



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

May 27, 1983

J.O. No. 14358
Ref. MPF 35

Attention Mr. R. Cook

RE: DOCKET NO. 50-329/330
MIDLAND PLANT - UNITS 1 and 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 35

A copy of the Independent Assessment of the Underpinning Weekly Report No. 35 for the period May 15, 1983 through May 21, 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,

W. E. Keller for A. S. Lucks
A. Stanley Lucks
Project Manager

Enclosures

ASL/ka

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

Weekly Report No. 35

May 15, 1983 through May 21, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski.	5/16 - 5/21
A. Scott	5/16 - 5/21
B. Holsinger	5/16 - 5/21
P. Barry	5/16 - 5/18
R. Beaudet	5/18 - 5/19

Parsons, Brinckerhoff Michigan, Inc.

V. Madill	5/16 - 5/18
M. Abrahams	5/18

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
5/16 through 5/21	Stone & Webster Bechtel Consumers Power Parsons (5/17)	Daily Meetings
5/18	Stone & Webster Bechtel Consumers Power	Discussion of Work Package Contents
5/19	Stone & Webster Bechtel Consumers Power Mergentime	Discussion of Simul- taneous Loading Of Adjacent Piers
5/20	Stone & Webster Bechtel Consumers Power Mergentime	Presentation Of Sequencing Of Bell Excavation for E/W8
5/20	Stone & Webster Bechtel Consumers Power	Resolution Of NCRs & FCRs

Activities

Construction -

KC11 Drift: Work has stopped in this drift pending development of a procedure for backfilling the layback area as requested by the NRC.

Pier E8: The shaft portion has been excavated to final grade and mud-mat installed with kicker plate for bell support. Minor water continued to seep into the pier excavation.

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Pier E10: A small portion of the bell excavation has been completed.

KC2 Drift: As in the case of KC11 drift, work has stopped pending development of a procedure for backfilling the layback area.

Pier W8: The shaft was excavated to just below the level of the bell, El. 571. A sump and pump were installed to remove seeping water since a delay is anticipated in receiving materials to complete the bell excavation and support.

Pier W10: The shaft was excavated to founding grade, El. 565. There was a blow-out in the pier near El. 570. Considerable water entered the excavation but the void was limited in-size. The void area was packed with layers of gravel and grout and allowed to drain. Subsequently, minor seepage continued into the excavation. Spiling was installed to minimize the possibility of soil collapse into the bell excavation.

SWPS: Two dewatering wells were completed and a third was partially installed.

Quality Control, Documentation and Records:

1. Reviewed nonconformance reports for repetition patterns and met with MPQAD to determine if they have detected areas of repetitive nonconformances that warranted consideration for corrective action.
2. Reviewed the Carlson meter Inspection Report package with PQCE to assess proper documentation.
3. Reviewed nonconformance report for grout cube compressive strength averaging to determine accuracy of reporting.
4. Performed an assessment of welding quality.
5. Assessed various field inspections for conformance to QA/QC procedures.

Observations

Construction - Because of the recent NRC request to eliminate the layback in the drift areas, the work this week was essentially confined to excavation of the shafts of E/W8 and E/W10. There was some lost time resulting from delays in obtaining steel from the fabrication areas. The Contractor responded quickly to two blow-outs in pier W10. Backpacking with grout and pea gravel and insertion of a drain pipe appears to have been effective.

Quality Control, Documentation and Records - The site organizations demonstrated a well-coordinated group effort in resolving a number of outstanding NCRs and field change requests. The Assessment Team acknowledges the effort put forth in resolving a number of these outstanding issues. This cooperative effort must be maintained to not only resolve in a timely manner outstanding non-conformance or change request documents but also to address and resolve the problem of reoccurring nonconformances.

The Assessment Team's preliminary findings from a review of a large sample of NCR's have identified the following areas where repetition is occurring: welding, Hilti bolt installation, drill permits and incorrect concrete specimen curing temperature. In the meeting with MPQAD it was indicated that their initial trend analysis had detected these areas of repetition. Steps are being taken to increase the effort in the area of trend analysis and evaluation of repetitive NCR's.

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Based on the review of MPQAD's PQCE folder, the Team is satisfied with the action taken on the Carlson meter finding. The problem was indentified, root cause determined and corrective action taken.

The nonconformance report for grout cube compressive strength averaging was not self explanatory. MPQAD has provided a revision of that nonconformance which is now more accurately explained. MPQAD stated that it is sometimes difficult to provide a self explanatory condition detail on the NCR; however, direction has been given to the staff to be as thorough and clear as possible on nonconformance description details.

The welding quality aspect of the work was assessed by Assessment Team specialists. Nonconformance reports were reviewed, discussions were held with site personnel and welds were examined. It is the Assessment Team's opinion that the product weld is acceptable. The number and types of NCR's is not indicative of a welding quality problem, rather that the tolerances are not clear or not specified.

During routine surveillance of work activities, QC inspectors were observed by Assessment Team members inspecting torquing of high-strength bolts for a spreader set in pier E10, the RGE inspection of shafts, piers and backpacking in E/W10 and W8 piers, and the Engineering and QC inspection of SWPS dewatering well installations. In the Assessment Team's opinion, these activities were being adequately performed.

Design Work Packages - The Assessment Team performed an overview of seven design packages. Outstanding questions were discussed on the E/W13/14 pier installations and zone excavation work package. Only one question on anchor installations remains to be resolved. Work packages on the BWST ring beam, the SWPS soldier beam installation, and dewatering discharge system were overviewed and questions submitted to the Contractor for resolution. A review of a package on activating the SWPS dewatering system was initiated but not yet completed. The Assessment Team received two additional work packages - one on the the service water pipe replacement and the other on the BWST reinstallation of electrical facilities. The nature of the work involved in these packages was such that it was judged to be out of the underpinning scope. A meeting was held with the Owner and Contractor to discuss the extent to which drawings, specifications and procedures would be referenced on the work package submittal form. The Owner's instruction to include all of the applicable documents in the package lists rather than use indirect reference resolves the Assessment Team's concern.

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NonConformance 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
7	Backpacking Material in Wet areas-Pier W11	4/5/83
8	Load Transfer Method- ology - Pier E12	4/5/83
9	Release of Pier W9 for Load Transfer	4/13/83
10	Verification of Vibrator Frequency	4/21/83

WE Keller
Project Engineer

W. E. Keller for K. S. Bunkin
Project Manager

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

Held at the Midland Site Location
Midland, Michigan
May 16, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	E. Cvikl M. Blendy J. Gaydos	R. Sevo	A. Scott P. Barry B. Holsinger

Purpose

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

Discussion

Item 1 - Issuance of a Construction Aid Procedure, Administrative Guideline FIU-1.100.

M. Blendy advised that the procedure is now awaiting approval signature from MPQAD.

Item 2 - Work stoppage when a NCR is written until the NCR is dispositioned or a conditional release is given.

Bechtel has advised that one meeting has been held on the subject. After alternatives have been developed another meeting will be held with MPQAD.

Item 3 - Elimination of slope layback in drifts.

Consumers Power Company advised that R. Wheeler would see that Bechtel had direction as to the request made by the NRC concerning the elimination of slope layback.

Item 4 - Elimination of concrete testing for concrete mud-mats.

Bechtel advised that an FCR eliminating concrete testing for mud-mat concrete has interim approval from project with a minimum curing time of 10 hours.

Item 5 - Elimination of drift sets at pier KC11.

The FCR written by Bechtel to eliminate drift set at pier KC11 so that work can progress has been held by Bechtel Engineering until Item 3 above has been resolved.

*Item 6 - W. Kilker request for the status of Stone & Webster NIR #7,8 & 9.

E. Cvikl advised that he will check and report the status on May 17.

*Item 7 - W. Kilker request for a meeting to be arranged with Project Engineering & Mergentime to discuss the loading of adjacent piers.

Bechtel advised that the meeting would be this week.

*Item 8 - A. Scott requested status of material delivery & fabrication of E/W8 pier bell support steel.

*Items requiring resolution

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

Held at the Midland Site Location
Midland, Michigan
May 17, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher E. Cvikl M. Blendy J. Gaydos	R. Sevo	A. Scott B. Holsinger P. Majeski
			<u>Parsons</u>
			V. Madill

Purpose

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

Discussion

Item 1 - Issuance of a Construction Aid Procedure, Administrative Guideline FIU-1.100.

Scheduled for sign-out by MPQAD by May 20.

Item 2 - Elimination of slope layback in drifts.

FSO has an action to set priorities regarding sequence of redesign of drifts without layback.

Item 3 - Welding tolerances.

M. Blendy advised that an FCR is being processed to add tolerances to work performed at Standish under Specification C-304 and other FCR's are being written to add similar tolerances to Specifications C-194 and C-195.

Item 4 - Elimination of concrete testing for mud-mats.

E. Cvikl advised that FCR-5945 has been signed off on May 16 eliminating the need for testing.

Item 5 - Standing water in pier W10:

There was a discussion as to why an NCR was written because a sump was not provided in pier W10 before the Sunday shutdown on May 15. J. Fisher indicated that the necessity for a sump is a judgment made by the RGE and FSO Field Engineer. At the end of the last work shift ending early Sunday morning no sump was considered necessary. However, a crew was scheduled to visit the site, to check wedges and inspect open shafts for water. When water was found the sump was provided.

Item 6 - Replacement of slope layback around KC2, KC11 and at ends of E/W8 drifts.

J. Fisher advised that FCR regarding replacement of slope layback was with MPQAD for review. A draft copy has been sent to the NRC in hope that a release to construct N/S bulkhead to the containment would be forthcoming.

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

Held at the Midland Site Location
Midland, Michigan
May 18, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher E. Cvikl J. Gaydos M. Blendy D. Lavelle	R. Sevo	A. Scott P. Majeski

Purpose

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

Discussion

Item 1 - Status of bell bracing material (reference Item #8, May 16 Daily Report).

J. Fisher advised that the status of the bell bracing material has been revised. The revised schedule was handed out in the meeting.

Item 2 - Replacement of slope layback around KC2, KC11 and at ends of E/W8 drifts.

J. Fisher advised that Resident Engineering has forwarded extensive comments on FCR to FSO. FSO is currently reviewing comments.

*Item 3 - Status of NEM nos 7, 8 and 9 (reference Item #6 May 16 Daily Meeting Notes).

E. Cvikl updated the response commitments to May 25.

Item 4 - Meeting on Concurrent Loading of Adjacent Piers (reference Item #7 May 16).

*Items requiring resolution

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

Held at the Midland Site Location
Midland, Michigan
May 19, 1983

Present For:

<u>Consumers Power</u>	<u>Bechtel</u>	<u>MPQAD</u>	<u>Stone & Webster</u>
G. Murray	J. Fisher E. Cvikel	R. Sevo	A. Scott P. Majeski B. Holsinger R. Beaudet

Purpose

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

Discussion

Item 1 - Elimination of slope layback in drifts.

E. Cvikel advised that engineering has started redesign of the drifts without slope layback.

Item 2 - Overview of welding.

R. Beaudet indicated that the quality of the welding is excellent and that a large number of NCRs regarding welding stem from strict inspection by the QC department. For example, it is impossible to make a weld which is exactly the size specified. To compensate practically for this, welds are usually made a little oversize. In order to provide an acceptance criteria for QC, engineering could provide the maximum allowable weld sizes. In Mr. Beaudet's experience the maximum tolerance has not been specified except in special instances such as where an oversized weld may cause an interference. Establishing these maximum tolerances has not been generally necessary as reasonable judgment can be applied for welds that are slightly oversized. Grinding of welds has been done to bring them to the required size which has been the practice because of the inspection criteria. If not very carefully performed the grinding can result in base metal reduction or reduction of weld size below the minimum acceptable. These conditions would then be grounds for rejection of a weld which otherwise was acceptable before grinding. Mr. Beaudet also indicated that extensive weld cleaning and polishing was being performed, possibly in anticipation of what the inspector might request.

R. Beaudet said that at the time his previous on-site assessment there was a commitment within the Soils Organization to address the question of tolerance and that in his opinion this commitment had not been addressed. This lack of action has not detrimentally affected the quality of the work but has resulted in the issuance of numerous NCRs on the same findings.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company
Midland, Michigan
May 20, 1983

There was no meeting held on this date.

STONE & WEBSTER MICHIGAN, INC.

MIDLAND NONCONFORMANCE IDENTIFICATION REPORT

DATE OF NONCONFORMANCE: May 26, 1983 NIR Number 11

IDENTIFICATION/LOCATION OF ITEMS: PQCI 1.004, MCP. 70.000 and Inspection Report
UPC-1.004-269

DESCRIPTION OF NONCONFORMANCE: A base metal repair was performed on an upper bearing plate for KC11. Contrary to project instructions the welding Inspection Report was closed and in the central vault with no final visual inspection of the weld. Prerequisites had, however, been inspected.

INITIATOR: <i>B. L. Holsinger</i>	DATE: <i>5/24/83</i>	PROJECT MANAGEMENT CONCURRENCE: <i>WE Keller for AS Lucke</i>
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CORRECTIVE ACTION BY: MPQAD
(IDENTIFY ORGANIZATION TAKING CORRECTIVE ACTION)

QC and QA displayed a quality attitude and assisted in determining the validity of the nonconformance. QC has opened a new Inspection Report to do the required inspection on the plate and weld area. MPQAD has determined the root cause of the finding to be lack of clarity in instructions and is issuing clarified instructions. MPQAD has determined that the nonconformance is isolated and is continuing research to determine if other fabricated items are affected by this finding. The individuals involved were retrained. Based on the described action, this NIR is issued closed.

INITIATOR CONCURRENCE: <i>B. L. Holsinger</i> <i>5/24/83</i>	PROJECT MANAGEMENT CONCURRENCE: <i>WE Keller for AS Lucke</i>	DATE: <i>5/27/83</i>
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