

STONE & WEBSTER MICHIGAN, INC.

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United States Nuclear Regulatory Commission Midland Site Resident Office Route 7, Midland, Michigan June 6, 1984

J.O. No. 14358 Ref. MPF 89

Attention: Mr. B. L. Burgess

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 89

A copy of the Independent Assessment of Underpinning Weekly Report No. 89 for the period of May 27, 1984 through June 2, 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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Weekly Report No. 89
May 27, 1984 through June 2, 1984

Personnel on Site

Some & Webster Michigan, Inc.

P.	Majeski	5,27	-	5/29
D.	Benvie	5/29	-	6/1
D.	Zito	5/29	-	6/1
W.	Kilker	5/29	-	6/2
luis.	Rouen	5/20	-	6/2

Parsons Brinckerhoff Michigan, Inc.

J.	Oliveira	5/27	-	5/29
B.	Metros	5/30	+	6/2

Meetdags Attended

Pats .	Represented	Purpose
5/29 - 6/1	Stone A Webster Bechtel Consumers Powar Parsons	Daily Assessment Team Meeting
6/1	Consumers Power Bechtel MPQAD Stone & Webster	Weekly Interorganizational Meeting

Underginning and Remedial Soils - Construction

E/W5 Grillages: Placement and alignment of the grillage beams was completed. Installation of the loper leveling and bearing plate assemblies for the three jack locations at each grillage is in progress.

Pier Kc8: Bell excavation and placement of the concrete mudmat was completed. Find freing steel installation is in progress.

Pier E17: Routine rejacking following initial lead transfer of the center position of the pier was completed. Extension of the drift to permit enlarging the pier has begun.

Piers 37 3/10: Placement of bell concrete was completed. Installation of shaft reinforcing steel and instrumentation is in progress.

Pier K-5 Installation of the upper and lower leveling and bearing plate assemblies was completed.

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Pier W17: No further activity was performed pending fabrication of lagging materials to support the enlarged shaft.

East/West Access Shaft: Excavation for zones Y/Z3 (El. 591.5') neared completion.

SWPS: Installation of the upper level wales continued on the north and west sides. Excavation of the east access shaft was extended to El. 619.

BWST: Reinforcing steel, formwork installation, and concrete placement continued.

Cathodic Protection: Trench excavation and backfilling work continued.

Unit No. 2 HVAC Foundation Pad: Excavation for Installation of the foundation pad was completed.

Assessment Team Observations - Construction

At the Auxiliary Building, the Assessment Team observed the Contractors' activities associated with extending the east and west access shafts to El. 591.5'. Each of the temporary slopes from the shaft perimeter toward the E/W8 grillages was excavated in accordance with the design drawings. Installation of lagging and backpacking for the access shafts followed closely as the excavation proceeded, minimizing the potential for loss of ground. The Contractor was careful to minimize vertical and lateral over excavation as the work progressed. After installation of several lagging pieces for each wall panel, the craftsmen tamped the backpacking into place, thus ensuring proper bearing between the lagging and in-situ soil. Seepage of groundwater into the southeast corner of the east access shaft was effectively controlled. The Contractor installed a horizontal drain into the soil behind the wall and the area around the drain pipe was then grouted, forcing the water through the pipe and in turn to a sump.

Installation of the E/W5 grillage beams began this week. The Assessment Team observed placement, alignment and the independent survey for final location verification of the grillage beams. The beams were carefully moved through the highly restrictive access area and set at their placement locations without damage to the members. Transverse and longitudinal alignment and plumb were verified throughout the installation process. Scribe marks on top of the beams served as the primary alignment points although periodic checks were made at the beam and bearing pad interface for additional survey control. Once the Subcontractor completed placement and alignment of the beams, the Contractor conducted an independent verification survey of the installation. The survey verified that the beam locations were accurate, satisfactorily completing the placement and alignment activity.

The Assessment Team inspected the completed reinforcing steel and embedded plate installations for piers CT 3/10. The inspection verified that the

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number, size, location and spacing of reinforcing steel conformed with the design drawings, Additionally, the stagger for the Fox-Howlett couplers and location of the embedded plates on the north side of the piers were determined to be in compliance with design requirements.

Excavation , lagging installation, and backpacking of the SWPS east access shaft is nearing completion. Aided by careful in-process inspection and supervision by both Resident Engineering and Field Engineering and the use of a consistent installation methodology, the backpacking continues to improve.

The Assessment Team over-viewed concrete pre-placement and placement activities for construction of the Unit 2 BWST ring beam addition. Prior to placement, the area was thoroughly cleaned of all debris and water was removed by means of sumping. Forms were adequately braced and tight to prevent loss of mortar. Removable formwork spreaders were installed to ensure proper reinforcing steel clear cover was maintained during concrete placement. Pre-planned concrete placement points were designated and backup concrete vibrators were made available to ensure continuous placement of concrete once the work started. During placement, concrete was placed so that the maximum allowable lift thickness was not exceeded. In areas of heavy reinforcing steel congestion, the steel was bundled to allow passage of pencil vibrators into all areas of the placement to ensure thorough consolidation of the concrete. The Assessment Team concluded that the Contractors' activities for concrete placement, especially in areas where the reinforcing still is heavily congested were acceptable.

Assessment Team Observations - QA/QC

The Assessment Team reviewed the FSO report summarizing the results of the self audit conducted at their controlled drawing station and at various workprint stations. Five hundred and twenty one documents out of a total of 2.150 were reviewed for correct revision number, proper posting of attachments, legibility and proper identification stamps. The report indicated that missing attachments to drawings continues to be a problem but that the computerized register was accurate. Actions being taken to address the identified problem include the addition of clerical staff to maintain the documents and the reduction in the backlog and cycle time for distribution of documents. The Assessment Team believes these actions to be appropriate in addressing the problems noted during the self-audit. The Assessment Team expects the results of the next self-audit, scheduled for mid-June, to show fewer attachment-related problems.

The Assessment Team reviewed a group of NCRs and 10 QARs that were recently dispositioned. In general, the descriptions contained on these MPQAD forms were clear and concise. The nonconforming conditions were detailed, including occasional sketches, and the resulting dispositions were complete in terms of addressing the specific nonconformance plus any document changes that may have been required. In the opinion of the Assessment Team, one of these NCRs was vague in terms of the information that had been available for evaluation of the disposition.

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Work Activity Packages

The following Work Activity Packages (WAPs) overviews are in the open response stage or have been completed during the past week.

WAP No. Title Status

(Opened) (Closed)

86 Support Brackets 5/18/84 5/31/84 for Ke5.89, Ke6 and Ke7 Turbine Building

Nonconformance Identification Reports

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

NIR No.	Description	Status
		(Opened)(Closed)
26	Closure of Procedural Deficiencies	5/25/84

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - 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 listing of all Open item 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.

Item No.	Description	Closure
64-10	Trend Analysis	89-27
71-17	Computerized Civil Drawing Register	Open
74-21	US Testing Corrective Action	Open

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Item No.	Description	Closure
82-9	Trend Analysis	89-27
86-16	Vibration of BWST Concrete	89-15
87-5	Implementation of the QAP Task Force Recommendations	89-11
88-24	FSO Quality Engineering Group Controlled Document Audit	89-26
88-25	Documentation of Buttress Access Shaft Spall Repair	Open
88-26	NCR Disposition of a Concrete Air Entrainment Deficiency	89-12
89-7	Level C Wale Bearing Plate Gap	Open
89-10	Access Shaft Soldier Piles	Open
89-23	Incorporation of "One Time Deviation" FCRs	Open

Project Engineer W. E. Kilker

Denvier AS fucks

Held at Midland Site Midland, Michigan May 28, 1984

No meeting was held on this date.

Held at Midland Site Midland, Michigan May 29, 1984

Present For:

Con	sumers Power	Bec	htel	MPQ	AD	Sto	one & Webster
R.	Wieland	J.	Fisher Kelleher Cvikl		McMaster Sevo	D.	Majeski Benvie Zito

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 89-1 - Auxiliary Building Underpinning Activities.

Concrete placement was completed for the CT 3/10 pier bells.

Installation of the bearing plates is in process for the jack locations at the E/W5 grillages.

Load lock off has been completed for the middle portion of the enlarged E17 pier. Routine rejacking is in progress.

Shaft excavation for pier Kc8 has proceeded to the top of the bell.

Excavation in the east and west access shafts continued.

(INFORMATION ITEM)

Item 89-2 - SWPS Underpinning Activities.

J. Fisher reported that excavation of the east access shaft has resumed. Excavation work had been halted while areas behind the lagging which had been washed out during last week's heavy rainfall were repaired. (INFORMATION ITEM)

Item 89-3 - Vibration of BWST Concrete.

J. Kelleher reported that a pea gravel concrete mix will not be used for the BWST ring beam addition. Previously it was reported that a pea gravel would be used to ensure full penetration of concrete into access of high reinforcing steel congestion. It is still planned to bundle rebar and use pencil vibrators to ensure proper vibration of concrete in congested areas. (Item 86-16 remains OPEN) (INFORMATION ITEM)

Held at Midland Site Midland, Michigan May 29, 1984

Item 89-4 . Trend Analysis.

J. McMaster stated that the first monthly report summarizing the results of the MPQAD tracking activity of Remedial Soils related NCRs will be issued this week. This tracking activity is being performed to compliment the M-2 manual trending which is ongoing. (Item 64-10 and 82-9 remain OPEN) (INFORMATION ITEM)
New Items

Item 89-5 - SWPS Instrumentation Readings.

E. Cvikl reported that one of the electrical extensometers in the SWPS had shown an alert level reading over the weekend. A subsequent check of the mechanical dial gage on the extensometer did not indicate that the alert level had been reached. It is believ "that water drainage from a pipe above the extensometer may have affected to electrical instrumentation reading. Resident Engineering is presently investigating the cause of the alert level reading. (INFORMATION ITEM)

Item 89-6 - MPQAD Trend Reports.

D. Zito requested that MPQAD provide copies of the M-2 manual trending reports for February 1984 through April 1984. J. McMaster will respond. (OPEN ITEM)

Item 89-7 - Level C Wale Bearing Plate Gap.

P. Majeski stated that he observed a small gap along the edge of the Level C wale bearing plate adjacent to the spalled concrete on the West Buttress Access Shaft wall. Mr. Majeski requested that FSO or Engineering determine if the gap is related either to spalling or the result of movement. E. Cvikl will respond. (OPEN ITEM)

Item 89-8 - Hold Tags for Tubular Steel Lagging.

P. Majeski noted that a Hold Tag describing welding deficiencies associated with a tubular steel lagging piece had been removed and reattached to a piece of wood lagging. It was noted that recent correspondence from Bechtel requested the Underpinning Subcontractor to reinstruct it's employees as to the requirements of the NCR Hold Tag system. Mr. Majeski asked if this retraining has been completed. J. Fisher will respond. (OPEN ITEM)

Item 89-9 - Service Water Line Backfill.

J. Oliveira stated that during inspection of the backpacking behind the soldier pile wall along the north side of the SWPS a zone of loose backfill was found beneath the west 36 in. diameter service water line of Train A. Mr. Oliveira asked what will be done to correct this situation. J. Fisher will respond. (OPEN ITEM)

Held at Midland Site Midland , Michigan May 29, 1984

Item 89-10 - Auxiliary Building Access Shaft Soldier Piles.

J. Fisher reported that two soldier piles in each access shaft were not installed to their full design length. The soldier piles which were supposed to have been seated onto the east and west buttress access shaft footings were installed approximately 4 in and 24 in. too short, respectively. Engineering is presently evaluating corrective action. The Assessment Team requested that Engineering provide details of their evaluation once it is completed. E. Cvikl will respond. (OPEN ITEM)

Response Items

Item 89-11 - Implementation of the QAP Task Force Recommendations.

CP Co addressed the Assessment Team question concerning implementation of the QAP Task Force recommendations. The recommendations which include revisions to selected PQCIs, construction procedures and specifications to facilitate construction and inspection of various processes have been accepted by CP Co. Additionally CP Co agrees with the guidelines recommended by the task force for developing new PQCIs, construction procedures and specifications or making major revisions to existing procedures. CP Co has directed the Contractor to implement these guidelines. (CLOSES ITEM 87-5)

Item 89-12 - NCR Disposition for Concrete Air Entrainment Deficiency.

The Assessment Team has reviewed the MPQAD response addressing implementation of corrective action to ensure future concrete air entrainment testing is performed properly. MPQAD stated that the individual who was responsible for the improper concrete testing has been made aware of procedural requirements and no further corrective action is required. A review of additional NCRs by the Assessment Team found one other incident where a procedural deficiency associated with exceeding the time limit for performance of concrete aggregate testing was noted. The NCR response addressed the hardware issue associated with the testing but did not adequately address the procedural deficiency. The Assessment Team believes that the procedural deficiencies identified in these two NCRs should be addressed to ensure future concrete testing is properly performed. As a result NIR # 26 was issued on 5/25/84. (NIR # 26 is OPEN) (CLOSES ITEM 88-26)

Held at Midland Site Midland, Michigan May 30, 1984

Present For:

Consumers Power

G. Murray

J. Fisher
E. Cvikl

R. Sevo

Stone & Webster

D. Benvie

W. Kilker

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 89-13 - Auxiliary Building Underpinning Activities.

Placing and alignment of grillage beams for the E/W5 piers is in progress.

Placement of the Kc5 upper leveling plate grout was completed.

Placement of the concrete mudmat for the Kc8 pier shaft was completed. (INFORMATION ITEM)

Item 89-14 - Trend Analysis.

J. McMaster provided the Assessment Team with a copy of the first monthly report summarizing the results of the MPQAD tracking activity of Remedial Soils related NCRs. (Item 64-10 and 82-9 remains OPEN)

New Items

No new items were discussed.

Response Items

Item 89-15 - Vibration of BWST Concrete.

The Assessment Team observed placement of concrete for the Unit 2 BWST ring beam addition in an area of high reinforcing steel congestion. To address the Assessment Team's concern with proper concrete vibration in heavily congested areas, the Contractor bundled the reinforcing steel and used pencil vibrators to allow access into all areas of the placement. The Assessment Team believes implementation of these modifications was effective in ensuring proper vibration of concrete throughout the placement area. (CLOSES ITEM 86-16)

Held at Midland Site Midland, Michigan May 30, 1984

Item 89-16 - MPQAD Trend Reports.

J. McMaster provided the Assessment Team with copies of the MPGAD manual trending reports for February 1984 through April 1984. (CLOSES ITEM 89-6)

Item 89-17 - Hold Tag Repositioning.

J. Fisher and J. McMaster responded to the Assessment Team question on the repositioning of a Hold Tag for steel lagging to be used in the Auxiliary Building underpinning. The tag had not been intentionally moved but had fallen from the lagging and then re-attached by QC personnel. FSO has nevertheless reinstructed field personnel as to the requirements of the NCR Hold Tag system. (CLOSES ITEM 89-8)

Item 89-18 - Service Water Line Backfill.

J. Fisher responded to the Assessment Team concern of loose backfill beneath the west Train A service water line. After investigation, FSO concurs that the material that extends well beyond the backpacking zone is loose. However, no immediate remedial action is required since in the course of the planned Phase II construction this pipe will be rebedded within the next few months. (CLOSES ITEM 89-9)

Held at Midland Site Midland, Michigan May 31, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher J. Kelleher J. Darby	J. McMaster R. Sevo	W. Kilker D. Benvie D. Zito
			Parsons P.inc/erhof

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 89-19 - Auxiliary Building Underpinning Activities.

Installation of reinforcing steel in the CT 3/10 pier shafts is in progress.

Installation of jacks and jackstand for pier Kc5 is in progress.

Widening of the E17 drift to enlarge the shaft for the E17 pier is scheduled to begin today.

(INFORMATION ITEM)

Item 89-20 - US Testing Corrective Action.

W. Kilker requested the status for final issuance of the US Testing Quality Control Procedures (QCPs) with the attached work instructions. J. Fisher stated that the QCPs have been approved as noted. US Testing is presently incorporating comments and will resubmit the QCPs for final approval in the near future. (Item 74-21 remains OPEN) (INFORMATION ITEM)

New Items

Item 89-21 - SWPS Drawings.

D. Zito discussed his review of two recently revised SWPS drawings. It was noted that the two drawings which pertain to installation of the place load test assembly for pier No. 1 were marked up with a large number of comments. One drawing contained 84 comments while 67 comments were identified on the other drawing. Mr. Zito stated that these drawings were quite difficult to use because of the number of comments. (OPINION ITEM)

Held at Midland Site Midland, Michigan May 31, 1984

Item 89-22 - SWPS Phase II B Cofferdam.

D. Benvie asked if the cantilevered soldier pile wall concept is still being considered for construction of the SWPS Phase II B Cofferdam. J. Fisher stated that the original concept consisting of a braced soldier pile wall cofferdam will be implemented. The braced concept will be used because the bracing is needed to support utilities in addition to providing lateral support for the cofferdam. (CLOSED ITEM)

Item 89-23 - NCR for SWPS Backpacking Erosion.

L. Rouen discussed an NCR written due to erosion of the SWPS backpacking during last week's heavy rainfall. The NCR disposition stated that all eroded areas behind the soldier pile wall would be backfilled as directed by the Resident Geotechnical Engineer. Additionally, the NCR stated a sandbag berm and sumps had been installed around the perimeter of the east and west access shafts to prevent future washouts. Mr. Rouen noted that all the berm and sumps had not yet been installed and asked why the NCR was closed out. J. Fisher responded that the disposition wording should have stated that the sandbag berm and sumps will be installed as part of the corrective action. It was noted that the filling of the eroded areas, which is Q related, had been completed prior to NCR closure. The earth berm and sump system are not considered Q related work. (CLOSED ITEM)

Item 89-24 - SWPS Instrumentation Reading.

J. Darby stated that Resident Engineering completed their investigation of the cause for the alert level readings at one of the SWPS extensometers earlier this week. It was determined that the extensometer has malfunctioned because of water drainage onto the instrument from a pipe above. (INFORMATION ITEM)

Item 89-25 - Assessment Team Comments on a Recent QAR.

L. Rouen summarized the Assessment Team observations on a QAR issued by MPQAD subsequent to the May 23 erosion of soil behind portions of the SWPS access area lagging. The QAR noted that the Subcontractor's procedure does not adequately address means to control "groundwater/rainwater runoff" into the excavation. In reply, FSO offered a lengthy technical definition of groundwater in defense of the content of the existing procedure. The Assessment Team believes that MPQAD could have used an alternate means of requesting a clarification on this issue such as, a Request for Information. In addition, the Team feels that the FSO response was written primarily to refute the QAR. As a more positive approach FSO could have emphasized the actual measures being taken to guard against future potential erosion. (OPINION ITEM)

Held at Midland Site Midland, Michigan May 31, 1984

Response Items

Item 89-26 - FSO Quality Engineering Group Controlled Document Audit.

J. Fisher responded to the Assessment Team question concerning replacement of illegible and/or torn drawings at workprint stations. Field engineers have been directed by memo to ensure that during their daily review of new documents posted at a particular workprint station, they also identify and replace any torn or illegible drawings with copies. (CLOSES ITEM 88-24)

Item 89-27 - Trend Analysis.

W. Kilker stated that the Assessment Team has reviewed the MPQAD Soils NCR Tracking Report issued for the month of April. This Tracking Report contains a summary of the number of Inspection Reports (IRs), the number of inspection sign-offs, the number of attributes inspected and the number of NCRs and non-conforming items. In addition, there is a narrative on any major areas of NCRs and plots relating non-conforming items in several different areas of the number of inspection sign-offs. The Team believes this monthly report combined with the standard monthly M-2 trending report and the monthly FSO trending report adequately address the item raised on NCR trending in the Assessment Team report of October 1983 entitled "Evaluation of Change and Nonconformance Documents." (CLOSES ITEM 64-10 and 82-9)

Held at Midland Site Midland, Michigan June 1, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher E. Cvikl J. Kelleher	J. McMaster R. Sevo	W. Kilker D. Benvie D. Zito L. Rouen

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

Item 89-28 - Auxiliary Building Underpinning Activities.

The first lift of concrete for the CT 3/10 pier shafts is scheduled for 6/3/84.

Excavation of the Kc8 pier bell was completed. Placement of the bell concrete mudmat is scheduled for today.

(INFORMATION ITEM)

Item 89-29 - SWPS Underpinning Activities.

J. Fisher reported that excavation of the SWPS east access shaft is almost complete. Installation of the lower bracing system is scheduled to begin in the near future. (INFORMATION ITEM)

Item 89-30 - SWPS Drawings.

J. Fisher discussed the two SWPS drawings which have been marked up with a large number of comments. The Assessment Team had previously expressed concern that these drawings were difficult to use because of the large number of comments. Mr. Fisher stated that these two drawings will be revised this weekend to incorporate all of the comments on the drawings and then reissued for erection. (INFORMATION ITEM)

New Items

Item 89-31 - Weekly Report # 89.

The text of weekly report # 86 was reviewed. It was noted in the report that the revised methodology for incorporation of "one time deviations" FCRs has not been finalized. The Contractor had previously reported that

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"one time deviations" FCRs will either be incorporated onto the applicable drawing directly or referenced on the drawing with a brief description of the FCR. The Assessment Team will verify implementation of an incorporation methodology for "one time deviations" FCRs. (OPEN ITEM)

Response Items

No response items were discussed.