



STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

PRINCIPAL STAFF	
RA	DRP
D/RA	DRS
RC	DRSS
PAO	ML
SGA	OL
EIC	OI
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United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan

June 20, 1984

J.O. No. 14358
Ref. MPF 91

Attention: Mr. B. L. Burgess

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 91

A copy of the Independent Assessment of Underpinning Weekly Report No. 91 for the period of June 10, 1984 through June 16, 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.

W E Killmer for A S Lucks

A. Stanley Lucks
ASL/pd

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JUN 26 1984

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

Weekly Report No. 91

June 10, 1984 through June 16, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	6/10 - 6/14
D. Benvie	6/11 - 6/15
D. Zito	6/11 - 6/15
W. Kilker	6/16
L. Rouen	6/12 - 6/16
S. Lucks	6/13 - 6/14
A. Genosi	6/13 - 6/14

Parsons Brinckerhoff Michigan, Inc.

J. Oliveira	6/10 - 6/12
B. Metros	6/12 - 6/16
J. Ratner	6/11 - 6/12

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
6/11 - 6/15	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting

Underpinning and Remedial Soils - Construction

E/W5 Grillages: Installation of jack and jackstands was completed.

Pier Kc8: Installation of the upper and lower leveling and bearing plates was completed. Jackstand installations was underway.

Pier E17: Extension of the drift to permit enlargement of the pier is in progress.

Pier CT 3/10: Installation of the transfer frames and leveling plates is in progress.

Pier Kc5: Load transfer for the pier was completed. Routine re-jacking is in progress.

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

Pier E/W10: Drilling of anchor bolt holes for the strut plates at the buttress access shaft walls has begun.

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Independent Assessment of Underpinning

SWPS: Installation of the upper level wale in the west access shaft was completed. Installation of the lower level wales has begun in the east access shaft.

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

Cathodic Protection: Trench excavation and backfilling work continued.

Independent Assessment Team Observations - Construction

The Contractor began installation of the transfer frames in preparation for loading of piers CT 3/10. The Assessment Team observed installation of the steel collar drift frames, placement and installation of the transfer frames, and repair of the transfer frame teflon bearing pads that were damaged during onsite storage. Erection and splicing required for the installation of the steel collars conformed with applicable procedures. Bolts for connection of the transfer frame beams and posts were torqued to the appropriate tension. The QC inspector marked each successfully completed bolt after torquing to indicate an acceptable installation and also to provide a reference point to aid in examining the anchor bolts for signs of loosening during subsequent inspections. Damaged teflon and brass backing areas were cut out and removed as prescribed by the manufacturer. The exposed stainless steel surface below the teflon and brass backing was then cleaned with a solvent, removing all surface impurities. The replacement material was subsequently positioned into place and spotwelded to the stainless steel, successfully completing the repair.

Load transfer and the initial routine re-jacking was performed this week for pier Kc5. Increments and rate of loading for the load transfer and subsequent routine re-jacking conformed with procedural requirements. Jacking loads were maintained at the specified values for the required time intervals and/or until the acceptance criteria were met. The initial soil compression was less than 1/8 in. which is consistent with that observed at most Kc pier installations.

The Assessment Team observed placement of Q backfill in a cathodic protection trench and over a ductline installed for the Unit 2 HVAC equipment located on the northeast side of the containment building. Grade stakes were installed at the extremities of the fill areas prior to placement of backfill for each lift to assist the craftsmen in maintaining loose lift thickness to less than the required maximum. The number of passes, required overlap of passes, and the type of compaction equipment conformed with the required placement technology. In areas where the cathodic protection was placed, the craftsmen were careful to ensure proper backfill compaction without damaging the PVC cathodic protection pipes.

The Assessment Team attended a FSO/Subcontractor planning session associated with the jacking sequence for the E/W5 grillages and the CT 3/10 piers. Items discussed included the jacking procedure, the rationale for the jacking sequence and contingency plans for re-jacking other critical supports, if required. The content of this planning session indicated that these critical loading activities have been carefully reviewed and scheduled to minimize possible building movement.

Assessment Team Observations - QA/QC

The Assessment Team overviewed MPQAD inspection of anchor bolt tensioning for the embedded and surface mounted strut plates in the SWPS west access shaft. The inspection verified that the appropriate tension was applied to each bolt. Prior to

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 Independent Assessment of Underpinning

subsequent tensioning, the inspector ensured that the load indication needle on the torque wrench was reset to zero.

Preparation of dry pack grout cubes by US Testing was observed by the Assessment Team. The grout samples were properly mixed with a minimal amount of water to obtain a cohesive mixture without excess bleed water. A small drop-hammer was used to uniformly tamp the dry pack into the molds, simulating the actual method of placement. The grout cubes were then properly stored at the work area until the initial set was attained.

Work Activity Packages

The following Work Activity Packages (WAPs) 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)
46	Yard Area Permanent Dewatering System	6/5/84

Nonconformance Identification Reports

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

Open Items

Items discussed during the 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.

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

The following 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>
74-21	US Testing Corrective Action	Open

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 Independent Assessment of Underpinning

<u>Item No.</u>	<u>Description</u>	<u>Closure</u>
89-7	Level C Wale Bearing Plate Gap	Open
89-31	Retirement of "One Time Deviation" FCRs	Open
90-6	SWPS Duct Bank Cracks	Open
90-7	Upper Leveling and Bearing Plate Assembly Welds	91-8
90-9	BWST Ring Beam Addition in Valve Pit	Open
90-35	Concrete Aggregate Testing	91-9
91-7	Pier Kc5 Bearing Plates	Open
91-21	MPQAD Inspection Reports for Concrete	Open
91-27	Material Storage and Handling Procedures Audit	Open

W E Killian
 Project Engineer

W E Killian for K S Duvall
 Project Manager

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

Held at Midland Site
Midland, Michigan
June 11, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Kelleher

MPQAD

R. Sevo
J. McMaster

Stone & Webster

D. Benvie
D. Zito
P. Majeski

Parsons Brinckerhoff

J. Oliveira
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

Status Items

Item 91-1 - Auxiliary Building Underpinning Activities.

Placement of concrete was completed for the Kc8 pier.

Installation of the pier Kc5 jacks and jackstands was completed.

Installation of the CT 3/10 transfer beams has begun.

Jackstand installation for all 3 jack locations is in progress for the E/W5 grillages.

(INFORMATION ITEM)

Item 91-2 - SWPS Underpinning Activities.

J. Fisher reported that grouting of the embedded strut base plates on the SWPS north wall is scheduled for today. (INFORMATION ITEM)

Item 91-3 - Incorporation of One Time Deviation FCRs.

J. Kelleher stated that the incorporation of existing one time deviation FCRs is in progress. In the future, the use of one time deviation FCRs will be discontinued. FCRs are now either being incorporated directly onto the drawings or referenced with a brief description. This task is expected to be completed by 8/84. Future FCRs which are incorporated by reference will be maintained in a binder at one of the controlled document stations for use by the appropriate personnel. (Item 89-31 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
June 11, 1984

Item 91-4 - NIR # 26 - Nonconformance Reports Associated with Concrete Testing.

P. Majeski discussed NIR # 26 which was written as a result of deviations from procedural requirements associated with concrete testing. The Assessment Team has received and reviewed the MPQAD response to NIR # 26. The MPQAD response did not acknowledge that there were deviations from procedural requirements. Additionally, MPQAD stated in the response that the NCRs represented one time occurrences and therefore further corrective action is not required. The Assessment Team believes that this response does not adequately address the deviation from procedural requirements described in the NCRs and therefore returned the MPQAD response as unacceptable. (NIR # 26 remains OPEN) (INFORMATION ITEM)

New Items

Item 91-5 - SWPS Phase II Cofferdam Subgrade.

E. Cviki reported that Resident Engineering will inspect and prepare detailed logs of the sheeted pits which will be excavated for installation of the Phase II soldier piles. This data will be used for preliminary evaluation of pipe bedding subgrade. (INFORMATION ITEM)

Item 91-6 - Fluorocarbon Repair of the CT 3/10 Teflon Pads.

Mr. Oliveira discussed the fluorocarbon repair of the teflon bearing pads for the CT 3/10 transfer frames. It was noted that the vendor's repair procedures was not identified with a number. Mr. Oliveira asked how the procedure is identified. J. McMaster responded that the procedure will be attached to the NCR to document the methodology used to repair the teflon bearing pads. (CLOSED ITEM)

Item 91-7 - Pier Kc5 Bearing Plates.

J. Oliveira stated that during an inspection of the pier Kc5 lower bearing plates, he observed a small space between two of the plates which appeared to be continuous. This condition indicates that proper bearing contact has not been attained between the two plates. Mr. Oliveira requested the Contractor to evaluate this condition. J. Fisher will respond. (OPEN ITEM)

Response Items

Item 91-8 - Upper Leveling and Bearing Plate Assembly Welds.

J. Fisher responded to the Assessment Team questions concerning use of smaller welds for the upper leveling and bearing plate assemblies. FSO will be monitoring future work to ensure that the smaller weld is used in those situations where it will aid in minimizing warping of the upper leveling and bearing plate assemblies. (CLOSES ITEM 90-7)

Notes of Daily Meeting
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Consumers Power Company

Held at Midland Site
Midland , Michigan
June 11, 1984

Item 91-9 - Concrete Aggregate Testing.

J. McMaster responded to the Assessment Team question concerning review and documentation of aggregate moisture test results associated with the piers CT 3/10 concrete. Once US Testing has completed their determination of the aggregate moisture content, MPQAD performs an informal review of the calculation. The calculation is formally checked and reviewed by both US Testing and MPQAD prior to closing out the QC inspection report associated with a particular batching activity. (CLOSES ITEM 90-35)

Item 91-10 - MPQAD Organization Chart.

In response to the Assessment Team request, J. McMaster provided the Assessment Team with a copy of the MPQAD organization chart containing a schedule breakdown with staffing levels for each work shift. (CLOSES ITEM 90-34)

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

Held at Midland Site
Midland, Michigan
June 12, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
J. Kelleher
D. Morris

MPQAD

R. Sevo
J. McMaster

Stone & Webster

D. Benvie
P. Majeski
L. Rouen

Parsons Brinckerhoff

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

Status Items

Item 91-11 - Auxiliary Building Underpinning Activities.

Installation of the steel drift collar was completed for pier CT 3.

The upper leveling and bearing plate assembly have been set into place for pier Kc8 in preparation for grouting.

Preparation of the Kc4 to Kc5 drift invert for concrete placement was completed.

(INFORMATION ITEM)

Item 91-12 - SWPS Underpinning Activities.

J. Fisher reported that grouting of the embedded strut plates on the SWPS was completed. Once the grout has attained design strength, the strut plate anchor bolts will be tensioned and excavation of the west access shaft will resume. (INFORMATION ITEM)

Item 91-13 - US Testing Corrective Action.

J. Fisher provided a status update on upgrading being undertaken by US Testing. Cross training of US Testing inspectors to at least Level I for 20 or more certifications is on schedule and should be completed by 6/30/84. US Testing Quality Control Procedures (QCPs) with attached work instructions have all been approved by Project Engineering and are in the process of being issued from Central Document Control. (Item 74-21 remains OPEN) (INFORMATION ITEM)

New Items

No new items were addressed.

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
June 13, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cviki
J. Kelleher

MPQAD

R. Sevo
J. McMaster

Stone & Webster

D. Benvie
D. Zito
P. Majeski
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

Status Items

Item 91-14 - Auxiliary Building Underpinning Activities.

Installation of jacks and jackstands continued for the E/W5 grillages.

Load transfer for pier Kc5 is scheduled to begin today.

(INFORMATION ITEM)

Item 91-15 - NIR 26 - Nonconformance Tests Associated with Concrete Testing.

P. Majeski stated that the Assessment Team had met with MPQAD management to discuss their response to NIR # 26. A revised response will be forthcoming. (NIR # 26 remains OPEN) (INFORMATION ITEM)

New Items

No new items were discussed.

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
June 14, 1984

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
None	J. Fisher E. Cvikl J. Kelleher	R. Sevo	D. Benvie D. Zito P. Majeski L. Rouen S. Lucks A. Genosi <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 91-16 - Auxiliary Building Underpinning Activities.

The lower leveling plates for piers CT 3/10 have been grouted.

Load transfer for pier Kc5 is in progress.

Installation of the jackstands for the E/W5 grillages was completed.

Placement of drypack for the Kc8 pier upper leveling plate was completed.

Concrete removal at the buttress access shaft walls has begun in preparation for installation of the E/W 10 strut plate rock bolts.

(INFORMATION ITEM)

Item 91-17 - Incorporation of "One Time Deviation" FCRs.

J. Kelleher discussed the status of the procedure for handling of "one time deviations" FCRs. Those FCRs which are incorporated by reference onto a drawing will be maintained at one of the controlled document stations. If an engineer needs a copy of a reference FCR, he will request distribution of this FCR from the controlled document station for his work area. Field document control procedures will be revised to incorporate this methodology for use and handling of reference FCRs. (Item 89-31 remains OPEN) (INFORMATION ITEM)

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

Held at Midland Site
Midland, Michigan
June 14, 1984

Item 91-18 - BWST Ring Beam Addition in Valve Pit.

J. Kelleher reported that qualification tests for a pea gravel concrete mix which is proposed for use on the BWST ring beam additions within the valve pits have been performed. Initial test results are expected on 6/18/84. It was noted that this concrete mix had been previously qualified, but requalification was required because of the time lapse since it was last used on site. E. Cviki reported that subsequent to running these new qualifications of the pea gravel mix it was determined that the previous test results are still applicable. The ACI code states that requalification is not required if 30 or more acceptable strength test results for a concrete mix design fall in any one year prior to the use of the mix in the field. (Item 90-9 remains OPEN) (INFORMATION ITEM)

Item 91-19 - Pier Kc5 Bearing Plates.

J. Fisher and E. Cviki discussed the gap between two of the pier Kc5 lower bearing plates observed by the Assessment Team. The gap partially closed up during initial load application for the pier. Engineering is now measuring the gap to evaluate it against the AISC code for compliance with bearing surface contact requirements. (Item 91-7 remains OPEN) (INFORMATION ITEM)

New Items

Item 91-20 - Rejacking of the W5 Grillage.

E. Cviki reported that the W5 grillage is presently being rejaacked. The grillage was rejaacked as a result of absolute downward movement of 18 mils measured at the west corner of the west EPA. Lift off was attained with 179% of the specified load for two of the jacks while the remaining jack attained lift off at 186%. The load at all 3 jack locations was decreased to 160% of specified load. Engineering is presently evaluating the cause for the 18 mil absolute movement. (INFORMATION ITEM)

Item 91-21 - MPQAD Inspection Reports for Concrete.

P. Majeski reported that the Assessment Team had earlier met with MPQAD to discuss three inspection reports related to batching of concrete for the CT 1/12 piers. MPQAD has been requested to provide an explanation of the sequence of initiation and closure of the inspection reports dated 3/24/84, 3/25/84 and 3/29/84. J. McMaster will respond. (OPEN ITEM)

Item 91-22 - Storage of Material.

L. Rouen stated that several cement bags observed in the vicinity of the Kc4 to Kc5 drift invert appeared to have been improperly placed near standing water and as a result the bags are wet. Mr. Rouen requested the Contractor to evaluate. 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
June 14, 1984

Item 91-23 - Material Storage and Handling Procedure Audit.

J. Fisher reported that the FSO Quality Engineering group has initiated an audit to review the Subcontractor's procedures for handling and storage of materials. This audit was initiated as a result of the damage to the Teflon bearing pads for the CT 3/10 transfer frames. (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
June 15, 1984

Present For:

Consumers Power

G. Murray

Bechtel

J. Fisher
E. Cvikl
J. Kelleher

MPQAD

J. McMaster

Stone & Webster

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

Status Items

Item 91-24 - Auxiliary Building Underpinning Activities.

Installation of the jacks for the E/W5 grillages is in progress.

Rejacking of the W8 grillage was completed and the load locked off.

(INFORMATION ITEM)

New Items

Item 91-25 - W5 Grillage Support Columns.

J. Fisher reported that one of the W5 grillage support columns adjacent to the containment had been installed without any weld inspection of the base plate shear lugs. As a result, an NCR was written. The NCR will have to be closed prior to loading of the grillage. (INFORMATION ITEM)

Item 91-26 - Weekly Report # 90.

The text of Weekly Report # 90 was reviewed. It was determined that all open items had been previously identified. (INFORMATION ITEM)

Item 91-27 - Material Storage and Handling Procedure Audit.

J. Fisher reported that the FSO Quality Engineering group had completed their audit of the Subcontractors procedures for handling and storage of materials. A report will be issued presenting the results of the audit and recommendations for procedural changes. D. Benvie requested that the Assessment Team receive a copy of the audit report once it is issued. 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
June 15, 1984

Response Item:

Item 91-28 - Storage of Material.

In response to the Assessment Team question concerning wet bags of cement observed in the underpinning area, J. Fisher reported that the wetted bags were removed from the work area and discarded. Additionally, the Subcontractor has been instructed to comply with material handling and storage requirements.
(CLOSES ITEM 91-22)