

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report of Construction Inspection

IE Inspection Report No. 050-329/75-02
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Licensee: Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

Midland Units 1 and 2
Midland, Michigan

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

Type of Licensee: PWR (B&W) 650 MWe, Unit 1; 818 MWe, Unit 2

Type of Inspection: Special, Announced

Date of Inspection: February 26, 1975

Dates of Previous Inspection: February 5-7, 1975 (Construction)

Principal Inspector: *T. E. Vandell*
T. E. Vandell

3-25-75
(Date)

Accompanying Inspector: *I. T. Yin*
I. T. Yin

3-25-75
(Date)

Other Accompanying Personnel: None

Reviewed By: *D. W. Hayes*
D. W. Hayes
Senior Construction Project Inspector

3/25/75
(Date)

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SUMMARY OF FINDINGS

Enforcement Action

A. Noncompliance

No noncompliance of NRC requirements were identified.

B. Safety Matters

None identified.

Licensee Action on Previously Identified Enforcement Action

Not applicable.

Design Changes

Not applicable.

Other Significant Findings

A. Current Project Status

During an inspection conducted February 5-7, 1975 (IE Inspection Report No. 050-330/75-01) a review of records, developed in connection with the rebar spacing nonconformance, indicated insufficient information relative to design and analysis conditions assumed. At that time, the licensee could not address IE:III's questions but agreed to review the matter with the Bechtel Associates Professional Corporation, their Architect-Engineer. This is the follow-up inspection arranged with the Consumers Power Company, performed at the Bechtel Corporation offices at Ann Arbor, Michigan.

B. Unresolved Matters

Unit 2 Containment Rebar Spacing Nonconformance

Bechtel Associates Professional Corporation (Bechtel) and Consumers Power Company (CP) are to provide further studies on the safety implication analysis relative to spacing of the Unit 2 containment rebars. (Report Details, Paragraph 3)

C. Status of Previously Reported Unresolved Matters

Not applicable.

Management Interview

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

Consumers Power Company (CP)

H. W. Slager, Midland Project Quality Assurance Administrator

Bechtel Associates Professional Corporation (Bechtel)

E. Rumbaugh, Engineer Manager
P. A. Martinez, Midland Project Engineer
K. Wiedner, Chief Civil/Structural Engineer
R. L. Castleberry, Project Engineer
J. L. Hurley, Assistant Project Engineer
J. Hink, Civil Design Group Supervisor
T. Thiruvengadam, Senior Engineer
M. G. O'Mara, Midland Project Quality Assurance Engineer
W. F. Holub, Midland Project Quality Assurance Engineer
C. V. Newton, Midland Quality Assurance Engineer
J. I. Dotson, Ann Arbor Quality Assurance Staff

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

1. The inspector indicated that he had reviewed and was satisfied with the Bechtel procedures on design interface control. (Report Details, Paragraph 1)
2. The frequency of QA audit on design engineering groups appeared to be insufficient. However, the inspector noted that there are significant improvements in recent audit activities. (Report Details, Paragraph 2)
3. The inspector stated that it was his understanding that Bechtel is to supplement their previous report on rebar spacing nonconformance evaluation. Such analysis is to directly reflect the PSAR commitments in the areas of design load bases and reactor building design criteria. More detailed design verifying documentation is also to be included in the analysis. The Bechtel Assistant Project Engineer noted that detailed verification will be provided in accordance with the IE:III inspector's concerns but may not follow the format suggested.

REPORT DETAILS

Persons Contacted

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

Bechtel Associates Professional Corporation (Bechtel)

R. D. Hart, Midland Quality Assurance Engineer
J. R. McBride, Midland Quality Assurance Engineer

Results of Inspection

1. Bechtel Design Interface Control

The inspector reviewed design interface requirements in the areas of: (1) review, (2) approval, (3) release, (4) distribution, and (5) revisions. Bechtel procedures and criteria appear to be adequate and effective.

Documents reviewed:

- a. Engineering Department Procedure (EDP)-4.37, "Preparing Calculation", Revision 0, dated February 20, 1974.
- b. Manager of Engineering Directive (MED)-4.25-0, "Design Interface Control", Revision 1, dated February 4, 1975.
- c. MED-4.37-, "Design Calculations", Revision 2, dated July 15, 1974, for Midland Project and Greenwood Unit 1 Project.

2. Bechtel Design Audit Activities

The inspector reviewed Bechtel quarterly master auditing plan covering areas of: (1) design criteria, (2) calculations, (3) specifications, and (4) interfaces, and audited the following reports of quality assurance audits of engineering design groups:

- a. Design Review Audit on Stress Analysis Group, conducted in November 1974, dated December 20, 1974. Fifteen (15) Quality Assurance Findings (QAF) were issued as a result of the audit, and training sessions were recommended.
- b. Design Review Audit document on engineering in February 1974.
- c. Design Review Audit document on mechanical design in November 1973. ↓

- d. San Francisco headquarters management audits on Design processes in: (1) May 1974, (2) October 1974, and (3) November 1974.

The inspector also reviewed the following procedures:

- a. QA Department Procedure Manual, Section C, Procedure 5, "Project Audit".
- b. NQAM Section I, No. 4, "Quality Assurance Department", Revision 1, dated June 24, 1974.
- c. NQAM Section V, No. 5, "Quality Assurance Department Procedures", Revision 2, dated August 2, 1974.
- d. NQAM Section V, No. 6, "Indoctrination and Training", Revision 3, dated August 2, 1974.

The records indicated adequate (1) checklist, (2) review and followup actions, and (3) personnel qualifications. The frequency of Bechtel Engineering internal audits has been increased considerably since the latter part of 1974.

3. Unit 2 Containment Rebar Spacing Nonconformance

A review was performed of Bechtel report, Investigation of As-built Reinforcing Steel Spacing for Midland Containment Wall, Revision 0, dated December 13, 1974. The results indicated that the report was not sufficiently complete relative to: (1) justification of formula used, (2) design bases consideration, (3) adherence to PSAR reactor building design criteria, including loading combinations and acceptance criteria, (4) verification documentation, and (5) mathematical accuracy. CP Quality Assurance and Bechtel Civil/Structural Department were in agreement with the inspector's findings and are to submit a supplementary report on the rebar spacing nonconformance safety evaluation. Target date of submitting a report is March 28, 1975. The outline of Bechtel's preliminary plan to accomplish the reevaluation included: (1) code evaluation, design conditions, and loading conditions, (2) material identification, (3) description of analytical methods, (4) stress level and safety factors, (5) design/verification process documentation, and (6) discussion on justification of the acceptability of the as-built condition.