

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

November 16, 1978

NRC PUBLIC DOCUMENT ROOM

Ivan W. Smith, Esq.
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

Mr. Lester Kornblith, Jr.
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)
Docket Nos. 50-329 and 50-330
(Operating Licenses Proceeding)



Gentlemen:

In view of the proposed contentions concerning settlement of the Diesel Generator Building Foundations pending before this Board for consideration, I am enclosing two items for your information. The first is a 10 CFR 50.55(e) report dated September 29, 1978 from Consumers Power Company. The second is a memorandum from James Keppler, Director of Region III, Office of Inspection and Enforcement dated November 1, 1978. This matter will be included as part of the NRC Staff's ongoing safety evaluation of the license application.

Sincerely,

William J. Olmstead
William J. Olmstead
Counsel for NRC Staff

Enclosures as Stated

cc (w/encls.):

Frank J. Kelley
Myron M. Cherry, Esq.
Ms. Mary Sinclair
Michael I. Miller
Judd L. Bacon, Esq.
Atomic Safety and Licensing Board Panel
Atomic Safety and Licensing Appeal Panel
Docketing and Service Section
Mr. Steve Gadler
Wendell Marshall

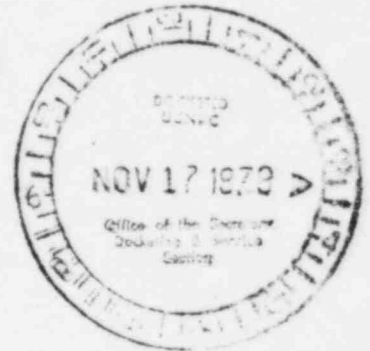
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

November 1, 1978



Docket No. 50-329
Docket No. 50-330

MEMORANDUM FOR: N. D. Thornburg, Director, RCI, IE

FROM: James G. Keppler, Director, RIII

SUBJECT: MIDLAND LAND 2 EXCESSIVE SETTLEMENT OF
DIESEL GENERATOR BUILDING FOUNDATIONS (A/I F30437H1)

Pursuant to 10 CFR 50.55(e), Consumers Power Company (CPC) notified RIII on September 7, 1978 that the settlement of the Diesel Generator Building foundations was greater than anticipated and, therefore, a soils boring program was started to determine the cause and extent of the problem. A copy of CPC's report is attached.

An inspection was conducted at the Midland site on October 24-27, 1978 to review this matter, and the results will be documented in Inspection Report No. 50-329/78-12; 50-330/78-12. The following summarizes the pertinent inspection findings:


1. The excessive total and differential settlements of the Diesel Generator building foundation and generator pedestals appear to be the result of several contributing factors. These are: variable properties of random fill material used to support the structure, influence of condensate piping and electrical conduit banks under a portion of the building, ~~percent compaction~~ *percent compaction* ~~requirements, raising the natural ground water level approximately~~ 20 feet by filling the cooling water pond, and the design and construction sequence of the generator pedestals and spread footing foundations for the building.
2. The FSAR specifies "controlled, compacted cohesive soils" be used as the supporting soils for the Diesel Generator Building, portions of the Auxiliary Building, Borated Water Storage Tank foundation, Diesel Fuel Oil Tank foundation, Radwaste Building and other structures. However, the supporting soil actually used for these structures was random fill material (Zone 2), which is defined as any material free of humus, organic or other deleterious material. The material included sand, silts, clay and lean concrete.

★ banks under a portion of the building, percent compaction requirements, raising the natural ground water level approximately

3. The applicable specifications, procedures and drawings contained conflicting requirements, were at variance with FSAR requirements and/or did not implement recommendations of the A-E's consultant (Dames & Moore) in such areas as: percent compaction requirements, lift thickness, required number of passes with specified equipment and type of fill material.
4. Settlement of the structures listed in paragraph 2 above has been observed, and it continues to be monitored along with that of the Diesel Generator Building. The A-E categorizes the settlement of these structures as not as severe as that of the Diesel Generator Building at this time.
5. The A-E has contracted Goldberg, Zoino, Dunnicliff & Associates (Consultant in Geotechnical Engineering) to perform laboratory tests on soil samples obtained during the soils boring program including a series of soils classification tests and determination of engineering soils properties.
6. The final results of the A-E's investigative soils test program and the A-E's recommended alternatives and actions concerning the resolution of this problem are scheduled to be presented to CPC during the week of November 6, 1978. CPC is desirous of making a presentation concerning their plans on this matter to the NRC approximately one week after the meeting with their A-E.

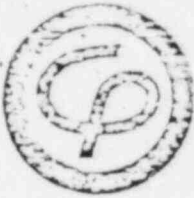
In our view, this deficiency has the potential for affecting the design adequacy of several safety related structures at the Midland site. As such, we believe that the responsibility for evaluation and resolution of this problem should be transferred to NRR since their evaluation of the application is in progress. Additionally, we believe that this deficiency is relevant and material for Board notification pursuant to MC 1530 and, therefore, recommend that this matter be forwarded to NRR for Board notification.

If you have questions or comments, please contact us.


James G. Keppler
Director

Enclosure:
Letter from CPC
dtd 9/29/78

cc w/encl:
J. G. Davis



Consumers
Power
Company

A-119

Stephen H. Howell
Vice President

General Offices: 1945 West Parrall Road, Jackson, Michigan 49201 • Area Code 517 788-0453

September 29, 1978
Howe-183-78

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

1978 OCT 3 AM 11 21
RECEIVED DISTRIBUTION SERVICES UNIT

MIDLAND NUCLEAR PLANT -
IT NO 1, DOCKET NO 50-329
UNIT NO 2, DOCKET NO 50-330
SETTLEMENT OF DIESEL GENERATOR FOUNDATIONS AND BUILDING

In accordance with the requirements of 10 CFR 50.55(e), this letter constitutes an interim report on the status of the settlement of the diesel generator foundations and building.

A description of the conditions relative to the settlements and the investigative actions planned are documented in the enclosures to this letter.

Another report, either interim or final, will be sent on or before November 17, 1978.

Stephen H. Howell

Enclosures: 1) Quality Assurance Program, Management Corrective Action Report, MCAR-1, Report 24, dated September 7, 1978.

2) Letter, P A Martinez to G S Keeley, ELC-6578, MCAR-24, Interim Report #1, dated 9/22/78, with attached report.

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

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

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B019/S *
11.0

REPORT NO. 24

B NO 7220

Q NO. 1.40

DATE 9/7/78

*DESCRIPTION (Including references):

The Bechtel "Foundation Data Survey Program" has indicated that the settlement of the Diesel Generator Building has been greater than expected. This has been documented in NCR-1482 dated (8/21/78). A preliminary evaluation of soil boring data from an investigation being conducted by Project Engineering indicated that the magnitude of the investigative tests and analysis of test results makes this item reportable under 10CFR50.55 e, 1, iii.

*RECOMMENDED ACTION (Optional)

1. Determine the amount of settlement of the Diesel Generator Building (DGB) and increase the frequency of foundation survey measurements to find if the settlement is or will be excessive.
2. Determine the cause of the settlement.
3. If the settlement is or will be excessive, determine what actions are required to correct the condition and preclude recurrence.

REFERRED TO ENGINEERING CONSTRUCTION QA MANAGEMENT

ISSUED BY L. A. Dreisbach 9/7/78
Project QA Engineer Date

REPORTABLE DISCREPANCY

NO

YES

NOTIFIED CLIENT 9/7/78
Date

Robert [Signature] 9/7/78
Project Manager Date

CAUSE

CORRECTIVE ACTION TAKEN

RECEIVED
SEP 8 1978
QUALITY ASSURANCE

AUTHORIZED BY _____
Date

DISTRIBUTION:

- Project Manager
- Construction Manager
- Engineering Manager
- Project Engineer
- Proj. Supt. / Proj. Const. Mgr. or P & I Procurement Mgr.
- Chief Field QC Engineer or Procurement Insp. Mgr.
- QA Supervisor
- Client

- J.B. Violette
- S.I. Heisler
- L.A. Dreisbach
- J. Amaral (Gaithersburg)
- J.E. Bashore (Norwalk)

FORMAL REPORT TO CLIENT _____
(If Section II Applies) Date

CORRECTIVE ACTION IMPLEMENTED

VERIFIED BY _____
Project QA Engineer Date

Describe in space provided and attach reference document.

717 East Eisenhower Parkway
Ann Arbor, Michigan

M. ADDRESS: P. O. Box 1000, Ann Arbor, Michigan 48106



September 22, 1978

BLC-6578

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

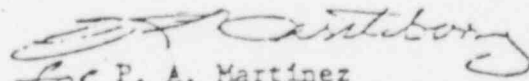
Midland Units 1 and 2
Consumers Power Company
Fechtel Job 7220
MCAR 24 INTERIM REPORT 1
Files 2417/2801

Dear Mr. Keeley:

Attached is Interim Report 1 addressing the Diesel Generator Building Settlement as described in MCAR 24 (issued September 7, 1978).

As agreed with W. R. Bird on September 21, 1978, the next report will be issued November 3, 1978.

Very truly yours,


for P. A. Martinez
Project Manager

PAM/WGM/pp

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

Attachment (5 pages).

RECEIVED

SEP 25 1978

QUALITY ASSURANCE

Bechtel Associates Professional Corporation

Attachment to ELC-6578

SUBJECT: MCAR #24 (Issued 9/7/78)

Settlement of the diesel generator foundations and building

INTERIM REPORT # 1

DATE: September 22, 1978

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

Introduction

This report summarizes the project's actions relating to the settlement of the diesel generator foundations and building as described in MCAR #24 and NCR 1482.

The fill material in this area was placed between 1975 and 1977. Construction was started on the diesel generator building in mid-1977. The diesel generator building settlements were noticed to exceed anticipated values in July 1978. The diesel generator building construction was placed on hold on August 23, 1978. A diesel generator building soil boring program was started on August 25, 1978. Based on preliminary fill boring data evaluation, MCAR #24 was issued.

The actions requested by MCAR #24 are being performed as follows:

- 1) The Foundation Data Survey Program, Specification 7220-C-76, has been expanded by increasing the number of data locations and the frequency of measurements.
- 2) The cause of the settlement and the corrective actions required to preclude the recurrence of this condition will be addressed after the testing and monitoring programs have been evaluated.
- 3) The options available to resolve the existing settlement conditions will be discussed in the Corrective Actions section.

September 22, 1978

Attachment to BLC-6578

Deficiency

The Bechtel Foundation Data Survey Program (Specification 7220-C-76) generated data that indicated the settlement of the diesel generator foundations and building was greater than anticipated. Nonconformance Report 1482 was generated on August 21, 1978, describing the settlements.

The general foundation and building settlements, as of September 19, 1978, are shown on Figure 1 (attached).

Due to the magnitude of the settlements observed, a soils boring program was started. Based on the borings completed to date, the fill under the building has variable strength properties ranging from good to poor.

Further clarification of the fill deficiency will be made when the soil test results have been completed and evaluated.

An independent soils consultant has been retained to help in the data evaluation and feasibility of the corrective actions.

Safety Implications

Large settlements can pose possible safety problems for buildings. A preliminary evaluation of soil boring data from the investigation being conducted indicates that the magnitude of the investigative tests and analysis of test results makes this item reportable under 10 CFR 50.55 e, 1, iii.

These structures are monitored for settlement as part of the foundation data survey program. Hence, any unusual settlement of the structure would be detected before the diesel generators would be rendered inoperable due to the resulting distortions.

Activities in Progress

Several activities are in progress to generate information needed to evaluate the feasibility of possible corrective actions. The activities are:

- 1) The Foundation Data Survey Program has been expanded to include additional settlement data locations as well as monitoring these data locations more frequently. Building time rate of settlement curves are being developed based on this datum for a better understanding of the problem.

September 22, 1978

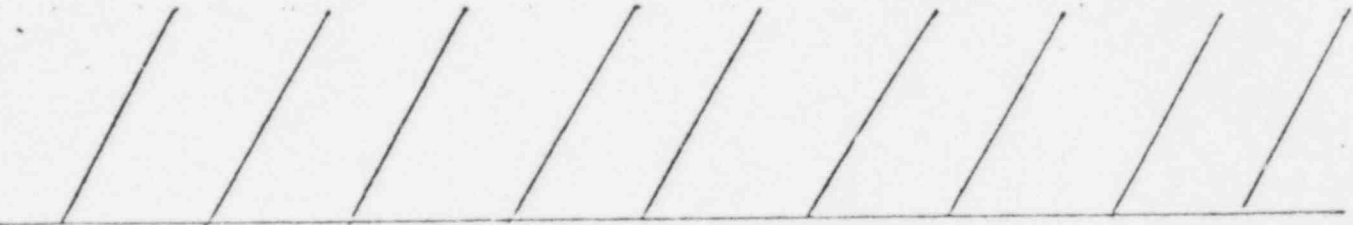
Attachment to ELC-6578

- 2) A boring program has been initiated to provide better definition of the fill conditions under the building and to obtain soil samples for laboratory tests: Dutch cone penetration tests are also being performed under the building area to better define the variable strength properties of the fill material.
- 3) Laboratory tests being performed are:
 - a. Shear strength tests to determine fill characteristic for bearing capacity evaluation
 - b. Consolidation tests to predict building settlement for the present fill material
 - c. Soil classifications
 - d. Mineralogy tests to evaluate the swelling potential of the fill material

This portion of the Bechtel Report is deleted because it contains a premature discussion of possible corrective action options. Specific options will be included in subsequent reports following a complete evaluation of soil conditions.

September 22, 1978

Attachment to BLC-6578




Detailed descriptions of the selected options will be presented in subsequent reports.

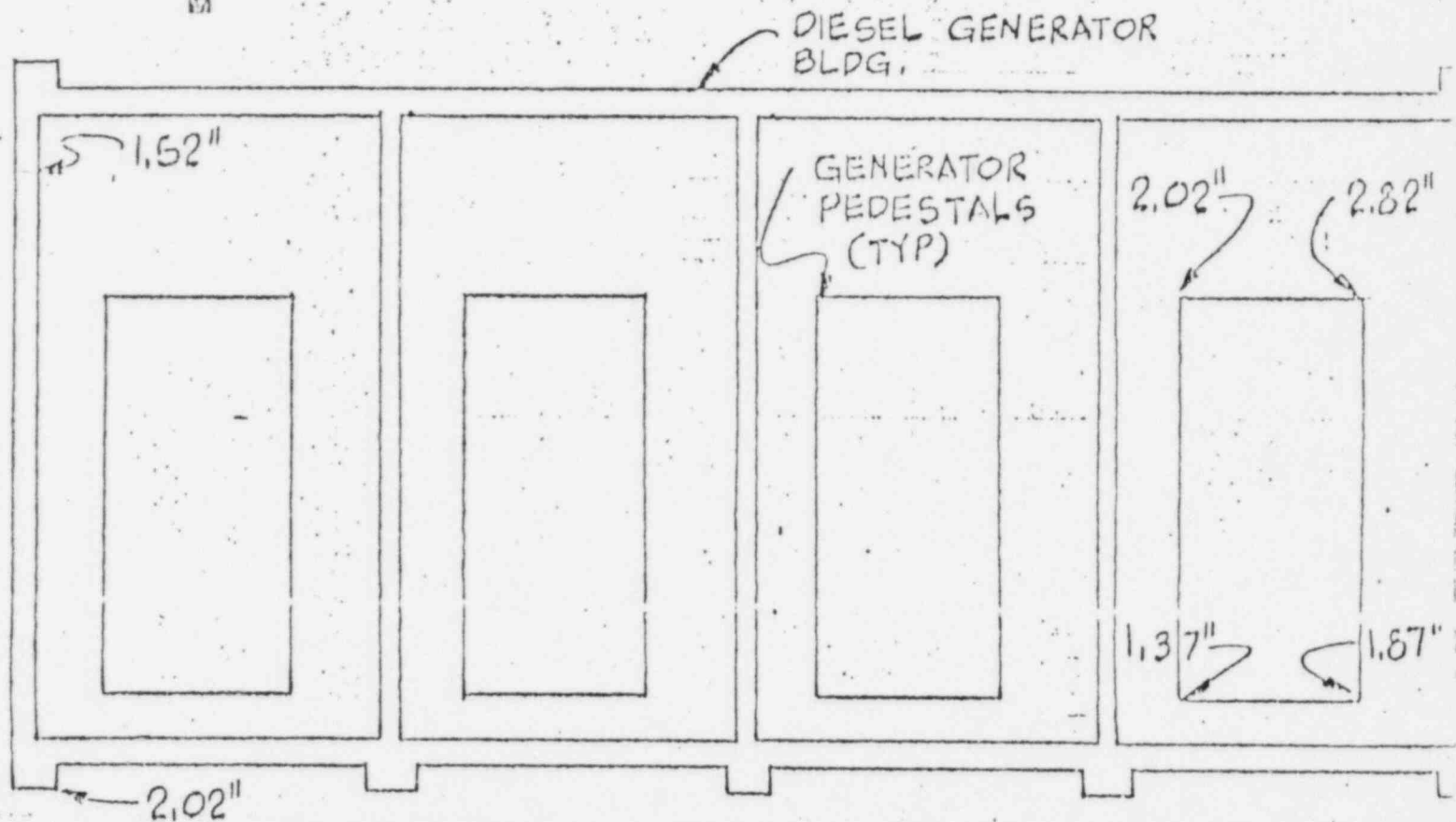
Submitted by: B. Charles McConnel

Approved by: J. D. [Signature]

Concurrence by: [Signature]

JH/cap
9/19/6

		JOB NO. 7230 SPECIES GUIDE NO.	
CONSUMERS POWER COMPANY MIDLAND PLANTS UNIT 1 AND 2 MCAR # 24		DATE 9-22-78	
REVISIONS		DATE 9-22-78	
ISSUED FOR INFO TO MCAR # 24 INTERIM REPORT # 1		DATE 9-22-78	
M. DATE		DATE 9-22-78	
OAKIN		DATE 9-22-78	
FIGURE 1		DATE 9-22-78	



DIESEL GENERATOR BLDG.
 SETTLEMENT DATA AS OF 9-19-78
 (INCHES)