



STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

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

October 25, 1983

J. O. No. 14358
Ref. MPF 57

Attention : Mr. R. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 57

A copy of the Independent Assessment of Underpinning Weekly Report No.57 for the period of October 16, 1983 through October 22, 1983 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.

W E Kiley for
ASL

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 57
October 16, 1983 through October 22, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

| | |
|--------------|---------------|
| W. Kilker | 10/19 - 10/22 |
| B. Holsinger | 10/16 - 10/18 |
| P. Majeski | 10/16 - 10/18 |
| J. Springer | 10/20 - 10/22 |

Parsons Brinckerhoff Michigan, Inc.

| | |
|-----------|---------------|
| J. Ratner | 10/17 - 10/21 |
|-----------|---------------|

Meetings Attended

| <u>Date</u> | <u>Represented</u> | <u>Purpose</u> |
|------------------------|--|--|
| 10/17, 10/19- 10/21 | Stone & Webster Bechtel Consumers Power Parsons | Daily Assessment Team Meeting |
| 10/18 | MPQAD Stone & Webster | Assessment Meeting Meeting with MPQAD |
| 10/17 | Bechtel Consumers Power Stone & Webster | Weekly Inter-organizational Meeting |

Underpinning and Remedial Soils Activities - Construction

Kc10-Kc9 Drift: Work resumed on the advancement of the drift to a point approximately 4 ft. beyond the area of pier Kc9. The drift set and reshore members in this drift extension remain to be installed.

Pier E13: The upper level struts between piers E12 and E14 were installed allowing the excavation for pier E13 to begin. The pier area was excavated and lagged to a depth of 2 ft. to El 589.

CT12 (East UAT): The drift steel was installed in the access drift area.

Pier Kc3: The load transfer to pier Kc3 was accomplished. The deflection acceptance criteria was met and the routine rejack performed.

Kc2-Kc3: No additional activity.

Kc2-Kc4 Drift: The drift was excavated and supported to a distance of approximately 10 ft. beyond pier Kc3. The excavation was mainly in unreinforced concrete.

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Pier W13: The upper level struts between piers W12 and W14 were installed allowing the excavation for pier W13 to begin. The pier area was excavated and lagged to a depth of 4 ft. to E1 587. Groundwater seepage forced the Subcontractor to grout behind the north and south side lagging. Subsequently, the flow of water was substantially reduced.

CT1 (West UAT) : Additional soils stabilization work was performed. Installation of the access drift support is in-process.

SWPS: Installation of lagging for the access area continued near the northeast corner and along a portion of the north side of the structure. The Phase I pile installation was completed except for grouting a portion of one soldier pile.

BWST: The installation of reinforcing steel and concrete formwork continued. A segment of the ring beam modification on the Unit 2 tank was completed with the placement of the concrete.

Yard Area: The lean flyash grout fill was placed in the excavated area surrounding the former location of the 36 inch diameter casing in Q soils.

Assessment Team Observation - Construction

The Assessment Team observed numerous construction installation activities throughout the week. At the Auxiliary Building the Team observed the installation of wale seats at the east and west access shafts, drift excavations along the Kc turbine building line, a drift set installation at pier C12 UAT access, abandoned drill hole grouting at the pier C1 UAT access, upper level strut installation at W12/14, and grouting behind the lagging at the pier W13 excavation. At the SWPS, the lagging installation was monitored while at the BWST the Team members observed the installation of reinforcing steel and the concrete curing technique. The construction personnel followed the requirements of the design documents except for occasional non-conforming conditions, identified by either the Field Engineers or MPQAD personnel, that were documented and forwarded to Engineering for disposition.

With respect to the pier W13 excavation, the Team feels the field personnel took proper corrective action to reduce the groundwater seepage, by grouting and therefore the potential for substantial loss of ground behind the lagging. Early indications are that the seepage was markedly reduced.

The Assessment Team is aware that the Contractor is re-evaluating the need for the extensive welding of lagging to soldier beams at the SWPS access excavation. The Team commends this type of "second look" particularly on installation details for temporary support elements.

The Assessment Team was represented at the Weekly Inter-organizational meeting held between 2nd level supervisory personnel for Project Engineering, FSO, MPQAD, and SMO. This meeting appears to be quite effective as a means for problems to be aired across organizational lines. Several of these problems were discussed with either resolution obtained or action items developed.

The Auxiliary Building Underpinning Contractor has recently initiated a Visual Reminder (VR) tag system for use in various construction areas. The information on the tag has generally been to alert the craft personnel as to the limits of work or the prerequisites required to advance work. The Team feels this

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communication technique can be effective but should not become too commonplace so as to be overlooked or replace the verbal communication required between the Field Engineers/Supervisors and the craft personnel.

Assessment Team Observation- QA/QC

The Assessment Team witnessed the QC inspections of welds on the strut seat at pier W12 and the grouting of abandoned drill holes at the access drift to pier C1. The inspections were performed with the proper techniques and tools, and in accordance with the requirements of the respective PQCI.

The Assessment Team reviewed the closure of the NIRs issued to date for method of closure. Verification of the corrective action, if required, was judged to be complete. No additional action will be required to verify proper and adequate responses to these NIRs.

On October 21, MPQAD issued a site wide Stop Work Order on Q-related work including remedial soils activities. A CPCo audit revealed a potential for misapplications or inadequate distribution of the project Field Change Request (FCR)/Field Change Notice(FCN) forms to affected drawings and/or specifications. As a result, FSO must review all changes issued to date and determine the extent of misapplications or inadequate distribution. For any changes that fall into either of the above two problem categories, FSO will evaluate the impact, if any, on installed items. Once FSO completes the review and evaluation, the information will be forwarded to MPQAD for verification. Bechtel will also retrain the appropriate Project Engineering, Field Engineering, and Document Control personnel in the use of the forms to void reoccurrence of the problem. The Assessment Team feels the proposed action for resolution is appropriate.

Work Activity Packages

The comments and questions on WAPs 25, 60 and 61, were resolved satisfactorily. FSO action items remain open on WAP 59. WAP 64 was reviewed and comments/questions were submitted to FSO for resolution.

Control Document Evaluation

The Assessment Team report on the evaluation of change and nonconformance documents, referenced in Weekly Report No. 51, was issued on October 21 under separate cover to the NRC and CPCo.

Nonconformance Identification Reports

| <u>NIR No.</u> | <u>Description</u> | <u>Date</u> (Opened)(Closed) |
|----------------|--------------------|---------------------------------|
| 14 | Nut Procurement | 8/11/83 |

Open Items

On the attached Notes of Daily Meetings, the discussion items will be annotated by one of the following:

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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, which is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general or background information regarding the 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. No response or implementation is required as a result of an Opinion Team.

CLOSES ITEM XX-XX - This notification is the mechanism by which a previously open item is closed.

The following is a listing of all Open Items from the Daily Meeting Notes with Bechtel and the Weekly Meeting with MPQAD. 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> |
|-----------------|---|----------------|
| 45-8Q | Discussion on Mechanism of Identifying Quality Concerns | Open |
| 48-8Q | Structural Backfill PQCI Adequacy | Open |
| W.R.51.pg. 4 | Control Document Evaluation | W.R.# 57 |
| 52-4Q | MPQAD Independent Welding Inspection Review | Open |
| 55-2 | Plasticized Concrete Mix Tests | Open |
| 56-8 | Potential Interference of OBS 4 | 57-8 |
| 56-10 | BWST Reinforcing Steel Placement Inspection | 57-7 |
| 56-12 | Lean Flyash Placement | Open |
| 57-17 | Wall Ties | Open |

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| <u>Item No.</u> | <u>Description</u> | <u>Closure</u> |
|-----------------|--------------------------------|----------------|
| 57-18 | Tubular Steel Sheeting | Open |
| 57-6Q | MPQAD Supervisory Personnel | Open |
| 57-7Q | Welding Inspection | Open |

WE Keller
Project Engineer

AS Lusk *WSK*
Project Manager

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

Held at Midland Site Location
Midland, Michigan
October 17, 1983

Present For:

| | | | |
|------------------------|----------------|--------------|----------------------------|
| <u>Consumers Power</u> | <u>Bechtel</u> | <u>MPQAD</u> | <u>Stone & Webster</u> |
| R. Weiland | J. Fisher | R. Sevo | B. Holsinger |
| | E. Cvikl | | P. Majeski |
| | J. Gaydos | | |
| | | | <u>Parsons</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

Item 57 - 1 - UAT Soil Stabilization Grouting.

J. Fisher reported that one FCR has been approved and another is in the approval stage to allow sequencing changes and to minimize the possibility of damaging utilities during the drilling process. These changes allow more flexibility in excavating in the UAT areas and allow for a method to obtain additional information regarding obstructions encountered during the drilling operations. (INFORMATION ITEM)

Item 57 - 2 - Load Transfer at Kc3.

Load transfer commenced on 10 - 16. (INFORMATION ITEM)

Item 57 - 3 - Drift Kc3 - Kc4

The drift excavation between between Kc3 and Kc4 has started. (INFORMATION ITEM)

Item 57 - 4 - Level C Wales.

Level C Wale installation has started in both access shafts. (INFORMATION ITEM)

Item 57 - 5 - E/W 14 Struts.

The struts between Piers E/W14 and E/W12 will be connected to the lagging on E/W12 by means of a plate welded to the lagging instead of the connection using Hilti bolts as originally designed. This change is made to avoid interference with reinforcing steel. (INFORMATION ITEM)

Item 57 - 6 - SWPS Soldier Beam Installation.

E. Cvikl reported that the soft subgrade condition which resulted in the increased depth of soldier pile 16 is not expected to be a problem for the

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

Held at Midland Site Location
Midland, Michigan
October 17, 1983

Phase II piles. (INFORMATION ITEM)

Item 57 - 7 - BWST Reinforcing Steel Placement Inspection.

J. Gaydos indicated that 4 to 5 written inspection requests (phased inspections rather than in process inspections) are planned to inspect rebar installation for the BWST. (CLOSES ITEM 56 - 10)

Item 57 - 8 - Potential Interference at OBS - 4.

J. Fisher indicated that all work in the general area of OBS - 4 is on hold until the results of the penetrometer tests are evaluated. (CLOSES ITEM 56 - 8)

Item 57 - 9 - Dewatering at SWPS.

P. Majeski asked if any conclusions had been reached regarding the effectiveness of the dewatering test at the SWPS. J. Fisher answered that as a result of the test findings, the additional wells in phase II will not be required. (CLOSED ITEM)

Item 57 - 10 - Lessons Learned from Auxiliary Building Underpinning.

P. Majeski asked if there were any formal or quasi-formal means where the lessons learned from the Auxiliary Building underpinning would be transmitted or applied to the SWPS Underpinning. This question applies from the management level through craftspeople. J. Fisher responded that no formal program exists. However, considerable feedback is expected because of a number of individuals have the same roles on both underpinning projects. He also stated that various project meetings, Field Engineer cross training, and briefing and debriefing meetings as well as informal interpersonal relationships will aid in providing the necessary communications. (CLOSED ITEM)

Item 57 - 11 - Welding of Lagging at SWPS.

P. Majeski asked for the rationale for requiring welding between the lagging and the soldier piles at the SWPS. E. Cvikel to respond. (OPEN ITEM)

Item 57 - 12 - Procedure for Tracking and Closing Items.

The revised procedure for tracking and closing items at the Daily Meetings was discussed. The Assessment Team has revised its method of providing the status, tracking and closing items. In order to be consistent and provide for easier cross reference, Bechtel will be revising their notes also. (CLOSED ITEM)

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

Held at Midland Site Location
Midland, Michigan
October 18, 1983

Present For;

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Gaydos

MPQAD

R. Sevo

Stone & Webster

P. Majeski

Parsons

J. Ratner

Purpose

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

Discussion

Item 57 - 13 - Additional Penetrometer Testing.

J. Fisher indicated that additional penetrometer testing in the area of OBS - 4 is planned to start next week. (INFORMATION ITEM)

Item 57-14 - Welding of Lagging at SWPS.

E. Cvikl indicated that where the flange of the soldier pile is skew to the lagging a shear force exists requiring a weld. Otherwise, the welds are required to hold the lagging in place. An FCR is in process to minimize the extent of the welding. (CLOSES ITEM 57-11)

Item 57-15 - WAP Reviews.

P. Majeski indicated that the Assessment Team has completed its review of WAP 62,63,65 and 67. All outstanding questions and comments have been resolved with FSO. (INFORMATION ITEM)

Item 57-16 - Concrete Drill.

J. Ratner asked if there are any procedural changes or training requirements necessary to use the special concrete drill which has been ordered for use in removing mass amounts of fill concrete. (OPEN ITEM)

Item 57-17 - Wall Ties.

J. Ratner asked if Nelson studs could be substituted for the 28 gauge wall ties indicated in Drawing No. 2025 - 12. Rev. 1, Note 6. (OPEN ITEM)

Item 57 -18 - Tubular Steel Sheeting.

J. Ratner asked if the space within the tubular sheet sheeting must be filled. (OPEN ITEM)

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

Held at Midland Site Location
Midland, Michigan
October 19, 1983

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 Location
Midland, Michigan
October 20, 1983

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl

MPQAD

R. Sevo

Stone & Webster

W. Kilker
J. Springer

Parsons

J. Ratner

Purpose

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

Discussion

Item 57-19 - Status of Kc Drifts.

J. Fisher responded to a question by W. Kilker concerning the lengthy period of time (8 days) that the drift excavation has been on-hold. The delay was caused by the need to re-design the drift set member (s) in the vicinity of piers Kc4/9 after approval was given by the NRC to excavate 4 ft. beyond the Kc4/9 locations. However, J. Fisher said the delay is not expected to cause any final drift completion slippage since the CT1/12 pier completions are the " critical path " items. (CLOSED ITEM)

Item 57-20 - Construction Delays at UAT Access to Piers CT1/12.

J. Fisher stated that a series of events have caused a delay of several days on the work at the UAT access areas. The problems included encountering concrete obstructions and unidentified formed concrete, the need to modify the drift sets to conform to the area geometry and Hilti-anchor installation delays. All problems have been resolved and work on the access pits to CT1/12 is expected to start within the next few days. (INFORMATION ITEM)

Item 57-21 - Concrete Drill.

In response to Item 57-16, J. Fisher verified that a procedural change is not required. The type of equipment to remove material is not addressed in the procedures. (CLOSES ITEM 57-16)

Item 57-22 - Oil Residue at Stand-by Jacks.

J. Ratner mentioned that one of the jacks at both piers Kc3 and E9 appear to have leaked oil. Mergentime is reportedly aware of the situation and will take any required steps to replace or repair the jacks. J. Ratner offered a suggestion that if possible any repair work should be done on-site under the direction of the manufacturer. (OPINION ITEM)

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

Held at Midland Site Location
Midland, MI.
October 21, 1983

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl

MPQAD

R. Sevo

Stone & Webster

W. Kilker
J. Springer

Parsons

J. Ratner

Purpose

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

Discussion

Item 57-23 - Status of Piers E/W13.

J. Fisher reported the upper struts between the E/W12 and 14 piers were installed and excavation of piers E/W13 has commenced. (INFORMATION ITEM)

Item 57-24 - Soldier Pile Installation Status.

J. Fisher reported the last Phase I soldier pile will be installed today. (INFORMATION ITEM)

Item 57-25 - Use of Lean Flyash as Backfill.

J. Fisher reported that lean flyash will be used to backfill the Q soils excavated area around the recently removed 36 inch diameter casing. G. Murray said it had been (and will be) necessary to verify the use of this material with the NRC on a case-by-case basis. J. Ratner observed that lean flyash was also being used by the Subcontractor to fill in the space behind the lagging on the SWPS. G. Murray stated that the use of lean flyash for this purpose was not considered the same as for filling a yard area and that case-by-case approval was not required. (CLOSED ITEM)

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2

Held at Midland Site Location
Midland, Michigan
October 18, 1983

Present For:

Stone & Webster

B. Holsinger
P. Majeski

MPQAD

J. Meisenheimer
D. Horn
M. DeWitt
B. Sevo
J. Foley

Purpose

This meeting is held to obtain and discuss information relative to Q.A. activities for soils underpinning work at the Midland Plant Units 1 & 2.

Discussion

Item 57-1Q - Status of NIR # 14.

MPQAD is in the final stage of implementing corrective action. After verification by Q.A., the response will be sent. (INFORMATION ITEM)

Item 57-2Q - Status of Mechanism For Identifying Quality Concerns.

The final copy is being routed for approval. (INFORMATION ITEM)

Item 57-3Q - Status of MPQAD Welding Inspection Review.

The welding consultant is finalizing the report which should be available next week. (INFORMATION ITEM)

Item 57-4Q - Status of Comments on PQCI Backfill.

J. Meisenheimer , J. Foley, P. Majeski and B. Holsinger discussed the specifics of the assessment teams comments on the PQCI. The PQCI was reviewed to each comment and where necessary corresponding specification requirement. A better understanding of the assessment concerns were reached and resolution should be accomplished by next week. (INFORMATION ITEM)

Item 57-5Q - Certification of Supervisors.

The Assessment Team stated that although certification of the second tier of Q.C. supervision is not mandatory, the Team recommends that for consistency the supervisor that is not certified should be certified. (OPINION ITEM)

Item 57-6Q - Use of Supervisory Personnel.

The Assessment Team requested clarification on the availability and use of Level III certified staff for the purpose of providing guidance and resolving conflicts between Level II inspectors and noncertified Q.C. supervisory staff. (OPEN ITEM)

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2

Held at Midland Site Location
Midland, Michigan
October 18, 1983

Item 57-7Q - Welding Inspection.

The Assessment asked that if pre-heat is required to be checked by MPQAD then why is it not as equally important to inspect the heat affected zone on Q base metal rather than current practice of verifying the inspection of the field engineer? MPQAD will take the action to resolve this issue.
(OPEN ITEM)