Jo Kane 2/84 Rec'd 6/9/80

May 27, 80

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2)	Docket Nos. 50-329-OM 50-330-OM

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Paton/Olmstead

FF

Reply Due Jun 16, 1980

In the Matter of CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2)	Docket Nos. 50-329-OL 50-330-OL

MOTION FOR PARTIAL CONSOLIDATION

Pursuant to 10 C.F.R. §2.716, Consumers Power Company (CPCo) hereby moves the Atomic Safety and Licensing Board (Board) to consolidate for discovery, evidentiary presentation and fact finding purposes the issues relating to soil conditions for safety-related structures and systems founded in and on plant fill material in the hearing considering the December 6, 1979 Order Modifying Construction Permits (Order), the operating license hearing, and any hearing which may be requested and ordered in connection with CPCo's requested Amendment Nos. 72, 74, 76, 77 and others to its application for construction permits and operating licenses.

May 84

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I. Background - The Proceedings

A. Soil Conditions Issues in the Order Modifying Construction Permits Proceeding.

CPCo is a holder of Construction Permits No. CPPR-81 and No. CPPR-82 which authorize the construction of two pressurized water reactors in Midland, Michigan. During its construction settlement monitoring program CPCo observed a larger than predicted settlement of the Diesel Generator Building and reported this to the NRC. From late 1978 to December 6, 1979 Applicant and the Nuclear Regulatory Commission Staff (Staff) investigated the settlement of the Diesel Generator Building and soil conditions for other safety-related structures and systems founded in and on plant fill material. During this period CPCo responded to numerous Staff inquiries concerning both what caused the soil conditions and the remedial action undertaken or proposed to be undertaken by CPCo.

On December 6, 1979 the Staff issued the Order by which the Staff seeks to prohibit CPCo from continuing certain remedial actions associated with the soil conditions for safety related structures and systems founded in and on plant fill material until issuance of an amendment to the construction permits authorizing the remedial action.

CPCo requested a hearing with respect to the Order and has filed requested Amendment Nos. 72, 74, 76 and 77 to its application for construction permits and operating

licenses setting forth the remedial action it proposes to take to ensure that the plant can be constructed and operated without undue risk to the health and safety of the public. Since the Order CPCo has had several meetings regarding the soil conditions issues with the Staff and their consultants.

B. Soil Conditions Issues in the Operating License Proceeding.

In her Contention 24, Mary Sinclair, Intervenor raised an issue in the operating licenses proceeding which the Board interpreted as raising an issue relating to soil conditions.[1/] The Board in the Special Prehearing Conference order dated February 23, 1979 accepted Contention 24, stating:

> No. 24 - The contention...is accepted...conditioned by our agreement with Staff's comment (November 28, 1978 response, page 6) that the question appears not to be one of site suitability, but rather of the type of material used by the Applicant under the building in question. A suitable restatement of the Contention shall be provided by the Intervenor at the time required by the schedule below for submission of other related contentions.

1/ "No. 24. The present site for the Midland facility is...affirmatively unsafe. Serious questions have been raised concerning the ground stability of portions of the site. At lease [sic] one of the essential buildings of the reactor complex is reported sinking, and construction has been halted on that building. As a result of the serious and unresolved questions concerning ground stability, the findings required by 10 C.F.R. §§50.57(a)(3) and 50.57(a)(6) can not be made."

Mapleton Intervenors raised the same soil conditions issue which was also accepted by the Board.[2/]

C. Current Status of Soil Conditions at Midland Site.

After observing the larger than predicted settlement of the Diesel Generator Building CPCo conducted an exhaustive investigation concerning the soil conditions for the Diesel Generator Building and other safety-related structures and systems founded in and on plant fill material. On the basis of this investigation CPCo believes the actions it then took remedied the soil conditions under and around the Diesel Generator Building. CPCo has submitted extensive technical analyses to the Staff, including submittals in the aforementioned amendments to the Application for construction permits and operating licenses to the Staff and has had several meetings with the Staff and their consultants during which CPCo and its consultants detailed the remedial action it proposes to take with regard to the soil conditions under and around safety-related structures and systems other than the Diesel Generator Building. CPCo is awaiting Staff approval of the amendments and at present no remedial action has been taken in regard to these structures.

2/ The Board in its Special Prehearing order dated February 23, 1979 stated:

> Contention 2 - This is the same issue as Sinclair Contention 24. It is accepted as it relates to settling of the Midland diesel generator building.

II. Issues to be Consolidated

CPCo requests that the following issues be consolidated for discovery, evidentiary presentation and fact finding:

1. Whether the remedial actions taken by CPCo with regard to soil conditions under and around the Diesel Generator Building

(a) satisfy the relevant requirements of the Order in that they provide reasonable assurance that the Diesel Generator Building will be constructed and operated without undue risk to the health and safety of the public;

(b) satisfy the relevant requirements of 10 C.F.R. §50.91 and 10 C.F.R. §50.35(a) in that they provide reasonable assurance that the Diesel Generator Building can be constructed and operated without undue risk to the health and safety of the public;

(c) satisfy the relevant requirements of 10 C.F.R. §50.57(a)(3) and (6) in that they provide reasonable assurance that the Diesel Generator Building can be operated without endangering the health and safety of the public and that its operation will not be inimical to the health and safety of the public.

2. Whether remedial actions proposed by CPCo with regard to soil conditions under and around safety-related

structures and systems, other than the Diesel Generator Building, will

(a) satisfy the relevant requirements of the Order in that they provide reasonable assurance that these structures and systems will be constructed and operated without undue risk to the health and safety of the public;

(b) satisfy the relevant requirements of 10 C.F.R. §50.91 and 10 C.F.R. §50.35(a) in that they provide reasonable assurance that these structures and systems can be constructed and operated without undue risk to the health and safety of the public;

(c) Satisfy the relevant requirements of 10 C.F.R. §50.57(a)(3) and (6) in that they provide reasonable assurance that these structures and systems can be operated without endangering the health and safety of the public and that their operation will not be inimical to the health and safety of the public.

III. Discussion

The Nuclear Regulatory Commission's Rules of Practice, 10 C.F.R. §2.716 Consolidation of Proceedings, provide, in pertinent part:

> On motion and for good cause shown . . ., the presiding officers of each affected proceeding may consolidate for hearing or for other purposes two or more proceedings . . . if it is found that such action will be conducive to the proper dispatch of [the NRC's] business and to the ends of justice and will be conducted in accordance with the other provisions of this subpart.

In addition to the above guidelines, the Nuclear Regulatory Commission requested, at page 2 of its March 14, 1980 Notice of Hearing, the Board to "consider whether such consolidation [of the hearing regarding the Order with other NRC proceedings which involve substantially identical issues] would adversely affect the expeditious resolution of the issues [to be decided in the hearing regarding the Order]....". 3/

A discussion of the factors the Board should consider in ruling on the motion for partial consolidation follows.

A. The Soil Conditions Issues in All Proceedings are Substantially Similar.

A chief issue to be resolved in the Hearing concerning the Order is whether the remedial actions taken and the information provided by CPCo provides "reasonable assurance that the affected safety-related portions of the Midland facility will be constructed and operated without undue risk to the health and safety of the public". (Order at page 3.)

3/ The NRC had been made aware of CPCo's intention to move for partial consolidation. As stated at page 2 of the March 14, 1980 Notice of Hearing:

> On December 26, 1979, CPCo filed a Request for Hearing pursuant to Part V of the Order. See, 10 CFR 2.204. In that Request, CPCo referred to other pending NRC proceedings which it believes involve issues substantially identical to those addressed by the Order of December 10. CPCo also stated its intention to move, pursuant to 10 CFR 2.716, to consolidate all the proceedings which are considering these issues.

In regard to CPCo's requested Amendments Nos. 72, 74, 76 and 77 to its application for construction permits and operating licenses, "in determining whether an amendment to a license or construction permit will be issued to the Applicant the Commission will be guided by the considerations which govern the issuance of initial licenses or construction permits to the extent applicable and appropriate." 10 C.F.R. §50.91. One of the considerations in determining whether to grant the initial construction permit is whether the "proposed facility can be constructed and operated...without undue risk to the health and safety of the public." 10 C.F.R. §50.35(a). Any hearing which may be requested and ordered in connection with the above-mentioned requested Amendments will consider this issue.

As stated previously, Mary Sinclair, Intervenor, and Mapleton Intervenors, contend in the operating licenses proceeding that the soil conditions issues prevent the Commission from finding, as it must pursuant to 10 C.F.R. §50.57, that:

> (3) There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this Chapter.
>
> (6) The issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

All proceedings dealing with the soil conditions issues have substantially the same issue in common: whether the affected safety-related portions of the Midland facility can be constructed and operated without undue risk to the health and safety of the public. This satisfies the Commission's consolidation admonition that the issues be substantially the same.

While CPCo recognizes that in some instances an operating license review is more detailed than a construction permit review, in this instance the reviews as to the soil conditions issue will be nearly identical. All repairs except for general site dewatering have been completed on the soils under and around the Diesel Generator Building and hence for all practical purposes review of the soil conditions issues for that structure will be conducted as if an operating license were being sought. The design details on general site dewatering have been submitted and discussed with the Staff and its consultants.

As to the other safety-related structures and systems, CPCo has not taken any remedial action but has submitted detailed explanations and justifications of the remedial actions it proposes to take and has had discussions with the Staff and its consultants. It is CPCo's position that all the required technical information has been submitted and that, therefore, the design concept is final. No more information will be available at the operating license

hearing than will be present prior to the hearing considering the order, except insofar as implementation of any remedial action approved in this proceeding may be at issue.

B. Partial Consolidation "Will be Conducive to the Proper Dispatch of NRC Business" and "To the Ends of Justice."

Since, as demonstrated above, the issues in all proceedings are substantially similar, the evidence to be presented in each proceeding will necessarily be the same. Consolidated discovery evidentiary presentation and fact finding would eliminate the presentation of the same evidence at least two times.[4/] Moreover, since the Board in both proceedings is comprised of the same individuals, it would not be required to hear the same evidence several times and make several separate rulings. Also, the consolidation would have the benefit of precluding needless litigation of issues as to res judicata or collateral estoppel which would occur if each proceeding were held separately.

A partial consolidation would avoid needless

4/ To date no hearing has been ordered with regard to CPCo's requested Amendment Nos. 72, 74, 76 and 77 to its application for construction permits and operating licenses, although pursuant to 10 C.F.R. §50.91 a hearing is a distinct possibility.

If such a hearing is held the consolidation would satisfy the Appendix A Statement of General Policy and Procedure: Conduct of Proceedings for the Issuance of Construction Permits and Operating Licenses, that construction permit hearings be "conducted expeditiously" with "efficiency and economy" and that procedures relating to these proceedings "maintain significant flexibility to accommodate that objective."

duplication of preparation and effort for the Staff. It will not require any additional time by the Staff since the SER to be issued in connection with the Construction Permit Amendment will be based on the same facts which will ultimately form the basis for the Operating License SER. The only factual matters regarding soils conditions which will not be known prior to the hearing considering the Order involve the efficacy of the remedial actions proposed for safety-related structures and systems other than the Diesel Generator Building.

The only parties not subject to all proceedings are the intervenors. A partial consolidation would give them the opportunity to participate in an evidentiary and fact finding hearing regarding the soil conditions issue at an earlier date than if the presentation occurred at the operating license hearing. To the extent that this is an inconvenience to them, a flexible discovery and hearing schedule can be developed.

CPCo believes that the intervenors will not suffer any denial of rights if the motion is granted. If, however, intervenors oppose the motion it should be noted that their consent is not necessary.[5/]

5/ The NRC noted In the Matter of Edlow International Company, 5 NRC 1327, 1328 (1977) that 10 C.F.R. §2.716:

> mirrors Rule 42(a) of the Federal Rules of Civil Procedure which establishes general standards used by Federal courts in determining whether consoli-

(cont.)

In short, a partial consolidation is the most efficient and least expensive manner in which to handle the soil conditions issues.

C. Partial Consolidation Will Not Adversely Affect the Expeditious Resolution of the Order Modifying Construction Permits Hearing.

Since, as demonstrated earlier, the issues to be consolidated in all proceedings are substantially similar, the partial consolidation will not inject any new issues or evidence into the hearing considering the Order. Further, even if any delay were to occur, the delay would not harm the Board or any of the intervenors. This is because, as stated at pages 1-2 of the March 31, 1980 Staff's "Summary of February 27 and 28, 1980 Meeting And Site Tour With Consultants To Review Soil Settlement," "Consumers Power Company has elected to defer all remedial work on inadequately supported structures until acceptance of the proposed work is received from the Staff." Any delay caused by the

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(5/ cont.)

> dation of proceedings is appropriate. Rule 42(a) provides that, if actions involve common questions of law or fact, they may be consolidated if consolidation would 'avoid unnecessary costs or delay.'

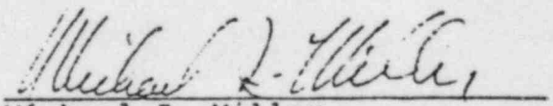
An examination of the case law interpreting Federal Rule 42(a) demonstrates that "If a common question exists, courts have often consolidated actions despite differences in parties," Wright & Miller, Federal Practice and Procedure, Civil Volume 9, §2383 at 264. Moreover, "The consent of the parties is not required." Id. at 259.

consolidation will, therefore, only harm CPCo and it is willing to risk this possibility in order to have a single evidentiary presentation and fact-finding determination on the soil conditions issue.

IV. Conclusion

The foregoing demonstrates that there is good reason to grant the partial consolidation motion, that partial consolidation will be conducive to the proper dispatch of NRC business and to the ends of justice and that it will not in any way affect the expeditious resolution of the Order. Therefore, CPCo requests the Board to consolidate for discovery, evidentiary presentation and fact finding purposes the issues relating to soil conditions for safety-related structures and systems founded in and on plant fill material in the hearing considering the Order, the operating license hearing, and any hearing which may be requested and ordered in connection with CPCo's requested Amendment Nos. 72, 74, 76, 77 and others to its application for construction permits and operating licenses.

Respectfully submitted,



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DATED: May 27, 1980

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2)	Docket Nos. 50-329-OM 50-330-OM

In the Matter of CONSUMERS POWER COMPANY (Midland Plant, Units 1 and 2)	Docket Nos. 50-329-0L 50-330-0L

CERTIFICATE OF SERVICE

I, Alan S. Farnell, hereby certify that a copy of Consumers Power Company's Motion For Partial Consolidation was served upon all persons shown in the attached service list by deposit in the United States mail, first class, this 27th day of May, 1980.

Alan S. Farnell

Alan S. Farnell

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J Kane 5/25

MIDLAND - AUXIL. BLDG - PHASE 2
ALL OUTSTANDING REVIEW ISSUES

MAY 25 1982

Docket Nos: 50-329 OM, OL
and 50-330 OM, OL

DISTRIBUTION:
Docket Nos. 50-329/330 OM, OL
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Mr. J. W. Cook
Vice President
Consumers Power Company
1945 West Parnall Road
Jackson, Michigan 49201

Dear Mr. Cook:

Subject: Completion of Soils Remedial Activities Review

In several meetings and discussions held during the months of April and May 1982, you were informed by the staff of the approach to be used for the review of the soils remedial activities at Midland Plant, Units 1 and 2. This approach is intended to make the review process more consistent with that followed by the staff for license applications and improve the efficiency of the staff review. Specifically, the previous staff practice of approving each individual construction step for each remedial measure as the review progresses will generally be discontinued by the staff. The staff intends to complete the entire review of the soils remedial activities and related matters as an integrated package and then proceed with ACRS meetings and hearing sessions in the normal fashion.

Although no activities directed to remedial actions for the soils deficiencies are expected to be approved prior to completion of the staff's integrated review, those for which staff review was substantially completed as of April 1, 1982, are, however, approved. These are discussed below.

On the basis of the staff technical review of documents listed in Enclosure 1, the staff concurs with your plan to proceed with Phase 2 underpinning activities (which involve excavation under the feedwater isolation valve pit and the turbine building) subject to the successful completion of conditions listed in Enclosure 2. Accomplishment of these conditions should be documented and Region III notified. Enclosure 3 provides a definition of Phase 2 on which the staff's approval is based, and further discusses the staff's understanding of approved quality assurance plans for this and other soils work.

We are further responding to your letter of May 10, 1982, which addresses certain soils construction work you believe had staff approval prior to the Licensing Board's Memorandum and Order of April 30, 1982. Staff comments and conclusions on Paragraphs I and II are provided in Enclosure 4.

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OFFICE ▶	.....	.....	.....	.....	.....	.....	.....
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NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981-

With respect to your Paragraph III, you note you are continuing with certain soils remedial work with full awareness and concurrence of the staff for which explicit written approval had not been obtained. You also noted that this work has been stopped in accordance with the Order and requested that the staff verify its concurrence so that the work can be reactivated. The three work items you identified in this category are:

(1) installation of deep-seated benchmarks,
(2) installation and operation of construction dewatering wells that were not previously operating, and
(3) installation of monitoring system instruments and mounting.

Items (1) and (2) are conditionally approved as addressed by Enclosure 5 and 6, respectively. With respect to item (3), your letter notes that work on the monitoring system instruments and mounting for the auxiliary building is presently stopped because Region III concurrence has not been obtained. We are advised that Region III will provide explicit written confirmation of NRC approval following resolution of existing QA deficiencies.

Your letter of May 10, 1982, also forwarded Drawing 7220-C-45 for purposes of defining which soils at the Midland site are safety related (i.e., are considered to be under and around safety-related structures and systems). During a May 5, 1982, conference telephone call with the Licensing Board and hearing parties, Consumers proposed to use this drawing to define the bounds for the term "around" in Sections VI(1)(a), (b) and (c) of the Board's April 30, 1982, Memorandum and Order. The Board's subsequent Memorandum and Order of May 7, 1982, requested the staff to advise the Board of the results of its review of Drawing 7220-C-45. The results of our review are presented in Enclosure 7; and, on the basis of your commitments to modify the drawing, we find this drawing to be acceptable for the purpose of defining areas around safety-related structures and systems.

In addition, Enclosure 8 lists the information required by the staff to conclude its review of the soils remedial work. This list is based upon staff review of information provided by your letter of March 31, 1982, and earlier submittals. Certain of the information needs may already have been transmitted by you. You are requested to provide your response schedule within seven (7) days of receipt of this letter. Once your schedule is received, the staff will develop the review completion schedule for this effort.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by
Darrell G. Eisenhut

Darrell G. Eisenhut, Director
Division of Licensing

Enclosures:
As stated

cc: See next page

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ATTN: Dr. Steve J. Poulos
1017 Main Street
Winchester, Massachusetts 01890

LISTING OF ENCLOSURES

Enclosure 1 - "Basis for Staff Concurrence for Start of Phase 2"

Enclosure 2 - "Conditions for Staff Acceptance of Phase 2"

Enclosure 3 - "Definition of Phase 2 Underpinning Activities and Quality Assurance Plans for Soils Activities"

Enclosure 4 - "Staff Comments on Continuing or Planned Soils Activities Previously Approved by the Staff"

Enclosure 5 - "Installation of Deep Seated Benchmarks"

Enclosure 6 - "Construction Dewatering Wells"

Enclosure 7 - "Staff Evaluation of Drawing 7220-C-45"

Enclosure 8 - "Additional Information Required to Complete Staff Review of Soils Remedial Work"

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ENCLOSURE 1

BASIS FOR STAFF CONCURRENCE FOR START OF PHASE 2

1. Letter to R. Vollmer from R. T. Hamilton, dated July 8, 1975, transmitting Bechtel quality assurance topical BQ-TOP-1, Revision 1A

2. Letter to H. R. Denton from J. W. Cook, dated September 30, 1981, Submitting the Auxiliary Building Dynamic Model, Technical Report on Underpinning the Auxiliary Building and Feedwater Isolation Valve Pits

3. Letter to H. R. Denton from J. W. Cook, dated November 16, 1981, on Response t the NRC Staff Request for Additional Information Pertaining to the Proposed Ur pinning of the Auxiliary Building and Feedwater Isolation Valve Pits

4. Hearing testimony by CPC witnesses (Johnson, Burke, Gould, Corley and Sozen) c remedial underpinning work for the Midland Auxiliary Building, November 19, 19

5. Hearing testimony of D. Hood, J. Kane and H. Singh concerning the Remedial Unc pinning of the Auxiliary Building Area, dated 11/20/81

6. Hearing testimony of F. Rinaldi, dated 11/20/81

7. Letter to H. R. Dentor from J. W. Cook, dated 11/24/81 on Test Results, Auxili Building, Part 2, Soil Boring and Testing Program

8. Letter to H. R. Denton from J. W. Cook, dated December 3, 1981, with Addendum Technical Report On Underpinning the Auxiliary Building and Feedwater Isoloati Valve Pits

9. Letter to H. R. Denton from J. W. Cook, dated January 6, 1982, on Auxiliary Building Underpinning - Freezewall; Effects of Freezewall on Utilities and Str tures

10. Letter to H. Denton and J. Keppler from J. W. Cook, dated January 7, 1982, tra mitting general Quality Plan for underpinning activities and Quality Plans and Q-Listed activities for SWPS and Auxiliary Building Underpinning

11. Design audits of January 18-20, 1982 (Summary dated March 10, 1982); Feburary 1982; March 16-19, 1982; and meeting of February 23-26, 1982, (Summary dated March 12, 1982)

12. Letter to H. R. Denton from J. W. Cook, dated February 4, 1982, on Auxiliary Building Access Shaft - Augering Method for Soldier Pile Holes

OFFICE ▶	.....	.....	.....	.....	.....	.....	.....
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ENCLOSURE 1

13. Letter to J. W. Cook from R. L. Tedesco, dated February 12, 1982, on Staff Concurrence for Activation of Freezewall

14. Letter to H. R. Denton from J. W. Cook, dated March 10, 1982, on Protection of Excavation Face - Auxiliary Building Underpinning Shaft

15. Summary of March 8, 1982 Telephone Conversation Regarding Soil Spring Stiffnesses for Auxiliary Building Underpinning and Phase II Construction, dated March 11, 1982

16. Letter to H. R. Denton from J. W. Cook, dated March 31, 1982, on Response to the NRC Staff Request for Additional Information Required for Completion of Staff review of Phases 2 and 3 of the Underpinning of the Auxiliary Building and Feedwater Isolation Valve Pits

17. Letter to J. Keppler from J. W. Cook, dated April 5, 1982, describing Quality Assurance for Remedial Foundation Work

18. Letter to H. Denton from J. W. Cook, dated April 26, 1982, transmitting quality assurance topical CPC-1-A, Revision 12

Enclosure 2

CONDITIONS FOR STAFF ACCEPTANCE OF PHASE 2

1. Deep-seated bench marks DSB-AS1 and DSB-AS2. DSB-AS1 and DSB-AS2 shall be installed at a distance not to exceed 5-feet from the wall of the main auxiliary building which is founded at Elevation 562. Actual locations of these installed bench marks and any modifications in tolerance criteria required on Drawing C-1493(Q) due to changes from the original DSB-AS locations shall be documented.

2. Monitoring instrumentation required to be installed. The following deep seated benchmarks and relative-absolute measurement devices identified on audited drawings shall be properly installed and operating for at least 7 days prior to drifting under the turbine building or Feedwater Isolation Valve Pit (FIVP):

Deep-Seated Benchmarks		Relative-Absolute Measurement Devices
DSB-1W	DSB-AS1	DMD-1W
DSB-1E	DSB-AS2	DMD-1E
DSB-2W	DSB-AN	DMD-11
DSB-2E		DMD-12
DSB-3W		DMD-13
DSB-3E		

3. Strain gauge installation. Revisions shall be made to the proposed instrumentation shown in drawing C-1495, "Instrumentation - Elevation 695 - 0 5/16" for Building Settlement Monitoring". On the sectional view at the wall at Column Lines 7.4 and 7.8, change the orientation of proposed lower strain gauges between Elevations 584 to 614 to be perpendicular to the orientation shown on Drawing C-1495, Figure 3 in the March 31, 1982 submittal. On this same sectional view, add an additional strain gauge between Elevations 646 to 659 at an inclination similar to the above recommended orientation. Also, correct the labeling of column lines H and G which is reversed on the copy of the sectional view submitted to the staff.

4. Pier load test procedures. The following modifications and additions shall be made to the pier load test procedures provided by the April 22, 1982 submittal from J. Cook to H. Denton, "Response to the NRC Staff Request for Additional Information Required for Completion of Staff Review of the Borated Water Storage Tank and Underpinning of the Service Water Pump Structure." (Consumers Power Company (CPCo) stated that, although the procedures were submitted for underpinning work for the service water pump structure, the procedures are applicable to the pier load test to be conducted during Phase 2 underpinning work for the auxiliary building.)

a. The maximum required test load should be equal to 1.3 times the maximum anticipated design load. As an alternative, should there be structural difficulties in developing the required reaction load for the prior test, the staff would accept a procedure where the maximum test load for the pier load test was equal to 90 percent the maximum anticipated design load and a plate load test (ASTM D1194) was performed to a maximum test load equal to 130 percent of the maximum anticipated design load. (See Page 12 of submittal).

b. Significant modifications to the specified ASTM D1143-81 test procedures, as may be appropriate, require advanced notification and approval of the Region III Office. (See Page 12 of submittal.)

c. The rate of settlement shall not exceed 0.005 inch per hour when controlling the length of time that the 90% test load increment is to be maintained. (See Page 12 of submittal).

d. In order to provide a more positive reduction of skin friction, plywood sheeting coated with 1/8-inch thick bitumen (or equivalent) shall be installed on all test pier sides prior to performing the pier load test as a replacement for the plastic sheeting proposed by CPCo. (See Page 12 of submittal).

e. To permit correlation with the previously approved measures proposed by CPCo to demonstrate the adequate foundation capacity of the other installed piers, a minimum of two in situ density tests and five cone penetrometer tests shall be performed on the soil at the bottom of the pier selected for test loading.

5. Construction dewatering. During underpinning of the auxiliary building area, the upper phreatic surface shall be maintained a minimum of 2 feet in depth below the bottom of any underpinning excavation at any given time. The final plan for the dewatering system shall be established and implemented in advance of drifting under the turbine building or FIVP. The dewatering plan should include the locations and depths of the dewatering wells and piezometers (observation wells). Criteria for monitoring loss of soil particles due to pumping shall be the same as those previously approved by the staff for the construction dewatering of the service water pump structure (R. Tedesco letter of April 2, 1982) or for the permanent dewatering wells (R. Tedesco letters of June 18, September 2, and October 22, 1981).

6. Monitoring movement of FIVPs. Jacking of the FIVP back to its original position shall be required if the relative settlement between the reactor containment and the FIVP reaches a total settlement of 3/8-inches since the time piping connections were made.

ENCLOSURE 3

DEFINITION OF PHASE 2 UNDERPINNING ACTIVITIES AND QUALITY ASSURANCE PLAN FOR SOILS ACTIVITIES

Phase 2 construction activities for the Midland auxiliary building underpinning are defined by Bechtel drawing C-1418-1(Q) Revision A, "Auxiliary Building - Underpinning Construction Sequence", and associated plan and logic drawing C-1418(Q), Revision A, both issued for information 3/19/82 and provided to the staff during an audit meeting on that date.

With respect to quality assurance requirements for Phase 2 work, CPCo's letter to H. Denton/J. Keppler dated January 7, 1982, transmitted a general Quality Plan for underpinning activities along with quality plans for the service water pump structure underpinning system and for the auxiliary building underpinning system and FIVPs. These plans describe the basic QA program controls to be applied to items and activities associated with the soils remedial work. We find these plans, including the QA programs described in Revision 12 of Consumer's QA Topical Report CPC-1A and Bechtel's QA Topical Report BQ-TOP-1, Rev. 1A, acceptable for the soils remedial work. However, a condition for this finding is that these quality assurance plans and programs are to apply to 1) all items and activities identified in the ASLB Memorandum and Order of April 30, 1982, and 2) all of the to-go underpinning Q-listed and non Q-listed work described in your April 5, 1982 letter to J. Keppler, except that work stated in attachment 1 of that letter. We interpret these plans and program to mean that the Midland Project Quality Assurance Department will be actively involved in reviewing contractor's, sub-contractor's, and consultant's quality assurance capabilities and assuring thorough review of procedures and verifications that hardware is built and work is performed in accordance with design, specification, and procedural requirements. Accordingly, we conclude that the above referenced Quality Plan is acceptable for implementation as described above. Since the foregoing conforms to the April 30, 1982, Board Order, any deviations must be reported to the staff.

ENCLOSURE 4

STAFF COMMENTS ON CONTINUING OR PLANNED SOILS ACTIVITIES PREVIOUSLY APPROVED BY THE STAFF

The following comments are provided to clarify the staff's prior approvals of remedial soils activities at the Midland Plant. Each listed item in paragraphs I and II of CPCo's May 10, 1982, letter is presented and addressed.

"I.a. Phase I Work (Auxiliary Building Underpinning)"

The specific activities for Phase I work referred to in our letter of concurrence (Reference 5) for installation of the vertical access shafts were those defined by Consumer's Drawing "Underpinning Auxiliary Building Construction Sequency Logic" dated January 20, 1982.

"I.b. Access Shaft (Auxiliary Building Underpinning)"

This item is included in the staff's definition of "Phase I work" and is discussed under paragraph I.a. above.

"I.c. Freezewall Installation, Underground Utility Protection, Soil Removal Cribbing and Related Work in Support of the Freezewall Installation, Freezewall monitoring and Freezewall activation"

References 5 and 7 provided staff concurrences for freezewall installation and activation, respectively. These approvals were based upon CPCo's plan to eliminate the inducement of stresses to the conduits and piping because of heaving by excavating the soil directly beneath affected utilities within the projected area of influence of the freezewall before ground freezing begins. The approvals also recognized your commitments (1) to demonstrate to the staff's satisfaction that recompression of the foundation soils beneath the piping or ducts has been completed before backfilling the excavation, and (2) to notify Region III personnel prior to drilling near seismic Category I underground utilities and structures. The approval was further contingent upon the successful audit by the NRC Regional Office III of the implementation procedures for excavation and monitoring.

The information which provided the basis for staff review and approval was provided by CPCo's letters of November 16 and 24, 1981, and January 6, 1982, and by hearing testimony of your consultant, J. P. Gould.

Consequently, the staff agrees that prior explicit concurrence for the activities listed by paragraph I.c. of CPCo's letter, May 10, 1982 had been obtained from the staff prior to the April 30, 1982 Order, except for the ambiguous phase you included "and related work in support of...". Therefore, the staff did not approve "related work" in its letters of concurrence or other records.

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"I.d. Installation and Operation of the Permanent Site Dewatering System"

The identity and location of the 65 permanent dewatering wells approved by the staff are given in References (1), (2) and (4). Installation and monitoring aspects of the permanent site dewatering system, exculding seismic aspects, was to be performed as Q-listed activities following staff review and approval of associated quality assurance and quality control documents.

"I.e. Operation of Existing Construction Dewatering Wells"

The only construction dewatering wells approved by the staff are those identified by References (6) and (10). This item is further discussed in Enclosure 6. As noted therein, however, construction wells installed and monitored to procedures equivalent to those for permanent wells may be considered acceptable.

"I.f. FIVP Proof Load Test"

The staff has no record or recollection of concurrence for a FIVP proof load test. Therefore, this test is not approved.

"II.a. Installation and Activation of Dewatering System for the Service Water Pump Structure"

Staff approval was indicated by Reference (10), subject to certain committed changes specified therein.

"II.b. The Repair of Cracks in the Borated Water Storage Tank Ring Wall"

Staff approval was indicated by Reference (9), which noted your commitment to pressure grout at least all cracks with widths in excess of 10 mils. This activity follows the completion of the valve pit surcharge programs which were also the subjects of prior staff approvals (References (3) and (8)).

In summary, ambiguity associated with CPCo's use of the terms "Phase I work" and "related [freeze wall] work" preclude confirmation of specific prior approval of these activities. Similarly, failure by CPCo to identify the particular existing construction dewatering wells precludes us from determining whether previous staff concurrence had been indicated. No description or discussion is provided for a "FIVP proof load test" and no record of prior staff approval can be located. Consequently, continuation of these activities in conformance with the foregoing staff comments will be in accordance with the Board Memorandum and Order of April 30, 1982. Any deviations must be reported and approved by the staff.

References:

(1) R. Tedesco letter of June 18, 1981, "Staff Concurrence on Installation of Twelve Backup Dewatering Wells"

(2) R. Tedesco letter of September 2, 1981, "Staff Concurrence on Installation of Eight Backup Dewatering Wells"

(3) R. Tedesco letter of September 25, 1981, "Staff Concurrence on Surcharging of Valve Pits for Borated Water Storage Tank Foundations"

(4) R. Tedesco letter on October 22, 1981, "Staff Concurrence on Installation of Permanent Dewatering Wells and Request for Additional Information"

(5) R. Tedesco letter of November 24, 1981, "Staff Concurrence for Construction of Access Shafts and Freezewall in Preparation for Underpinning the Auxiliary Building and Feedwater Isolation Valve Pits"

(6) R. Tedesco letter of December 28, 1981, "Staff Concurrence for Five Temporary Dewatering Wells"

(7) R. Tedesco letter of February 12, 1982, "Staff Concurrence for Activation of Freezewall"

(8) R. Tedesco letter of February 26, 1982, "Staff Concurrence on Removal of Surcharge from Borated Water Storage Tank Valve Pits"

(9) R. Tedesco letter of March 26, 1982, "Staff Concurrence for Grouting of Cracks in Concrete Foundations of Borated Water Storage Tanks"

(10) R. Tedesco letter of April 2, 1982, "Staff Concurrence for Installation and Operation of Construction Dewatering and Observation Wells for the Service Water Pump Structure"

ENCLOSURE 5

STAFF CONCURRENCE ON INSTALLATION OF DEEP SEATED BENCHMARKS

CPCo's letter of May 10, 1982 states that installation of deep-seated benchmarks is being carried out by Woodward Clyde Consultants, which is subject to its own quality assurance program and procedures approved by Consumers and previously subject to staff inspections. We are advised that these NRC inspections have resulted in a finding that these activities are being conducted to an acceptable quality assurance program.

CPCo has also provided the staff with information on the installation of deep-seated benchmarks and relative-absolute instrumentation beginning with the design audit of January 18-19, 1982 and continuing through the submittal of March 31, 1982 (Letter from J. Cook to H. Denton, Response to the NRC Staff Request for Additional Information Required for Completion of Staff Review of Phases 2 and 3 of the Underpinning of the Auxiliary Building and Feedwater Isolation Valve Pits). The information for the auxiliary building underpinning work which has been provided includes locations, depths, elevations, instrumentation accuracy and typical installation details of the proposed instruments. This information is contained in the following documentation:

a. Technical Specification for Monitoring Instrumentation for Underpinning Construction, Specification 7220-C-198(Q), January 18, 1982 Rev. 0 (Provided at the February 3, 1982 Design Audit)

b. Drawings C-1490(Q) and C-1491(Q), Auxiliary Building, Instrumentation Location for Underpinning, January 20, 1982; Revision 1 (Provided at the February 3, 1982 Design Audit)

c. Drawing C-1493(Q), Auxiliary Building and F.I.V.P., Instrumentation System and Monitoring Matrix, May 29, 1982, Rev. A (Provided by applicant's letter of March 31, 1982)

d. Sketches of Carlson Stress Meter and Telltale Installations, Midland Plant Instruments for Pier Measurements, January 15, 1982

On the basis of the technical review by the Staff and its consultants of the information in the above documents, including the quality assurance program, the staff concurs with Consumer's proceeding with the installation of the deep-seated benchmarks and relative-absolute instrumentation for monitoring the auxiliary building underpinning work.

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ENCLOSURE 6

CONSTRUCTION DEWATERING WELLS

In the past Consumer's position with respect to temporary or construction dewatering has been that this work was not permanent, it was being conducted to enable performance of construction activities and, therefore, the work did not require staff approval. Consumers did not provide the details of the construction dewatering design and installation and did not seek staff approval for these activities.

More recently the staff has concluded that certain aspects of construction dewatering activities related to underpinning the service water pump structure (SWPS) and auxiliary building could potentially affect the foundation stability of these nearly completed structures. The staff has actively reviewed the temporary construction dewatering plan for the SWPS and has reached agreement with CPCo on an acceptable plan (April 2, 1982 letter with enclosures from R. Tedesco to J. Cook, Staff Concurrence for Installation and Operation of Construction Dewatering and Observation Wells for the Service Water Pump Structure). The staff has not presently obtained or evaluated the final plan for construction dewatering during auxiliary building underpinning but has specified conditions for Phase 2 concurrence (Enclosure 3).

It is the staff's position, with respect to the remaining construction dewatering wells that are already installed and operating, that these wells be monitored for the loss of soil particles due to pumping similar to the requirements agreed upon and recorded in Enclosure 3 to the April 2, 1982 letter.

The specifications for a construction dewatering well are dependent upon the specific application. Consequently, approval for typical field practices, on other than a case-by-case basis is not meaningful. Therefore, for the future, the design and installation details of construction dewatering wells that have not yet been operated or installed should be addressed on a case-by-case basis following appropriate notification of the staff by the CPCo. This procedure will permit an assessment of the safety significance of the proposed well. However, any construction well for which the procedures for installing and monitoring the loss of soil particles are equivalent to those previously approved for permanent dewatering wells (which was in accord with a staff approved quality assurance plan) may be considered acceptable, provided also that the upper phreatic surface is maintained two feet below the bottom of any excavation or as otherwise approved in advance by Region III.

ENCLOSURE 7

STAFF EVALUATION OF DRAWING 7220-C-45

Staff requirements for this drawing were provided by the staff on May 7, 1982, to Messrs J. Mooney, J. Schaub and others of CPCo. These were:

(1) The seismic Category I retaining wall to the east of the service water pump structure is shown to be located in the non-Q zone. CPCo should revise the drawing to provide for Q-listed control in the vicinity of this wall.

(2) The drawing should be revised to provide for Q control of soils activities for the emergency cooling water reservoir (ECWR), the concrete service water discharge lines, and the perimeter and baffle dikes adjacent to the ECWR.

(3) CPCo should implement Q controls for certain aspects of work outside the Q zone of Drawing 7220-C-45 which could impact safety related structures and systems. Examples include potential removal of fines by dewatering wells, improper location of borings near the Q boundary, and soil excavations at the boundary involving both Q and non-Q areas.

(4) CPCo should re-confirm that no seismic Category I underground utilities extend beyond the Q area bounds of the drawing.

CPCo's letter of May 10, 1982 notes the intent to revise the drawing to address the ECWR components and other appropriate areas. CPCo has also identified during the May 7 telephone discussion additional measures being implemented to assure proper location for drillings.

On the basis of CPCo's commitment to extend the controls of soils activities to incorporate these staff requirements, the staff approves the use of Drawing 7220-C-45 for defining the areas around safety-related structures and systems within which the restrictions and requirements of the April 30, 1982, Memorandum and Order shall apply.

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ENCLOSURE 8

ADDITION INFORMATION REQUIRED TO COMPLETE STAFF REVIEW OF SOILS REMEDIAL WORK

1. Provide the following information regarding the Auxiliary Building and Feedwater Isolation Valve Pits:

   1.1 redesign of stiffened bulkhead against earth pressures during drift excavation to install needle beam assembly

   1.2 revise report on crack evaluation to include consideration of the effects of multiple cracks

   1.3 analysis of the construction condition using a subgrade modulus of 70 KCF and provide results

   1.4 allowable differential settlements for Phase 3 (based on 1.3 above)

   1.5 horizontal movement acceptance criteria for Phase 3 for instruments at top of EPAs and control tower

   1.6 as-built report with confirmatory detail on underpinning in FSAR upon completion of construction

   1.7 acceptance criteria for strain monitors for Phase 3

   1.8 acceptability of 1.5 FSAR SSE versus SSRS as bounding design

   1.9 method to be followed for transfer of jacking load into permanent wall

   1.10 complete design analyses of permanent underpinning wall

   1.11 updated construction sequence for Phases 3 and 4

   1.12 settlement monitoring program to be required during plant operation with action levels and remedial measures identified (Tech. Spec.). Include RBA, EPA and Control Tower

   1.13 plans and details for permanently backfilling underpinning excavations including compaction specifications for granular fill under FIVP

   1.14 procedure to be required for detecting extent of planar openings uncovered in drift excavations and controls to minimize their effects.

2. Provide the following information regarding the Service Water Pump Structure:

   2.1 acceptability of 1.5 FSAR SSE versus SSRS as bounding design

   2.2 sliding calculation using site-specific response spectra (SSRS) seismic loads and provide results with basis for assumed soil input parameters

   2.3 stress condition for existing parts of structure:
   (a) Maximum stresses
   (b) Critical combinations
   (c) Identify true critical elements based on actual rebar

2.4 calculation for determining lateral earth pressures under dynamic loading

2.5 settlement monitoring program to be required during plant operation with action levels and remedial measures identified (Tech. Spec.)

2.6 as-built report with confirmatory data on underpinning in FSAR upon completion of construction

2.7 report on crack evaluation to include consideration of the effects of multiple cracks.

3. Provide the following information regarding the Borated Water Storage Tanks:

3.1 adequacy of governing load combination used in design

3.2 acceptability of 1.5 FSAR SSE versus SSRS as bounding design

3.3 settlement monitoring program to be required during plant operation with action levels and remedial measures identified (Tech. Spec.)

3.4 as-built report with confirmatory data in FSAR on completed construction

4. Provide the following information regarding underground pipes:

4.1 basis for modeling of the piping inside the building in the terminal end analyses

4.2 controls to be required during plant operation to pervent placement of heavy loads over buried piping and conduits

4.3 as-built report with confirmatory data in FSAR on completed construction

4.4 justification why the BWST lines are not to be rebedded from the tank farm dike to the auxiliary building

4.5 a list of all penetrations for underground seismic Category I piping. Revise and submit your pipe monitoring program to include periodic measurements of rattelspace for plant operating life. Provide justification for all exceptions.

4.7 justification for the high (beyond limits) reported settlement stesses

5. Provide the following information regarding the Diesel Generator Building:

5.1 a structural reanalysis considering:
   (a) Presurcharge conditions
   (b) Conditions during the surcharge
   (c) 40-year settlement effects
   (d) The combined effects of (a) through (c) above

5.2 a structual reanalysis assuming reduction in soil spring stiffnesses between bays 3 and 4 on the south side and beneath adjacent cross wall

5.3 a statistical evaluation of settlements to evaluate impact of survey inaccuracies versus actual differential settlements which have been experienced

5.4 acceptability of 1.5 X SSE (FSAR) versus SSRS for bounding design
5.5 criteria relating crack width and spacing to reinforcing steel stress
5.6 settlement monitoring program tc be required during plant operation with action levels and remedial measures identified (Tech. Spec.)
5.7 evaluation of effect of past and future differential settlements to diesel lines from the day tank to the diesels.

6. Provide a settlement monitoring program to be required during plant operation with action levels and remedial measures identified (Tech. Spec.) for the underground Diesel Fuel Oil Storage Tanks.

7. Provide the following information regarding the permanent dewatering system:

7.1 results of the dewatering recharge tests
7.2 technical specification requirements on the permanent dewatering system.
7.3 a summary dicussion of your contingency plans which would be implemented in the event groundwater levels at critical locations exceed limits in the technical specifications.

8. Provide a settlement monitoring program to be required for structures founded on natural soils and plant fill which have not been identified above with action levels and remedial measures identified. (Tech. Spec.)

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

June 1, 1982

Harold R Denton, Director
Office of Nuclear Reactor Regulation
Division of Licensing
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND PROJECT
MIDLAND DOCKET NO 50-329, 50-330
SCHEDULE FOR RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON SOILS REMEDIAL ACTIVITIES
FILE: 0485.16 SERIAL: 17293
REFERENCE: NRC LETTER DATED 5/25/82 TO J W COOK FROM D G EISENHUT

Your referenced letter requests a response to Enclosure 8 within seven days, noting when technical responses will be completed for each of the questions. Enclosure 8 lists several specific requests for "additional information required to complete staff review of soils remedial work."

A response to each of the requests in Enclosure 8 will be submitted by June 15, 1982. For those questions that require data based on future construction, the June 15 response will include a general discussion of the subject and an anticipated date for completing the response once the underpinning is complete.

James W. Cook

JWC/WJC/acr

oc0682-0030a168

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MIDLAND - PHASE 2
MAY 10 1982
AUXIL. BLDG UNDERPINNING

J. Kane
Rec'd 5/12/82
from V Noonan
5/B5

MEMORANDUM FOR: [redacted] Assistant Director
for Licensing
Division of Licensing

This work was ultimately completed in NRC letter of May 25, 1982 (Eisenhut to J. Cook

FROM: James P. Knight, Assistant Director
for Components & Structures Engineering
Division of Engineering

SUBJECT: MIDLAND PLANT UNIT NOS. 1 AND 2

The applicants submittals regarding Phase 2 of the underpinning repair work at the Midland Plant have been reviewed from the standpoint of Structural and Geotechnical engineering. We conclude that the Phase 2 program is acceptable provided that certain modifications and requirements are incorporated. The enclosure to this memo entitled "Midland Plant, Provisions for Acceptance of Phase 2" lists the modifications and requirements we believe necessary. Based on discussions with your staff we understand that the transmittal of these provisions to the applicant will include specific instructions to document the accomplishment of these actions and inform Region III as that documentation is available for the inspectors examination. We believe that this approach is appropriate.

James P. Knight, Assistant Director
for Components & Structures Engineering
Division of Engineering

cc: R. Vollmer
D. Eisenhut
R. Purple
E. Adensam
D. Hood
R. Hernan
F. Schauer
G. Lear

Marked up copy provided to D Hood on 5/12/82

8205210467 5pp.

Corrections in pencil are approving [illegible] as of 5/12/82 and [illegible] Tel. [illegible] as of 5/11/82

Midland Plant

Provisions for Acceptance of Phase 2

1. <u>Deep-seated bench marks DSB-AS1 and DSB-AS2</u>. DSB-AS1 and DSB-AS2 shall be installed at a distance not to exceed 5-feet from the wall of the Main Auxiliary Building which is founded at Elevation 562. Actual locations of these installed bench marks and any modifications in tolerance criteria required on Drawing C-1493(Q) due to changes from the original DSB-AS locations shall be documented. Deleted requirement to notify NRC Region III at least two weeks in advance of the start of Phase 2

   without timeliness we would have documentation of modifications [illegible]

2. <u>Monitoring devices required to be installed</u>. The following devices shall be properly installed and operating prior to drifting under the turbine building or FWIV pit.

   Deleted requirement to notify [illegible]

   Should not be a problem [illegible] Region III [illegible] these provisions

DSB-1W	DSB-AS1	DMD-1W
DSB-1E	DSB-AS2	DMD-1E
DSB-2W	DSB-AN	DMD-11
DSB-2E		DMD-12
DSB-3W		DMD-13
DSB-3E		

3. <u>Strain gage installation</u>. The following revisions shall be made to the proposed instrumentation shown on drawing C-1495, "Instrumentation - El. 695 - 0 5/16" for Bldg. Settlement Monitoring".

   a. With reference to drawing C-1495 Sectional View - Wall at Col. Lines 5.3 and 5.6. Reorientate the proposed vertical strain gage installation between Elevations 646 to 659 to a slope similar to lower gages between Elevations 584 to 614.

a. X. With reference to drawing C-1495, Sectional View-Wall at Col. Lines 7.4 and 7.8. Change orientation of proposed lower strain gages between Elevations 584 to 614 to be perpendicular to orientation shown on Drawing C-1495 in the March 31, 1982 submittal (Figure 3). On this same sectional view add an additional strain gage between Elevations 646 to 659 at an inclination similar to the above recommended orientation. (The labeling of column lines H and G is reversed on the copy of this sectional view submitted to the staff.)

4. Pier load test procedures. The following modifications and additions shall be made to the pier load test procedures provided by the April 22, 1982 submittal from J. Cook to H. Denton entitled "Response to the NRC Staff Request for Additional Information Required for Completion of Staff Review of the Borated Water Storage Tank and Underpinning of the Service Water Pump Structure." (It is the NRC Staff's understanding that, although the procedures were submitted for underpinning work for the Service Water Pump Structure, the procedures are applicable to the pier load test to be conducted during Phase 2 underpinning work for the Auxiliary Building.)

   a. Page 12. The maximum required test load should be equal to 1.3 times the maximum anticipated design load. As an alternative, should there be structural difficulties in developing the required reaction load for the pier test, the NRC Staff would accept a procedure where the maximum test load for the pier load test was equal to 100 percent the max. anticipated design load and a plate load test (ASTM D1194) was performed to a maximum test load equal to 130 percent of the maximum anticipated design load.

b. Page 12. Significant modifications to the specified ASTM D1143-81 test procedures, as the Applicant may deem appropriate, require early notification and the approval of the NRC Region III Office.

c. Page 12. The rate of settlement shall not exceed 0.005 inch per hour when controlling the length of time that the 90% test load increment is to be maintained.

d. Page 12. In order to provide a more positive reduction of skin friction, plywood sheeting coated with 1/8-inch thick bitumen or equivalent shall be installed on all test pier sides prior to performing the pier load test as a replacement for the plastic sheeting proposed by Consumers Power.

e. To permit correlation with the previously approved measures proposed by the Applicant to demonstrate the adequate foundation capacity of the other installed piers, a minimum of two in situ density tests and five cone penetrometer tests shall be performed on the soil at the bottom of the pier selected for test loading.

Piezometers may indicate high GWT but sumping will locally reduce water pressures in per excavations with sumps.

5. Construction Dewatering. During underpinning of the Auxiliary Building area, the upper phreatic surface shall be maintained a minimum of 2 feet in depth below the bottom of any underpinning excavation at any given time. The final plan for the dewatering system shall be established and implemented in advance of drifting under the turbine building or FWIV pit. The dewatering plan should include the locations and depths of the dewatering wells and piezometers (observation wells). ~~Installation details and~~ Criteria for monitoring loss of soil particles due to pumping shall be the same as those previously approved by the staff for the construction dewatering of the Service Water Pump Structure. Provide revised details at deep duct bank isolation at freezewall crossing

6. Monitoring movement of Feedwater Isolation Valve Pit (FIVP). Jacking of the FIVP back to its original position shall be required if the relative settlement between the Reactor Containment and the FIVP ~~on between the Turbine Building and the FIVP~~ reaches a total settlement of 3/8-inches since the time piping connections were made.

5/12/82 Problem is the 2 foot depth limitation may be too restrictive if excavations are entirely in impervious clay and seepage could be handled with localized sump pumps rather than deep wells. Attempt to develop that allows for sump pumping (and not 2 foot limitation) provided the underpinning excavations are conducted in a manner that does not destroy the undisturbed soil characteristics because of uncontrolled seepage. Is there need to have deep wells in the sand backfill around the containment building?