Consumers Power Company

James W Cook
Vice President - Projects, Engineering and Construction

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

January 31, 1984

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

MIDLAND ENERGY CENTER PROJECT
DOCKET NOS 50-329 AND 50-330
IE BULLETIN 79-02
FILE: 0505.12 SERIAL: 27991

References: CPCo letters to J G Keppler; Midland Project; Docket Nos 50-329, 50-330; IE Bulletin 79-02:

1) Serial Howe-195-79; dated July 3, 1979
2) Serial Howe-233-79; dated August 15, 1979
3) Serial Howe-84-80; dated May 7, 1980
4) Serial 9107; dated June 9, 1980
5) Serial 10049; dated October 31, 1980
6) Serial 11505; dated February 26, 1981
7) Serial 14636; dated December 15, 1981
8) Serial 17510; dated June 1, 1982
9) Serial 20684, dated January 28, 1983
10) Serial 23757, dated July 28, 1983

References 1 through 10 are correspondence which address IE Bulletin 79-02. References 3 through 10 reported that further evaluations and corrective actions were required to completely address 79-02.

Attachment 1 provides another interim report on this subject.

The three remaining items required in order to complete all actions necessary to close the 79-02 issue are:

1. Completion of pipe support review against the criteria regarding expansion anchor usage within the first two supports of a pump nozzle. This review is identified as Item 1A in the attachment to this letter.

2. Completion of review of the pipe supports for new seismic loadings resulting from seismic reanalysis. This is Item 1C in the attachment to this letter.

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3. Completion of inspection of the accessible pipe support expansion anchors in conjunction with the CCP. This is Item 6 in the attachment to this letter.

Either a final response or a status report will be provided by December 31, 1984.

James W. Cook

JWC/JPK/cd

Attachment: Report For I&E Bulletin 79-02, dated January 12, 1984

CC Document Control Desk, NRC
Washington, DC

RJCook, NRC Resident Inspector
Midland Nuclear Plant

DHood, NRC Office of NRR

INPO Records Center

OM/OL SERVICE LIST

Mr Frank J Kelley
Attorney General of the
State of Michigan
Ms Carole Steinberg, Esq
Assistant Attorney General
Environmental Protection Division
720 Law Building
Lansing, MI 48913

Mr Myron M Cherry, Esq
Suite 3700
Three First National Plaza
Chicago, IL 60602

Mr Wendell H Marshall
RFD 10
Midland, MI 48640

Mr Charles Bechhoefer, Esq
Atomic Safety & Licensing
Board Panel
U S Nuclear Regulatory Commission
Washington, DC 20555

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

Mr Fred C Williams
Isham, Lincoln & Beale
1120 Connecticut Ave, NW, Suite 325
Washington, DC 20036

Mr James E Brunner, Esq
Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Mr D F Judd
Babcock & Wilcox
PO Box 1260
Lynchburg, VA 24505

Mr Steve Gadler, Esq
2120 Carter Avenue
St Paul, MN 55108

Atomic Safety & Licensing
Appeal Board
U S Nuclear Regulatory Commission
Washington, DC 20555

Mr C R Stephens (3)
Chief, Docketing & Services
U S Nuclear Regulatory Commission
Office of the Secretary
Washington, DC 20555

Ms Mary Sinclair
5711 Summerset Street
Midland, MI 48640

Mr William D Paton, Esq
Counsel for the NRC Staff
U S Nuclear Regulatory Commission
Washington, DC 20555

Atomic Safety & Licensing
Board Panel
U S Nuclear Regulatory Commission
Washington, DC 20555

Ms Barbara Stamiris
5795 North River Road
Rt 3
Freeland, MI 48623

Dr Jerry Harbour
Atomic Safety & Licensing
Board Panel
U S Nuclear Regulatory Commission
Washington, DC 20555

Mr M I Miller, Esq
Isham, Lincoln & Beale
Three First National Plaza
52nd Floor
Chicago, IL 60602

Mr John DeMeester, Esq
Dow Chemical Building
Michigan Division
Midland, MI 48640

Ms Lynne Bernabei
Government Accountability Project
1901 Q Street, NW
Washington, DC 20009

September 6, 1983
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REPORT FOR I&E BULLETIN 79-02

SUBJECT: I&E BULLETIN 79-02
"PIPE SUPPORT BASE PLATE DESIGNS
USING CONCRETE EXPANSION ANCHOR BOLTS"

INTERIM REPORT

DATE: January 12, 1984

1. Anchor Bolt Use Prohibition

a. An agreement has been reached with the original pipe support design agency to allow a one-time design deviation that permits expansion anchor bolts to remain in the first two supports on either side of a pump, provided the calculated bolt load is 25% or less of the anchor bolt specification allowable. Pipe supports that do not meet these criteria are being identified and corrected as part of the reviews described in 1c below. Implementation of the rework, if any, will be accomplished in accordance with the construction completion program.

b. The original pipe support design agency has prepared a report to document their design methodology for base plate design. Bechtel review of the first submittal of this report has been completed, and Bechtel comments have been addressed by that design agency in a revised report. Bechtel review of the revised report has been completed with no additional comments. This report has been accepted by Bechtel.

c. Discrepant pipe support designs issued by the original pipe support design agency and documented on nonconformance reports have been dispositioned. All pipe support designs issued by that primary pipe support design agency are being rereviewed for proper anchor bolt usage. This review is now being conducted to a priority based on the seismic reanalysis schedule rather than the turnover schedule as previously stated. The new schedule for completion of the review is now anticipated to be June, 1984 for all areas except inside unit No. 1 containment. A schedule for the latter is currently being developed and will be addressed in the next report.

2. Determination of Proper Embedment Depth

a. The inspection of anchor bolts used for pipe supports is addressed in Section 6.

b. It has been concluded that no further testing and inspection for embedment depth is required for expansion anchors used on non-pipe support applications. This conclusion is based on the results of the reinspections of expansion anchors used on pipe supports, and heating, ventilating, and air conditioning Seismic Category I support applications.

Reinspection and testing in accordance with project specifications (issued to satisfy the requirements of I&E Bulletin 79-02) for pipe support anchors installed before May 30, 1980, was completed. Of 1,631 expansion anchors reinspected, 65 did not meet the requirements for embedment depth. These results indicate, with a 95% confidence level, that over 95% of the anchors satisfies the criteria for embedment length. Additional reinspection and testing of expansion anchors used for heating, ventilating, and air conditioning Seismic Category I supports was performed. Of 4,565 expansion anchors reinspected, 72 did not meet the requirements for embedment depth. These results also indicate, with a 95% confidence level, that over 95% of the anchors satisfies the criteria for embedment depth.

c. The controls initiated in May, 1980 for length marking and quality control inspection (MCAR 31) provide assurance that embedment depth will not pose a problem.

3. Demonstration of Achievement of Required Factor of Safety

a. Midland-specific tests to determine the amount of preload remaining in the bolt indicate that an average of 37% of the original preload remains in the bolt after 1 year. Other tests (References A and B) have established that the amount of preload on the bolts will not affect the performance of the anchorage. If the initial installation torque on the bolt accomplishes the purpose of setting the wedge, then the ultimate capacity of the bolt is not affected by the amount of preload present in the bolt at the time of cyclic loading. These tests (Reference A and B) indicate no anchor pullout failures occurred as a result of cyclic loading and that preload is not required to withstand cyclic loading.

b. An additional static tension test (Reference C) to supplement the manufacturer's data was completed. The final report, combined with the manufacturer's data, establishes that all sizes of expansion anchors used for pipe supports under the scope of I&E Bulletin 79-02 on the Midland project met the required factor of safety for pullout.

MCAR Status

a. MCAR 34:
Bechtel Management Corrective Action Report (MCAR) 34 final report, concerning installed drop-in anchors, has been issued. No further new corrective action is required. Required rework has been completed and MCAR 34 was closed on December 14, 1982.

b. MCAR 31:
MCAR 31 revised final report, concerning embedment depth of expansion anchors, was issued May 10, 1982. Corrective actions associated with MCAR 31 are complete and the MCAR was closed on May 24, 1982.

5. Reportability Review

Review of the results of the inspection and tests identified no items with a safety impact. Results of future analyses will be reveiwed for reportability under 10 CFR 50.55(e).

6. Additional Expansion Anchor Inspections

Inspection of 100% of the accessible pipe support expansion anchors installed before May 30, 1980, is complete. An evaluation of the adequacy of the inaccessible anchors (less than 6.7% for any parameters), based on the inspection results of the accessible anchors, is complete. As a result of this review, it has been determined that no rework of the inaccessible anchors is required. Identification and completion of the rework for the inspected anchors is now approximately 90% complete. The remaining 10% will be reworked as part of the Construction Completion Program (CCP). A detailed schedule for system completion under CCP is currently being developed. Actual implementation is subject to NRC concurrence that work can proceed. It is anticipated that an actual schedule will be available in early March, 1984.

REFERENCES*

A. Teledyne Engineering Services Technical Report 3501-2 for Utilities/TES Owners Group Summary Repot Generic Response to US NRC I&E Bulletin 79-02.

B. Commonwealth Edison Company Summary Report, Static, Dynamic and Relaxation Testing of Expansion Anchors in Response to NRC I&E Bulletin 79-02.

C. Final Report on Concrete Expansion Anchor Static Tension Tests for Bechtel Power Corporation, March, 1982, Wiss, Janney, Elatner and Associates, Inc.

*Tranmitter via J. Cook letter to J. Keppler dated January 28, 1983, Serial 20684.