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Ross Landsman Inspections of Mar. 25-27 & Apr. 7-9, 1981

Woodward-Clyde Consultants

L. Campbell, Project Manager

2. Purpose of Inspection

The inspection was conducted to verify the quality assurance program for the soil borings being conducted by Consumers Power Company. The borings were performed in response to a request by the Corps of Engineers for additional soil information in their review of the 50.54(f) answers.

3. Review of Drilling Procedures

The inspector reviewed the Woodward-Clyde Quality Assurance Procedures Manual dated March 23, 1981, for completeness, consistency with industry standards and NRC guidelines during the initial visit on March 25-27, 1981.

From the review the following concerns were identified and discussed with the licensee:

- a. No procedures existed regarding shipment of the soil samples to the laboratory.
- b. No procedures existed regarding various field testing instruments to be used.
- c. No procedures existed for anchoring the boring rig to the ground during hydraulic push of the soil samplers.
- d. No procedures existed covering the use of rusty Osterburg tubes.
- e. No procedure existed for controlling the sealing wax temperature.
- f. The procedure is not clear on how much bentonite will be used in the grouting fluid.
- g. No procedure existed to certify the inspection personnel to ANSI N45.2.6.
- h. The procedure manual was signed and dated in the reviewed and approved spaces, but no preparer's signature existed.
- i. No controlled document existed to specify boring locations, sample depths and types.
- j. The hydraulic pressure gages on the boring rigs were not calibrated.
- k. No procedure existed for instructions on what to do if obstructions were encountered during boring operations.

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- l. No instructions existed to specify what precautions are being taken to reduce the chance of hydraulically fracturing the dike.
- m. No criteria was established to specify which soil samples would be chosen for testing.
- n. Laboratory testing procedures have not been submitted or reviewed by CPCo.
- o. No indoctrination and training of drillers to site procedure requirements was conducted.

The licensee agreed that no work would proceed until all items were resolved. Subsequently the inspector visited the site on April 7-9, 1981, to verify corrective action of the previously mentioned concerns. Pursuant to this task, the revised Woodward-Clyde Project Procedures Manual dated March 30, 1981 was reviewed.

- a. Soil sample shipment instructions are given in Geotechnical Procedure GP-8.
- b. Field testing instrument procedures are given in GP-7.
- c. Boring rig anchoring procedures are given in GP-4.
- d. The use of new Osterburg tubes is given in GP-5.
- e. Wax temperature is given in GP-5.
- f. Minimum percentage of bentonite is given in GP-11.
- g. Certification of inspection personnel is given in GP-1.
- h. The new manual is signed and dated.
- i. Boring location drawing C1145(Q), Rev. 7, dated March 27, 1981, was reviewed.
- j. Pressure gages were calibrated.
- k. Boring obstruction instructions are given in GP-4.
- l. Thickness of the drilling mud is described in GP-4.
- m. The sample selection committee has decided how test samples will be chosen. As of this date, the Corps of Engineers has not received the criteria for review.
- n. CPCo is planning to audit the soil laboratory next week to review their Quality Assurance Program.

- o. A training session for the drill operators was held on April 1, 1981, and attended by all concerned parties.

These corrective actions satisfactorily resolved all previous NRC concerns on drilling operations.

4. Review of Contract Documents

The inspector reviewed the contract documents for the soil boring work and identified that the approval of Woodward-Clyde as a principal supplier of services was not complete prior to commencing soil boring activities as required by CPCo QA Program Policy Number 7 and CPCo QA Program Procedure Number 7-1. This failure to accomplish activities affecting quality in accordance with documented instructions and procedures is considered an item of noncompliance with 10 CFR 50, Appendix B, Criterion V as described in Appendix A of the report transmittal letter. (329/81-09-01; 330/81-09-01)

5. Exit Interviews

The inspector met with licensee and contractor representatives at the conclusion of the two inspections on March 27, 1981 and April 9, 1981 and summarized the inspection scope and findings. The licensee acknowledged the inspection results.

DETAILS

1. Persons Contacted

Exit Meeting Attendees on March 27, 1981

Consumers Power Company

W. Bird, QA Manager, Midland Project  
R. Hirzel, QA Engineer  
N. Ramenujam, Staff Engineer  
T. Cooke, Site Project Superintendent  
D. Turnbull, Site QA Superintendent

Bechtel Power Company

J. Milanden, Manager of QA  
M. Deitrich, Project QA Engineer  
C. Parledes, QC Engineer  
K. Kleinhardt, On-Site Geotechnical Engineer

Woodward-Clyde Consultants

D. Hendren, Project Manager  
R. Ladd, Laboratory Manager, New Jersey  
L. Campbell, QA Engineer

Corps of Engineers

R. Erickson, Staff Engineer

NRC

R. Cook, Resident Inspector

Exit Meeting Attendees on April 9, 1981

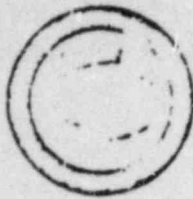
Consumers Power Company

W. Bird, QA Manager, Midland Project  
R. Hirzel, QA Engineer  
D. Sibbald, Projects  
T. Cooke, Project Superintendent

Bechtel Power Company

M. Deitrich, Project QA Engineer

# COST OF MIDLAND REMEDIAL WORK



**Consumers  
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Company**

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July 1, 1981

50-327

Ms. Barbara Stamiris  
5795 North River Road  
Route 3  
Freeland, MI 48623

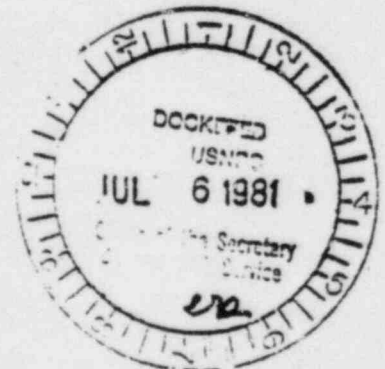
Dear Ms. Stamiris:

Attached is a copy of a document reflecting the latest available cost data associated with soils remedial actions from Bechtel's cost trending program. Information regarding the cost data supplied has been provided in the footnotes to the document.

Very truly yours,

James E. Brunner

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June 25, 1981

Ms. Barbara Stamiris  
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Dear Ms. Stamiris:

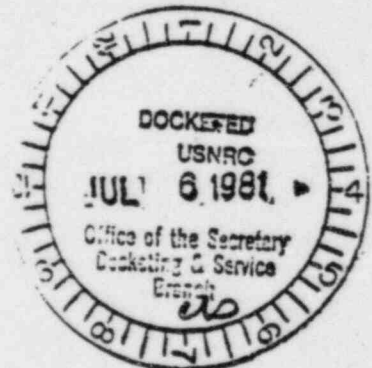
Attached hereto are copies of 10 CFR 50.55e Reports respecting soils matters or matters at issue in the Soils Case, and which were previously provided to other Intervenor. To the best of my knowledge, copies of all 10 CFR 50.55e Reports are forwarded by the NRC Staff to the Midland Public Library. Hence, these reports have always been publicly available.

Further, Consumers Power Company is under no legal obligation to submit copies of 10 CFR 50.55e Reports to Intervenor (cf. 10 CFR 50.55e). However, I have instructed the persons in charge of the service list for 10 CFR 50.55e Reports to place your name on an equal footing with those of the other Intervenor as respects soils settlement matters. I trust these documents will not "overwhelm" your resources in preparing for the hearing.

Very truly yours,

*James E. Brunner*  
James E. Brunner

CC: OM/OL List



The following reflects Bechtel's most recent estimates of the cost of remedial actions associated with foundation soil issues:<sup>1</sup>

Material Cost	\$ 664,000	
Labor Cost	2,664,000	
Subcontract Cost	4,391,000	
Subtotal	7,719,000	Direct Field Cost
	<u>2,737,000</u>	Distributable Field Cost
Total Field		10,456,000
Engineering	5,025,000	
Other Home Office	2,090,000	
Contingency and Rounding	69,000	
Total Cost <sup>2</sup>	<u>\$ 17,640,000</u>	

<sup>1</sup>Costs reflect the latest available data from Bechtel's cost-trending program. Data for cost trend projections of bin wall underpinning scheme for service water pump structure are not yet available. Hence, data reflects the driven pile underpinning scheme for the service water structure. Cost assumptions for the auxiliary building underpinning scheme include caisson underpinning at electrical penetration areas and full concrete underpinning of service water valve pits.

<sup>2</sup>This cost is the total Bechtel cost of carrying out remedial actions presently proposed, excluding cost increment of bin wall design over the driven pile design for the service water pump structure.