



STONE & WEBSTER MICHIGAN, INC.

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

March 15, 1984

J.O. No. 14358
Ref. MPF 77

Attention: Mr. R. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 77

A copy of the Independent Assessment of Underpinning Weekly Report No. 77 for the period of March 4, 1984 through March 10, 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.

WE Kitter for A. S. 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. 77

March 4, 1984 through March 10, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	3/4 - 3/8
D. Benvie	3/4 - 3/10
R. Lykens	3/4 - 3/6
W. Kilker	3/6 - 3/10
D. Zito	3/7 - 3/9
L. Rouen	3/6 - 3/10
A. Lucks	3/6 - 3/8
D. O'Nan	3/7 - 3/8

Parsons Brinckerhoff, Michigan Inc.

J. Oliveira	3/4 - 3/6
B. Metros	3/6 - 3/10

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
3/5 - 3/7, 3/9	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
3/6	Bechtel Consumers Power Stone & Webster MPQAD	QAP Review Meeting
3/7	Bechtel Consumers Power Stone & Webster MPQAD	Engineering/Construction Co-ordination Meeting
3/8	NRC Consumers Power Stone & Webster	Monthly Meeting with NRC
3/9	Bechtel Consumers Power MPQAD Stone & Webster Spencer, White & Prentis Mergentime HRDA (Course Consultant)	Team Effectiveness Meeting

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 Midland Plant
 Units 1 & 2
 Independent Assessment of Underpinning

Underpinning and Remedial Soils - Construction

Kc-4 pier: Excavation of the bell and installation of the bell support steel has been completed.

Pier W-16: Excavation of the pier shaft is complete to El. 572'. Minor seepage into the shaft excavation is being removed by sump pumping.

Piers CT-1/12: Excavation of the shaft to the subgrade has been completed. The subgrade for each pier is presently being prepared for placement of mudmats.

Pier Kc-9: The pier concrete was placed and the lower leveling plate for the jackstands was grouted into place.

Pier E-13: Placement of concrete in the pier shaft was completed to El. 592.

Pier E-16: Excavation of the pier shaft is complete to El. 565.

Access Shaft Level "C" Wales: Installation of rock bolts to support the west shaft Level C wale is in progress.

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

Assessment Team Observations - Construction

The Assessment Team observed the on-going excavation and lagging installations at five pier locations. The Subcontractor's personnel were careful to minimize over-excavation of the piers. Adequate spacing between lagging sets was maintained and backpacking was performed, as required, to fill any void areas. In those pier excavations where minor water seepage continued, the Subcontractor took prudent measures to divert, collect and remove the water thereby minimizing the impact on the subgrade soils. The Team believes these installations fulfilled the intent of the design and are in accordance with good underpinning practice.

Surface preparation for the pier Kc-9 upper and lower leveling plates and placement of the lower leveling plate grout was observed by the Assessment Team. The pier surface and the underside of the turbine building slab were roughened and moistened for 24 hours in accordance with the procedures to achieve a good bonding surface. The efficient and continuous placement of the grout avoided segregation and bleeding. Curing of the grout conformed with prescribed procedures. The Assessment Team believes that procedural requirements were implemented properly resulting in a satisfactory installation.

Installation of the lateral wellpoints in the UATs began this week. The wellpoints are being installed to remove perched groundwater from beneath the Control Tower. The original method of installation required that the wellpoint be advanced through the soil by means of jacking. However, during installation of the first wellpoint, penetration was limited to a few feet due to the dense nature of the soil. To overcome this problem, the Contractor implemented an alternate method involving the jacking of a perforated open ended pipe into the soil in increments and cleaning out the soil inside the pipe prior to further jacking of the pipe. Once the pipe has been installed to its full length, the wellpoint will be installed inside of the perforated pipe. The Assessment Team believes that this alternate installation method is satisfactory in that it minimizes the potential for loss of ground in addition to expediting the installation.

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Assessment Team Observations - QA/QC

The Assessment Team performed an independent preplacement inspection prior to concrete placement at pier E-13 and observed concrete placement activities at pier Kc-9. The required reinforcing steel for pier E-13 had been installed in accordance with applicable drawing and specification requirements. Forms were adequately cleaned prior to concrete placement. Quality attributes relating to placement operations and field testing of concrete were evaluated by the Assessment Team during concrete placement for pier Kc-9. It is the Assessment Team's opinion that all concrete preplacement and placement activities for piers E-13 and Kc-9, respectively, conformed to the appropriate procedures resulting in a satisfactory installation.

Cadwelder qualification testing was observed by the Assessment Team. Splices were tested in accordance with applicable procedures. The qualifications of the inspector performing the tensile test and the calibration data for the tensile testing machine were reviewed and found to be acceptable.

The Assessment Team attended one of the sessions of a "Team Effectiveness" course that is being given by a human resource development consultant to various levels of management and supervision within the Midland Soils Organizations. At this particular session there were three levels of responsibility represented within the respective organizations (i.e. CP Co. Site Management Organization, MPQAD, Bechtel Field Soil Organization, Bechtel Engineering, and the Underpinning Subcontractors). The session dealt with group discussions on the importance of inter-organizational communication and presentations of the 1983 goals of the various organizations. The Assessment Team believes this type of group training is an effective method of promoting positive communication and understanding between groups and thereby enhance the overall quality of the project.

Work Activity Packages

The following Work Activity Package (WAP) 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>
		(Opened)(Closed)
82	Repair and Reroute 1 1/2 In. Diameter Air Lines	3/8/84 3/9/84

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>Status</u>
		(Opened)(Closed)
22	Resident Engineering Document Control Stations	2/21/84

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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 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>
58-3	Tubular Steel Lagging	77-16
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
71-9	US Testing QA Manual	77-23
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 Piers CT-1/12	Open

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Independent Assessment of Underpinning

<u>Item No.</u>	<u>Description</u>	<u>Closure</u>
77-4	Tracking Design Document Attachments	Open
77-13	Drawing Attachment Stamp	Open
77-29	QE Monitoring Activities	Open

D.A. Benou for W.E. Kiker
Project Engineer

B.J. Mojidi for A.S. Lucks
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 5, 1984

Present For:

Consumers Power

G. Murray
R. Wheeler
R. Wieland

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

R. Sevo

Stone & Webster

D. Benvie
P. Majeski
R. Lykens

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 77-1 - Auxiliary Building Underpinning Activities.

Excavation of the pier shaft for pier Kc-4 is almost complete.

Preparations are being made to pour the concrete for pier Kc-9 today.

Drifting to pier W-16 continued.

Installation of rock bolts to support the Level C wale has began on the West access shaft.

(INFORMATION ITEM)

Item 77-2 - Dewatering Control Tower Area.

J. Fisher reported that while jacking the lateral drains in the UATs resistance had been encountered preventing further penetration of the lateral drains. The contractor plans to auger into the hole to determine the cause of resistance. Based upon the findings, the contractor may evaluate alternate methods to install the lateral drains. (INFORMATION ITEM)

Item 77-3 - NIR # 22 - Resident Engineering Document Control Review.

E. Cvikl stated that the Resident Engineering response to the QAR concerning NIR # 22 will be issued today. (INFORMATION ITEM)

New Items

Item 77-4 - Tracking of Attachments to Design Documents.

P. Majeski asked if a procedure exists designating responsibility for tracking the number of attachments to design documents to determine when revisions are necessary. J. Fisher will respond. (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 5, 1984

Item 77-5 - QE Monitoring of Resident Engineering Controlled Documents.

P. Majeski questioned if QE monitoring of attachments to the Resident Engineers specifications was performed in 1983. In addition, the Assessment Team requested a copy of the results for the QE monitoring activities of the Resident Engineers controlled drawings and specifications performed in 1983. J. Fisher will respond. (OPEN ITEM)

Item 77-6 - Corrections to the Field Document Control Register.

P. Majeski questioned how Field Document Control notifies controlled document stations of corrections made to the register. J. Fisher will respond. (OPEN ITEM)

Response Items

Item 77-7 - Tubular Steel Lagging.

E. Cvikl provided the Assessment Team with the last of 3 DCNs issued to designate areas in the vicinity of the Auxiliary Building where filling of internal voids in the tubular steel lagging is required. (Item 58-3 remains OPEN) (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 6, 1984

Present For:

Consumers Power

R. Wieland

Bechtel

J. Fisher
E. Cvikl
J. Gaydos
D. Anderson

MPQAD

J. McMaster
R. Sevo

Stone & Webster

D. Benvie
P. Majeski
R. Lykens

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 77-8 - Auxiliary Building Underpinning Activities.

Excavation of the bell for piers CT-12 and Kc-4 has begun.

Concrete has been placed to the top of pier Kc-9.

Installation of reshore members has begun in preparation for excavation of pier W-16.

Engineering has completed their evaluation of the sand layer at piers E-16 and E-17. As a result, pier E-17 will initially be constructed as a straight shaft. The shaft will then be enlarged by constructing 2 additional piers directly adjacent to two sides of the initial shaft to create one singular pier.

(INFORMATION ITEM)

Item 77-9 - US Testing QA Manual.

The Assessment Team received a copy of the revised US Testing QA manual. (Item 71-9 remains OPEN) (INFORMATION ITEM)

Item 77-10 - Resident Engineering Document Control.

E. Cvikl provided the Assessment Team with copies of the QA and QE review report on Resident Engineers' document control station. (Item 75-9 remains OPEN) (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 6, 1984

Item 77-11 - NIR # 22 -- Resident Engineering Document Control Review.

The Assessment Team received a copy of the Resident Engineers response to the QAR initiate concerning NIR # 22. (NIR # 22 remains OPEN)
(INFORMATION ITEM)

New Items

Item 77-12 - Processing of FCRs/FCNs and NCRs.

P. Majeski reported that he had discussed the processing of FCR's, FCN's and NCR's with several FSO Engineers and Resident Engineers. Based upon these discussions, it is believed that critical path construction can be impacted because of the cumbersome coordination process. Review sequencing, multiple reviews by the same organization and definition of the roles of review organizations were identified as areas where improvements are considered necessary. The Assessment Team requested that the Contractor review these items to determine if modifications can improve the handling and disposition cycle. J. Fisher will respond. (OPEN ITEM)

Item 77-13 - Drawing Attachment Stamp.

P. Majeski noted that in addition to attaching change documents to the back of design drawings, FSO also uses a block stamp on the front of the drawing to list attachments that are a part of the drawing. In accordance with administrative procedures, Resident Engineering is not required to use a block stamp listing attachments if the attachments are fastened to the back of the drawing. P. Majeski questioned if both FSO and Resident Engineering should, for consistency use the same requirements to handle drawing attachments. J. Fisher will respond. (OPEN ITEM)

Item 77-14 - US Testing Training Matrix.

J. Oliveira requested a copy of an updated US Testing training matrix.
J. Gaydos will respond. (OPEN ITEM)

Item 77-15 - Supervision Responsibilities.

J. Oliveira stated that during pouring of concrete at pier Kc-9, an incident occurred involving vibration of the concrete in which it appeared that the MPQAD Inspector was directing the craftsmen. It was pointed out that action should be taken by FSO to ensure that responsibilities of those organizations involved with the construction process are well defined. J. Fisher stated that all of those involved with construction activities on site are cognizant of their responsibilities. However, action will be taken to ensure that responsibilities are well defined. (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 6, 1984

Response Items

Item 77-16 - Tubular Steel Lagging.

The Assessment Team has completed a review of DCNs issued to designate areas where filling of the internal voids in the tubular steel lagging is required at the Auxiliary Building and SWPS. Based on the review the Assessment Team believes that the DCNs are adequate. (CLOSES ITEM 58-3)

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

Held at Midland Site
Midland, Michigan
March 7, 1984

Present For:

Consumers Power

R. Wieland
R. Wheeler
J. Schaub
G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Gaydos
W. Brandes

MPQAD

R. Sevo
J. McMaster

Stone & Webster

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

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 77-17 - Auxiliary Building Activities.

Installation of the ring beam has started for pier CT-1 and has been completed for CT-12.

Excavation to the subgrade for pier Kc-4 has been completed.

Excavation for the shaft of pier W-16 has begun.

Grouting to stabilize the sand layer in pier E-16 is in progress.

(INFORMATION ITEM)

Item 77-18 - SWPS Underpinning Activities.

J. Fisher reported that drilling of anchor bolt holes on the SWPS wall is on hold until a Balance of Plant NCR written against the SWPS wall is resolved. The NCR was written due to inadequate concrete cover over the rebar on the SWPS wall. This deficiency was discovered while preparing the wall to drill the anchor bolt holes.

A tear was found in the web of one of the wale sections installed on the soldier pile wall along the east side of the SWPS. The referenced wale has been removed and will be replaced with a new section. (INFORMATION ITEM)

Item 77-19 - Jacking of the W-8 Grillage.

J. Fisher stated that jacking of the W-8 grillage to increase the load on the grillage is scheduled to resume on 3/8/84. It is planned to jack the W-8 grillage to 130% of the specified design load in 5% increments. The load on the W-8 grillage is presently at 120% of the specified design load. (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 7, 1984

New Items

No new items were discussed.

Response Items

Item 77-20 - Corrections to the Field Document Control Register.

J. Fisher responded to the Assessment Team's questions concerning correction of errors to the Document Control register. When an error is found with the register, it is corrected and the register is revised. The affected documents or attachments to documents are then transmitted to the various site document control stations by Field Document Control or recalled by Field Document Control. (CLOSES ITEM 77-6)

Item 77-21 - US Testing Training Matrix.

J. Gaydos provided the Assessment Team with a copy of the US Testing Training Matrix. (CLOSES ITEM 77-14)

Item 77-22 - Supervision Responsibilities.

J. Fisher stated that the underpinning subcontractors have issued a memorandum to their workforce stating that superintendents are to ensure that craftsmen working under their supervision understand that their direction is only to come from the Superintendent. The Assessment Team believes that the action taken is appropriate to ensure that there is no conflict in direction of craftsmen. (CLOSES ITEM 77-15)

Item 77-23 - US Testing QA Manual.

The Assessment Team has completed a review of the latest revision to the US Testing QA manual. All attached change notices to the prior revision have been incorporated into the text. Also, the new criteria for incorporating future change notices into the body of the QA manual (i.e. change notices shall be incorporated when the number of change notices exceeds five, but no later than 45 days after issuance of a change notice) has been added. (CLOSES ITEM 71-9)

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

Held at Midland Site
Midland , Michigan
March 8, 1984

No meeting was held on this date.

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

Held at Midland Site
Midland, Michigan
March 9, 1984

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher E. Cvikl J. Gaydos C. Miller	J. McMaster	D. Zito L. Rouen W. Kilker
			<u>Parsons Brinckerhoff</u> 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 77-24 - Auxiliary Building Underpinning Activities.

The shaft excavations for piers CT1 and CT12 are complete. The mudmat will be installed shortly.

The casings for the horizontal drains under the Control Tower are being jacked into place.

The ejector pump at well BB-2 is being removed in order to use the location to monitor the level of the perched groundwater.

(INFORMATION ITEM)

Item 77-25 - SWPS Underpinning Activities.

J. Fisher reported the wale section removed because of the lamination tear from along the east side of the structure has been determined by Engineering to be an adequate section and will be used at another location in the lateral soil support system. (INFORMATION ITEM)

New Items

Item 77-26 - Piers CT 1/12 Bell Bracing.

B. Metros asked what bell support is presently planned for piers CT 1/12.

J. Fisher said the nominal bell bracing required on the drawings will be installed. Additional sheeting of the bell area(s) will be done only if soil or groundwater conditions warrant. (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 9, 1984

Item 77-27 - Review of Weekly Report No. 76.

The text of the report was reviewed. It was determined that all open items had been previously identified. (CLOSED ITEM)

Item 77-28 - NCR on SWPS North Wall.

J. Fisher discussed the disposition of an NCR written due to inadequate concrete cover of reinforcing steel which resulted during original construction of the SWPS. Conditional release to the NCR was given to allow resumption of the underpinning work. The conditional release was allowed because the underpinning work did not create the nonconforming condition, resolution of the NCR will not impact underpinning operations or conversely the underpinning operations will not impact the resolution of the NCR. The Assessment Team believes that issuance of the conditional release is appropriate as it applies to the SWPS underpinning work. (CLOSED ITEM)

Item 77-29 - QE Monitoring Activities.

In response to an Assessment Team request, C. Miller provided the Assessment Team with copies of the QE monitoring activities performed in 1983 on the RE controlled drawings and specifications. The Assessment Team will review this information. (CLOSES ITEM 77-5) (OPEN ITEM)

Item 77-30 - Construction and Engineering Correspondence.

E. Cvikl provided a copy of the correspondence that took place between Construction and Engineering with respect to the SWO audits. (Item 75-9 remains OPEN) (CLOSED ITEM)