



**Consumers
Power
Company**

James W Cook

*Vice President - Projects, Engineering
and Construction*

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

February 25, 1983

78-05 #12

Mr J G Keppler, Regional Administrator
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND NUCLEAR COGENERATION PLANT
DOCKET NOS 50-329 AND 50-330
REACTOR BUILDING SPRAY PIPING SUPPORTS
FILE: 0.4.9.17 SERIAL: 20713

Reference: (1) CPCo (S H Howell) letter to NRC (J G Keppler), Same Subject,
Serial Howe-320-79, Dated December 21, 1979

Reference 1 had provided Consumers Power's final report on the subject of
Reactor Building Spray Piping Supports. On 1/25/83, W R Bird informed
R Gardner of your staff that we were going to reopen the 50.55(e) report
because of possible unconservative water hammer loads being used in the
original design analysis. Mr Gardner had confirmed that NRC had not as yet
closed out 78-05.

Attached is Interim Report 1 to MCAR-22 Addendum which provides a complete
description of the concern and the status of the actions being taken to
resolve the concern.

Another report, either interim or final, will be sent on or before July 11,
1983.

JWC/WRB/lr

Attachment: MCAR-22 Addendum, Interim Report 1, dated February 16, 1983

CC: Document Control Desk, NRC
Washington, DC

RJCook, NRC Resident Inspector
Midland Nuclear Plant

8303100263 830225
PDR ADOCK 05000329
S PDR

OC0283-0019A-MP01

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CC: CBechhoefer, ASLB Panel
FPCowan, ASLB Panel
JHarbour, ASLB Panel
AS&L Appeal Panel
MMCherry, Esq
MSinclair
BStamiris
CRStephens, USNRC
WDPaton, Esq, USNRC
FJKelley, Esq, Attorney General
SHFreeman, Esq, Asst Attorney General
WHMarshall
GJMerritt, Esq, TNK&J

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Attachment to
Serial 20713
78-05 #12

105361

SUBJECT: MCAR 22 (Addendum issued 1/26/83)
Reactor Building Spray Anchors

INTERIM REPORT 1

DATE: February 16, 1983

PROJECT: Consumers Power Company
Midland Plant Units 1 and 2
Bechtel Job 7220

Description of Deficiency

A modeling assumption was discovered in the original reactor building spray system water hammer analysis, which resulted in less conservative results. Some of the recalculated water hammer pressures are higher than those calculated in the original analysis.

Summary of Investigation

Bechtel has recalculated the pressure time histories for the reactor building spray system header using revised modeling assumptions. The maximum differential pressures in each spray header piping branch have changed in magnitude from -30 to +275% from the values originally calculated (see Table 1).

The pressure time histories are currently being converted to force time histories for input to the piping stress analysis.

Analysis of Safety Implication

The primary safety-related functions of the reactor building spray system are to remove sensible heat and subsequent decay heat from the reactor building and to remove fission products from the reactor building atmosphere following loss of coolant or main steam line break accidents. The piping stress analysis and associated hanger and anchor design provides assurance that the reactor building spray header will remain intact to perform these safety functions. The calculation of the water hammer forces in the reactor building spray header is one input to the stress analysis. The final disposition of MCAR 22, Reactor Building Spray Anchor Discrepancy, was based on the original reactor building spray header stress analysis completed in 1979. The increased water hammer loads put the design of the spray header in question until the stress analysis is completed and hanger design can be verified.

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Probable Cause

This discrepancy was caused by simplifying modeling assumptions made in the original water hammer analysis that appeared reasonable at the time but were subsequently found to be less conservative in certain cases.

Corrective Actions

The following actions have been initiated.

1. Verification of the Installed Piping, Hanger, and Anchor Design

Bechtel has recalculated new water hammer pressure time histories for the spray header and is currently converting these pressure time histories into force time histories. The force time histories will be input into the piping stress analysis to develop loading forces on piping hangers and anchors. The installed design of the piping, piping hanger, and anchors will then be evaluated by Bechtel for compliance with ASME Code allowables.

2. Determination that the Modeling Assumptions In Question Were Not Used in Other Water Hammer Analyses on the Midland Project

A summary of the modeling assumptions and their use has been distributed to other Bechtel AAO project and staff entities performing water hammer analyses for assessment of applicability to their work.

The basis for the probable cause involves engineering judgment and decisions and is not associated with a deficiency in engineering procedures or practices. Therefore, no process corrective action is required.

A schedule for completion of the above corrective actions will be provided in the next interim report.

Reportability

Because of the indeterminate nature of the impact on plant safety, this item has been conservatively considered to be potentially reportable considering criteria contained in 10 CFR 50.55(e). Consumers Power Company reported this condition to the NRC on January 25, 1983.

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Submitted by: *J.A. Clements*
J.A. Clements
Nuclear Systems Group Super-
visor

Approved by: *E.M. Hughes*
E.M. Hughes
Project Engineer

Concurrence by: *R.B. Fallgren*
R.B. Fallgren
Geotechnical Services
Manager

Concurrence by: *R.L. Loos*
R.L. Loos
Chief Nuclear Engineer

Concurrence by: *E.H. Smith*
E.H. Smith
Engineering Manager

Concurrence by: *M.A. Dietrich*
for M.A. Dietrich
Project Quality Assurance
Engineer

JAC/MCP/jsh*

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TABLE 1

REACTOR BUILDING SPRAY HEADER DIFFERENTIAL PRESSURES

Reactor Building Spray Header Pipe Number and Quadrant	Maximum Differential Pressure (ft of water)		Percent Changed
	<u>Original Analysis</u>	<u>Revised Analysis</u>	
1GCB-12, Quad 1	1,190	840	-30
1GCB-12, Quad 2	1,190	840	-30
1GCB-10, Quad 1	508	540	+6
1GCB-10, Quad 2	508	600	+18
1GCB-8, Quad 1	570	740	+30
1GCB-8, Quad 2	570	1,210	+112
1GCB-6, Quad 4	1,068	980	-8
1GCB-6, Quad 3	1,068	940	-12
1GCB-2, Quad 4	962	860	-11
1GCB-2, Quad 3	962	990	+3
1GCB-4, Quad 4	616	750	+22
1GCB-4, Quad 3	616	2,310	+275