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May 4, 1979

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Dr. Frederick P. Cowan  
6152 N. Verde Trail  
Apt. B-125  
Boca Raton, Florida 33433

Re: Consumers Power Company  
(Midland Plant, Units 1 and 2)  
Docket Nos. 50-329, 50-330

Gentlemen:

Enclosed are an interim and a final report submitted by Consumers Power Company to the Nuclear Regulatory Commission pursuant to 10 C.F.R. §50.55(e). The interim report, which pertains to the diesel generator building settlement, references certain attachments which consist of figures, drawings and charts. Copies of these attachments will be provided to members of the Atomic Safety and Licensing Board and any party upon request.

Very truly yours,

*Martha E. Gibbs*

Martha E. Gibbs

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cc: Service List w/enclosures

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Consumers  
Power  
Company

Stephen H. Howell  
Senior Vice President

General Offices: 1945 West Parnell Road, Jackson, Michigan 48201 • (517) 788-0453

May 1, 1979  
Howe-131-79

Mr J G Keppler, Regional Director  
Office of Inspection and Enforcement  
US Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, IL 60137



MIDLAND NUCLEAR PLANT  
UNIT NO 1, DOCKET NO 50-329  
UNIT NO 2, DOCKET NO 50-330  
REACTOR BUILDING SPRAY PIPING SUPPORTS

Reference: S H Howell letters to J G Keppler; Midland Nuclear Plant;  
Unit No 1, Docket No 50-329; Unit No 2, Docket No 50-330;  
Reactor Building Spray Piping Supports -

- 1) Serial Howe-60-78, dated April 19, 1978
- 2) Serial Howe-92-78, dated June 13, 1978
- 3) Serial Howe-154-78, dated August 30, 1978
- 4) Serial Howe-186-78, dated October 13, 1978
- 5) Serial Howe-231-78, dated November 10, 1978
- 6) Serial Howe-265-78, dated December 15, 1978
- 7) Serial Howe-36-79, dated February 1, 1979
- 8) Serial Howe-93-79, dated March 16, 1979

The referenced letters are interim 50.55(e) reports. This letter is the final 50.55(e) report. Analysis conducted since the initial report has verified the adequacy of the design of the reactor building spray piping supports in that the ASME Section III Code allowable stresses are met.

The enclosed letter provides the final report to Bechtel Management  
Corrective Action Report (MCAR) 22.

*Stephen H. Howell*

Enclosure: Letter, P A Martinez to G S Keeley, BLC-7507, MCAR-22 Final  
Report, with attached report, dated April 27, 1979

CC: Director of Office of Inspection  
and Enforcement  
Att: John G Davis, Acting Director,  
USNRC (15)

Director, Office of Management  
Information & Program Control, USNRC (1)

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BCC: JLBacon, M-1085A  
WRBird, JSC-216B  
RLCastleberry, Bechtel AA (w/o att)  
TCCooke, Midland  
JLCorley, Midland  
LADreisbach, Bechtel-Midland (w/o att)  
GSKeeley, Pl4-408B  
BWMarguglio, JSC-220A  
PAMartinez, Bechtel AA  
DEMiller, Midland  
JFNewgen, Bechtel-Midland (w/o att)  
MEGibbs, IL&B  
File: 0.4.9.17

## Bechtel Power Corporation

777 East Eisenhower Parkway  
Ann Arbor, Michigan

Mail Address: P.O. Box 1000, Ann Arbor, Michigan 48106



April 27, 1979

BLC-7507

Mr. G. S. Keeley  
Project Manager  
CONSUMERS POWER COMPANY  
1945 West Parnall Road  
Jackson, Michigan 49201

Midland Units 1 and 2  
Consumers Power Company  
Bechtel Job 7220  
MCAR 22 FINAL REPORT  
Files 2417/2801

Dear Mr. Keeley:

The attached final report for MCAR 22, "Apparent Design Deficiency in the Reactor Building Spray Piping Assemblies," is submitted for your information and use. The basis of the MCAR Final Report submittal is receipt of assurance from ITT Grinnell (primary design responsibility) that the design meets Code requirements.

ITT Grinnell has given Bechtel assurance that the anchors in question are within the Code allowables. Bechtel Engineering has completed the review of the Grinnell report on results of the time history analysis for the six welds that were discussed with Consumers Power on January 22, 1979, and reported to the NRC on February 1, 1979 (Howe-36-79) and March 16, 1979 (Howe-93-79). The review confirms the Grinnell assertion that the six anchors meet Code requirements.

The ITT Grinnell report, which presents the summary of analysis for the remaining anchors, will be reviewed by Bechtel Engineering on or before May 18, 1979. Final verification and closure of the MCAR by Bechtel Quality Assurance will be based upon Engineering's review and acceptance of the Grinnell report. The Grinnell reports reviewed and accepted by Bechtel will

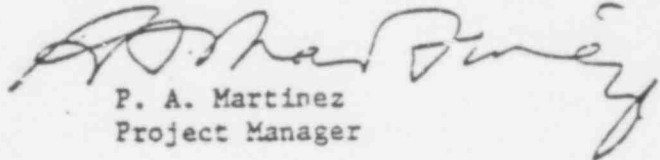
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be maintained in the Project Engineering files and will be available for any desired subsequent reviews. Detailed calculations are retained by ITT Grinnell. They are required to be kept for the lifetime of the plant per ANSI N45.2.9-1974.

Very truly yours,



P. A. Martinez  
Project Manager

PAM/AEB/pp

cc: Mr. R. C. Bauman  
Mr. W. R. Bird  
Mr. J. L. Corley  
Mr. B. W. Marguglio

Attachment (4 pages)

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# Bechtel Associates Professional Corporation

Attachment to BLC-7507

SUBJECT: MCAR 22 (issued 3/21/78)  
Reactor Building Spray Anchor Discrepancy

## FINAL REPORT

DATE: April 27, 1979  
PROJECT: Consumers Power Company  
Midland Plant Units 1 & 2  
Bechtel Job 7220

### Introduction

This final report is prepared in response to Midland project Management Corrective Action Report 22, dated March 21, 1978.

### Description of Discrepancy

It was determined that local pipe stresses may potentially exceed ASME Code Section III allowables at the anchor points in the reactor building spray headers located in the reactor building dome. A total of 32 anchor points (16 per unit) were determined to have this potentially overstressed condition.

### Potential Safety Implication

A potential safety problem could exist if the overstressed piping deformed plastically and impeded reactor building spray flow following a LOCA or main steam line break (MSLB).

### Summary of Investigation and Historical Background

It was determined that the potential condition exists because ITT Grinnell's original anchor design did not use a reinforcing pad, which has been utilized by subsequent ITT Grinnell anchor designs to distribute the loading. The 1976 analysis used by Grinnell in designing these anchors indicated that the original design, without reinforcing pads, was adequate. Only the spray piping anchors have this original design. Subsequent Grinnell anchor designs utilize a reinforcing pad supported by a three-dimensional finite element analysis for all other Grinnell-designed piping anchors in the Midland plant.

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All 16 Unit 2 reactor building spray dome anchors were installed in late 1976 and early 1977 in accordance with Grinnell drawings, except that minor modifications were made to the Level 1 approved Grinnell hanger sketches. The 10 Unit 1 anchors were installed in the prefabricated dome, based on the approved supplier Revision 0 design, in early 1977 prior to the lifting and setting of the Unit 1 dome. For the remaining six anchors in the Unit 1 ring girder area, a revised anchor design was received from the supplier which included reinforcing pads. These anchors have not been installed pending resolution of this MCAR. The Grinnell sketches were revised to show the minor modification required for installation and sent to Grinnell for concurrence.

Simultaneous to the above in April 1977, Grinnell revised their sketches (Units 1 and 2) to incorporate a reinforcing pad. These revised sketches were received by Bechtel Engineering in June 1977.

The Unit 2 drawings were returned to Grinnell by Bechtel Engineering with an approval Level 9 (revision unacceptable) because the Unit 2 anchors were already installed. The Unit 1 drawings were returned to Grinnell by Bechtel Engineering with an approval Level 1 (revision acceptable) based on the erroneous schedule information that they were not yet installed.

During the week ending March 13, 1978, a review of the status of the pad material questioned the need for reinforcing pads, bringing to light the fact that the as-designed/built condition may have exceeded the code allowable stresses. Significant actions and results which developed in the investigation of the anchor design are described in the following paragraphs.

- 1) Bechtel initiated a reanalysis of the reactor building spray system piping to define specific loading for each of the subject anchors. The original design loading provided to Grinnell was based on worst case seismic loading with additional allowance to ensure an adequate design for a water hammer loading combination. It had been anticipated that the water hammer loads would not have exceeded the

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seismic loading. The water hammer loading combination analysis was to be performed later in the project cycle with a review of the adequacy of the initially designed reactor building spray system supports for this loading.

It was determined that the water hammer loading combination significantly exceeded the previously provided seismic loadings. Independent of the investigation for MCAR 22, this planned verification would have caused the recognition of the potentially overstressed conditions, based on the initial calculational method. Therefore, Bechtel proceeded to develop time-history loadings to allow Grinnell to perform a more exact analysis using actual loading conditions.

- 2) Bechtel reviewed the anchor-to-pipe interface stress levels, based on the loading developed in Item 1, and determined that the stress levels were acceptable. Bechtel analysis was based on using the stress intensification factor technique for an unreinforced pipe branch.
- 3) Concurrent with Bechtel activity in Item 2, Grinnell reviewed the anchor stanchion design and structural attachment interface for acceptable stress levels. Grinnell determined that, using the most severe of the time-history data combined with other loads provided by Bechtel as a result of Item 1 activity, all but six anchors per unit were acceptable. These six anchors were calculated to be approximately 6% over code allowables at the Bechtel-supplied structural support and Grinnell anchor interface.

Grinnell subsequently reviewed these anchors based on the actual time-history loading developed by Bechtel as discussed in Item 1. Based on this analysis, the report of which is attached, Grinnell has determined that these anchors are also within code allowables.

- 4) It is concluded that the statement on the MCAR concerning apparent cause is inaccurate, and that no deficiency in the supplier design calculations has been discovered.

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## Corrective Action

As a result of the determination that the reactor building spray piping system can be used as is, no corrective action involving hardware is required.

A review of the methods used to ensure timely response by Grinnell and resolution of comments on changes to hangers were initiated early in the investigation. It is concluded that the existing procedural methods for anchor design review and approval are adequate. Since the time of recognition of the problem in March 1978, these methods have been properly implemented.

## Reportability

Project Engineering's final evaluation is that the originally reported discrepancy of the subject MCAR has been shown through analysis not to exist, and thus there is not now a reportable condition within the requirements of 10 CFR 50.55(e).

Submitted by:

B. J. Anderson

Approved by:

B. J. Anderson

Concurrence by:

Karl Wiedner

4/17/5

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