

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

Report of Construction Inspection

RO Inspection Report No. 050-329/74-08

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

Midland Plant, Units 1 and 2  
Midland, Michigan

License No. CPPR-81  
License No. CPPR-82  
Category: A

Type of Facility: PWR (B&W) - Unit 1, 650 Mwe  
Unit 2, 818 Mwe

Type of Inspection: Routine, Announced

Dates of Inspection: June 18 and 19, 1974

Dates of Previous Inspection: April 18 and 19, 1974 (Construction)

Principal Inspector: R. A. Rohrbacher *R. A. Rohrbacher* 7-22-74  
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: D. W. Hayes *D. W. Hayes* 7-23-74  
Senior Reactor Inspector  
Reactor Construction Branch  
(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

No new design changes were identified during the current inspection.

### Unusual Occurrences

None identified.

### Other Significant Findings

#### A. Current Findings

##### 1. Project Status

The licensee estimated current project status to be as follows:

- a. Engineering - 38% complete.
- b. Construction - 5.1% complete.

Containment building liner plate prefabrication activities are continuing at the site. The first Unit 2 containment building floor liner plate assemblies were placed on May 1, 1974, and erection of vertical liner plate assemblies was started on June 15, 1974. Five vertical liner plate assemblies were in place at the conclusion of the inspection.

Due to a problem concerning application of the liner plate protective coating, some liner plate assemblies are scheduled to be coated after erection, rather than before erection as previously planned.

2. Nonconformance Report Review

Nonconformance reports, received by RO from Consumers Power Company (CP) under cover letter dated March 25, 1974, were reviewed to ascertain their significance. From this review, five 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 unresolved matters were identified during the current inspection.

C. Status of Previously Reported Unresolved Matters

1. Bechtel Corporation (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 resolution to this QAF is being developed by Bechtel. This matter remains open. (Paragraph 4, Report Details)

2. Containment Building Tendon Trumplates (RO Inspection Reports  
No. 050-329/74-01 and No. 050-330/74-01; No. 050-329/74-03 and  
No. 050-330/74-03; No. 050-329/74-04 and No. 050-330/74-04;  
No. 050-330/74-07 and No. 050-330/74-07

The planned corrective action relative to this matter was considered to be adequate during a previous inspection. During the current inspection, it was determined that this corrective action has been satisfactorily completed. This matter is considered to be resolved. (Attachment A, Item 1, NCR No. C-42)

3. Babcock and Wilcox Company (B&W) QA Program for the Midland  
Plant (RO Inspection Reports No. 050-329/73-06 and No.  
050-330/73-06; No. 050-329/74-04 and No. 050-330/74-04)

During a previous inspection, it was determined that the revised B&W QA documents (QA plans) covering Class 1 components to be supplied for the Midland Plant, appeared to be complete

and were properly approved by B&W, and no deficiencies were identified during a preliminary review of these B&W QA documents (B&W-1346, Revision 1, and Specification 09-1212-01). However, a more detailed review was to be made during a subsequent inspection.

During the current inspection, the above documents and other records relative to the B&W QA program, including CP audits and Bechtel surveillance of B&W activities, were reviewed and discussed with CP. The inspector had no further questions, and this matter is considered to be resolved.

4. Site Contamination Sampling Program (RO Inspection Reports No. 050-329/73-07 and No. 050-330/73-07; No. 050-329/73-10 and No. 050-330/73-10)

A new site contamination sampling program was proposed by Bechtel for consideration by CP. Bechtel indicated that this program was not necessary, and CP concurred with this conclusion. This matter is considered to be resolved. (Paragraph 5, Report Details)

#### Management Interview

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

##### Consumers Power Company (CP)

W. E. Kessler, Project Manager  
T. C. Cooke, Project Superintendent  
H. W. Slager, Project Quality Assurance Supervisor  
J. L. Corley, Field Quality Assurance Engineer

##### Bechtel Corporation (Bechtel)

J. P. Connolly, Project Field Quality Control Engineer  
G. L. Richardson, Lead Quality Assurance Engineer  
A. J. Boos, Senior Field Engineer

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

1. The inspector stated that he had reviewed the site activities and records of several selected nonconformance reports to determine the status and adequacy of corrective action and that he had no further questions at this time relative to these nonconformance reports. (Attachment A)

2. The B&W QA program was discussed. A representative of CP stated that CP had reviewed the previously received B&W QA documents for the Midland project and, except for several details of concern to CP which are presently in the process of resolution with B&W, the B&W QA program for Midland is acceptable to CP.
3. The previously completed site sampling program and the new proposed program were discussed. CP stated that they concur with the recent Bechtel evaluation that the new sampling program is not necessary. CP further stated that this conclusion was based on the results of the previous sampling program and the measures used to control the storage of materials and components at the construction site.
4. In response to questions concerning the problem of applying a protective coating to containment building liner plate assemblies, the licensee stated that work is continuing toward a resolution of this problem. The inspector was assured that, despite changes in work and inspection scheduling, adequate quality related inspections would be performed as required and to the extent previously planned.
5. Those present were informed of the recent organizational changes in RO:III, especially relative to the Reactor Construction Branch.

## 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 (CP)

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

#### Bechtel Corporation (Bechtel)

L. R. Albert, Lead Civil Quality Control Engineer

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

V. S. Agaonkar, Midland Site Representative

### Results of Inspection

#### 1. Concrete - Class 1 Structures and Supports

##### a. Implementation of QA Program - Champion, Incorporated

A review of the CP, Bechtel, and Champion, Incorporated (Champion) line and QA/QC organizational and functional relationships indicated that applicable quality requirements in this area are being met relative to the operation of the onsite concrete batch plant. A previous inspection determined adequate batch plant restoration and requalification. (RO Inspection Reports No. 050-329/73-07 and No. 050-330/73-07)

In addition to operating personnel, Champion has a plant supervisor and a plant superintendent at the site on a full-time basis. QC assistance is available from the home office, as required, and an executive vice president and manager is scheduled to audit onsite activities of Champion on a six-month basis.

Bechtel and the United States Testing Company, Incorporated (U. S. Testing) assure, through their sampling, testing, and

other QA/QC activities (RO Inspection Reports No. 050-329/74-04 and No. 050-330/74-03), that Champion manufactures and provides concrete that meets applicable requirements, including Bechtel Specification No. C-230, Technical Specification for Operating Onsite Batch Plant and Finishing Concrete for the Consumers Power Company Midland Plant.

The Champion Quality Assurance Manual for Ready Mix Concrete (QAM), Revision No. 3, issued March 12, 1974, was reviewed. Appendix A to this QAM includes twelve QC procedures. Bechtel has approved this QAM, and a copy is in their site files. Champion initiates and maintains quality related records for the activities they perform, including purchasing of material, inspection and maintenance of equipment, and scheduling inspection and calibration of scales and other measuring devices.

b. Record Review

Records relative to the Unit 2 containment building base slab pour (concrete placement No. CC (591.5(a))) were reviewed and were considered to be adequate. This placement consisted of approximately 5,000 cubic yards of Class 1 concrete. Records reviewed, pertinent to the pour mentioned above, and to concrete activities in general, include the following:

- (1) Bechtel inspection plans for preplacement, batch plant operation, and batch plant inspection.
- (2) Reinforcing steel test results for about 50% of the heats of rebar received at the site during the last three months. This review was made to verify that applicable procedures were being used and that test results for specific heats tested correlated with rebar heats used at the site. The tests conformed to Bechtel specifications, including the referenced ASTM Standards. The records were determined to be complete, up-to-date, and readily retrievable for review. (Also see RO Inspection Reports No. 050-329/74-04 and No. 050-330/74-04)
- (3) Bechtel Field Inspection Plan C-231-186 and associated in-process concrete test reports (Field Tests, QC-C12) for about 30% of the inspections for this pour. Data for each batch were recorded. Each batch record was identified by a ticket number and included the mix number, placement location, reference to applicable requirements, sampling and test results, and batch reject information, if applicable. All of the field test reports reviewed were complete, and all were signed and dated by Bechtel QC as being acceptable (correct).

c. Observation of Work

From observations at the site and from a review of CP and Bechtel QA/QC records, no deficiencies were identified relative to the placement of the Unit 2 containment building base slab.

Concrete preplacement work in progress, relative to the Auxiliary Building walls, appeared to be adequate; that is, no deficiencies were identified relative to forms, embeds, rebar, and QC inspection.

2. Review of QA/QC Logs and Reports

The following documents relative to QA/QC activities were reviewed. These supplement the required reports concerning violations and nonconformances. It was determined that these logs and reports provided a chronological history of QA/QC events relative to construction activities at the Midland site.

a. Bechtel QC Monthly Reports

Bechtel Monthly Activity Status Reports have been prepared by the Bechtel QC supervisor since March 1974. These monthly reports (dated March through June 1974) were reviewed during the current inspection. Topics covered include completed and in-progress QC activities such as training, inspection planning, status of nonconformance reports, site test laboratory activities, and Bechtel management visits. These monthly reports describe particular activities (e.g., corporate management visits to the Midland site) and the status of on-going activities (e.g., status of master inspection plans and field inspection plans).

b. Bechtel QC Daily Logs

About half of the Bechtel QC daily log sheets (Form QC-G1-1) from mid-May through mid-June, were reviewed. These logs cover field inspection activities.

c. CP QA Logs

The CP Project Quality Assurance Services Department provides daily log sheets for use at the site. Statements relative to QA activities are entered in chronological order on an essentially daily basis.



The logs of two field QA coordinators were reviewed - one from April 18, 1974 to June 18, 1974, the other from April 09, 1974 to June 18, 1974. About 75% of the entries in each log, covering the above periods, were reviewed in detail. The entries were judged to be comprehensive and appropriate matters were included. Open items, from the above log sheets, are recorded on separate summary sheets.

3. Additional Work and Inspection Procedures

Although this matter was considered to be resolved during the previous inspection (RO Inspection Reports No. 050-329/74-07 and No. 050-330/74-07), the status of these procedures was reviewed again during the current inspection as a follow-up matter. Except for some current problem areas, which are in the process of resolution between CP and Bechtel, appropriate procedures are being developed and/or revised and approved in a timely manner.

4. Bechtel QAF No. C-3-3

Bechtel QAF No. C-3.3, dated January 29, 1974, refers to Bechtel Project Special Provisions Notice No. 3, Section 4C, which deals with the responsibility for reviewing and approving field prepared requisitions for Q-list materials. The statement of "corrective action taken" is not clear in that no procedure is available that defines the requirements of the review and approve responsibility.

A representative of CP stated that this matter had been discussed with Bechtel, and a resolution to this QAF is being developed. Corrective action is to include a revision to the Bechtel QA/QC procedures to define the requirements involved and to transfer this responsibility from the project field QC engineer to the project quality engineer. This matter remains open pending review of modifications to be made.

5. Site Contamination Sampling Program

Prior to 1974, inspection of material and components, stored at or near the construction site, and analysis of samples previously collected indicated that the site atmospheric contamination has not adversely affected stored materials to an extent greater than normally expected. (See RO Inspection Reports No. 050-329/73-10 and No. 050-330/73-10)

A new site sampling (monitoring) program, previously developed by Bechtel, was revised and given to CP on April 18, 1974. In a May 14, 1974, letter to CP, Bechtel indicated that this new sampling program was not necessary, and, on May 29, 1974, CP concurred that this sampling program need not be implemented at the site. This conclusion was based on the results of previous inspection and sampling programs and on the measures used to control the storage of materials and components at the construction site. (Bechtel FPG-3, Procedure for Storage and Storage Maintenance of Equipment and Material, Midland Units 1 and 2, and Bechtel FIM G-5, Material Receiving and Storage Control.) The inspector had no further questions relative to this matter.

Attachment:  
Attachment A

ATTACHMENT A

MIDLAND PLANT NONCONFORMANCE REPORTS

The nonconformance reports (NCR's) received by RO from CP under cover letter dated March 25, 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 these NCR's were adequately controlled (procedural requirements met) and that adequate, corrective action had been initiated and/or completed.

1. Bechtel NCR No. C-42, Gallery Trumplate Assemblies (December 20, 1973)

The recommended disposition of this NCR appeared to be adequate during the previous inspection (RO Inspection Reports No. 050-329/74-07 and No. 050-330/74-07, Attachment A), but a review of the completed corrective action remained open. This matter was closed out by Bechtel QC on April 2, 1974, and the RO inspector had no further questions subsequent to his review of the corrective action.

2. Bechtel NCR No. 51, Revision 1, Lean Backfill Concrete Did Not Meet Air Entrainment Requirements (February 8, 1974)

Several batches of concrete with out-of-specification air entrainment were included in five placements. All of the concrete referenced in this NCR was lean backfill (2,000 psi compressive strength) and test cylinders indicated adequate strength. Bechtel recommended "use as is" and reiterated the need for following procedures for placing concrete to preclude repetition and that no specification relaxation is allowed for lean backfill concrete. This NCR was closed out by Bechtel on March 29, 1974.

3. Bechtel NCR No. 58, Liner Plate Weld Examination Requirements (February 13, 1974)

This NCR resulted from confusion as to what RT requirements were applicable for this work. Apparently, two sets of RT requirements were available (applicable) depending on whether Revision 2 or Revision 3 of Bechtel Specification C-111 (the applicable specification)

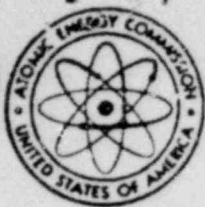
was used. This matter has been resolved, and the NCR was closed out by Bechtel QC on February 28, 1974.

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 remains open. (Paragraph 4, Report Details)

5. CP QF-8, Unapproved Champion QAM in Bechtel File (February 19, 1974)

This nonconformance has been resolved. Bechtel now has an approved copy of the Champion QAM, Revision 3, issued March 12, 1974, in their site files. This QF was closed out by CP on March 20, 1974.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
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A. RO Inspection Report No. 050-329/74-08 and No. 050-330/74-08

Transmittal Date : July 24, 1974

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

Distribution:  
RO Chief, FS&EB  
RO:HQ (4)  
L:D/D for Fuels & Materials  
DR Central Files  
RO Files

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  
RO:HQ  
DR Central Files  
RO Files

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

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

Distribution:  
RO Chief, FS&EB  
RO:HQ (4)  
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