, correspondence between CP and B&W was reviewed relative to Technical Procedure No. 12-2-GEM-5 "Maintenance of Welding Equipment." The B&W response, dated September 30, 1974, was considered adequate, and the inspector had no further questions relative to this matter.

7. Bechtel Quality Audit Finding (QAF) No. C-3-3

This QAF identified a lack of procedure relative to reviewing and approving field prepared requisitions for Q-list materials. A procedure for the above has been prepared and is to be included in the Bechtel Nuclear Quality Assurance Manual. This procedure will give Bechtel project engineering the responsibility to supply the quality related requirements and Bechtel quality engineering the review and approval responsibility. This QAF was initially closed out by Bechtel QA on March 5, 1974, with an additional note dated May 7, 1974, relative to additional procedural requirements.

8. Nonconformance Report Review

The Bechtel field file of nonconformance reports (NCR's) were reviewed and considered adequate relative to procedural requirements. In addition, about 25% of the NCR's, generated by Bechtel during the last three months, were reviewed in detail. The NCR forms were determined to be adequately filled out, readily available for review, and response to questions by the inspector relative to specific NCR's were considered to be adequate.

Attachment:  
Attachment A

ATTACHMENT A

MIDLAND PLANT NONCONFORMANCE REPORTS

The nonconformance reports (NCR's) received by RO from CP under cover letter dated May 24, 1974, were reviewed to ascertain their significance. These nonconformances were identified during the normal performance of licensee/contractor QA/QC activities at the site. From this review, the NCR's listed below were selected for more detailed review at the site during the current inspection. The selection was based on potential significance and/or lack of sufficient information on the NCR form.

Results of Inspection

Based on a review of records, discussions with CP and Bechtel personnel, and observations at the construction site, it was determined that the procedural requirements were met and that adequate, corrective action had been initiated and/or completed.

1. Bechtel NCR No. 86, Containment Liner Plate Coating (April 11, 1974)

The primer coating on two liner plate assemblies did not meet the thickness specification. Disposition required sandblasting and recoating. This work was done, and the NCR was closed out by Bechtel on April 18, 1974.

2. CP QF-10, Containment Liner Plate Radiographic Work (March 28, 1974)

This nonconformance is associated with Revision 3 of the applicable specification (Bechtel Specification No. C-111) for this work. The intent of Revision 3 was to implement the requirements of Amendment No. 23 to the Midland PSAR relative to NDE requirements for liner plate welding. However, it was not fully implemented in the field. Subsequently, Revision 4 was issued and used, which is in accordance with Amendment No. 23. This QA was closed out by CP on April 29, 1974.

3. CP QF-11, Bechtel Auditing of Drawing Control Procedures (March 28, 1974)

A Bechtel procedure (FIM, G-1, Section 3.8.g) includes the requirement to monitor and report the degree of adherence to document control procedures. This QF stated that no record of such performance was available. A Bechtel procedure (SF/PSP #4, Revision 1, dated August 2, 1974) was subsequently issued, which included detailed requirements for this activity. Implementation of SF/PSP #4, Revision 1, is considered to be satisfactory. CP closed out this QF on September 17, 1974.

4. Bechtel QAF No. C-3-3, Lack of Procedure for Review and Approval of Field Prepared Requisitions for Q-List Material (January 29, 1974)

This QAF was closed out by Bechtel on May 7, 1974. (Paragraph 7, Report Details)



UNITED STATES  
ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

TELEPHONE  
(312) 858-2660

RO Inspection Report No. 050-329/74-10  
A. RO Inspection Report No. 050-330/74-10

Transmittal Date : October 29, 1974

Distribution:  
RO Chief, FS&EB  
RO:HQ (5)  
DR Central Files  
Regulatory Standards (3)  
Licensing (13)  
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RO Chief, FS&EB  
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L:D/D for Fuels & Materials  
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B. RO Inquiry Report No. \_\_\_\_\_

Transmittal Date : \_\_\_\_\_

Distribution:  
RO Chief, FS&EB  
RO:HQ (5)  
DR Central Files  
Regulatory Standards (3)  
Licensing (13)  
RO Files

Distribution:  
RO Chief, FS&EB  
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DR Central Files  
RO Files

C. Incident Notification From: \_\_\_\_\_  
(Licensee & Docket No. (or License No.))

Transmittal Date : \_\_\_\_\_

Distribution:  
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