

J.O. NO. 14358
Midland Plant
Units 1 and 2
Independent Assessment
Auxiliary Building Underpinning

Weekly Report No. 27

March 20, 1983 through March 26, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

W. Kilker	3/25 - 3/26
P. Barry	3/21 - 3/26
B. Holsinger	3/21 - 3/26
S. Lucks	3/21 - 3/23
R. Beaudet	3/22 - 3/26

Parsons, Brinckerhoff Michigan, Inc.

P. Parish	3/22 - 3/25
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Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
3/21 through 3/25	Stone & Webster Bechtel Consumers Power Parsons	Daily Meetings
3/25	Stone & Webster Bechtel Consumers Power	Weekly Soils Review
3/22	Stone & Webster Bechtel	Pier W11 Load Test

Activities

Construction - Pier W12: The pier settlement was monitored and shims checked for tightness.

Pier W9: As stated in Weekly Report No. 26, there was minor unravelling of the soil so the Contractor elected to install the reinforcing steel and instrumentation within the bell portion only of the pier. The concrete was placed on March 22, 1983. During the placement a concrete slump test on material taken from the end of the pumpline indicated excessive slump which required making additional test cylinders to verify the strength. A compressor powering the concrete vibrators failed forcing a delay of nearly one hour during the placement. However, once repaired the vibrator was able to penetrate the in-place concrete under it's own weight. Subsequently, the shaft reinforcing steel, telltales, embeds and forming were completed and the shaft concrete was placed on March 26, 1983. The concrete slump was relatively low (between 2 and 3 inches) making discharge from the mixer slightly difficult.

Pier W11: The advancement of the drift was slow due to the cure time required on the dry-pack grout used to fill partially drilled drift set anchor bolt holes. Excavation of the pier advanced to a depth of 2 ft.

Pier E12: The load transfer was completed on March 22, 1983 when the 24 hour deflection criteria was satisfied. Routine re-jacking of the pier continued for the remainder of the week.

Pier E9: As in the case of pier W9 the Contractor elected to install the concrete in the bell portion to prevent excessive unravelling of the soil. The reinforcing steel and telltale were installed to above bell elevation and the concrete was placed on March 22, 1983. After installation of the remaining reinforcing steel, embeds and telltales, the concrete placement in the shaft was completed on March 26, 1983.

Pier E11: The progress on the drift to the pier was slow due to the drift set anchor bolt hole grout cure time as described above for the pier W11 drift. The excavation was complete but the drift sets and re-shore channels have not been completely secured.

Quality Control, Documentation and Records:

1. Verified the re-jacking of pier E12 was being performed in accordance with the project procedure.
2. Performed a pre-placement evaluation of E9 and W9 shafts prior to concrete placement.
3. Witnessed the inspection and testing of concrete during placement of pier shaft concrete on piers W9 & E9.
4. Verified issue of 2 NCRs on pier W9 bell concrete pour.
5. Performed an assessment of the welding activities associated with the fabrication of materials for the underpinning work. The assessment included discussions with craftsmen, welding engineers, and MPQAD engineers and inspectors. Specifications, procedures, and inspection reports were reviewed. Welds were inspected prior to and after release from QC inspection. The training certification and experience of the QA/QC personnel were evaluated and in-process inspections were witnessed.

Observations

Construction: The Team feels the Contractor showed good engineering judgment in electing to concrete the bell portion of piers E9 and W9 thereby preventing additional unravelling of the soil. The reinforcing steel placement and pre-placement clean-ups in both piers was satisfactory. The concrete placement in pier bell E9 and shafts E9 and W9 was accomplished without incident. The high slump and loss of vibrator problems associated with the pier W9 bell pour were adequately addressed.

Quality Control, Documentation and Records- The completion of the load transfer to pier E12 was in accordance with the project documents. Total pier deflection to date is on the order of $\frac{1}{4}$ inch.

The QC personnel on the pier bell W9 pour reacted correctly to the high slump concrete in rejecting the load, taking additional record cylinders and writing a non-conformance for engineering disposition. The issuance of a non-conformance on the vibrator down-time was correct. However, the NCR failed to mention the condition of the concrete upon resumption of the vibration. In this case adding the QC evaluation of the concrete condition to the NCR would have aided in the engineering disposition.

The overall assessment of the welding program was positive. The weld quality appeared good and the rejection rate was quite low during the time period of this assessment. The inspection personnel were well-trained and knowledgeable. Project Engineering and the construction groups have both committed qualified engineers to assist in the resolution of welding problems. Until recently the overall progress of the underpinning has been impacted by welding-related delays. The Assessment Team feels it is the responsibility of all the organizations involved - construction, engineering and quality Assurance - to improve the process, whether by actual improvements in the weld quality, by clarification to the specifications and procedures, or by improved communication. A common understanding of the level of quality of the welding required for this work must be attained. The Assessment Team is of the opinion that the engineering group must be instrumental in fostering this understanding.

Pier W11 Load Test

The Assessment Team raised a concern expressed by the NRC over the construction activities planned in the vicinity of pier W11 during the proposed load test. Project Engineering stated that no new construction would be initiated within 20 ft. of pier W11 until completion of the test. The Team concurs that this commitment is sufficient to avoid effects of construction on the test or test results.

Non-Conformance Identification Reports

Status of previous issues: (NIR numbers no longer listed have been closed-out.)

<u>NIR NO.</u>	<u>Description</u>	<u>Date</u>	
		(Opened)	(Closed)
5	Concrete Mix Qualification	2/10/83	
6	Lagging Spacers	3/21/83	

W E Kilmer
Project Engineer

A S Leach
Project Manager

INDEPENDENT ASSESSMENT TEAM MEETING WITH BECHTEL

Date: March 21, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	D. Puhalla
	J. Darby	S. Lucks		
	J. Gaydos			

1. J. Fisher stated that work on the third drift set for pier W11 was delayed until the expansion bolt location and the drift set top plate details are finalized. J. Darby stated that the hold on torquing the expansion bolts would not restrain excavation of pier W11 because the diagonal braces that require the expansion bolts are not required until the mass excavation.
2. J. Fisher stated that the channel embedded in the lean mix concrete will no longer be used to support the plywood used to keep load off freshly placed concrete or grout. In the future if this platform is required it will be supported from the temporary wood lagging in the bell.
3. J. Fisher stated that the plan is to place concrete in the bell of both piers E/W9.
4. R. Visser stated that QA had not approved the disposition of the NCR or the concrete mix approval because of insufficient information on the training of personnel to the ACI requirements.

INDEPENDENT ASSESSMENT TEAM MEETING WITH BECHTEL

Date: March 22, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	D. Puhalla
	J. Kelleher			
	E. Cvikl			
	M. Lewis			
		<u>Parsons</u>		
		P. Farish		

1. J. Fisher stated that load transfer on E12 was continuing.
2. J. Fisher stated that excavation in E/W11 drifts was delayed pending issue of an FCR on expansion bolt and drift set details.
3. P. Barry questioned why two complete sets of concrete test were required when both bells were placed on the same day. Bechtel will advise.
4. P. Barry asked about the method of installing the E/W8 grillage beams. Bechtel will arrange a meeting to present the installation method. The construction procedure for the activity is being revised.
5. J. Fisher requested E. Cvikl to confer with project engineering in Ann Arbor concerning NIR #6. M. Lewis stated that back packing and inspection could be done with the 1-1/8 inch spacers. A. Lucks stated that the backpacking installed is acceptable but that the procedure should be revised to use the 1 1/2 inch spacers. Bechtel previously agreed to use the spacers. J. Fisher stated that it would be difficult to use 1 1/2" minimum near the ring beam since the spaces at the ring beam are adjusted so that the ring beam can be installed at the proper elevation.

INDEPENDENT ASSESSMENT TEAM MEETING WITH BECHTEL

Date: March 23, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	R. Wieland
	J. Gaydos	A. Lucks		
	M. Lewis	R. Beaudet		
		B. Holsinger		
		<u>Parsons</u>		
		P. Parish		

1. M. Lewis stated that the load transfer for pier E12 was completed on the afternoon of March 22, 1983. Routine jacking will begin this morning March 23, 1983.
2. M. Lewis stated that the RSE requested rejack of pier W12 because the pier had settled 5 mils since the end of routine jacking to ensure that 110% of specified load is in the pier.
3. J. Fisher stated that the FCR on testing dry pack grout has been written.
4. J. Fisher stated that the compressor for the concrete vibration broke down at 5:30 PM during the placement of concrete in the E9 bell. Another compressor was used to power the vibrator. Vibration of concrete was resumed at 5:55 PM and the vibrator penetrated the existing concrete by it's own weight. The vibration was witnessed by the MFE, Bechtel FE and QC. J. Fisher stated that this was in conformance with the specification and that a NCR was not necessary.
5. J. Fisher stated that during the placement of the E9 bell a slump was taken at the end of the pumpline at the request of B. Holsinger. This slump was 6 1/2 inch. Two additional slumps, each 5 1/2 inch, and a set of concrete cylinders were taken at the end of the pumpline. A slump test was also taken at the end of the truck. This slump was 4 1/2". Bechtel feels that since this was the first truck that the slump change can be attributed to the 1 cubic yard of grout used to lubricate the pipeline. A. Lucks and B. Holsinger stated that enough concrete had gone through the line to preclude the grout affecting concrete slump. *J. Fisher stated that the second test for the placement was taken on the first truck load in pier E9.
6. P. Barry requested a copy of all FSO and QA/QC records concerning the concrete placement.

* Subsequent check of QC records show that 6 cubic yard out of 8 cubic yard total had been discharged from the truck.

INDEPENDENT ASSESSMENT TEAM MEETING WITH BECHTEL

Date: March 24, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	R. Wieland
	J. Gaydos			
	R. Weight			
	E. Cvikl			
		<u>Parsons</u>		
		P. Parish		

1. J. Fisher advised that the rejack of W12 would be done tomorrow morning, March 25, 1983.
2. J. Fisher stated that the NCR on dry pack grout has been given interim approval and that work or grouting can proceed.
3. P. Barry stated that the question concerning holding the proof load on the pier longer than required was still open. E. Cvikl stated that this is contrary to the procedure and cannot be done without a procedure change.
4. P. Barry stated that the vibrator down-time mentioned in yesterday's meeting was incorrect. The placement according to the Bechtel field engineer daily reports show the placement delayed from 5:12 to 5:55 PM. The opinion of the Assessment Team members present during placement was that the delay was slightly longer than recorded. J. Fisher stated that since the additional slump testing and the loss of power occurred essentially at the same time and the extent of the loss of power was not known immediately the determination of the time of loss of power may have been approximate.
5. J. Gaydos stated that two NCR's were written by QC on the loss of power and the excessive concrete slump. Disposition for these NCR's one being postponed. One of the cylinders cast to verify concrete strength for the out of spec concrete was damaged but 5 cylinders remain intact.
6. P. Barry stated that the NCR's should note that when power was restored the vibrator penetrated the concrete under its own weight and that cylinders were cast from the out of spec concrete.

INDEPENDENT ASSESSMENT TEAM MEETING WITH BECHTEL

Date: March 25, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	P. Puhalla
	J. Gaydos	R. Beaudet		
	E. Cvikl			
		<u>Parsons</u>		
		P. Parish		

1. P. Barry requested any data available on concrete slump correlation between slump at the tailgate and slump at the end of the pumpline. P. Barry also requested that tailgate slump be taken on the placements for E/W9 to correlated with the record tests. J. Gaydos stated that this is normal procedure. J. Gaydos also stated that concrete placement for E9 is scheduled for tomorrow March 26, 1983. Placement for W9 maybe done tomorrow if the two NCR's on the bell concrete placement have been dispositioned.



STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

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

April 1, 1983

J.O. No. 14358
Ref. MPF 27

Attention Mr. R. Cook

RE: DOCKET NO. 50-329/330
MIDLAND PLANT - UNITS 1 and 2
INDEPENDENT ASSESSMENT OF AUXILIARY BUILDING UNDERPINNING
REPORT NO. 27

A copy of the Independent Assessment of the Auxiliary Building Underpinning Weekly Report No. 27 for the period March 20, 1983 through March 26, 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.

Very truly yours,

A. Stanley Lucks
A. Stanley Lucks
Project Manager

Enclosures

ASL/ka

APR 4 1983