

NRC SITE VISIT
May 2, 1978

I. Agenda

- 8:30 - 9:30 Status of Construction (Orientation Room) Tom Cook
- 9:30 - 11:00 Group Tours
- Lunch
- 12:30 - 3:30 Specific Group Discussions (Conference Rooms)
- 3:30 - 4:30 Wrap-up/Exit Meeting (Conference Rooms)

Intake Bosphorus
Cooling Pond - 50% full
Piping -
Finds -

Unitd
1:44

II. Tour Groups

<u>Geotechnical Engineering (Foundation)</u>	<u>Hydrology- Water Use Plant Effluent Chemical</u>	<u>Accident Analysis</u>	<u>RAD Assessment (Exclusion Areas)</u>	<u>Project Management</u>
Beskid	Johnson	Farrell	Hinson	Hood
Gillen	Beskid	Campe	?Prasad(B)	Echols
Afifi(B)	Romano	Patel(B)	?Krause(B)	Derickson
LeFevre(B)	Vaslo	Prasad(B)	W.Strodl(C)	J.Zabritski(C)
*B.Wheeler(C)	Anderson(B)	Lodwick(B)	T.Sullivan(C)	R.Bauman(C)
D.Anderson(C)	Papadakas(B)	T.Sullivan(C)	Clements(C)	R.Green(C)
	Wheeler(B)	Schmidt(NUS)	*D.Vokal(C)	J.Hurley(B)
	A.Zeitoun(C)	*E.Evans(C)		*B.Peck(C)
	JoWildern(C)	Kowalchuk(C)		
	*D.Sibbald(C)			
Vehicle: Operations Blazer	Vehicle: Construction Blazer			

Abbreviations:

- (B) - Bechtel
(C) - Consumers Power Company
(NUS) - N.U.S. Corporation

BHPeck/pp
5-1-78

8408210367 840718
PDR FOIA
RICE84-96 PDR

Meeting Tues. Feb 27 Midland

— Thursday: Discus Meeting held Friday 23rd in Chicago
⇒ at which IE presented Conclusions w/ areas of inquiry

— Had Summary of concs

→ Economic Compensation $\left\{ \begin{array}{l} \text{Immediate removal + replacement} \\ \text{Numerous fix efforts} \end{array} \right.$

March 5th Meeting —

SUBJECT: CCo Midland Plant Units 1 & 2
Diesel Generator Building

Meeting with NRC at Midland

DATE: December 4, 1978

AGENDA

- Preload
to get
other engineers*
- I. Introduction by CCo
 - II. History by Bechtel (N. Swanberg)
 - a. Plant description
 - b. Settlement monitoring program
 - c. Brief history of site fill placement
 - d. Settlement of Category 1 structure
 - e. Settlement of diesel generator building and pedestals
 - f. Review settlement data and drawings (SK-C-620/623)
 - g. Consultants
 - III. Soil Exploration by Bechtel (S. Afifi)
 - a. Soil borings
 - b. Dutch cone penetrations
 - c. Laboratory tests
 - d. Possible causes
 - IV. Consultant's Recommendation by Dr. R.B. Peck and C.J. Dunicliff
 - a. Preload
 - b. Instrumentation
 - V. Status report by Bechtel (B.C. McConnell)
 - a. Activities completed
 - b. Activities in progress
 - c. Activities planned for future
 - 1) Corrective action
 - 2) FSAR conformance
 - VI. Schedule by Bechtel (P. Martinez)
 - a. Overall project
 - b. Impact on project schedule
 - c. Schedule for remedial measures

VII.

Responses to open items in NRC Inspector's report dated 11/17/78 by Bechtel (B. Dhar)

a. Responses to Gallagher's concerns:

- 1) Conflict between FSAR Table 2.5-14 and Table 2.5-10 regarding fill material description
- 2) Conflict between FSAR Table 2.5-21 and Specification C-210 regarding required number of passes for compaction
- 3) FSAR Section 3.8.5.5 - expected settlement
- 4) Conflict between FSAR Figure 2.5-47 and project drawing regarding foundation elevation
- 5) Conflict in Specification C-210 regarding compactive effort in test method
- 6) Conflict between consultant's recommendation and Specification C-210 regarding lift thickness
- 7) $\pm 2\%$ tolerance in moisture content permitted in Specification C-210
- 8) Cracks in the building structure

b. FSAR Question 362.2 (Section 2.5.4.5.1)

*Random find no restrictions on gradation
use used not relevant
Amendment 16 will reflect change.*

*Fig is correct remove statement in 3.8.5.5
2.5-47 error this is incorrect
project drawing correct - FSAR will be changed
hydrostatic pressure on pump
etc. etc.*

VIII.

Closing Comments by CPCo

Midland Dec 4

I. Hal Swanberg

- first base line 5-17-77 (reactors) → poured 1974
- Fill placed 1976 - 1977
- Sewer water pump house partially on fill
- Diesel Gen Bldg - 5-4"

Contaminant $\frac{1}{4}$ - $\frac{5}{8}$ 14 months from May 1977 Topped Nov 1977

Avx Bldg $\frac{1}{8}$ "

Rail Rd. Station -

Pumphouse natural 0 - $\frac{1}{2}$ "

Borated $\frac{1}{2}$ "

- Dust banks $2\frac{1}{2} \times 4'$ founded 3-40' below D Gen Bldg

Shif Alti

II

- Borings & Duct Cones

- Till - no unusual properties
- Sand (around dust bank)
- Till variable in properties & strength

Towens - Ave 2000 pcf Range 200 - 4000

Uncolored - 200 - 4000 pcf shear strength

Class - CL-MH LL - 20 - 30 n - 40 material
PI - 8-20

Consolidation looking for
Perm 10^{-4} ⇒ 10^{-5}

III. Walt Fenn

- directed ^{efforts} toward fix not cause
- limiting directed toward causes

Fill variables critical records don't indicate

- placed dry of optimum
- insertion of dust banks could lead to some variability

IV. R.P.ub

~~Optical~~ Recommendations

- Variable Fall - result of compaction
- Acceleration of settlement

Dust Generated only at present

Sand pre-load (time guess: 6 mo (at least))
get water table up to ^{ground} as soon as possible

5 months before schedule calls for clearing out pits

Computation Equipment: in general velocity sheepsfoot

II. Dennisoff

Measurements on structure

- optical survey daily initially => adjustment
- rods (5 per pedestal) : : :
- vachs in E well monitored (width) 2 points Electrical gage and E next interior wall 2 points

surcharge zone 6' 18"

Fill

- Settlement

- Bore points



60 (10 plan 3 depths)

605 ft -590

7 are boreholes 2 clusters away from surcharge area

weekly until surcharge

- Pore Pressure - brass perforated piezometers

extended up through surcharge

10' in 6'

VI. Arch M. Linnell

Activities: - isolation of dust Bauls

- 60 day to Hoga founded on T.11

14 day Post site a fill

7 day Dust Gen



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

FEB 28 1979

Docket Nos: 50-329
50-330

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water Reactors
Branch No. 4, DPM

FROM: Darl Hood, Project Manager, Light Water Reactors
Branch No. 4, DPM

SUBJECT: FORTHCOMING TRIP TO OBSERVE PRELOADING PROGRAM FOR
CONSOLIDATION OF BACKFILL BENEATH DIESEL GENERATOR
BUILDING FOR MIDLAND PLANT UNITS 1 & 2

Date & Time: March 6, 1979
9:30 a.m.

Location: Midland Site

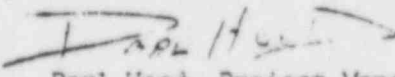
Purpose: To observe preloading program,
obtain results of measurements
to date, and observe surveillance
program for other structures on
backfill.

Participants: NRC

D. Gillen
D. Hood
A. Hafiz
R. Cook

Consumers Power Company

D. Miller
et al


Darl Hood, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

cc: See next page

310
8 7943270052

Consumers Power Company

FEB 28 1979

ccs:

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MEETING NOTICE

FEB 28 1979

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R. DeYoung
D. Muller
D. Ross
D. Vassallo
D. Skovholt
W. Gammill
F. Williams
J. Stolz
R. Baer
O. Parr
S. Varga
F. Collins
T. Speis
W. Haass
C. Heltemes
ACRS (16)
L. Crocker
H. Berkow
Project Manager: D. Hood
Attorney, ELD
IE (3)
SD (7)
M. Service
Receptionist
L. Rubenstein
L. Soffer

J. Knight
S. Hanauer
R. Tedesco
S. Pawlicki
F. Schauer
K. Kniel
T. Novak
Z. Rosztoczy
R. Bosnak
R. Satterfield
W. Butler
F. Rosa
V. Moore
M. Ernst
R. Denise
R. Ballard
B. Youngblood
W. Regan
G. Chipman
R. Houston
J. Collins
W. Kreger
G. Lear
M. Spangler
V. Benaroya
L. Hulman
H. Crnstein
J. Ledoux, IE

Participants:

D. Gillen
A. Hafiz
R. Cook

P-314



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

MAR 28 1979

Docket Nos.: 50-329
50-330

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water Reactors Branch No. 4
Division of Project Management

FROM: Darl S. Hood, Project Manager, Light Water Reactors
Branch No. 4, Division of Project Management

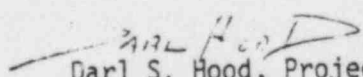
SUBJECT: FORTHCOMING MEETING ON OPEN ITEMS FROM STAFFS REVIEW
OF MIDLAND PLANT - UNITS 1 & 2 FSAR: PART I

Date & Time: Tuesday, April 10, 1979 - 8:30 a.m.
Wednesday, April 11, 1979 - 8:30 a.m.

Location: April 10 - Rm. 6110, Maryland National
Bank Building, Bethesda, Md.
April 11 - Rm. P-500, Phillips Building,
Bethesda, Md.

Purpose: To discuss open items associated with
the staff's FSAR review of Midland Plant,
Units 1 & 2

Participants: NRC
D. Hood
All FSAR Technical Reviewers
Consumers Power Company
R. Bowman, et.al.


Darl S. Hood, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure: Agenda

cc: See next page

~~7904120359~~

488

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AGENDA

The NRC staff is presently compiling a listing of those areas of the FSAR for which review has not been concluded. Some of the items require information from the applicant. Other items represent a disagreement in positions between the applicant and the staff.

The listing of open items will serve as the meeting agenda. The list will be transmitted under separate cover letter about March 30, 1979.

NRC Staff Technical Reviewers from each Branch will attend portions of the meeting during which their review areas are covered. The Licensing Project Manager will notify the appropriate reviewers as each Branch's area is reached during the meeting.

H. Gilber

MAR 28 1979

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Branch LWR#4 File
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R. Tedesco
S. Pawlicki
F. Schauer
K. Kniel
T. Novak
Z. Rosztoczy
R. Bosnak
R. Satterfield
W. Butler
F. Rosa
V. Moore
M. Ernst
R. Denise
R. Ballard
B. Youngblood
W. Regan
G. Chipman
R. Houston
J. Collins
W. Kreger
G. Lear
M. Spangler
V. Benaroya
L. Hulman
H. Ornstein
J. LeDoux, IE
Principal Staff Participants:
All FSAR Technical Reviewers



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

27

MAR 20 1979

Docket Nos: 50-329
50-330

APPLICANT: Consumer Power Company

FACILITY: Midland Plant, Units 1 & 2

SUBJECT: SUMMARY OF MARCH 6, 1979 TRIP TO OBSERVE
STATUS OF SOIL PRELOAD PROGRAM

On March 6, 1979, members of the NRC visited the Midland site to observe the status of the preloading program being performed in order to consolidate the fill in the vicinity of and underneath the diesel generator building. Participants and contacts are listed in Enclosure 1.

The preload program consists of placing granular fill (sand) inside the diesel generator building and for some distance outside the building. The level of preload at this stage consisted of a 10-foot uniform height. Further preload operation is dependent upon the applicant's evaluation of the results of this stage. A preload height of 20 feet above final plant grade is the maximum expected.

The preliminary data being obtained on the response to the 10-foot preload was reviewed. The data suggests that additional compaction is being achieved, particularly at the upper levels of the fill. As expected, a rapid rate of settlement was experienced initially in response to the preload, and the rate of settlement generally decreased thereafter. The preliminary data also suggests that the south-east corner of the diesel generator building is settling at a greater rate than the south-west corner. The applicant also noted that the concrete encasement for the condensate line located underneath the western half of the building is now believed to be in direct contact with the building foundation. This situation is being closely monitored and the validity of the measurements is being checked.

The preliminary measurements of ground water behavior beneath the building in response to the preload showed local variations in level. This tends to further confirm that the fill material under the structure is variable.

The applicant reported that instrumentation previously installed in the tank farm area was being relocated so as not to interfere with construction activities.

~~7904170070~~

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MAR 20 1979

Measurements of an underground service water pipe located between the diesel generator building and turbine building indicate a substantial variation in elevation. The Bechtel representative stated that this variation is believed to be due to faulty initial installation, and that the pipe would be replaced upon completion of the preload program.

A general tour of the site was made, including all seismic Category I structures founded upon fill.

The data reviewed during the trip will be reported in Bechtel's interim report 5 to MCAR 24 and will be forwarded by the applicant to the NRC in April 1979.

1 APR - Hood
Darl Hood
Light Water Reactor Branch No. 4
Division of Project Management

Enclosure:
As stated

cc: See next page

Consumers Power Company

-3-

MAR 20 1979

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Enclosure 1

NRC PARTICIPANTS

Darl Hood
Dan Gillen
Abdel Hafiz
Gene Gallagher

Division of Project Management, NRR
Geotechnical Engineering Branch, DSE/NRR
Structual Engineering Branch, DSS/NRR
I&E, Region III

CONTACTS

Consumers Power Company

Thiru Thiruvengandam
Charles Hunt
Bob Wheeler

Bechtel

Charles McConnel
Austin Marshall



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

NOV 14 1978

Docket Nos: 50-329
50-330

MEMORANDUM FOR: Steven A. Varga, Chief, Light Water
Reactors Branch No. 4, DPM

FROM: Darl Hood, Project Manager, Light Water
Reactors Branch No. 4, DPM

SUBJECT: FORTHCOMING MEETING AND SITE VISIT
ON SETTLEMENT OF MIDLAND STRUCTURES

Date & Time: December 3, 1978 - 1:00 p.m.
December 4, 1978 - 9:00 a.m.

Location: Midland, Michigan
Plant Site

Purpose: To discuss and observe
settlement of the Diesel
Generator Building and
other structures.

Participants: NRC
L. Heller
D. Gillen
D. Hood
R. Cook (Site)
A. Hafiz
Consumers Power Company
G. Keeley, et. al.

Darl Hood, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure:
Agenda

cc: See next page

~~78-1284-134~~

4pp

Consumers Power Company

NOV 14 1978

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ENCLOSURE

NOV 14 1978

AGENDA

Pursuant to 10 CFR 50.55(e), Consumers Power Company (CPCO) notified Region III of the Office of Inspection and Enforcement on September 7, 1978 that settlement of the Midland Diesel Generator Building foundations and generator pedestals was greater than expected and that a soils boring program had been started to determine the cause and extent of the problem. An interim status report was provided to Region III by CPCO's attached letter of September 29, 1978.

Region III conducted inspections on this matter on October 24-27, 1978 (Inspection Report No. 50-329/78-12; 50-330/78-12.

The architect - engineer has contracted Goldberg, Zoino, Dunicliff & Associates (Consultants in Geotechnical Engineering) to conduct laboratory tests on soil samples obtained during the soils boring program including a series of soils classification tests and determination of engineering soils properties. Results were provided to CPCO November 6, 1978.

Members of the NRC will observe settlement of the foundation and structures on Sunday, December 3, 1978.

The meeting on December 4, 1978 will discuss results of the architect - engineers investigative soils test program and those matters of the Region III inspection report.

NOV 14 1978

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P. Collins
C. Heltemes
R. Houston
R. Mattson
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ACRS (16)
L. Crocker
H. Berkow
Project Manager: D. Hood
Attorney, ELD
IE (3)
SD (7)
M. Service
Receptionist
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J. Knight
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R. Tedesco
S. Pawlicki
Chief, SEB
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W. Haass
T. Novak
Z. Rosztoczy
R. Bosnak
Chief, ICSB
W. Butler
F. Rosa
V. Moore
R. Vollmer
M. Ernst
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R. Ballard
B. Youngblood
W. Regan
G. Chipman
J. Collins
W. Kreger
G. Lear
M. Spangler
V. Benaroya
J. Stepp
L. Hulman
H. Ornstein
L. Dreher
B. Faulkenberry

Participants:

L. Heller
B. Gillen
R. Cook, Reg. III
A. Hafiz



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

JUN 21 1979

Docket Nos.: 50-329
and 50-330

APPLICANT: Consumer Power Company
FACILITY: Midland Plant, Units 1 and 2
SUBJECT: SUMMARY OF TRIP TO INSPECT TEST PITS

The attached memorandum summarizes the trip by NRC staff personnel on June 7, 1979 to observe test pits in the plant area fill at the Midland Plant, Units 1 and 2 site.

A handwritten signature in black ink that reads "Darl S. Hood".

Darl S. Hood, Project Manager
Light Water Reactors Branch No. 4
Division of Project Management

Enclosure:
As stated

cc: See next page

~~7907190039~~ 2PP

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

June 14, 1979

MEMORANDUM FOR: ✓ Darl Hood, LPM
Light Water Reactors Branch No. 4, DPM

FROM: Daniel M. Gillen, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

THRU: Lyman W. Heller, Leader *LWH*
Geotechnical Engineering Section
Geosciences Branch, DSS

SUBJECT: MIDLAND SITE VISIT TO INSPECT TEST PIT PROGRAM

On Thursday, June 7, 1979, J. P. Knight, L. Heller, R. Lipinski, and I visited the Midland 1 & 2 plant site for a general tour of the structures founded on the plant fill, and an inspection of the test pit program in progress.

After a short introductory meeting we accompanied representatives of Bechtel and Consumers Power Company on a tour of the Category I structures to be effected by plant fill remedial work. These included the diesel generator building, service water pumphouse, auxiliary building railroad bay, auxiliary building control room and electrical penetration areas, diesel generator fuel oil storage tanks, and borated water storage tanks.

During the afternoon, while J. P. Knight and R. Lipinski were engaged in discussions with Bechtel and Consumers structural personnel, L. Heller and I were conducted on an inspection of the test pits in the plant fill and other open excavated areas. Three test pits were observed in various stages of completion (TP #'s 2, 3 and 4). We observed Goldberg, Zoino and Dunicliff personnel sampling and performing density tests in test pit #4 adjacent to the service water pumphouse. We also visited Goldberg, Zoino and Dunicliff's on site soils testing facilities.

A brief departure meeting was held for comments and questions that had arisen during the inspection tour. A list of applicant personnel contacted during our tour is attached.

Daniel M. Gillen

Daniel M. Gillen, Geotechnical Engineer
Geosciences Branch, DSS

Enclosure:
As stated

cc: See next page

~~7908020132~~

3PP

Darl Hood

- 2 -

cc: w/enclosure
J. Knight
R. Jackson
L. Heller
R. Lipinski
D. Gillen

List of Contacts

Bechtel: S. Afifi
P. A. Martinez
A. Boos
P. E. Johnson
B. Dhar
C. Weidner

Consumers Power Company: C. A. Hunt
R. M. Wheeler
T. C. Cooke
D. E. Horn
D. Sibbald

MEETING SUMMARY DISTRIBUTION

JUN 21 1979

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R. Mattson
R. DeYoung

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Attorney, ELD
M. Service
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ACRS (16)

R. Denise

L. Rubenstein

NRC Participants:

J. P. Knight

L. Heller

R. Lipinski

~~D. Gillen~~