



STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

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	File

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

March 21, 1984

J. O. No. 14358
 Ref. MPF 78

Attention: Mr. R. Cook

DOCKET NO. 50-339/330
 MIDLAND PLANT UNITS 1 & 2
 INDEPENDENT ASSESSMENT OF UNDERPINNING
 REPORT NO. 78

A copy of the Independent Assessment of Underpinning Weekly Report No. 78 for the period of March 1, 1984 through March 17, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meeting 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

A. Stanley Lucks
 Project Manager

Enclosures
 ASL/pd

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J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 78

March 11, 1984 through March 17, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	3/13 - 3/17
D. Benvie	3/12 - 3/16
R. Lykens	3/13 - 3/17
W. Kilker	3/11 - 3/13
D. Zito	3/11 - 3/16
L. Rouen	3/11 - 3/13

Parsons Brinckerhoff Michigan, Inc.

J. Oliveira	3/13 - 3/17
B. Metros	3/11 - 3/13

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
3/12 - 3/16	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
3/13	Consumers Power Bechtel MPQAD Stone & Webster	Inter-organizational Meeting
3/16	Consumers Power Bechtel MPQAD Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils - Construction

Pier Kc-4: Placement of reinforcing steel and concrete was completed.

Pier W-16: Bell excavation was completed and bell support was installed.

Piers CT-1/12: Bell excavation and support was completed. Bell reinforcing steel and concrete was placed.

Pier Kc-9: Bearing plates are being installed.

Pier E-16: Bell excavation was completed and bell support was installed.

Access shaft Level "C" Wales: Templates to be used for fabrication of plates are being made.

SWPS: Installation of the first level wales for the soldier pile wall is in progress.

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Assessment Team Observations - Construction

Jacking of the E/W 8 grillages to increase the reserve capacity load in each grillage was observed by the Assessment Team. Prior to jacking, the underpinning subcontractor reviewed the methodology and objectives of the jacking operation with the craftsmen, MPQAD, field engineers and the resident geotechnical and structural engineers. This discussion served as an appropriate forum to answer any questions thus ensuring a thorough understanding of the entire jacking operation by all organizations involved. The sequence of load application for the three sets of jacks at each grillage, increments of loading and the time interval between each load increment conformed with procedural requirements. The jacking operations were well co-ordinated between the resident structural and geotechnical engineers, the underpinning subcontractor and the instrumentation contractor. Reading of the instrumentation and reduction of data was expedient and accurate, allowing immediate evaluation of building and pier movement as jacking progressed. Acceptance criteria was met at both grillages prior to locking off and deactivating the jacks.

It is the opinion of the Assessment Team that the organizations involved with the jacking operations at the E/W8 grillages operated in an efficient and knowledgeable manner allowing the jacking for reserved capacity loading to be completed satisfactorily.

The successful and timely completion of piers CT1/12 is of utmost importance to the underpinning operations in the Auxiliary Building. Good prior planning and coordination enabled the Contractor to advance a scheduled concrete placement on short notice when it was determined that the reinforcing steel installation would be completed ahead of schedule. This is just one of a series of activities recently initiated to assure expeditious completion of these critical piers. The construction methods used demonstrated a good knowledge of proper technique for this difficult concrete placement.

Concrete was placed for the Kc-4 pier this week. The placement was well co-ordinated and the activities of the contractor, MPQAD and US Testing conformed with applicable procedures. Key items noted during the placement of the pier concrete was proper concrete consolidation, correct performance of in-process testing and availability of standby equipment. Concrete consolidation and in process testing were performed in accordance with applicable procedures. A second set of concrete pumps and vibrators were maintained at the placement area ensuring an uninterrupted operation. It is the opinion of the Assessment Team that placement of concrete conformed with applicable procedures resulting in a satisfactory installation.

The Assessment Team noted that a lesson learned from the Auxiliary Building underpinning is being applied at the SWPS. Prior to drilling holes for anchor bolts to be installed in the SWPS wall, sufficient concrete is removed in the area of the planned installation to allow mapping of the first layer of reinforcing steel. This allows an evaluation to be made for the bolt arrangement which will minimize the cutting of reinforcing steel and expedite the bolt installation.

J. O. No. 14358
 Midland Plant
 Units 1 & 2
 Independent Assessment of Underpinning

Assessment Team Observations - QA/QC

Compressive strength testing of pier Kc-9 concrete cylinders at the US Testing on site laboratory was overviewed by the Assessment Team. Additionally, qualifications of the inspector performing the testing and certification of the compression machine were reviewed. Testing attributes considered include proper capping and moistening of concrete specimens, rate of loading, and concentric application of load. Compression strength testing observed by the Assessment Team conformed with procedural requirements and certifications of the inspector and the compression machine were found to be acceptable.

The Assessment Team reviewed two work area controlled document stations for proper posting of attachments. One deficiency was found at each station. As a result NIR # 23 was issued.

The Assessment Team reviewed 300 Inspection Reports for completeness and proper certifications of inspectors. These reports covered inspections of twelve construction activities. All reports were found to be complete and the inspectors certified.

Work Activity Packages

No new work Activity Package overviews were reviewed during the past week.

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>Status</u>
22	Resident Engineering Document Control Stations	(Opened)(Closed) 2/21/84
23	Subcontractor Work Print Station	3/13/84

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.

J.O. No. 14358
 Midland Plant
 Units 1 & 2
 Independent Assessment of Underpinning

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

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel and 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>
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open
74-21	US Testing Corrective Action	Open
74-25	Expansion Anchors	Open
75-9	RE Document Control	Open
76-14	Lateral Wellpoints at CT 1/12	78-10
77-4	Tracking of Attachments to Design Documents	78-2
77-12	FCR Processing Task Force	Open
77-13	Drawing Attachment Stamp	Open
77-29	QE Monitoring Activities	Open
78-22	Concrete Truck Inspection	Open

J.A. Benoit for W.E. Kiker
 Project Engineer

J.A. Benoit for A. S. Farber
 Project Manager

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

Held at Midland Site
Midland, Michigan
March 12, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

J. McMaster
R. Sevo

Stone & Webster

W. Kilker
L. Rouen
D. Zito
D. Benvie

Parsons Brinckerhoff

B. 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 78-1 - Auxiliary Building Underpinning Activities.

Excavation of the bells for piers CT-1/12 is in progress.

Installation of the bell mudmat for pier Kc-4 has been completed.

Installation of the pier Kc-9 upper leveling plate has been completed.

Excavation of the pier W-16 bell is in progress.

Installation of bell bracing and placement of the bell mudmat for pier E-16 has been completed.

Drilling for installation of a wellpoint in the E-16 drift to dewater the soil in the vicinity of the E-17 pier has begun.

(INFORMATION ITEM)

Item 78-2 - Tracking of Attachments to Design Documents.

In response to an Assessment Team question concerning the tracking of attachments to design documents, E. Cvikl provided the Assessment Team with a copy of the Project Engineering Procedure, PEP 4.46.1. This procedure is used in the preparation, review, approval and control of engineering drawings. (CLOSES ITEM 77-4)

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

Held at Midland Site
Midland, Michigan
March 12, 1984

New Items

Item 78-3 - Document Review at Work Stations.

L. Rouen stated that during a review of controlled drawings at two work area stations, one deficiency was noted at each area. The first deficiency was a missing DCN to a drawing while the other involved a missing FCR. In both cases neither of the change documents were attached to the drawing nor were the documents identified in the block stamp on the front of the drawing. The Assessment Team requested FSO to determine why the documents were not attached or identified on the drawings. J. Fisher will respond. (OPEN ITEM)

Item 78-4 - FSO Controlled Document Review.

J. Fisher stated that a monthly review of FSO controlled documents will be conducted by FSO on March 17 and 18. (INFORMATION ITEM)

Response Items

No response items were addressed.

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

Held at Midland Site
Midland, Michigan
March 13, 1984

Present For:

Consumers Power

G. Murray
R. Wieland

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

Stone & Webster

W. Kilker
L. Rouen
D. Benvie

Parsons Brinckerhoff

B. 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 78-5 - Auxiliary Building Underpinning Activities.

Installation of the bell support plates has been completed in piers CT-1/12.

Reinforcing steel installation has began in piers Kc-4.

Bell support channels have been set and the bell mudmat was placed for pier W-16.

All rock bolts for the east level "C" wales have been grouted into place.

(INFORMATION ITEM)

Item 78-6 - Dewatering Control Tower Area.

J. Fisher reported that installation of the lateral wellpoints in the UATs to remove the perched groundwater beneath the Control Tower continues. Three of the four lateral drains have been advanced between 28 and 38 ft. into the backfill beneath the Control Tower. Drilling through fill concrete directly adjacent to the west UAT is in progress for the fourth lateral drain. (INFORMATION ITEM)

Item 78-7 - NIR # 22 - Resident Engineering Document Control Review.

E. Cvikl stated that in conjunction with the Resident Engineering response to the QAR concerning NIR # 22, MPQAD has requested Engineering to assess the impact, if any, of missing attachments to drawings on work being performed by Resident Engineering. (NIR # 22 remains OPLW) (INFORMATION ITEM)

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

Held at Midland Site
Midland, Michigan
March 13, 1984

New Items

Item 78-8 - Use of Injected Foam For Filling Tubular Lagging Internal Voids.

J. Fisher stated that the underpinning subcontractor has proposed the use of injected foam to fill the internal voids of tubular steel lagging in designated areas of the SWPS and Auxiliary Building. A demonstration on the use of injected foam will be given today by the underpinning subcontractor. (INFORMATION ITEM)

Response Items

Item 78-9 - Document Review at Work Stations.

J. Fisher concurred that the two missing attachments noted during a review of controlled documents by the Assessment Team were inadvertently not attached or identified on the drawings. W. Kilker reported that NIR # 23 has been issued as a result of the missing attachments. (CLOSES ITEM 78-3) (NIR# 23 will be tracked separately)

Item 78-10 - Lateral Wellpoints at piers CT-1/12.

In response to the Assessment Teams request to review the operation of lateral wellpoints installed in CT-1/12, J. Fisher stated that the Resident Geotechnical Engineer and the underpinning subcontractor had determined that the system was functioning adequately at the time and therefore no adjustments were warranted. B. Metros questioned who would monitor the operation of the lateral wellpoints that are being installed in the UATs and what type of monitoring will be performed. J. Fisher will respond. (CLOSES ITEM 76-14) (OPEN ITEM)

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

Held at Midland Site
Midland, Michigan
March 14, 1984

Present For:

Consumers Power

G. Murray
R. Wieland *

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

R. Sevo

Stone & Webster

R. Lykens
P. Majeski
D. Zito
D. Benvie

Parsons Brinckerhoff

J. Oliveira

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 78-11 - Auxiliary Building Underpinning Activities.

The mudmats for piers CT1 and CT12 will be placed today.

The two horizontal drains on the east side of the control tower have been advanced to 28 and 33 feet. The drains on the west side have been advanced to 33 and 38 feet.

J. Fisher indicated that Road Map meetings for installation of reinforcing steel in CT 1/12 are scheduled for 3/15 and 3/16.

(INFORMATION ITEM)

New Items

Item 78-12 - FCR Processing Task Force.

J. Fisher indicated that the kick off meeting for a task force to evaluate ways to facilitate processing of FCRs will be held tomorrow. Methods to facilitate NCR processing, which is considered to be less critical with respect to schedule impacts, will be begun at a later date. (Item 77-12 remains OPEN) (INFORMATION ITEM)

Response Items

There were no response items discussed.

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

Held at Midland Site
Midland, Michigan
March 15, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Gaydos
J. Blanchard

MPQAD

R. Sevo
J. McMaster

Stone & Webster

R. Lykens
P. Majeksi
D. Benvie

Parsons Brinckerhoff

J. Oliveira

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 78-13 - Auxiliary Building Underpinning Activities.

The mudmats for piers CT1 and CT12 were placed yesterday. Placement of bell reinforcing steel will begin today.

The horizontal drain installation was completed yesterday on the east side of the control tower. The drain installation on the west side is expected to be completed today.

(INFORMATION ITEM)

New Items

Item 78-14 - Rejacking of W-8 Grillage.

D. Benvie asked if the W-8 Grillage is to be rejaacked. E. Cvikl responded that rejaacking is expected to start today after lock off of the E-8 Grillage which was rejaacked yesterday. (INFORMATION ITEM)

Item 78-15 - NIR # 23, Document Review at Work Stations.

J. McMaster indicated that a QAR has been issued to initiate response to NIR # 23. (INFORMATION ITEM)

Item 78-16 - Review of Weekly Report No. 77.

The text of Weekly Report No. 77 was reviewed. It was determined that all open items had been previously identified. (CLOSED ITEM)

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

Held at Midland Site
Midland, Michigan
March 15, 1984

Response Item

Item 78-17 - Lateral Wellpoint at CT 1/12 .

In response to the Assessment Team question concerning responsibility for dewatering well performance (Item 78-10), J. Fisher indicated that the responsibility to develop dewatering methods lies with the subcontractor, but is subject to RGE approval. Monitoring of the functioning and effectiveness of the dewatering system is the joint responsibility of the subcontractor and the RGE. (CLOSES ITEM 78-10)

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

Held at Midland Site
Midland, Michigan
March 16, 1984

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	R. Sevo	R. Lykens
J. Mooney	J. Gaydos	J. McMaster	P. Majeski
J. Schaub			D. Benvie
R. Wieland			
			<u>Parsons Brinckerhoff</u>
			None

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 78-18 - Auxiliary Building Underpinning Activities.

The reinforcing steel in the bells of CT1 and CT12 is being installed.

Placement of concrete in the bells of CT-1 and CT-12 is planned for today and tomorrow respectively.

The reworking of the W-8 grillage is scheduled for today.

The installation of the horizontal drains beneath the Control Tower is complete. It is anticipated that pumping will start soon.

(INFORMATION ITEM)

Item 78-19 - QAP Review Program.

J. Fisher indicated that the full committee is planning to meet today to finalize its recommendations to management. (INFORMATION ITEM)

Item 78-20 - FCR Processing.

J. Fisher indicated that Field Engineers and Resident Engineers are going on an overtime schedule to reduce the number of outstanding FCR's. (INFORMATION ITEM)

Item 78-21 - NIR # 23, Document Review at Work Stations.

FSO's response to the QAR regarding deficiencies in attachments to drawings at work stations will be transmitted to MPQAD today. (INFORMATION ITEM)

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

Held at Midland Site
Midland, Michigan
March 16, 1984

New Items

Item 78-22 - Concrete Truck Inspection.

D. Zito reported that he noted several pieces of hardened concrete were removed by the laborers from the grate at the concrete pump during placement of the concrete for Kc-4. Apparently these pieces of concrete were an accumulation from the mixing blades of either the truck or the batch plant. The Assessment Team does not have a concern about the quality of the concrete placed in Kc-4. However, this incident may be an indication that improvements in the periodic inspection program for the concrete trucks or batch plant are required. D. Zito requested a copy of the procedures for the inspection program.
(OPEN ITEM)

Response Items

No response items were discussed.

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

Held at Midland Site
Midland, Michigan
March 12, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

J. McMaster
R. Sevo

Stone & Webster

W. Kilker
L. Rouen
D. Zito
D. Benvie

Parsons Brinckerhoff

B. 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 78-1 - Auxiliary Building Underpinning Activities.

Excavation of the bells for piers CT-1/12 is in progress.

Installation of the bell mudmat for pier Kc-4 has been completed.

Installation of the pier Kc-9 upper leveling plate has been completed.

Excavation of the pier W-16 bell is in progress.

Installation of bell bracing and placement of the bell mudmat for pier E-16 has been completed.

Drilling for installation of a wellpoint in the E-16 drift to dewater the soil in the vicinity of the E-17 pier has begun.

(INFORMATION ITEM)

Item 78-2 - Tracking of Attachments to Design Documents.

In response to an Assessment Team question concerning the tracking of attachments to design documents, E. Cvikl provided the Assessment Team with a copy of the Project Engineering Procedure, PEP 4.46.1. This procedure is used in the preparation, review, approval and control of engineering drawings. (CLOSES ITEM 77-4)