



R Landsman

Terence J Sullivan  
Manager, Safety & Licensing  
Midland Project

General Offices: 1945 West Farnell Road, Jackson, Michigan 49201 • (517) 788-2972

April 12, 1982

KED 13-82

David C Fischer  
Advisory Committee on Reactor Safeguards  
US Nuclear Regulatory Commission  
1717 H Street, NW  
Washington, DC 20555

MIDLAND PROJECT  
ACRS SOILS INFORMATION  
FILE: 0906.4 SERIAL: 16625

In response to your request for information concerning the Midland Soils issue, the enclosed additional documents are transmitted for your use. These documents are summarized in the attachment to this letter. Please let us know if you need any additional information or assistance.

Karl E Drehobl

Karl E Drehobl

For David A Sommers, Section Head  
Environmental Licensing and Radiological Safety

Attachment

CC JWCook  
RWHuston  
DFLewis, Bechtel  
DBMiller, Midland  
JAMooney  
TRThiruvengadam  
TJSullivan

B408170102 B40718  
PDR FOIA  
RICE84-96 PDR

MAY 3 1982

oc0482-0865a131

DIESEL GENERATOR BUILDING

1. Serial 15978, Letter to H R Denton From J A Mooney, Dated 2/16/82 on Evaluation Report for Concrete Cracks in the Diesel Generator Building and Enclosure: Evaluation of the Effect on Structural Strength of Cracks in the Walls of the Diesel Generator Building
2. Serial 14316, Letter to H R Denton From J W Cook (J A Mooney), Dated 10/21/81 on Remaining NRC Soils-Related Concerns For Diesel Generator Building and Enclosures: A) Structural Stresses Induced By the Differential Settlement of the Diesel Generator Building, B) Subgrade Modulus and Spring Constant Values for Diesel Generator Building Structural Analysis, C) Bearing Capacity Evaluation of Diesel Generator Building Foundation, D) Long-Term Monitoring of Settlement for Diesel Generator Building, E) Relative Density and Shakedown Settlement of Sand Under the Diesel Generator Building, F) Estimates of Relative Density of Granular Fill Materials, Diesel Generator Building, Midland Plant, G) Review and Control of Facility Changes to the Diesel Generator Building, and H) Diesel Generator Building Bearing Pressure Due to Equipment and Commodities.
3. Serial 14111, Letter to H R Denton From J W Cook (G S Keeley) Dated 10/2/81 on Diesel Generator Building Concrete Crack Analysis Study and Enclosures 1) A Study of Stress in the Vicinity of a Crack in a Wall of the Diesel Generator Building, and 2) Appendix A to Enclosure (1) Final Report on the Adina Concrete Cracking Analysis for the Diesel Generator Building by Cygna Energy Services.
4. DRAFT TESTIMONY.

AUXILIARY BUILDING AND FEEDWATER ISOLATION VALVE PIT

1. Serial 13794, Letter to H R Denton From J W Cook (G S Keeley), Dated 9/22/81, Subject and Enclosure: Test Results, Foundation Soils, Auxiliary Building (Part 1), Soil Boring and Testing Program, Midland Plant
2. Serial 14110, Letter to H R Denton From J W Cook, Dated 9/30/81 on Submittal of the Auxiliary Building Dynamic Model, Enclosures 1 and 2: Auxiliary Building Seismic Model; Technical Report on Underpinning the Auxiliary Building and Feedwater Isolation Valve Pits
3. Serial 14869, Letter to H R Denton From J W Cook, Dated 11/16/81, Subject and Enclosure: Response to NRC Staff Request for Additional Information Pertaining to the Proposed Underpinning of the Auxiliary Building and Feedwater Isolation Valve Pits
4. Serial 14874, Letter to H R Denton From J W Cook (G S Keeley), Dated 11/24/81, Subject and Enclosure: Test Results, Auxiliary Building (Part 2), Soil Boring and Testing Program, Midland Plant
5. Serial 14899, Letter to H R Denton From J W Cook, Dated 12/3/81, Subject and Enclosures: Addendum to Technical Report on Underpinning of the Auxiliary Building and Feedwater Isolation Valve Pits
6. Serial 15493, Letter to H R Denton From J A Mooney, Dated 1/25/82 on Evaluation of Feedwater Isolation Valve Pits and Enclosures 1 and 2; Evaluation of Feedwater Isolation Valve Pits at Midland Plant, Feedwater Isolation Valve Pit Crack Monitoring Program
7. Serial 15527, Letter to H R Denton From J W Cook (G S Keeley), Dated 1/29/82, Subject and Enclosure: Evaluation Report for the Auxiliary Building Control Tower and Electrical Penetration Areas at Midland Plant

BORATED WATER SERVICE

1. Serial 14902, Letter to J G Keppler From J W Cook, Dated 11/24/81 on Borated Water Storage Tank Foundation OL Design Calculations and Enclosure: Addendum No 1 - Design Report for the Borated Water Storage Tanks Foundation Analysis
2. Serial 14339, Letter to J G Keppler From J W Cook (G S Keeley), Dated 11/13/81 on Surcharge of the Borated Water Storage Tank Foundation and Enclosure: Midland Plants Units 1 and 2 Design Report for the Borated Water Storage Tanks Foundation Analysis
3. Serial 14281, Letter to H R Denton From J W Cook (G S Keeley), Dated 11/10/81 on Results of Soil Boring and Testing Program for Borated Water Storage Tanks and Enclosures:
  - A. Test Results, Borated Water Storage Tanks, Soil Boring and Testing Program, Midland Plant - Units 1 and 2
  - B. Figure 1 - Settlement vs Logarithm of Time Tank Farm West Borated Water Tank
  - C. Figure 2 - Settlement vs Logarithm of Time Tank Farm East Borated Water Tank

PERMANENT PLANT DEWATERING

1. Serial 11818, Letter to H R Denton From J W Cook, Dated 4/24/81 on Permanent Plant Dewatering
2. Serial 12225, Letter to H R Denton From J W Cook, Dated 5/28/81 on Permanent Plant Dewatering and Enclosures:
  - A. Revised Pages for Specification C-88
  - B. Bechtel Quality Control Instructions for Gravel-Packed Wells
  - C. Consumers Power Midland Project Quality Assurance Department - Project Inspection Plan and Report
3. Serial 13774, Letter to H R Denton From J W Cook, Dated 9/16/81 on Permanent Plant Dewatering Well Installation and Enclosures:
  - A. Table 1 - Permanent Dewatering Well Schedule
  - B. Figure 1 - Permanent Dewatering and Monitoring Well Location Plan
4. 50.54f Questions: 24, 47, 49-52

SERVICE WATER PUMP STRUCTURE

1. Serial 13738, Letter to H R Denton From J W Cook Dated 8/26/81 on Soils Settlement Remedial Action for Service Water Pump Structure (SWPS) and Enclosure 1: Technical Report on Underpinning the Service Water Pump Structure
2. Serial 14410, Letter to H R Denton From J W Cook (G S Keeley) Dated 9/30/81 on Submittal of the Auxiliary Building Dynamic Model, Service Water Pump Structure Dynamic Model and Description of Soils Settlement Remedial Fix for the Auxiliary Building. Enclosure 1: Service Water Pump Structure Seismic Model
3. Serial 14280, Letter to H R Denton From J W Cook Dated 11/6/81, Subject and Enclosure: Test Results, Service Water Structure Soil Boring and Testing Program, Midland Units 1 and 2
4. Serial 14843, Letter to H R Denton From J W Cook (G S Keeley) Dated 11/6/81, Subject and Enclosure: Responses to the NRC Staff Request for Additional Information Pertaining to Proposed Underpinning of the Service Water Pump Structure
5. Serial 16009, Letter to H R Denton From J W Cook Dated 3/2/82, Subject and Enclosure: Evaluation of Cracking in Service Water Pump Structure at Midland Plant
6. Serial 16352, Letter to H R Denton From J W Cook Dated 3/2/82, Subject and Enclosure: Three-Dimensional Finite-Element Models for the Service Water Pump Structure

UNDERGROUND UTILITIES

1. Serial 16269, Letter to H R Denton From J W Cook, Dated 3/16/82 on Additional Information Concerning Safety Grade Buried Piping and Enclosures:
  - A. Future Monitoring Program of Buried Service Water Piping for Midland Plant Units 1 and 2
  - B. Reinstallation Program for 26-Inch and 36-Inch Diameter Buried Service Water Pipes at the Midland Nuclear Plant
2. Serial 15093, Letter to H R Denton From J W Cook (G S Keeley), Dated 12/15/81 on Underground Piping Concerns and Enclosure: Analysis of Buried Piping for Midland Plant Units 1 and 2
3. 50.54F Questions: 4, 7, 12, 13, 23(1), 30 and 45.



**Consumers  
Power  
Company**

*DICK  
DUANE  
Laneman*

**James W Cook**  
Vice President - Projects, Engineering  
and Construction

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

April 5, 1982

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

	PRINT		
✓	DIR		
	D/D		
	A/D		
✓	DR&TI		
	DE&TI		
	DEP&OS		

MIDLAND PROJECT - DOCKETS 50-329 AND 50-330  
QUALITY ASSURANCE FOR REMEDIAL FOUNDATION WORK  
FILE 0.4.9.20.6 SERIAL 16161

Reference 1: Letter from Mr D Hood, dated March 12, 1982 on the subject:  
"Summary of March 10, 1982 Meeting Concerning Quality  
Assurance to be Applied to Remedial Foundation Work"

On March 30, representatives from Consumers Power Company (Messrs J W Cook, J A Mooney, B W Marguglio, et al) met with representatives from the NRC (Messrs C E Norelius, W Little, E G Adensam, D S Hood, et al) in the Region III office in Glen Ellyn, Illinois to discuss the Quality Assurance Program for the Midland Remedial Foundation Work. The purpose of this letter is to document the conclusions and commitments that were made at that meeting and subsequently discussed during several telephone conversations on April 2, 1982.

The major conclusion reached at the meeting was the Consumers Power Company commitment to place essentially all of the to-go underpinning work under the coverage of the Quality Plan For Underpinning Activities, MPQP-1, which had previously been discussed with the staff, most recently at the March 10, 1982 meeting in Bethesda as summarized in the correspondence cited as Reference 1. This expansion of the QA program coverage for the underpinning work is effective immediately, but recognizes specific exceptions to cover previously completed non-Q-listed work and certain future work as identified in Attachment 1 to this letter. Expansion of QA program coverage is in recognition not only of the importance of this work to public health and safety but also to the overall success of the Midland Project. As a result, the program is being applied to both safety-related and nonsafety-related items and activities without any further attempt to resolve prior discussions as to the exact definition and boundaries of safety-related as applied to each individual aspect of the underpinning work.

Certain other concepts related to the extended application of the QA program to the underpinning work were discussed at the prior meeting on March 10 (Reference 1) and reaffirmed in the discussion at our meeting on March 30.

*8408150718*

APR 9 1982



Both parties agreed that the Quality Assurance Program for Remedial Foundation Work will be applied to the multitude of underpinning items and activities to the extent commensurate with the importance of the individual items. This will be implemented by identifying the specific quality requirements that apply to each of the items and activities now covered by the program so that all parties whether carrying out or inspecting the work will have a clear understanding of what the actual quality requirements are for each item and activity.

As the underpinning work progresses, any new exceptions to the coverage under the QA program which are considered appropriate will be communicated in writing to Mr C E Norelius of the NRC Region III such that it is received at least five working days prior to the scheduled start of the affected work. It was agreed that this communication mechanism will provide NRC with sufficient time to review any such requests and respond to Mr J A Mooney of Consumers Power Company prior to the scheduled start of the affected work.

With regard to the exception list, subsequent to the March 30 meeting, discussions have been held with the NRC Region III staff on April 2 during which the NRC raised questions about the Q-list status of two items: (1) the rock bolts and rock and earth anchors, and (2) the connecting piping for the permanent dewatering system. In response to the first item, program coverage will be extended to all rock bolts and rock and earth anchors to be installed after April 2, 1982 which includes all permanent installations. With regard to the second item, the exception list as provided during the March 30 meeting, included the permanent dewatering system. However, this item has been deleted from the attached exception list because it is not a part of the underpinning work. It should also be noted that the non-Q classification of the permanent dewatering system, except for the installation of wells and the monitoring of fines, had been specifically resolved previously with the NRR staff.

In order to facilitate communications between Consumers Power Company and NRC Region III personnel during the course of the underpinning work, a number of agreements were reached as to communication channels. Dr R B Landsman has been designated as the Region III lead inspector for underpinning work with Mr R J Cook to assist in his capacity as resident inspector at the site. Consumers Power Company designated Messrs J R Schaub and D E Horn as the prime contacts for Dr Landsman and Mr Cook to obtain whatever specific detailed information they required for this work. In addition, we agreed to provide Region III, through normal distribution, weekly or biweekly reports (frequency to be determined) summarizing the results of the just completed work and describing the schedule of work for the immediate forthcoming period. All of the above information is in addition to the existing transmittal of nonconformance reports and other documents to Region III.

We believe that the results of the March 30 meeting as summarized above addresses all outstanding items in the staff's review of the Quality Assurance Program for the Remedial Foundation Work. We would appreciate a written confirmation of this conclusion.

---

We also discussed, as part of our March 30 meeting, Consumers Power Company's request that the NRC's lead inspector for the underpinning work spend as much time on the site as practicable in order to be thoroughly conversant with all current and short-term planned activities. We believe this is essential in order that we may be responsive to whatever additional information and discussions he wishes to pursue and to minimize the possibility of any misunderstandings. In order to facilitate the NRC's inspection planning, we will provide shortly and continue to provide updated overall underpinning schedule information and our specific recommendations of which aspects of this work the NRC should consider including in their inspection plan.

*James W. Cook*

JWC/BWM/kdz

Attachment 1: Exceptions to the Project Quality Assurance Program  
Coverage for Underpinning

CC: Atomic Safety & Licensing Appeal Board

Director - Office of Inspection & Enforcement  
Att: Mr Richard C DeYoung, US NRC

Director - Office of Management Information & Program Control, US NRC

CBechhoefer, ASLB  
MMCherry, Esq  
RJCook, Midland Resident Insp  
FPCowan, ASLB  
RSDecker, ASLB  
HRDenton, US NRC  
JHarbour, ASLB  
DSHood, US NRC  
CENorelius, US NRC  
WLittle, US NRC

JDKane, US NRC  
Wotc, US Army Corps of Engineers  
WHMarshall  
SJPoulos  
FRinaldi, US NRC  
HSingh, US Army Corps of Engineers  
MSinclair  
BStamiris

Exceptions to the Project Quality Assurance Program Coverage for Underpinning:

1. Freeze wall, other than for the protection of Category I utilities which are covered;
2. Auxiliary building access shaft activities above elevation 609 and soldier piles; welding  
steel  
3 welds
3. The procurement of soldier pile material; tools and equipment (such as torque wrenches, jacks, gauges and threading machines - but their calibrations are covered); steel and wood logging; backpacking material; rock bolts and rock and earth anchors already installed for temporary installations; and glue. steel  
steel logging  
rock bolts

Because of hearing → NAR accepted that

However, fragmented

3/30/82

soil borings  
dewatering wells  
[freeze wall]  
access shaft  
instrumentation

I) my inspection plan

\* if they are doing a good job, why do I have to be there fulltime, worried about items of noncompliance in reports.

~~I think you should be in residence!~~

~~But we can't do it!~~

communication

are we part of problem or solution

Because it  
irreversible

~~are we not consultants~~

~~are we in the consultant mode NO~~

\* they are routine in geotechnical area, not routine for  
N.P. Plan

II) INSTRUMENTATION

~~items that are not safety related~~

not safety related → quality activity

March 10 → agreed not to use fragmented  
approach, e.g. dewatering wells  
freeze wall  
access shaft

ongoing activities

freeze wall to EL 609

instrumentation complete ← led to believe

procurement of certain items

↑ in fact started  
March 11

Did not plug in Electrical QA

Elect. QA

At March 10, don't remember phase II, all activities


EXCEPTED

- 1) Freeze wall except safety-related utilities  
    { 2 duct banks  
    Service water pipes - 2-26"  $\phi$  } and monitoring
- 2) permanent dewatering system except - [ pipes to hook up ]  
    installation & monitoring      not  
    ↑  
    installation
- 3) <sup>ext. building</sup> access shaft to 609 and soldier piles  
    <sup>main floor</sup> <sup>ceiling</sup> <sup>pipes</sup>

~~ALL TO WORK TO BE DONE AS A RESULT~~

4) emergency plan "implementation"

5) "procurement" of rock bolts  
    ↑      those items already procured

 only those used in securing forms

CAN WE GET AWAY FROM SAFETY-RELATED

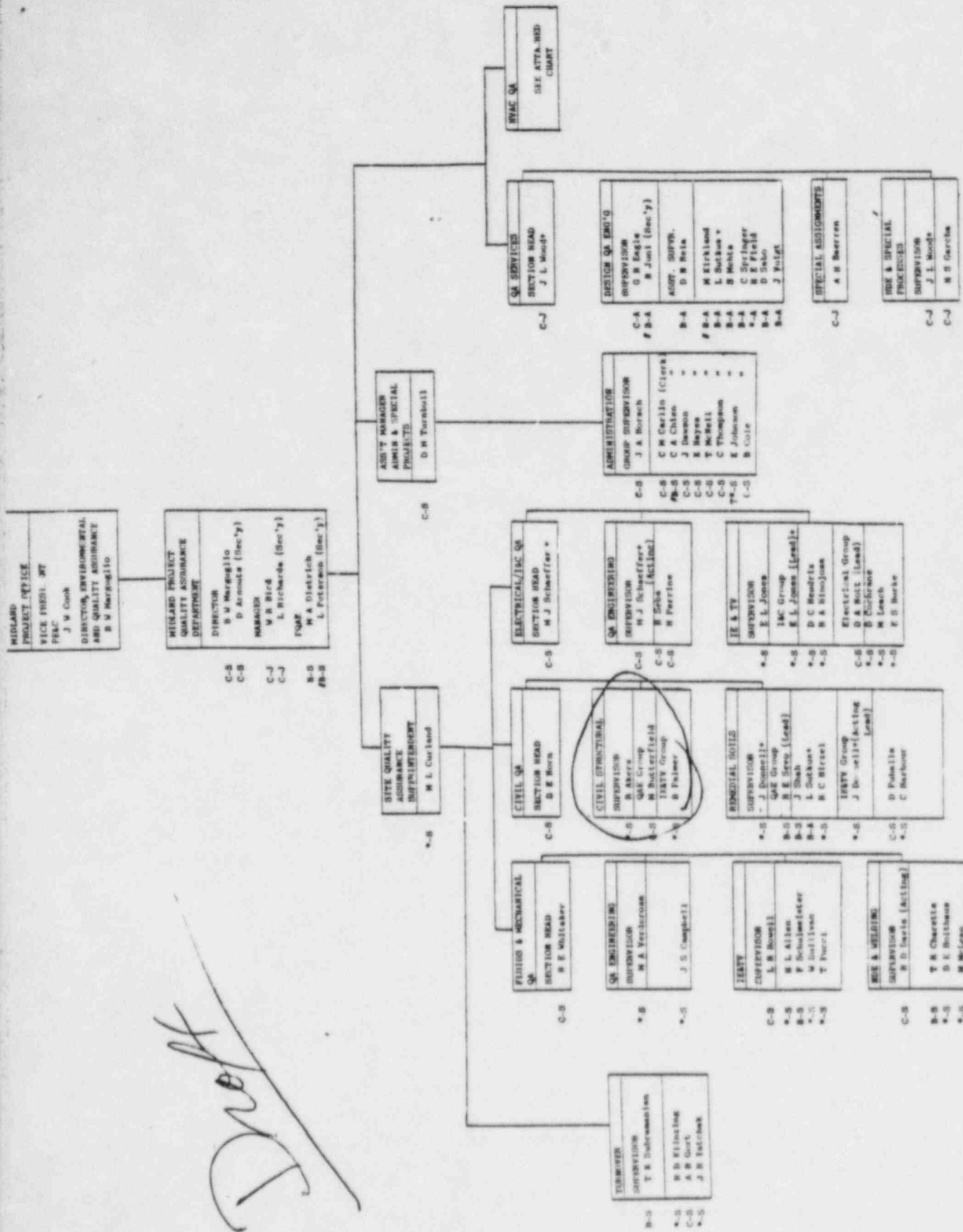
[ everything outside of column line \_\_\_\_\_ is not safety-related ]

Because of hearing → NAF accepted that

However, fragmented



*Draft*



C - CRO  
 B - Model  
 E - Contract Employee  
 S - Site  
 J - Jackson  
 A - Air Force  
 \* - Dual Capacity  
 # - Administrative Support  
 Not on List  
 (Parent's Name in Paren)

HVAC QA  
SECTION HEAD  
C-S HP Leonard

SECRETARY, KS Allison C-S

HVAC IE & TV  
SUPERVISOR  
\*-S DK Martin

CLERK, CA Sabo C-S

QAE GROUP  
SUPERVISOR  
\*-S GE Parker

ADMIN. GROUP  
SUPERVISOR  
\*-S SE Bandla

VERIFICATION  
GROUP  
SUPERVISOR  
(vacancy)

INSP. GROUP 1  
SUPERVISOR  
\*-S RW Miller

INSP. GROUP 2  
SUPERVISOR  
\*-S J L Zimmerman

INSP. GROUP 3  
SUPERVISOR  
(vacancy)

- \*-S S Cox
- C-S E Goold
- \*-S W Heiberger
- \*-S H McGrane
- \*-S E Riley
- \*-S R Bradley (4/5)

- \*-S M Bupp (Clerk)
- \*-S E DeGeer "
- \*-S L Fabel "
- C-S J Lyons "
- \*-S L Ray "

- \*-S J Dittenbir
- \*-S R Guentensberger
- \*-S A Kunz
- \*-S F McCloy
- \*-S S Schymanski

- C-S R Bishop
- \*-S D Infante
- \*-S T Kudich
- C-S F Lounds
- \*-S J Orr
- \*-S J Ruiz
- \*-S G Sweet
- \*-S A Tonda (3/31)

- \*-S J Gallivan
- \*-S D Haas
- \*-S R Kucharek
- \*-S G Morgan
- \*-S D Sanders
- \*-S T Tate
- \*-S R Thurston
- C-S K Benware (3/29)

\*-S (2nd Shift)

MEETING 3/30/82

File  
Midland  
←  
A meeting report is  
required!

I. Introduction

A. Meeting Purpose

To discuss QA Program for Midland underpinning activity.

. Recognize the importance based on

- (1) soils problems which led to this activity
- (2) hearing on QA related aspects of soils issue
- (3) importance of assuring sound construction of safety related structures.

. Both staffs agree to D. Hoods 3/12/82 memo and come to different conclusions

B. Clarify

- Specific applicability of QA program to instrumentation installation; subject of proposed CAL. (This letter held in abeyance pending clarification of apparent differing interpretations.)

- Broader terms - what are the applicable requirements and basis for determination and what type of enforcement actions are appropriate.
- Specifics on how our inspection program will be handled.

## II. Course of Meeting

### A. Recognize

- . In terms of clarifying requirements, involved discussions you have had with NRR and on hearing to extent of whether your QA program works or not, need NRR and ELD.
  - Feeling among the staff that we have been misled
- . JGK's interest
  - hearing testimony
  - your specific request

### B. Plan

1. Your construction schedule and our inspection schedule
2. On arrival of HQ people, clarification of requirements
3. Break & have JGK come back for summary

III. Inspection Program

- A. Dedication of one inspector and others, as needed.
- B. What is construction schedule?
- C. Major issues that they think we should inspect.
- D. Principal point of contact for Ross
- E. Inspector's role same as always
  - . Does not concur in procedures beforehand
  - . Does not approve such things as QA Org. changes
  - . Does inspections of ongoing activity and reports his findings.

IV. Confirmation of Action Letter

- A. Problem - safety related instrumentation installation activities were not carried out per QA requirements.

Marguglio stated Cook and Keppler had agreement.

- . Cook objected to such a letter and referenced discussions with Denton and Keppler.

Solution - reached agreement that work would be stopped.

- CPCo would write letter confirming work stoppage.

Understand - Only mention with Denton was that it would be discussed with JGK.

- Keppler gave no specific or general approval.

B. Review

- Specifically identified as Q listed item on 1/7/82 letter and therefore it is.

V. What Are Requirements

A. Things identified in 1/7/82 letter

B. All Phase 2 activities unless approved otherwise

VI Summary

- . Decision on CAL
- . Agreement on enforcement
- . Urgency of getting QA program to work!!!



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAR 22 1982

*R. Landsman*  
REG-111

Docket Nos: 50-329/330 OM, OL

Mr. J. W. Cook  
Vice President  
Consumers Power Company  
1945 West Parnall Road  
Jackson, Michigan 49201

PRINCIPAL STAFF	
DIR	
D/D	
A/D	
DEPT. I	
DEPT. II	<i>Landsman</i>
DEPT. III	File

Dear Mr. Cook:

Subject: Compilation of Information Requested for Completion of Staff  
Review of Phase 2 Underpinning of Midland Auxiliary Building

Pursuant to the request of Mr. J. Mooney of your Company on March 11, 1982, Enclosure 1 is a compilation of the information needed for completion of the NRC's review of "phase 2" of the construction activities for underpinning of the Midland Auxiliary Building. "Phase 2" is defined by the Construction Sequence Logic Diagram provided the staff during a January 18-19, 1982 audit meeting (Enclosure 1 of our meeting summary dated March 10, 1982), and generally provides for further deepening of the vertical access shaft, construction of limited drifts under the Feedwater Isolation Valve Pits (FIVPs) and Turbine Building, and installation of certain piers.

Your prompt attention to these matters should provide for staff concurrence with minimal impact to your present construction schedule.

The reporting and/or recordkeeping requirements contained in this affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Robert L. Tedesco, Assistant Director  
for Licensing  
Division of Licensing

Enclosure:  
As stated

cc: See next page

MAR 25 1982

*82-329-330-115*

MIDLAND

Mr. J. W. Cook  
Vice President  
Consumers Power Company  
1945 West Parnall Road  
Jackson, Michigan 49201

cc: Michael I. Miller, Esq.  
Ronald G. Zamarin, Esq.  
Alan S. Farnell, Esq.  
Isham, Lincoln & Beale  
Suite 4200  
1 First National Plaza  
Chicago, Illinois 60603

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

Ms. Mary Sinclair  
5711 Summerset Drive  
Midland, Michigan 48640

Stewart H. Freeman  
Assistant Attorney General  
State of Michigan Environmental  
Protection Division  
720 Law Building  
Lansing, Michigan 48913

Mr. Wendell Marshall  
Route 10  
Midland, Michigan 48640

Mr. Roger W. Huston  
Suite 220  
7910 Woodmont Avenue  
Bethesda, Maryland 20814

Mr. R. B. Borsum  
Nuclear Power Generation Division  
Babcock & Wilcox  
7910 Woodmont Avenue, Suite 220  
Bethesda, Maryland 20814

Cherry & Flynn  
Suite 3700  
Three First National Plaza  
Chicago, Illinois 60602

Mr. Steve Gadler  
2120 Carter Avenue  
St. Paul, Minnesota 55108

Mr. Don van Farrowe, Chief  
Division of Radiological Health  
Department of Public Health  
P.O. Box 33035  
Lansing, Michigan 48909

William J. Scanlon, Esq.  
2034 Pauline Boulevard  
Ann Arbor, Michigan 48103

U.S. Nuclear Regulatory Commission  
Resident Inspectors Office  
Route 7  
Midland, Michigan 48640

Ms. Barbara Stamiris  
5795 N. River  
Freeland, Michigan 48623

Mr. Paul A. Perry, Secretary  
Consumers Power Company  
212 W. Michigan Avenue  
Jackson, Michigan 49201

Mr. Walt Apley  
c/o Mr. Max Clausen  
Battelle Pacific North West Labs (PNWL)  
Battelle Blvd.  
SIGMA IV Building  
Richland, Washington 99352

Mr. I. Charak, Manager  
NRC Assistance Project  
Argonne National Laboratory  
9700 South Cass Avenue  
Argonne, Illinois 60439

James G. Keppler, Regional Administrator  
U.S. Nuclear Regulatory Commission,  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137



cc: Commander, Naval Surface Weapons Center  
ATTN: P. C. Huang  
White Oak  
Silver Spring, Maryland 20910

Mr. L. J. Auge, Manager  
Facility Design Engineering  
Energy Technology Engineering Center  
P.O. Box 1449  
Canoga Park, California 91304

Mr. Neil Gehring  
U.S. Corps of Engineers  
NCEED - T  
7th Floor  
477 Michigan Avenue  
Detroit, Michigan 48226

Charles Bechhoefer, Esq.  
Atomic Safety & Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Mr. Ralph S. Decker  
Atomic Safety & Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dr. Frederick P. Cowan  
Apt. B-125  
6125 N. Verde Trail  
Boca Raton, Florida 33433

Jerry Harbour, Esq.  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Geotechnical Engineers, Inc.  
ATTN: Dr. Steve J. Poulos  
1017 Main Street  
Winchester, Massachusetts 01890

Identification of Review Concerns Prior to Initiating Phase 2  
Underpinning Work Midland - Auxiliary Building

I. GEOTECHNICAL ENGINEERING

Phase 2a\*

- | <u>No.</u> | <u>Review Concern</u>  |
|------------|--|
| 1          | Submittal of Updated Construction Sequence Drawing (Identified in Feb. 3-5 Audit and Feb. 26, 1982 Meeting).   |
| 2.         | Letter documenting actual work to be performed under Phase 2a (telephone record, March 8, 1982, Par. 3). Letter should provide commitment not to proceed with 2b until the analyses using NRC recommended stiffness values are completed and results reviewed by NRC Staff.                      |
| 3.         | Update drawing of "Monitoring Matrix", No. C-1493(Q) that will include tolerance criteria (Telephone record, Mar. 8, 1982, Par. 4.b).  |
| 4.         | CPC commitment to have 6 deep seated bench marks with instruments installed and operational before beginning Phase 2a work. (Telephone record, March 8, 1982, Par. 4.B and Par. 5). Also instruments DMD-1W, DMD-1E, DSB-1W, DSB-1E are to be installed and operational. (Feb 3-5 Design Audit). |
| 5.         | Submittal of strain gage installation details @ E1 659 with limiting strain values and basis (Feb. 26, 1982 meeting and telephone record, Mar. 8, 1982, Par 4.d).  |
| 6.         | Commitment to perform test load above design load (e.g., 1.30 times) on installed pier to develop load-deflection curve for verification of hard clay soil modulus. Identify pier. (Feb. 3-5 Design Audit).  |
| 7.         | Submittal of measures to be required during periods of work shutdown to support faces of drifts and bottoms of pits (Feb. 3-5 Design Audit).   |
| 8.         | Submittal of plans for dewatering localized water pockets (e.g., placing wells in sand fill around reactor perimeter) in advance of pit construction (Feb. 3-5 Design Audit).  |

\* Phase 2a items are those not impacted by analyses of the change in soil modulus values beneath the main Auxiliary Building.

3/11/82  
12-12  
J.K.

Phase 2b

No.            Review Concern

1.            Provide instrumentation details and horizontal movement tolerance criteria with basis, for 3 instruments to be installed at top of EPA's and Control Tower (Telephone record, March 8, 1982, Par. 4.c and Par. 5).
  
2.            Submittal of results from analysis that establishes induced stresses at E1 659 assuming EPA is supported by first temporary support (Pier W8) and using Existing Soil Springs under EPA and Control Tower and Auxiliary Building (Feb. 3-5 Design Audit)
  
3.            Commitment by CPC to have installed and operational all of the remaining instruments identified on Drwg C-1493(Q).

## II. STRUCTURAL ENGINEERING (Phase 2a)

Strain gauges or equivalent shall be provided at critical locations, including:

- a. Elevation 659' slab
- b. Control Tower shear wall
- c. Slabs and walls near post-tensioning cables at the Control Tower and Electrical Penetration Areas
- d. Steel beams shall have strain gauges, and not deflection meters.

Information shall be provided for these gauges regarding:

1. Location
2. Monitoring frequency
3. Limits (initial and distress points)
4. Evaluations of results (method and acceptance criteria)
5. Commitment that instruments shall be in place and operational before beginning Phase 2a.

## III. MECHANICAL ENGINEERING BRANCH (Prior to drifting beneath FIVP)

1. Allowable movements shall be based upon total settlements since the main feedwater piping was first installed in 1977.
2. A commitment that the 2" steam generator drain lines shall first be shown not to be limiting for allowable structural movements in the event a decision should be made to connect this piping prior to completion of underpinning.

## IV. QUALITY ASSURANCE

Applicant shall notify NRC that all underpinning construction will be Q listed consistent with the NRC Staff's findings during the meeting of March 10, 1982.