

STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

February 28, 1984

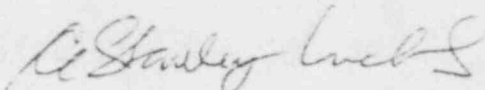
J.O. No. 14358
Ref. MFR 75

Attention: Mr. Cook

DOCKET NO. 50-339/230
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 75

A copy of the Independent Assessment of Underpinning Weekly Report No. 75 for the period of February 19, 1984 through February 25, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.



A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

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Independent Assessment of Underpinning

Weekly Report No. 75

February 19, 1984 through February 25, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

R. Majeski	2/19 - 2/21
D. Bervie	2/20 - 2/23
R. Lykens	2/19 - 2/21
J. Springer	2/22 - 2/23
W. Hilker	2/21 - 2/23
C. Lito	2/22 - 2/23
L. Rouen	2/21 - 2/23

Parsons Brinckerhoff

J. Oliveira	2/19 - 2/21
B. Metros	2/22 - 2/23

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
2/21 - 2/24	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
2/23	Bechtel Moretrench Groundwater Tech. Mergentime Parsons	CT 1-12 Dewatering Discussion
2/22	Bechtel Consumers Power Stone & Webster	Engineering-Construction Coordination Meeting
2/24	Consumers Power Bechtel Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils - Construction

Kc-4 Drift: Installation of the third drift set is underway. Excavation is in full-face concrete.

Pier W 13: Excavation of the pier is complete. The lower level struts were installed. Minor water seepage continued from near the top of the excavation and was removed by sump pumping.

Pier W 16: The initial drift set at the heading to the drift was completed. The raker installation is underway. Minor water seepage entering the excavation was removed by sump pumping.

CT 1: The excavation and lagging was completed to El. 584. Perched groundwater seepage entered the excavation requiring grouting, well points and sump pumping for control.

Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Pier Kc-9: Excavation of the pier shaft was completed and the bottom mudmat placed.

Pier E 13: The excavation was completed to El. 570 and the lower level struts installed.

E 16 Drift: The drift is complete. Installation of the final drift set is in progress.

CT 12: The excavation and lagging are complete to El. 583. Perched groundwater entering the excavation required control measures similar to those employed at the pier CT 1 excavation.

Well BB 2: The Contractor converted a piezometer to an ejector well and began pumping in order to remove perched water in the granular fill under the Control Tower.

SWPS: Excavation to the first level wale continued. Installation of the soldier pile wale seats is in progress.

Assessment Team Observation - Construction

The Contractor completed the chemical grouting of the soil to El. 583 around the perimeter of piers CT 1/12. The flow of water was substantially reduced and the soils stabilized as a result of the grouting. Nevertheless, wellpoints and sump pumping were installed to remove the remaining seepage. Also, a piezometer located in the Control Tower area midway between piers CT 1 and CT 12 was converted to a pumping well. As of 2/25/84 the water seepage was sufficiently controlled in both excavations to allow excavating to proceed. Plans are being discussed to install horizontal drains out of the UATs into the granular fill beneath the Control Tower. Once installed and operating, these drains should serve to reduce the perched groundwater level in the fill to an even greater extent. In the Assessment Team's opinion, the Contractor has taken prudent measures and proceeded cautiously in the advancement of these excavations. Stability of the surrounding soils continues to be the primary consideration.

The Assessment Team observed the advancement of the excavations for piers Kc-9 and E/W 13 and the drift to pier E 16. The requirements of the procedure and good underpinning practice were met. The backpacking of the lagging with soil or grout was accomplished in a timely and thorough manner and adequate measures were taken to control any groundwater seepage and to provide soil support in any potentially unstable areas.

Assessment Team Observations QA/QC

The Assessment Team conducted a review of the Resident Engineering Document Control Stations. Deficiencies noted during the review included improper posting of attachments to the design drawings and specifications, missing attachments to the design drawings and specifications, and lack of identification on a drawing that an attachment exists. As a result of these observations NIR No. 22 was issued. Presently, the distribution and posting of controlled documents is performed in accordance with the Contractor's Engineering Department procedures. The Assessment Team is aware that methods to improve the distribution and posting of the Resident Engineers controlled documents are being evaluated. In any case, an increased effort is needed on the part of Resident Engineering to maintain their controlled documents in conformance with applicable procedures.

Independent Assessment of Underpinning

The Assessment Team performed an overview of the classroom training and performance demonstrations for MPOAI QC inspectors. The classroom training sessions observed were on the installation of jackstands and plates, the erection and repair of structural steel, and concrete removal. The training in the installation-type classes concentrated on the technical terminology and PQCI attributes while the concrete removal training focused on the procedural requirements and compliance. In the Assessment Team's opinion, the content of the training sessions was well tailored to the type of construction activity to be inspected. The emphasis on technical content in steel fabrication erection and welding suits the nature of these activities while in concrete removal the training appropriately concentrated on procedural requirements and compliance with permit limitations.

QA inspector performance demonstrations, conducted by QA Engineers, were observed by the Assessment Team. The procedures tested were on miscellaneous steel fabrication and non-ASME in-process welding inspections. The candidates were required to perform various physical tasks, such as measurements and visual inspections. Also, the examiners asked the candidates to explain the PQCI procedural requirements. The Assessment Team believes the demonstrations adequately tested the candidates' knowledge of the particular activity.

The Assessment Team verified the training of a sampling of 60 craft (i.e. manual) personnel employed by the Auxiliary Building and SWPS Subcontractors. The review revealed the craft personnel in the various work areas had received the required QA indoctrination training. In addition, the craft foremen had been trained to MPOAI 1-2 and to the technical procedures for the work being supervised at the time. These activities were excavating and soil support, grouting, expansion anchor installations, and welding.

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

<u>WAP No.</u>	<u>Title</u>	<u>Status</u>
58	Bracket & Struts at E/W-10, Struts at E/W-11, and Mass Excavation of Zones Y/Z-3	Opened Closed 2/14/84 2/22/84
74	Auxiliary Building Slab Support Brackets at El. 614	2/25/84
75	SWPS Install Phase II A/B Soldier Beams	2/23/84

Nonconformance Identification Reports

The following Nonconformance Reports (NIRs) remain open or have been closed during the past week.

<u>NIR No.</u>	<u>Description</u>	<u>Date</u>
		(Opened) (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83 2/24/84

10000-1-100
 Wapato Plant
 Units 1 & 2
 Independent Assessment of Underpinning

<u>NCF No.</u>	<u>Description</u>	<u>Date</u>	
		<u>(Opened)</u>	<u>(Closed)</u>
22	Resident Engineering Document Control Stations	2/21/84	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEMS - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPCAD or the text of the Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

<u>Item No.</u>	<u>Description</u>	<u>Closure</u>
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
71-4	US Testing Work Instructions	Open
71-9	US Testing QA Manual	Open
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open

10-10-1988

Malaga-7490

Units 1 & 2

Independent Assessment of Underpinning

<u>Item No.</u>	<u>Description</u>	<u>Closure</u>
72-13	Welding Procedures	Open
74-17	Co-ordination of Concrete Placement Activities	Open
74-21	US Testing Corrective Action	Open
74-25	Expansion Anchors	Open
75-9	RE Document Control	Open
75-24	Assessment Team Sampling Methodology	Open

W.E. Kilker
Project Engineer

all
Project Manager

SECTION 1111
INVESTMENT MANAGEMENT
COLUMBIA POWER COMPANY

RECEIVED: MARCH 1968
MARCH 1968
MARCH 1968

Meeting was held on this date.

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 21, 1984

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MCAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	A. Gero	T. Gervie
R. Wheeler	E. Eviql	G. McMaster	R. Majeski
	J. Gaydos		R. Lykens
	J. Davies		
	L. Lavelle		<u>Varsons Brinckhoff</u>
	K. Miller *		M. Oliveira
	J. Blanchard *		
	E. Stanley *		

Part time *

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-1 - Auxiliary Building Underpinning Activities

Perched groundwater has been encountered during excavation of the shaft for pier CT-12. A dewatering well has been installed in the southwest corner of the pier shaft.

Localized sumping to control groundwater seepage is being performed in conjunction with excavation of the shaft for pier CT-1.

Installation of reshoring has been completed in preparation for finger drifting to pier Kc-4.

Excavation and installation of lagging to the top of the pier Kc-4 bell is almost complete.

Installation of struts for piers W-13 has begun.

Excavation, installation of lagging and backbacking continues on pier E-13.

Installation of the drift set posts on the southwest face of the access pit for pier W-13 has been completed.

Drifting to pier E-16 continues.

(INFORMATION ITEM)

Item 75-2 - SWPS Dewatering System.

J. Fisher reported that uncoupling of the riser pipe from the head assembly on three of the dewatering wells at the SWPS excavation resulted in minor flooding of the excavation on the east side of the SWPS and deposition of eroded material within the excavation on the north side of the SWPS. Cleanup operations are in progress and are expected to be completed later this week.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 21, 1984

The Contractor is presently assessing causes of the equipment failure and remedial action to prevent future occurrences of this type of equipment failure. (INFORMATION ITEM)

Item 75-3 - Welding Procedures.

J. Fisher stated that the WCP incorporating requirements for performance of welding under conditions of severe external shrinkage restraint into WCP-70.00 has been issued. A review to verify that past welding was not subject to severe external restraint conditions is scheduled for completion tomorrow. (Item 72-12 remains OPEN) (INFORMATION ITEM)

Item 75-4 - Tubular Steel Lagging.

E. Cvikel stated that DCNs designating specific areas at the SWPS requiring filling of internal voids in tubular steel lagging have been issued. (Item 58-3 remains OPEN) (INFORMATION ITEM)

Item 75-5 - Trend Analysis.

J. McMaster stated that two procedures to implement a trend analysis program for tracking NCRs are forecasted for issuance on 4/2/84. (Item 64-10 remains OPEN) (INFORMATION ITEM)

New Items

Item 75-6 - Piezometer BB-2.

J. Fisher reported that due to the presence of perched groundwater at pier CT-12, piezometer BB-2 may be converted to a dewatering well. D. Benvie asked if an evaluation was being made as to the need for additional dewatering wells in the vicinity of the remaining control tower piers. D. Lavelle responded that the need for additional dewatering wells is being evaluated. (CLOSED ITEM)

Item 75-7 - Lessons Learned from Level C Wales.

P. Majeski asked the following:

1. Does FSC intend to apply lessons learned from Level C wales to the Level D wales?
2. When changes and problems are identified in the course of performing a work activity, is there an established forum with engineering to evaluate possible impact to future work activities?

J. Fisher will respond. (OPEN ITEM)

Item 75-8 - Survey Control at Pier E-16.

J. Oliveira asked why survey control previously verified for construction of the pier E16 access pit required reverification prior to initiation of drifting activities to the pier. J. Fisher will respond. (OPEN ITEM)

1. List of Items Requested
2. Assessment of Management of Underpinning
3. List of Items Requested
4. List of Items Requested

1. List of Items Requested
2. Assessment of Management of Underpinning
3. List of Items Requested
4. List of Items Requested

Item 10 - Resident Engineering Document Control.

As a result of the Assessment Team review of the Resident Engineers document control station, the following information was requested:

1. Is there or will there be an administrative procedure for distributing and posting controlled documents at the Resident Engineers document control station?
2. What procedure is used for monitoring the Resident Engineers controlled documents (i.e. sample size, frequency, etc)?
3. Is there a procedure for distributing and implementing the Resident Engineering Controlled Document Register?
4. The Assessment Team requested a description of the Contractors QA and QC review of the Resident Engineers controlled document station.
5. A copy of Management Corrective Action Request/Report # 73 was requested.
6. The Assessment Team requested relevant correspondence between construction and engineering on construction stop work order related audits.

Engineering will respond. (OPEN ITEM)

• END OF DAILY MEETINGS
Independent Assessment of Activities
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
 Midland, Michigan
 February 22, 1984

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPRI</u>	<u>State & Webster</u>
E. Murray	C. Fisher	R. Berk	S. Eitz
L. Lombio	D. Ginski	J. McMaster	S. Wilket
C. Mooney	C. Gaydos		L. Rouen
B. Wheeler	D. Lavelle		L. Berville

Parsons Brinckerhoff

B. Metros

BURGLINE

This meeting is held each day to discuss items regarding the Independent Cells Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-10 - Auxiliary Building Underpinning Activities.

Excavation of the finger drift to pier K-4 has begun.

Excavation of the shaft for pier K-4 and installation of the ring beam has been completed.

Welding of the struts at el. 574' for pier W-15 against pier W-14 has been completed.

Installation of the raker plates for the W-16 pier is in progress.

Installation of the first drift set to pier E-16 is complete.

(INFORMATION ITEM)

Item 75-11 - QAP Review Program.

J. McMaster reported that the QAP task force subcommittee would meet with the full committee on 2/29/84 to make recommendations in regards to revising procedures and PRCIs. (Item 64-7 remains OPEN) (INFORMATION ITEM)

Item 75-12 - NIR # 20.

J. McMaster stated that a Request For Information (RFI) will be sent to Resident Engineering for clarification of their original response to NIR # 20. (INFORMATION ITEM)

New Items

Item 75-13 - NIR # 22.

It was noted that NIR # 22 was issued on 2/21/84. This NIR details deficiencies with the Resident Engineering Document Control Station found during an Assessment Team review. (INFORMATION ITEM)

Minutes of Daily Meetings
Interagency Assessment of Underpinning
Malaysian Pier 1 & 2
Singapore Power Company

Re: Pier Malayan Site
Malacca, Singapore
February 22, 1984

Item 75-14 - Perched Groundwater Beneath the Control Tower.

J. Wiener reported that as a result of perched groundwater encountered in the pier at 1982 excavations, methods to dewater the remainder of the control tower are including additional vertical wells and/or horizontal drains are being evaluated. (INFORMATION ITEM)

Response Items

Item 75-15 - Lessons Learned from Level C Walls.

J. Wiener responded to the Assessment Team's question concerning application of lessons learned from present work activities to future work activities. An Engineering task force group meets weekly to review FCRs/FCNs and DCNs originated during the week. This review categorizes changes made to work activities underway and evaluates impact to similar work being performed in other areas of the underpinning work and on future work activities. Specific examples noted include the application of changes made at the E/W8 grillages to the future construction activity at the E/W2 and 5 grillages. The Assessment Team believes that this weekly engineering review meeting is an appropriate forum to assess the impact of change to present work activities on future and/or similar activities. (CLOSES ITEM 75-7)

Item 75-16 - Survey Control at Piers E-16.

J. Wiener provided a response as to the need for a second verification of survey control at the E-16 pier. Procedure MCP-35.00 requires an independent verification of survey control for both the drop pit and drift of a pier because survey control points for both are not always the same. In the case of Pier E-16, the control points did happen to be the same, but in accordance with procedures MCP-35.00 a second verification was required. (CLOSES ITEM 75-8)

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 23, 1984

Present: Staff:

Consumers Power

D. Murray

Bechtel

J. Fisher
M. Currell
C. Cassano

MPQAD

C. McMaster
W. Lydell

Stone & Webster

D. Benson
W. Milnes
J. Lito
C. Thompson

Arizona Electric Power

B. Matros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-17 - Auxiliary Building Underpinning Activities.

Installation of a groundwater cutoff grout berm around the shafts for piers CT-1/12 at the el. 583' concrete mudmat interface is in progress.

Excavation of the ball for pier Kc-9 has begun.

Grouting of the struts at el. 574' for pier W-13 against pier W-12 has been completed.

(INFORMATION ITEM)

Item 75-18 - Dewatering Control Tower Area.

J. Fisher stated that based on a meeting with the dewatering subcontractor installation of horizontal drains is being evaluated for the east and west UATs in order to drain perched groundwater from beneath the control tower.

(INFORMATION ITEM)

Item 75-19 - SWPS Cleanup.

J. Fisher reported that the cleanup operations at the SWPS excavation have been completed and normal underpinning activities have resumed. (INFORMATION ITEM)

Item 75-20 - NIR # 22.

J. McMaster stated that a QAR has been issued by MPQAD as a result of NIR No. 22. (NIR # 22 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Superfiling
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 23, 1984

New Items

Item 75-21 - Weekly MPOAL Meetings.

W. Kilker stated that the weekly MPOAL meetings will no longer be held. Discussions on items related to MPOAL will take place at the daily meeting with FSO. The Assessment Team, SMT and MPOAL are the best recent practice. (CLOSED ITEM)

Response Items

No response items were addressed.

Midland Plant Meeting
Independent Assessment of Interference
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 24, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher

E. Cvikel

J. Gaydos

MPD&D

J. McMaster

Stone & Webster

W. Kilker

D. Eite

J. Springer

L. Rosen

Parsons Brinckerhoff

E. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent
Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-22 - Dewatering Control Tower Area.

J. Fisher reported that FSO is taking measures to obtain the permits and
materials required to begin the installation of horizontal drains from the
UATs and to convert piezometer BB2 into an ejector well. (INFORMATION ITEM)

Item 75-23 - Piers CT 1/12 Excavation .

J. Fisher reported the grout berm around piers CT 1/12 has been completed and
the excavation to the mudmat at El. 583 has begun. The inflow of perched
groundwater has been substantially reduced. (INFORMATION ITEM)

New Items

Item 75-24 - Assessment Team Review of RE Document Control.

E. Cvikel requested that the Assessment Team provide a brief description of
the sample taken in their review of the RE document control station and the
attributes considered. The Assessment Team will respond. (OPEN ITEM)

Response Items

Item 75-25 - NIR # 20.

J. Gaydos and J. McMaster stated that the RFI on NIR # 20 has been responded
to by FSO/Engineering. J. McMaster provided a copy of the completed RFI and
corresponding QAR to the Assessment Team. The Team will evaluate the response.
(NIR # 20 Remains OPEN) (INFORMATION ITEM)

Item 75-26 - Resident Engineering Document Control.

E. Cvikel stated that the response to the requests for information outlined in
Item 75-9 are in the process of being completed. All responses should be finalized
by March 9. (Item 75-9 remains OPEN) (INFORMATION ITEM)