



# STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

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

August 24, 1983

J. O. No. 14358  
Ref. MPF 48

Attention Mr. R. Cook

RE: DOCKET NO. 50-339/330  
MIDLAND PLANT UNITS 1 & 2  
INDEPENDENT ASSESSMENT OF UNDERPINNING  
REPORT NO. 48

A copy of the Independent Assessment of Underpinning Weekly Report No. 48 for the period of August 14, 1983 through August 20, 1983 is enclosed with this letter. Minor changes in the report format have been made to improve the readability. Included as attachments, are the minutes of the daily meeting held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report, please contact me at 617-589-2067.

Very truly yours,

*A-S. Lucks by R.K.*  
A. Stanley Lucks  
Project Manager

Enclosures

ASL/pd

AUG 26 1983

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Midland Plant  
Units 1 & 2  
Independent Assessment of Underpinning

Weekly Report No. 48

August 14, 1983 through August 20, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

A. Scott	8/16 - 8/20
P. Barry	8/15 - 8/17
W. Kilker	8/18 - 8/20
B. Holsinger	8/16 - 8/20
P. Majeski	8/15 - 8/18

Parsons, Brinckerhoff Michigan, Inc.

J. Ratner	8/14 - 8/18
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Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
8/15 - 8/19	Stone & Webster Bechtel Consumers Power Parsons	Daily Meetings
8/17	Stone & Webster Bechtel Consumers Power	Weekly Engineering Construction Coord- ination Meeting
8/15 - 16	Stone & Webster Bechtel Consumers Power	FSO Personnel Quality Awareness Training Sessions
8/18	Stone & Webster Consumers Power Parsons	Weekly MPQAD Meeting

Underpinning and Remedial Soils Activities

Pier E8: The pier load remained wedged off. The status of this pier will not be included in future reports unless significant changes occur or new activities are started at this location.

E8 Grillage: The installation of the load transfer columns continued at the containment drop pit. Two sets of upper leveling plates were installed and grouted.

Pier E10: The pier remained on active jacking and will continue for at least another month. Future reports will not contain the status of this pier unless significant changes occur.

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Independent Assessment of Underpinning

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Pier KC10: The drift excavation was completed and the pier excavated and lagged to the level of the ring beam-a depth of approximately 20 ft. The excavated material consisted of 10 ft. of generally cohesive fill underlain by stiff gray clay. No groundwater entered the excavation.

Pier W8: The pier was wedged-off and active jacking terminated. The status of this pier will not be included in future reports unless significant changes occur or new activities are started at this pier.

W8 Grillage: The installation of the load transfer columns continued at the containment drop pit. Several of the upper leveling plates were installed and grouted.

Pier W10: The pier remained on active jacking and will continue for at least an additional month. Future reports will not contain the status of this pier unless significant changes occur.

KC3 Drift: The drift excavation was completed. The entire excavation was in unreinforced concrete.

E/W Access Shaft Level C Waler Connector Access Pits: Excavation and support of three 4 ft. deep pits was completed. These pits will allow access to install level C waler connector plates to the building foundation walls.

E/W JATs: Work continued on the installation of framework for the working platform for access to the CT pier areas.

SWPS: The installation of the exterior and interior dewatering wells continued as did the soldier pile installation. Installation of one of the replacement sections of service water piping was underway.

BWST: The limited activity on the tank foundation consisted of some further sandblasting of the existing concrete and shear connector bolt installation.

#### Assessment Team Observations-Construction

The drift completion to pier KC3 was slowed by the need to advance through unreinforced concrete. The Contractor reported that adjacent drifts will likely require further concrete removal and that plans are being investigated to modify the excavation on method to improve the rate of advancement.

The excavation and support of pier KC10 to the level of the ring beam was performed efficiently and in accordance with the project requirements. The Team noted that the lagging spacer thickness was, in a number of locations on the narrow side of optimum. Discussions with the Contractor indicated future spacers will be cut closer to the maximum allowable thickness.

Assessment Team observations of the routine FIVP bolt tension check, re-jacking of pier W8, and the routine ringing of the pier wedges and the E/W8 grillage upper leveling plate grouting indicated these activities were performed in accordance with the project documents.

Assessment Team members attended the Quality Awareness Training sessions held by FSO for all manual and non-manual personnel. This training was initiated after the Contractor's Field Engineers had not been thorough enough in their evaluation of an installation prior to requesting a QC inspection. The Team believes the training was a proper response to the situation and that the message to perform work correctly the first time was adequately conveyed.

In anticipation of upcoming backfill placements the Assessment Team reviewed the excavation, fill placement and fill testing specifications. A few comments and

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questions on clarification were discussed with Engineering. One item awaits resolution.

#### Assessment Team Observations-MPQAD

1. The responses to Assessment Team questions on the adequacy of the grillage installation PQCI's were reviewed. Although, the PQCI's contained nearly all of the necessary quality attributes, as a result of the Assessment Team's questions some inspection attributes were modified or added primarily for consistency with other PQCI's. One attribute was changed to be consistent with a specification requirement. The Assessment Team believes the PQCI's are now satisfactory.
2. The FSO and MPQAD actions taken as a result of the Assessment Team NIR#14 on grillage hardware materials were reviewed. The Team noted that one week elapsed after notification of the nonconformance until Hold Tags were placed on the nonconforming items to prevent their inadvertent use. While the Assessment Team understands that documentation review is time consuming, it is felt that a week's delay was too long a time period between notification and action.
3. The PQCI for structural backfill was reviewed for adequacy of inspection instructions. Comments were made in the MPQAD weekly meeting ( Item 48-4Q of the Weekly Meeting Notes attached ). It was noted that this PQCI, while workable, should have certain misleading wording changed in order to provide clearer definition of inspection(s).
4. A QC welding inspection for compliance to quality instructions was observed. The Assessment Team observed the inspection criteria, inspection tools, methodology, and the inspector's knowledge of the requirements. All items were noted to be in compliance with the project specifications and the welding code.
5. The Assessment Team reviewed the qualification data for the concrete mix used to date on the underpinning work. This data had recently been compiled and reviewed by the Contractor. The Team found the qualification methodology and data to be acceptable. The mix design was originally approved with a 3 point curve for the maximum allowable slump. Later when a change was made in cement type the mix was checked with a single test mix using the new cement type. The test verified the strength level and subsequent field test data has substantiated the conclusion that the mix design strength meets the requirements of the specifications.

#### Work Activity Packages

The Assessment Team questions on WAP44 ( Emergency Personnel Lock ) were resolved. The package as submitted should contain sufficient information to complete the work as intended. Resolution of the comments/questions of WAP's 50 and 51 remain open.

#### Nonconformance Identification Reports

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

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### Open Items

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 out this week are also listed.

<u>Item No.</u>	<u>Description</u>	<u>Closure Reference</u>
W. R. 25,pg.5	Commitment to assess training and personnel records.	Open
W. R. 42,pg.3	Commitment to evaluate response to Grillage Installation PQCI.	Weekly Report # 48 Assessment Team Observations-Item 1
43-4Q	Receipt Package Inspection	48-3Q
43-5Q	Grillage Installation Questions	48-2Q
44-7	Receipt for Chronology of Events Surrounding Reoccurrence of Loose Washers on W8 N-S Bulkhead	48-14
44-20	Resolution of a Question on the Adequacy of the Procedure on the Tieback and Strut Installation.	48-17
44-2Q	Grillage Beam Receipt Inspection Package	48-3Q
44-3Q	Status of Questions on Grillage Beam PQCI	48-2Q
45-8Q	Discussion on Mechanism of Identifying Quality Concerns.	Open
47-22	Direct Hire Work Retraining	48-21
48-4Q	Structural Backfill PQCI Adequacy	Open
W.R. 48,pg.3	Backfill Specification Comment	Open

*WE Keller*  
 Project Engineer

*N. S. Goodwin WSK*  
 Project Manager

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

Held at Midland Site Location  
Midland, Michigan  
August 15, 1983

Present For:

Consumers Power

G. Murray

Bechtel

E. Cvikl  
J. Gaydos  
D. Himmelberger

MPQAD

R. Sevo

Stone & Webster

P. Majeski  
P. Barry

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 48-1 - Turbine Building Response to Load Transfer.

E. Cvikl indicated that a NCR was written because the load transfer for E8 caused upward movement of the turbine building, which exceeded the allowable by approximately 5 mils. This movement was unexpected because it actually occurred after the reduction in load from 125% to 110% of the design load. Subsequently, as the load was released from the jacks to the wedges, at the beginning of the routine rejack phase, the structure moved downward such that the net movement is now within tolerance.

Procedural changes will be implemented to prevent future occurrences.

( 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  
August 16, 1983

Present For:

Consumers Power

G. Murray  
R. Wheeler\*

Bechtel

E. Cvikl  
J. Gaydos  
D. Himmelberger

MPQAD

R. Sevo

Stone & Webster

P. Majeski  
P. Barry  
A. Scott

Parsons

J. Ratner

\* Part time

Purpose

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

Discussion

Item 48-2 - Exceeding Allowable Upward Movement on East Turbine Building.

There was further discussion regarding the upward movement of the turbine building exceeding the AUM during loading of pier E8. P. Majeski indicated that such an occurrence is an indication that other shortcomings may exist in the procedures currently being utilized for review of instrumentation data. E. Cvikl to make an evaluation. ( OPEN ITEM )

Item 48-3 - Grillage Beam Support Posts.

It was discovered that two grillage beam support posts were incorrectly marked by NPS resulting in the posts being installed 180 degrees out of position. NCR was prepared by MPQAD. ( CLOSED ITEM )

Item 48-4 - Use of New Concrete Mix.

The new mix, utilizing a super plasticizer, will be used for the mud mat in the drift and pier KC-10. ( CLOSED ITEM )

Item 48-5 - One Time Deviations.

J. Ratner asked if FCR's prepared to handle one time deviations from specifications or drawings could be applied to other cases at a later date. J. Gaydos advised that the one time deviations are usually written for a specific case because drawings which may have similar conditions have not been issued at the time that the FCR is written. ( 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  
August 17, 1983

Present For:

Consumers Power

G. Murray

Bechtel

E. Cvikl  
J. Gaydos  
D. Himmelberger  
K. Pearson \*

MPQAD

R. Sevo

Stone & Webster

A. Scott  
P. Majeski  
P. Barry  
B. Holsinger

Parsons

J. Ratner

\* Part time

Purpose

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

Discussion

Item 48-6 - AUM Criteria.

P. Majeski requested that Project Engineering supply the basic information or rationale for setting the AUM criteria. See Item 48-2. ( OPEN ITEM )

Item 48-7 - One Time Deviations.

Further information regarding one time deviations was presented, indicating that procedures exist within the engineering organization to review FCR's for possible incorporation of relevant aspects into new drawings.  
( CLOSED ITEM )

Item 48-8 - Bechtel Representation at Daily Meetings.

G. Murray requested that Bechtel reconfirm or revise its commitment to have either J. Fisher or D. Lavelle be present at the Daily Meetings. He indicated that recently neither person has been present at several meetings. ( OPEN ITEM )

Item 48-9 - Drift Sequencing.

Bechtel indicated that an FCR to excavate the drifts between KC2 and KC3, and KC11 and KC10 prior to loading KC3 and KC10 would be prepared. There are no engineering concerns with this change in sequencing. ( 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  
August 18, 1983

Present For:

Consumers Power

G. Murray

Bechtel

E. Cvikl  
J. Gaydos  
D. Himmelberger

MPQAD

R. Sevo

Stone & Webster

A. Scott  
P. Majeski  
B. Holsinger

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 48-10 - Bechtel Representation at Daily Meetings.

J. Fisher indicated that either he or D. Lavelle will be present at all future daily meetings with the Assessment Team. ( CLOSES ITEM 48-8 )

Item 48-11 - US Testing Meeting.

P. Majeski requested background information regarding the purpose and outcome of a recent meeting between Bechtel and US Testing. Part of the outcome resulted in a significant change in the US Testing staff. J. Fisher is to respond.  
( OPEN ITEM )

Item 48-12 - Work Status.

J. Fisher stated that either he, or in his absence, D. Himmelberger, should be consulted to obtain a status report on any construction matter. ( 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  
August 19, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone &amp; Webster</u>
G. Murray	J. Fisher	R. Sevo	A. Scott
J. Schaub	J. Gaydos		W. Kilker
	E. Cvikl		<u>Parsons</u>
	M. Lewis		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 48-13 - Update on Auxiliary Building Work Status.

J. Fisher reported that piers E/W 10 will remain on active jacking for at least another month. M. Lewis said Engineering is interested in further verification of what appears to be a "break" in the time history-settlement plot. J. Fisher said progress on pier KC10 has been stopped pending the resolution of problems with the certification of admixtures at the concrete batch plant. Rather than opening the bell area the pier advancement is stopped at the ring beam level. The advancement of the pier KC3 drift in concrete is complete as of today.

On the E/W8 grillage installation work on the drop-pit columns is nearing completion. One grillage beam has been placed in the hole on the west side.

SWPS work continues with dewatering well and soldier pile installations. In addition welding of the service water line replacement sections is underway.

The UAT platform installation is being reworked to resolve non-conforming items. ( CLOSED ITEM )

Item 48-14 - E/W8 Bulkhead-Loose Washer Inspections.

E. Cvikl reported that FSO has gathered the field data pertinent to the occurrence and reoccurrence of loose washers on the W8 N-S bulkhead in mid-July. Engineering will evaluate the information to assess any future impact. W. Kilker said the Assessment Team is satisfied that the issue is being addressed adequately. ( CLOSES OUT ITEM 44-7 )

Item 48-15 - Status of Upcoming Work.

J. Fisher said that the primary effort is to install and load transfer the grillage beams. However, work may also proceed on piers E/W13 and 14, KC2/3 and KC10/11 drifts and the access pit to level C walers in the access shafts. Mergentime will schedule to balance the work load. ( 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  
August 19, 1983

Item 48-16 - SWPS Well 502 Grouting.

M. Lewis reported that nonconformances were written against this well installation. Attempts were being made today to grout the hole as a result of recent surface collapse around the hole. R. Sevo said MPQAD is evaluating the reportability of this type of soil collapse adjacent to the structure. M. Lewis said that consideration is being given to put down an adjacent sheeted pit at a later date to determine if there was any impact on the foundation support. ( CLOSED ITEM )

Item 48-17 - Adequacy of Tieback and Strut Installation Procedures.

J. Gaydos stated the appropriate procedure has been revised to address the previous concerns. W. Kilker replied that the procedure revision addresses the point raised in Item 44-20. ( CLOSES OUT ITEM 44-20 )

Item 48-18 - Review of Instrumentation Data Utilization during Load Transfer.

In response to Item 48-2, E. Cvikl said Engineering is considering including Carlson meter readings and strain gage data in the WJE data bank. During load transfer the Carlson meters and strain gages can indicate if acceptance load ratios are being maintained at the various load points. ( CLOSES OUT ITEM 48-2 )

Item 48-19 - AUM Criteria.

In response to Item 48-6, E. Cvikl reported there was no specific technical basis for selecting 30 mils as the allowable upward movement of structures during load transfer. Rather it was selected as a result of conservative engineering judgment. The Assessment Team is satisfied with this response. ( CLOSES OUT ITEM 48-6 )

Item 48-20 - NCR on SWPS Baseline Data Gathering.

J. Fisher reported that FSO has issued an NCR on the baseline data gathering at the SWPS because the initially issued Work Permit had expired. G. Murray said the NRC had been notified. Since the activity involved only data-gathering no impact has occurred. Nevertheless, J. Schaub stated the importance of maintaining updated Work Permits for all situations. ( CLOSED ITEM )

Item 48-21 - Awareness Training.

J. Fisher said all Bechtel direct hire, Mergentime and SWP manual and non-manual personnel had received this training that stressed the need for all personnel to be fully aware of the importance of the Quality related aspects of the work. A few Bechtel site Engineering people have yet to receive the training. Another class is scheduled for next week to include these personnel. Future classes will be held as required to train new personnel. ( CLOSES OUT ITEM 47-22 )

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

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

Item 48-22 - Status of US Testing.

J. Fisher reported that Bechtel management has given U.S. Testing a short time period during which their performance must show marked improvement. Even after a CPCo audit in the spring of 1983 identified several programmatic deficiencies, nonconformances continue to surface routinely. ( CLOSSES OUT ITEM 48-11 )

Item 48-23 - Certification of Concrete Admixtures.

J. Gaydos said the recent NCR on concrete admixture certifications has resulted in sampling the on-site ingredients and returning them to W.R. Grace Co. for analysis. Results will take at least five days during which time no concrete will be placed. ( CLOSED ITEM )

Item 48-24 - Lagging Spacer Size.

W. Kilker reported that the Assessment Team had observed numerous lagging spacers in pier KC10 that had thicknesses on the order of 1 1/4 inches. This dimension is contrary to the procedurally agreed upon dimension of approximately 1 1/2 inches. J. Fisher said Mergentime has been instructed to cut the spacers to a thickness as close as practical to 1 1/2 inches. ( CLOSED ITEM )

Item 48-25 - Leveling Plate Pressure Grout Nipple.

A. Scott expressed a concern that the installation of the nipple on the inside of the plate could affect the quality of the grout installation in the area of the nipple. E. Cvinkl said the test program was done with nipples outside the plate but that requirements to remove the nipple to install the bearing plate resulted in the change to the inside arrangement. ( CLOSED ITEM )

Item 48-26 - Pier Lagging Requirements in Concrete.

A. Scott asked if lagging would be used on pier KC3 if concrete is encountered in the first several feet. M. Lewis said he had discussed this with Mergentime and that lagging would be used. ( CLOSED ITEM )

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

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

Present For:

Stone & Webster

B. Holsinger  
P. Majeski  
A. Scott

Parsons

J. Ratner

MPQAD

J. Meisenheimer  
M. DeWitt  
D. Horn  
D. Oliver

Purpose

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

Discussion

Item 48-1Q - Status of NIR # 14.

MPQAD has reviewed the NIR and associated receipt inspection packages. To date no MPQAD NCR has been written. B. Holsinger stated that on Monday, 8/10/83, QC in turn notified FSO. On Thursday, 8/11/83, verification with QC and FSO indicated no action had been taken. As of Tuesday, 8/16/83, the Team checked on the NIR status with QC. They had determined that most of the items identified were valid but had not placed Hold Tags on the material which would prevent the inadvertent use of the items. At this time the Team voiced concern in the delay of placing Hold Tags. QA then promptly set out to locate the material and place Hold Tags. B. Holsinger re-stated his dissatisfaction for not promptly placing Hold Tags in order to prevent the use of nonconforming material. ( CLOSED ITEM )

Item 48-2Q - Grillage Beam Installation Questions.

Stone & Webster has received the response to the questions regarding the grillage installation. These responses have been evaluated. ( CLOSES ITEM 43-5Q & 44-3Q )

Item 48-3Q - Grillage Beam Receipt Inspection Packages.

Stone & Webster has received the requested packages. ( CLOSES ITEM 43-4Q & 44-2Q )

Item 48-4Q - Adequacy of PQCI For Structural Backfill.

P. Majeski stated that the PQCI for structural backfill was in some instances misleading and attributes too general. Attribute 2.2.2F omitted a portion of the corresponding specification requirement which made the PQCI attribute more stringent than the specification. Attribute 2.2.2A could mislead the inspector to believe that sand backfill could be used in lieu of structural backfill contrary to the project specification.

Some attributes are general statements which refer to paragraphs in the specifications. These paragraphs may have several inspectable attributes. In these instances it was felt that separate attributes should be in the PQCI.

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

August 18, 1983

A question was asked if the PQCI should contain an attribute to inspect for segregation of placed material in order to cover the specification requirement.

A question was asked how material was controlled from time of receipt to installation. ( OPEN ITEM )

Item 48-5Q - Inspection Transfer Frame.

B. Holsinger stated in his opinion it would be easier and more accurate to have a survey performed for location of items such as the transfer frame in lieu of current practice of plumb-bobs and rulers. These survey notes could be verified and made a part of the quality documentation. ( CLOSED ITEM )

Item 48-6Q - Status of U.S. Testing.

B. Holsinger asked if MPQAD was aware of the current status and employee additions to the U.S. Testing organization. J. Meisenheimer stated he was aware of the U.S. Testing status. ( CLOSED ITEM )

Item 48-7Q - Closing Q.A. Programatic NCR.

A. Scott asked what could be done to close the Q.A. NCR in a more timely manner-particularly with respect to the NCR on the BWST Bolts.

J. Meisenheimer stated that better communication between MPQAD and Engineering was needed in order to close some NCRs faster. ( CLOSED ITEM )

Item 48-8Q - Training Schedule.

B. Holsinger requested an up-to-date training schedule and to be informed of unscheduled training when practical. ( CLOSED ITEM )