



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 12, 1983

J.O. No. 14358
Ref. MPF 55

Attention: Mr. R. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 55

A copy of the Independent Assessment of Underpinning Weekly Report No. 55 for the period of October 2, 1983 through October 8, 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.

Pete J. Muzich
for

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

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

Weekly Report No. 55

October 2, 1983 through October 8, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

W. Kilker	10/4 - 10/8
B. Holsinger	10/2 - 10/4
P. Majeski	10/2 - 10/4
J. Springer	10/7 - 10/8
A. Scott	10/2 - 10/8
S. Lucks	10/5
J. Allen	10/5
N. Cleveland	10/5
G. Schierberg	10/5

Parsons, Brinckerhoff Michigan, Inc.

J. Ratner	10/3 - 10/7
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Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
10/3 - 10/7	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment * Team Meeting
10/3	Bechtel Consumers Power Stone & Webster	Weekly Inter-organizational Discussion
10/5	Bechtel MPQAD Consumers Power Stone & Webster	Engineering and Construction Meeting
10/3	Bechtel Mergentime Consumers Power Stone & Webster	Discussion of Pit Method of Constructing Final Support Wall for Auxiliary Building
10/7	Bechtel Consumers Power Stone & Webster (Held in Bechtel Office Ann Arbor, MI.)	Bi-weekly Project Soils Meeting

* Meeting held at the request of the Assessment Team. Other meetings in the tabulation were attended by one or more Team members for the purpose of assessment or acquiring information.

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Midland Plant Units 1 & 2
Consumers Power Company

Underpinning and Remedial Soils Activities - Construction

E8 Grillage: Load transfer activities are complete. This item will not be included in future reports unless additional non-routine activities occur at this installation location.

Pier Kc10: The routine rejack of the pier is complete. A discussion of this pier will not be included in future reports unless circumstances require non-routine activities at this location.

Pier Kc10-Kc11 : The embed installation was completed and the drift invert concrete placed.

Kc10-Kc9 Drift: The drift excavation was completed. The excavated material consisted of approximately 1 ft. of unreinforced concrete underlain by a mixture of sand and clay fill. The installation of the final drift support sets remains to be completed.

Pier E14: The concrete placement was completed and the curing period is underway. A minor surface repair of honeycombed concrete was required at the upper construction joint elevation.

W8 Grillage: Load transfer activities are complete. This item will not be included in future reports unless additional non-routine activities occur at this installation location.

Pier Kc3: Repair of the turbine mat patch progressed. However, grout strength verification and disposition of a non-conformance on small voids in the patch grout is required before the upper leveling plate work can be initiated.

Kc2-Kc3 Drift: The drift was completed with the majority of the excavation in unreinforced concrete. Drift invert reinforcing steel is being installed.

UATs: The excavations through the west and east UATs were initiated. The respective corners of the control tower foundation were revealed. Excavation in the west UAT area was generally in grouted sand while in the east UAT the excavated material was mainly unreinforced concrete. Additional grouting is underway and will be completed prior to excavation of the access pits to piers CT1 or CT12.

SWPS: The dewatering system was activated. Early indications are that it effectively lowers the groundwater level. Installation of the soldier piles is nearly complete. However, work has been temporarily halted pending a determination by Project Engineering of the significance of encountering a boulder near the proposed bearing elevation and being able to displace the boulder with the truck drilling action. Engineering is evaluating the need to extend the bearing elevation somewhat deeper to the natural soil. Excavation of the underpinning access pit adjacent to the northeast corner of the foundation wall was started. The excavation extended to approximate E1 629.

BWST: Nearly half of the reinforcing steel for the Unit 2 tank is in-place while the reinforcing steel installation for the Unit 1 tank has just begun.

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 Consumers Power Company

Yard Area: Excavation and lagging of the access pits around the two 36 inch diameter pipe casings were completed. Continuation of the casing removal requires the mobilization of a drilling rig to inject drilling fluid into the area as the casing is pulled.

Assessment Team Observation - Construction

The Assessment Team observations of the concrete placement at pier E/W14 and the Kc10-11 drift invert, the excavation and lagging of the Kc9-10 drift, the excavation of the CT11/12 access drifts showed that the work is being accomplished in accordance with the project documents. There was some delay in final sign-off of the concrete pour card just prior to initiating placement for pier E14 and Kc10-11 drift invert. The Assessment Team recommends this activity be completed prior to making the decision to order concrete. Inspection of the soil grouting exposed in the west UAT excavation indicates that the penetration and coverage was excellent. Except for additional soil stabilization, work progress on the UAT work has been delayed by the need to modify the drift supports.

Assessment Team Observation - QA/QC

1. During a review of the QC Inspection Reports on the E/W8 grillage beam installation, the Assessment Team noted that Field Engineer's Daily Reports that contained interpretative comments on the Engineer's drawings were attached to the IRs. These interpretations were countersigned by the responsible Resident Engineer on the report form. In addition, these Field Engineer's Daily Report forms are controlled; that is, they are assigned a specific number. Subsequently, the QC inspector took these comments, as confirmation of a drawing interpretation (not a drawing change) and attached the applicable report form to the QC Inspection Report. The Assessment Team believes this is an acceptable method of documenting Engineering interpretation of the drawings.
2. The Assessment Team reviewed a draft report on an evaluation of US Testing issued by the Contractor's Civil Field Engineering group. Since an audit of US Testing by CPCo earlier this year, there has been an on-going effort by both CPCo and Bechtel to foster positive changes in the US Testing organization, procedures, training and document control. This recent report is still quite critical of the overall performance of US Testing and offers specific recommendations to improve both the quality and performance aspects of the organization. The Assessment Team commends the on-going effort by the Owner and Contractor to develop changes at US Testing. Nevertheless, in light of the on-going underpinning/soils remedial work and the upcoming balance of plant construction work, the Team feels it is important that the recommendations be acted upon as soon as is practical.

Work Activity Packages

The Assessment Team reviewed Work Activity Packages on the Installation of Cathodic Protection in Q-Soils (WAP59) and the Repair of the deep Q-Duct Bank (WAP 25).

Questions were submitted to the FSO Constructibility Group for resolution or clarification.

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 Midland Plant
 Units 1 & 2
 Independent Assessment of Underpinning
Nonconformance Identification Reports

<u>NIR No.</u>	<u>Description</u>	<u>Date</u>	
		(Opened)	(Closed)
14	Nut Procurement	8/11/83	
15	MPQAD Supervisor Certification	9/19/83	

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</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	Open
52-4Q	MPQAD Independent Welding Inspection Review	Open
54-24	Inadvertent Drilling of Auxiliary Building Strongback	55-21
54-27	BWST Status	55-14
55-2	Plasticized Concrete Mix Tests	Open
55-31	SWPS Soldier Piles	Open

WE Keller
 Project Engineer

Peter J. Maguire
 for AS Lucas
 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 3, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	R. Sevo *	A. Scott
	J. Gaydos		P. Majeski
	J. Davie		
	J. Darby		<u>Parsons</u>
			None

* 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 55-1 - UAT Work Status.

The steel walls of the UAT's have been opened and the drifts to CT 1/12 have begun. (CLOSED ITEM)

Item 55-2 - Status of Concrete Mix With Superplasticizer.

A. Scott inquired as to status of evaluation of concrete mix with superplasticizer. J. Gaydos indicated that he is in the process of gathering additional data concerning the quantity of superplasticizer versus workability and strength as well as gathering other data. He will provide additional information at a future meeting. (OPEN ITEM)

Item 55-3 - Turbine Building Mat Repair.

J. Fisher indicated that small voids were found around the edges of the turbine building mat repair at Kc3. He indicated that they anticipated repairing the voids when the leveling plate is installed. (OPEN ITEM)

Item 55-4 - Excavation Permit Procedure Revision.

J. Fisher advised that the revised Excavation Permit Procedure was signed out on 10/1. (CLOSED ITEM)

Item 55-5 - BWST Status.

R. Sevo indicated that the QC inspectors for the upcoming BWST work have completed their training and are ready to perform the necessary inspections. Training was completed during the morning of 9/30. The delay came about because MPQAD was not aware of a need to train inspectors to a procedure for bending rebar. (CLOSED ITEM)

Item 55-6 - Additional Exploration Pits at SWPS.

J. Fisher indicated that engineering has requested approximately 15 additional exploratory pits near the SWPS. (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 4, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Store & Webster</u>
G. Murray	J. Fisher	R. Sevo	A. Scott
J. Schaub	J. Gaydos		P. Majeski
	E. Cvikl		
			<u>Parsons</u>
			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 55-7 - SWPS Status.

J. Fisher advised that dewatering system was activated today to determine the efficiency of the system. (CLOSED ITEM)

Item 55-8 - Piers CT 1 and CT 12.

J. Schaub advised that the NRC approval to begin work on these piers allows work to proceed only through excavation. Approval has not been received to place rebar. However, approval is expected prior to completion of pier excavation. (CLOSED ITEM)

Item 55-9 - Status of Concrete Mix With Superplasticizer.

J. Gaydos stated that additional information will be furnished after the 28 day strength tests are available. (CLOSED ITEM , ITEM 55-2 REMAINS OPEN)

Item 55-10 - Grouting of UAT's.

The effectiveness of the regrouting at the UAT's was discussed. Inspection of exposed face shows that the grouting did not change the color of the soil except in the area of the grout hole. However, the effectiveness of the grouting was evident by physically handling the grouted soil. It is apparent that the soil that has been excavated immediately adjacent to the UAT was adequately penetrated by the grout. (CLOSED ITEM)

Item 55-11 - Turbine Building Mat Repair Status.

J. Fisher advised that the voids found on the edges of the repair patch will be chipped out and repaired during placement of grout for the upper leveling plate. (CLOSED ITEM, ITEM 55-3 REMAINS OPEN)

Item 55-12 - Cathodic Protection Installation.

The installation of cathodic protection in non Q areas is to begin today. (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 4, 1983

Item 55-13 - SWPS Access Shaft.

The excavation of the SWPS Access Shaft is to begin late this week.
(CLOSED ITEM)

Item 55-14 - Training of QC Inspectors.

P. Majeski asked what actions were being taken by MPQAD and FSO to prevent delay of work because the training of QC inspectors is incomplete. J. Fisher indicated that several actions have recently been taken to improve communications in this area. QC/QA will attend the weekly subcontractors meetings and the weekly scheduling meeting. In addition, R. Oliver of MPQAD is providing a list which indicates the procedures for which there are no certified inspectors and a list of all PQCI's in preparation. Finally, other correspondence will be supplied to FSO which indicates that changes to PQCI's are necessary. These lists and the correspondence will be reviewed by FSO and used as required to keep MPQAD informed of upcoming work so that training can be done in a timely manner. (This item and Item 55-5 CLOSES ITEM 54-27)

Item 55-15 - Certification of Coupler Installer.

The Assessment Team questioned the sequence of events that led to the installation of Fox-Howlett couplers on piers E/W 14 by a non-certified craftsman. J. Fisher said the individual had performed the necessary qualification tests and had been approved by Bechtel for certification. However, the papers had not been properly forwarded to Mergentime or MPQAD for recording the test results. Therefore, QC wrote an NCR on the non-certified installer. J. Fisher said Bechtel will naturally determine what can be done to avoid this reoccurrence. (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 5, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	None	A. Scott
J. Schaub	J. Gaydos		N. Cleveland
R. Wheeler	E. Cvikl		J. Allen
R. Wieland	D. Lavelle		J. Schierberg
	M. Blendy		S. Lucks
			W. Kilker
			<u>Parsons</u>
			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 55-16 - Underpinning and Soils Remedial Work Status.

W. Kilker introduced 3 members of the Assessment Team Senior Management Review group. This group is on-site to be updated on activities that have occurred since their last visit in February, 1983. J. Fisher presented an update on the underpinning and soil remedial work status. J. Darby presented a summary of the building instrumentation data including a discussion on upward building movement. (CLOSED ITEM)

Item 55-17 - Significance of NRC Control of Work Release.

N. Cleveland questioned if the NRC control of work releases has had significant impacts on the work progress. CPCo and Bechtel replied that to date the NRC has released enough work to generally keep the construction forces busy. (CLOSED ITEM)

Item 55-18 - Cathodic Protection Installation.

J. Fisher said the installation of additional cathodic protection holes has begun. W. Kilker indicated that the assessment team has reviewed the Work Activity Package on the installation within the Q soils area. (CLOSED ITEM)

Item 55-19 - FCR on KC Drift Invert.

A. Scott questioned the status of the outstanding FCR (written 9-29-83) on reinforcing steel in the drift. The FCR resolution is forthcoming, however Mergentime has indicated that the grillage beam 2 mock-up may be lowered into the hole to evaluate the drift configuration for accessibility. The invert concrete placement will be held-up pending the "beam fit" results. (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 5, 1983

Item 55-20 - Standish Fabrication Shop Work Status.

J. Ratner asked if the work was stopped at the shop. D. Lavelle replied that over the weekend the work had been halted to resolve some problems with the welding specification. However, work had resumed on 10-3-83.
(CLOSED ITEM)

Item 55-21 - Drilling Stop Work Order Status.

J. Fisher reported that the Stop Work Order on the drilling has been lifted by MPQAD. Work resumes today on the various drilling operations.
(CLOSES OUT ITEM 54-24)

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

Held at Midland Site Location
Midland, Michigan
October 6, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	G. Carpenter	A. Scott
J. Schaub	E. Cvikl		W. Kilker
	J. Gaydos		
			<u>Parsons</u>
			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 55-22 - West Access Shaft Level C Waler Beam Seats.

A. Scott questioned why the recently installed beam seats were removed.
J. Fisher replied that FSO had originally proposed to disposition an NCR on an "as-is" basis but subsequently changed to a "rework" disposition.
J. Fisher will provide an explanation. (OPEN ITEM)

Item 55-23 - SWPS Baseline Instrumentation Data.

J. Schaub requested that Bechtel use the date of dewatering system activation (10-4-83) as the building monitoring baseline date. Any building movement associated with dewatering would then be included in the settlement data.
(CLOSED ITEM)

Item 55-24 - SWPS Exploratory Pits.

J. Fisher reported the request to install additional exploratory pits near the SWPS has been withdrawn (refer to Item 55-6). It appears unlikely that the utility installations will require any additional support. (CLOSED ITEM)

Item 55-25 - Phase II SWPS Work.

J. Ratner asked if the Phase II (re-bedding) work is tied into the Phase I work and if a contract has been placed to do that work. J. Fisher said there is no interface between the 2 phases of the work and that efforts to place a contract are underway. (CLOSED ITEM)

Item 55-26 - Re-structuring of Resident Engineering Group.

E. Cvikl reported that J. Darby, existing lead resident structural engineer, will confine his duties to building monitoring and procedures. An additional engineer from Bechtel will be assigned shortly to handle FCR and NCR issues.
(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 6, 1983

Item 55-27 - Status of US Testing.

In response to a question by J. Ratner, G. Murray said Field Engineering has recently completed an "audit-type report" on U.S. Testing. The report is available for the Assessment Team. (CLOSED ITEM)

Item 55-28 - SWPS Abandoned Well Exploratory Pit Status.

In response to a question by A. Scott, J. Fisher stated that SWP has prepared a drawing showing the proposed exploratory pit to evaluate the soil conditions in the vicinity of well 502 adjacent to the SWPS foundation wall. Upon approval of the drawing and fabrication of the pit lagging materials, the work will proceed. (CLOSED ITEM)

Item 55-29 - Turbine Building Mat Repair at Pier KC 3

J. Fisher stated the grout repair has been completed and the forms removed. Visual observations and soundings indicate that the void areas previously detected have been successfully repaired. Installation of the upper leveling plate may now proceed. (CLOSES OUT ITEM 55-3)

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

Held at Midland Site Location
Midland, Michigan
October 7, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher	G. Carpenter	A. Scott
R. Wieland	E. Cvikl		J. Springer
	J. Gaydos		
	M. Blendy		<u>Parsons</u>
			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 55-30 - West Access Shaft Level C Waler Beam Seats.

J. Fisher stated that the NCR was changed to a rework condition because of tolerances that were existing on the waler installation. Until the Level C waler plates are installed for the connection on the Turbine Building and for the connection at the Buttress Access Shaft, the actual level required for the Beam Seats is indeterminate at this time and could possibly not be within the required tolerances. (CLOSING ITEM 55-22)

Item 55-31 - Service Water Pump Structure Soldier Piles.

J. Fisher stated that installation of soldier piles was stopped due to problems encountered when installing Soldier Pile No. 16. When drilling, a boulder was encountered and was pushed down leading to a question concerning the subgrade. Project Engineering is investigating. (OPEN ITEM)

Item 55-32 - Concrete Trucks.

R. Wieland questioned why the concrete trucks did not have the mixer drum turning when not discharging concrete. It was observed on the concrete placement of October 6, 1983 that one truck did not have the drum turning for approximately ten minutes. Mr. Wieland stated that Bechtel should direct the concrete supplier to maintain the drums turning to the extent possible. J. Gaydos will see that concrete truck drivers are instructed and taught that at all times their drums be revolving at idle speed when not discharging concrete. (CLOSING ITEM)

Item 55-33 - Removal of Concrete.

J. Ratner questioned whether or not the Contractor has investigated the procurement of equipment for the breaking and removal of concrete encountered during excavation. J. Fisher stated that the procurement of equipment is on the agenda of the management meeting today at Ann Arbor with the client. (CLOSING ITEM)