SEB & MEB Input into NRC Response to CPCo Interrogatories

Kane
Recd 3/26/81

STRUCTURAL ENGINEERING BRANCH

CONSUMER POWER COMPANY - MIDLAND NPP

ANSWER TO INTERROGATORIES

INTERROGATORY QUESTION 2:

State which "of the Staff's requests were directed [as of or before December 6, 1979] to the determination and justification of acceptance criteria to be applied to various remedial measures taken" (Order at page 3) and which portion of each request was directed.

ANSWER:

The concerns identified in the Second Request for Information and during the initial evaluation of the settlement problem include the following items:

(1) For the containment, we require that you evaluate the structure at critical locations (base mat, intermediate floor level and at the springing line) to determine that the use of ACI 359 Code in conjunction with SRP 3.8.1 would result in adequate safety margins for these structures. For this assessment, actual material properties may be used, if properly justified.

(2) For critical sections of other Category I structures (base mat, an intermediate elevation and an upper elevation) both inside and outside containment, we require that you provide an assessment as to the extent to which these structures can meet the requirements of current ACI 318 Code in conjunction with SRP 3.8.3 and 3.8.4. This assessment should justify the conclusion that adequate margins of safety exist for these structures using current Codes. For this assessment, actual material properties may be used if properly justified.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

(3) For all other Cateogry I structures, the same type of curves as those presented for the containment (FSAR 3.7-66 and 67) should be provided. Also, compare the floor response spectra computed at critical locations using your original seismic input and method and those outlined in Regulatory Guides 1.60, 1.61, and 1.92 for the containment and other Category I structures. The safety significance of any difference resulting from the comparison should be assessed.

(4) For the seismic Category I structures which are located upon backfill and which are experiencing settlement in excess of that predicted, provide an assessment that will assure the ability of these structures to withstand appropriate loading combinations (including SSE) throughout plant life. Describe how stresses associated with differential settlement of the structural foundations and any corrective activities have been or will be factored into these evaluations. A comparison of the stresses predicted due to settlement to those allowable stresses permitted by the ACI Code should be provided.

(5) For the Category I piping systems modify your FSAR to reference BP-TOP-1 Revision 3 and identify and justify all exceptions or alternate approaches which you take to Revision 3.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

(6) Investigate the soil properties and the foundation characteristics of all the areas affected by the fill material or as modified by any proposed changes. On the basis of the soil properties and foundation characteristics thus determined, conduct a new seismic analysis to account for the revised soil-structure interaction effect and the new structural response. The structural response spectra should be used to determine the new seismic loads to be incorporated into a revised structural analysis of Category I structures. All details of this investigation should be provided for the staff's review and evaluation.

(7) Your proposed method of re-evaluation of Category I structures which are founded partially or totally on fill, as outlined in the response to Question 15, is not acceptable. The structural analysis should be conducted using the current NRC criteria, i.e., the Standard Review Plan (Sections 3.8.4 and 3.8.5) or the current ACI-349 Code supplemented by the appropriate Regulatory Guide (Regulatory Guide 1.142), so that the margins of safety can be assessed.

(8) With reference to your response to Question 4, it was stated that the preliminary estimate for the residual settlement for the diesel generator building for the 40-year plant life is on the order of 1 inch. In this connection, specify the following:

INTERROGATORY QUESTION 2 ANSWER CONTINUED

a. Is this estimate based on static condition only or does it include soil shakedown due to operational vibration and/ or an earthquake event? If the answer is negative, what would be the total predicted settlement? In your response, describe your method of analysis of settlement.

b. What is the accuracy of the result of your analysis? State the possible upper bound of the settlement.

c. Investigate the effect of a concrete mat foundation (see Recommendation (5)) for this building and provide the results.

d. Evaluate the effect of the impingement of the electrical ducts on the foundation during the surcharging operation, including the effect of the construction slabs that were located below the electrical ducts.

(9) With reference to Question 14, you did not answer the basic questions regarding the causes of the cracks, significance of the extent of the crack, and their consequences. In view of the above, you are requested to conduct a detailed and comprehensive study which would answer these questions. It is noted that large areas of the auxiliary building are marked as temporarily or permanently inaccessible. Indicate how you plan to investigate the extent of the cracks in those areas. Since these cracks exceed the recommendations provided in applicable industry codes, you should address this concern in your reply.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

(10) Review of your response to Question 7 indicates that the electrical duct banks have not been designed in accordance with the same criteria as those applicable to other Category I structures.

The electrical duct banks are considered to be a vital link between diesel generators and other parts of the plant. The acceptance of these ducts should be based on the use of the structural criteria for Category I structures as provided in the appropriate sections of the Standard Review Plan (SRP) and Regulatory Guides. Passing of a rabbit through the duct banks cannot be substituted for such criteria. You are requested, therefore, to perform an analysis of the affected duct banks using the criteria applicable to other Category I structures.

(11) The response to 50.54(f) request reported the following inconsistencies between data used for structural design of the diesel generator building and the data contained in the FSAR.

a. A uniform load of 3,000 psf was used rather than the 4,000 psf shown in Figure 2.5-47 in the FSAR.

b. The calculations assumed a mat foundation rather than a spread footing foundation, which is the actual design condition.

c. The results of these erroneous calculations were included in the FSAR.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

Please clarify these apparent inconsistencies. In addition, state if settlements have been noted for the other Category I structures in question other than the Diesel Generator Building.

(12) In response to our previous Question 13, it was indicated that the floor response spectra for the diesel generator building were generated on the assumption that the shear wave velocity will be lower than 500 fps. Describe the basis for this assumption. Describe the surveillance plan for all of the structures in question during the life span of the plant by which you will be able to monitor the soil conditions to ascertain in the future that your assumption is valid.

(13) Investigate Auxiliary Building tower for any permanent damage that may have been caused by the bad soil foundation under the wing structures that span from the central tower of the Auxiliary Building.

(14) Investigate the option of providing a foundation supported on solid soil for the north wing of the service water building.

(15) Load the borated water storage tanks to 90% of their maximum load capacity and continue the investigation of the settlement and crack patterns. Submit a plan for this surveillance for our review.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

(16) Categorize, design, and test the dewatering system in its entirety or in part to remain operational during an earthquake event. Justify your assumption that only a portion of this dewatering system will survive an earthquake event in view of the fact that you qualify all of the wells as a Category I component.

(17) Use of site dependent input design spectra is acceptable if the input spectra are reviewed and accepted by Geosciences Branch (GSB) (Ref. SRP Section 2.5).

(18) Methods for implementing the soil-structure interaction analysis should include both the half space lumped spring and mass representation and the finite element appraoches. Category I structures, systems and components should be designed to responses obtained by any one of the following methods:

a. Envelope of results of the two methods;

b. Results of one method with conservative design consideration of impact from use of the other method; and

c. Combination of (a) and (b) with provision of adequate conservatism in design.

INTERROGATORY QUESTION 2 ANSWER CONTINUED

(19) Consideration of the effects due to accidental torsional forces in design (as a minimum, the 5% times base dimension off-setting criteria should apply).

(20) Deletion of Table 3.7.2-1, "Acceptable Methods for Soil-Structure Interaction Analysis" and adopt acceptance criteria of 3(a), 3(b) and 3(c) stated in Section 3.7.1.

(21) Use of Regulatory Guides 1.92 and 1.122.

(22) Case-by-case acceptance of the use of a single seismic instrumentation system for sites with multiple plants (more than 2 plants).

INTERROGATORY QUESTION 3:

State and explain the reasons why "such [acceptance criteria], coupled with the details of the remedial action, are necessary for the Staff to evaluate the technical adequacy and proper implementation of the proposed action." (Order at page 3.)

ANSWER:

The Structural Engineering Branch utilizes criteria developed in the form of Regulations, Regulatory Guides, Standard Review Plans, Topical Reports, and Branch Positions. The information requested is related to criteria identified in the above related documents. Therefore, the applicant's answers to our questions are necessary for the Staff safety evaluation of the Midland NPP.

INTERROGATORY QUESTION 4:

State and explain the basis for the statement, at page 3 of the Order, that "the information provided by the licensee fails to provide such criteria." (Acceptance criteria.) (Order at page 3.)

ANSWER:

The Staff has identified differences in criteria or lack of criteria for area of review related to the structural review of the Midland NPP. Also, the settlement problem of most of the Category I structures has added to the differences and lack of criteria for the Midland NPP FSAR. In addition, areas that were found adequate need to be re-investigated to examine the effect of settlement and changed material and physical parameters.

INTERROGATORY QUESTION 5:

State with particularity each item of information the Staff requested up and until December 6, 1979 with regard to acceptance criteria.

ANSWER:

The outstanding items identified in the answer to Interrogatory (2) are the items outstanding in the structural review as of December 6, 1979. Additional concerns have been identified from the current review (i.e. reactor vessel hold-down bolts, borated water tank cracks, improper models for the dynamic analysis of certain structures, etc.).

INTERROGATORY QUESTION 6:

With regard to each item of information identified in response to Interrogatory 5, state: (a) the identity of the request; (b) whether Consumers responded to that request; (c) the identity of the communication that the Staff considered Consumers response to the request; (d) whether the Staff considered the response adequate; (e) the identity of the communication by which the Staff communicated its position as to the adequacy of the response; (f) the basis for the Staff's position regarding adequacy or inadequacy of Consumers response; and (g) the Staff personnel responsible for determining whether Consumers' response was adequate or inadequate.

ANSWER:

Consumer Power Company has addressed many of our concerns and has eliminated some of them. The simplest approach to address the

INTERROGATORY QUESTION 6 ANSWER CONTINUED

questions of which items of concerns have been resolved and which ones remain as items of safety concern is to state the items that remain, in addition to other items that have been identified during the current review and from the site investigation at the Midland NPP. The items that are still a concern to us, at this point, are identified in the answer to Interrogatory (7). The Staff responsible for the determination of the adequacy/inedequacy of the responses are as follows:

James P. Knight, Assistant Director for
Components and Structures Engineering

Franz P. Schauer, Chief
Structural Engineering Branch

Frank Rinaldi, Senior Structural Engineer
Structural Engineering Branch

P. Kuang, Consultant
NWSC

J. Matra, Consultant
NWSC

INTERROGATORY QUESTION 7:

State with particularity each item of information the Staff requested after December 6, 1979 with regard to acceptance criteria.

ANSWER:

The concerns identified by the Staff after December 6, 1979, include the items not resolved from the previous list of concerns and concerns resulting from the additional investigations conducted by the applicant and by the Staff. Some of these additional concerns have been identified recently by the applicant (i.e. reactor vessel hold-down bolts, improper modeling of some Category I structures, damage to the foundation of the borated water tanks, etc.). These items are acknowledged by the Staff as problem areas. The other areas of safety concern include the following:

(1) As a result of settlement and inadequate compaction in the fill area, the applicant has agreed to re-run the seismic/ structural analyses of the Category I structures located in this area. We require that the applicant verify and evaluate any changes in the design safety margins available for all applicable Category I structures, by performing a structural re-analysis using the resulting seismic forces.

(2) As a result of the strengthening measures planned for the auxiliary building and the service water intake structure, through the use of caissons and piles, respectively, the foundation of these structures will be different from the

INTERROGATORY QUESTION 7 ANSWER CONTINUED

original design. Such a change will require a new seismic/ structural analysis. In addition, since the floor response spectra for the diesel generator building were generated on the assumption that the shear wave velocity would not be lower than 500 FPS, we require that monitoring of the soil properties be undertaken throughout the period of consolidation in order to verify the validity of this assumption. Also, the applicant is required to report and eval ate any variations from the mimimum assumed value of 500 FPS.

(3) The fill material under the nothern part of the service water pump structure remains an open item. While the portion of the structure over the fill material is being supported by the rest of the structure founded on natural material, through cantilever action, it is stated in the Management Corrective Action Report, Interim Report 6, issued September 7, 1978, that the total design loads cannot be supported by the main structure. The proposed corrective action recommends the placing of pilings along the north wall of the structure. The following concerns regarding this proposed corrective action, need to be addressed:

INTERROGATORY QUESTION 7 ANSWER CONTINUED

a. The corrective action does not provide the type of foundation support that was considered in the original design, which provided stable solid soil support along the foundation of the structure. The corrective action only provides concentrated supports along the wall through the use of piles, corbels, and bolts. This new design needs to be identified and the details of the analysis and results be fully reviewed.

b. The methods of attaching corbels by using long longitudinal bolts through the walls requires the bolts to resist bending forces. This is not an effective way of utilizing bolts, since bolts provide low strength in the bending mode. Other corrective design methods, that more closely comply with the design intent, should be considered and compared. In any event details of this bolt design and analysis needs to be provided for our safety review.

c. In the proposed re-analysis of the service water pump structure for seismic loading, the manner in which piling will be modeled is not clear. It appears that the vertical piling may not resist horizontal forces unless proper bracing is provided. In addition, the applicant should evaluate as to whether or not the piling will still be an effective way of providing vertical support after the occurrence of a postulated earthquake (OBE).

INTERROGATORY QUESTION 7 ANSWER CONTINUED

(4) In the response to Question 15 of the NRC request, regarding plant fill, it is stated that, "differential settlement primarily induces additional strain, which is a self-limiting effect and does not affect the ultimate strength of the structural members." Additional clarification of this statement is needed. Due to differential settlement the foundations of Category I structures, in the plant fill areas, have become drastically different from the original design. Consequently, the new structural systems should be evaluated to determine that all of the design loads, load combinations and stress/strain limits identified in current NRC criteria are satisfied.

(5) The applicant responses to Questions 14, 28, and 29 of the NRC request regarding the causes of cracks due to settlement, the significance of the extent of cracks, and the consequences of cracking, provide insight into the existing condition of the Category I structures. However, additional information is needed for the evaluation of the Category I structures, as follows:

a. Provide the tension field data, if any, under the design load combinations at all crack locations for each Category I structure.

b. Provide an analysis that will show the limiting tension field condition in which a crack will not propagate.

INTERROGATORY QUESTION 7 ANSWER CONTINUED

c. Demonstrate that the existing cracks will not propagate further as result of any postulated additional settlement.

d. Demonstrate that adequate corrective plans, in regard to the adverse effects of corrosion of the reinforcing bars in the cracked areas, have been formulated and that quality assurance/ control procedures have been carefully identified and evaluated.

(6) Since the fill was replaced by other material, such as lean concrete, in the vicinity of the auxiliary building and of the feedwater valve pits, the soil properties of the foundation material have been changed. It is recommended that new soil properties (e.g. damping values and shear modulus) be used in the revised seismic analysis to determine the structural adequacy of all of the pertinent Category I structures. A new soil-structure interaction analysis should be conducted by the applicant and a summary of the assumptions, models, and results should be provided for our review.

Also, all structural/seismic analyses should be conducted using the revised seismic loading and current NRC criteria so that margins of safety can be determind against currently acceptable loads and standards. In addition, all analyses should include the effects of soil settlement, as identified in the revised load combination equations, and include an evaluation of significant local cracked areas, as per Question 5 criteria.

INTERROGATORY QUESTION 7 ANSWER CONTINUED

(7) The applicant has not established the effectiveness of the groundwater well system. These wells are needed to control the ground water level and prevent soil-liquefaction. The proposed dewatering system should be categorized in its entirety or in part, as per the determination of the system and geoscience technical personnel, as Category I systems and should be designed and constructed to resist the loads of OBE/SSE and other pertinent loads.

(8) The reactor vessel support system remains as an open item since it is undergoing a re-evaluation by the applicant. Provide the final design and analysis for our review.

(9) Since the design of other Category I and internal concrete structures were completed before 1973 the load combinations presented in the FSAR are not in accordance with all of the current NRC criteria. Specifically, the Staff has adopted as the acceptable criteria ACI-349 modified by the exceptions identified in Regulatory Guide (RG) 1.142. The applicant has not yet compared the degree of conservatism of the Midland NPP design for the two criteria, with respect to the load combination and with respect to related acceptable allowable stress/strain criteria. Demonstrate that the criteria (load combinations and acceptance limits) are equivalent in safety scope.

INTERROGATORY QUESTION 7 ANSWER CONTINUED

(10) The Tornado Missile Spectra does not fully comply with the current NRC criteria. Specifically, the applicant has not considered the three steel pipe missiles (3" dia., 6" dia., 12" dial). From a structural point of view the 12" diameter steel pipe controls the design of the concrete barriers. Therefore, further evaluation of the tornado missile barriers is required. In addition, the applicant should demonstrate that the vents used to reduce the differential pressure in other Category I structures are adequate to resist any postulated missile impact.

(11) Confirmatory independent seismic analyses of the containment structure, service water pump structure and the diesel generator building are underway. Additional data to those presented in the FSAR are required. It is requested that the following data be forwarded to NRC for the structures mentioned above:

1. Lump mass models;
2. Stiffness value for each member;
3. Mass at each nodes point;
4. Spring constants used in the analysis (K_o, C_o, K_x, C_x, K_y, C_y); and
5. Seismic inputs of the modified Taft N21E 1952 record used in this analysis.

INTERROGATORY QUESTION 8:

With regard to each item of information identified in response to interrogatory 7, state: (a) the identity of the request; (b) whether Consumers responded to that request; (c) the identity of the communication that the Staff considered Consumers response to the request; (d) whether the Staff considered th respon[illegible] adequate; (e) the identity of the communication by which the Staff communicated its position as to the adequacy or inadequacy of the response; (f) the basis for the Staff's position regarding adequacy or inadequacy of Consumers response; and (g) the Staff personnel responsible for determining whether Consumers' response was adequate or inadequate.

ANSWER:

Consumer Power Company has attempted to answer most of the concerns identified in Interrogatory (7). However, the earliest attempt to answer these questions is dated November, 1980. This date indicates that, factoring in the actual time for document mailing, the mail time into/in NRC, holiday period, scheduling period, etc., the review has not been completed at this time. The Staff will communicate the degree of acceptance of any replies to our safety concerns as soon as possible. Some Staff positions have been reviewed by the applicant during the deposition of Staff/Consultants to the Structural Engineering Branch. However, the resolution of certain problems identified recently will take a longer period of time for its review/discussion/resolution. The basis for the determination of the adequacy/inadequacy will be the Staff criteria. The Staff responsible for these determinations is the same as stated at the end of the answer to Interrogatory (6).

INTERROGATORY QUESTION 9:

Excluding the information provided in response to Interrogatory 5, state with particularity each item of information the Staff felt was necessary, as of December 6, 1979, for Consumers to provide in order for the Staff to have concluded that "the safety issues associated with remedial action taken or planned to be taken by the licensee to correct the soil deficiencies will be resolved." (Order at page 3.)

ANSWER:

As of December 6, 1979, the Structural Engineering Branch Staff had no other concern other than those stated in Interrogatory (2) and acknowledged in Interrogatory (5). After the review of subsequent submittals from the applicant the Structural Engineering Branch's Staff had the concerns identified in our answer to Interrogatory (7). Note that additional concerns related to the reactor vessel hold-down bolts, modeling of certain Category I structures and additional damage to foundation of the borated water tanks have been identified by the applicant and acknowledged by the Staff. However, no resolution of these new concerns have been accomplished.

INTERROGATORY QUESTION 10:

For each item of information set forth in response to Interrogatory 9, state (a) whether the Staff has requested Consumers to provide such information; (b) the identity of each request by the Staff to Consumers: (c) the identity of the communication that the Staff considered Consumers' response to the request; (d) whether Consumers' response was deemed adequate by the Staff; (e) the identity of the communication by which the Staff's evaluation of Consumers' response was communicated to Consumers; (f) the basis for the Staff's position regarding adequacy or inadequacy of Consumers' response; and (g) the Staff personnel responsible for determining whether Consumers' response was adequate or inadequate.

ANSWER:

No additional concerns other than those identified in Interrogatory (2) and (7) and the other three new concerns stated in our answer to Interrogatory (9) have been identified. Any communication on these new items has been directed through the Project Manager. The Structural Engineering Branch Staff awaits a proposed resolution from the applicant on the problems with the foundation of the borated water tanks and the improper modeling of certain Category I structures. The proposed concept for the resolution of the problem related to the reactor vessel hold-down bolts appears adequate from the point of view of a construction permit. However, final acceptance will be given after a careful review of the design/analysis/assumptions/

INTERROGATORY QUESTION 10 ANSWER CONTINUED

models/results for the proposed fix. The Staff responsible for determining the adequacy/inadequacy of the applicant's proposed design is the same as stated at the end of the answer to Interrogatory (6).

INTERROGATORY QUESTION 11:

Excluding the information provided in response to Interrogatory 7, state with particularity each item of information the Staff feels, as of the date of answering this Interrogatory, is necessary for Consumers to provide in order for the Staff to conclude that "the safety issues associated with remedial action taken or planned to be taken by the licensee to correct the soil deficiencies will be resolved." (Order at page 3.)

ANSWER:

To account for the effect of the soil deficiency, an acceptable answer by Consumer Power Company to the concerns identified in our answer to Interrogatory (7) and the new concerns identified at the end of our answer to Interrogatory (10) would be sufficient to resolve the staff concerns related to the structural safety of Category I structures.

INTERROGATORY QUESTION 12:

For each item of information set forth in response to Interrogatory 11 state: (a) whether the Staff had requested Consumers to provide such information: (b) the identity of each request by the Staff to Consumers; (c) the identity of the communication that the Staff considered Consumers' response; (d) whether Consumers' response was deemed adequate by the Staff; (e) the identity of the communication by which the Staff's evaluation of Consumers' response was communicated to Consumers; (f) the basis for the Staff's response; and (g) the Staff personnel responsible for determining whether Consumers' response was adequate or inadequate.

ANSWER:

Since no new questions are of concern at this time to the Staff other than those identified in the answers to Interrogatory (7) as supplemented in the answers to Interrogatories (8), (9) and (10), no new information can be supplied by the Structural Engineering Staff on this Interrogatory (12).

INTERROGATORY QUESTION 13:

State with particularity each acceptance criteria which Consumers Power Company had up until December 6, 1979, provided to the Staff.

ANSWER:

Acceptance criteria which Consumers Power Company had up until December 6, 1979 provided the Staff is as follows:

(1) Wind Design Criteria (SRP 3.3.1).

(2) Tornado Design Criteria (SRP 3.3.2).

(3) Water Level (Flood) Design Criteria (SRP 3.4.2).

(4) Barrier Design Criteria (SRP 3.5.3).

(5) Seismic Input Criteria (SRP 3.7.1).

(6) Seismic System and Subsystem Analysis Criteria (SRP 3.7.2 and 3.7.3).

(7) Seismic Instrumentation Criteria (SRP 3.7.4).

(8) Concrete Containment Criteria (SRP 3.8.1).

(9) Concrete and Structural Steel Internal Structures Criteria (SRP 3.8.3).

(10) Other Category I Structures Criteria (SRP 3.8.4).

(11) Foundation (SRP 3.8.5).

However, note that not all of the criteria provided was found complete and/or acceptable.

INTERROGATORY QUESTION 14:

As of December 6, 1979 with regard to each criteria identified in your answer to Interrogatory 12 state whether Consumers had submitted sufficient information to justify each acceptance criteria. If Consumers had not submitted sufficient information, state with particularity which information Consumers had failed to supply.

ANSWER:

The applicant has provided answers to most of our concerns, identified prior to December 6, 1979. However, as we stated before in our answer to Interrogatory (2); those were the items not yet resolved, as of December 6, 1979.

INTERROGATORY QUESTION 15:

Excluding the acceptance criteria identified in response to Interrogatory 13, state with particularity each acceptance criteria which Consumers has to date provided to the Staff.

ANSWER:

The status of the acceptance criteria which Consumers Power Company provided the Staff is summarized below:

(1) Wind Design Criteria - CPCO has conformed with our criteria.

INTERROGATORY QUESTION 15 ANSWER CONTINUED

(2) Tornado Design Criteria - CPCO has conformed with the exception of two open items listed below:

a. Tornado missile spectra does not fully comply with the current NRC missile criteria; and

b. Demonstrate that the vents in all Category I structures are adequate to resist missile impact.

(3) Water Level Flood Design Criteria - CPCO conforms with our criteria with the exception of the open item listed below:

a. Soil liquefaction problem.

(4) Barrier Design Criteria - CPCO conforms to our criteria with the exception of the open item listed below:

a. Seismic Category I systems and components may not be adequately protected against missile impact due to the above open items in item (2).

(5) Seismic Input Criteria - CPCO conforms to the above criteria. However, the spectra proposed by the applicant was not accepted by the Geosciences Branch.

INTERROGATORY QUESTION 15 ANSWER CONTINUED

(6) Seismic System and Subsystem Analysis Criteria - CPCO conformed to our criteria with the exception of the open item listed below:

a. Settlement and inadequate soil compaction require re-analysis of Category I structures in plant fill area.

(7) Seismic Instrumentation Criteria - CPCO has conformed with our criteria.

(8) Concrete Containment Criteria - CPCO has conformed with the above criteria with the exception of the open item listed below:

a. Applicant has not demonstrated the degree of conservatism used in the Midland design with respect to the load combinations and related to our acceptance criteria.

(9) Concrete and Structural Steel Internal Structures Criteria - CPCO has conformed with our criteria with the exception of the open items listed below:

a. Load combination presented in FSAR are not fully in compliance with our requirements. Specifically ACI-349, modified as per Regulatory Guide 1.142;

b. Information on the use of masonry walls in Category I structures is needed; and

INTERROGATORY QUESTION 15 ANSWER CONTINUED

c. Re-analysis of Reactor Vessel Support System (Bolt failure).

(10) Other Category I Structures Criteria - CPCO conforms to our criteria with the exception of the following open items:

a. Load combinations for concrete structures are not fully in compliance with our requirements specifically ACI-349, modified as per Regulatory Guide 1.142;

b. Extensive soil settlement and related wall cracking observed in various Category I structures must be addressed and evaluated in sufficient details acceptable to the Staff; and

c. Proposed corrective actions need to be addressed and evaluated in sufficient details acceptable to the Staff.

(11) Foundations - CPCO conforms with our criteria with the exception of the following open items:

a. Settlement and inadequate compaction of the foundations material:

(i) New soil properties; and

INTERROGATORY QUESTION 15 ANSWER CONTINUED

(ii) Structural/seismic re-analysis: Include effects of settlement and revised load combination were appropriate.

b. Cracking of Category I structures:

(i) Provide tension field data;

(ii) Provide limiting tension field conditions during which the cracks will not propagate;

(iii) Show that existing cracks shall not propagate further due to settlement;

(iv) Show corrective plans in regard to corrosion of reinforcing bars in crack areas; and

(v) Propose a load as part of the load combinations which accounts for the effects of the cracks in the Category I structures.

c. Floor response spectra:

(i) Surveillance of soil properties to be conducted through out entire period of consolidation to verify the validity of the assumed soil properties.

INTERROGATORY QUESTION 15 ANSWER CONTINUED

d. Corrective actions under consideration:

(i) Proposed corrective action for the service water building cannot be accepted unless further analysis is performed and presented to the Staff for our evaluation and acceptance;

(ii) Borated water storage tanks (cracks in foundation ring) - Propose a solution and perform applicable analyses for Staff evaluation;

(iii) Dewatering system - Provide analyses if it is categorized as a Category I system; and

(iv) Improper modeling of Category I structures - Identify in detail all improper models for Category I structures, propose correct/proper structural models for these structures and present and justify the new results, including the available safety margins.

INTERROGATORY QUESTION 16:

With regard to each criteria identified in your answer to Interrogatory 15 state whether Consumers has submitted sufficient information to justify each acceptance criteria. If Consumers has not submitted sufficient information, state with particularity which information Consumers has failed to supply.

ANSWER:

Consumer Power Company has submitted some information to resolve many of the structural safety concerns outstanding in the review. Note that any of the submittals provided toward the end of December 1980 have not been reviewed in full. In addition, note that some of the problem areas recently identified, with the exception of the reactor vessel hold-down bolts, have not been addressed by the applicant in any formal matter. The other open items have been discussed in detail in our answers to Interrogatories (7) and (15).

This input was incorporated by D. Hood into NRC Response to Interrogatories (Feb 25, 1981)

J. Kane

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

MAR 17 1981

Docket No.: 50-329/330

MEMORANDUM FOR: Robert L. Tedesco, Assistant Director for Licensing, DL

FROM: James P. Knight, Assistant Director for Components & Structures, DE

SUBJECT: RESPONSES TO CONSUMERS' POWER FIRST SET OF INTERROGATORIES FROM THE MECHANICAL ENGINEERING BRANCH (MIDLAND SETTLEMENT ISSUE)

Find enclosed input from the MEB responding to the first set of interrogatories issued by Consumers Power concerning soil settlement, dated November 17, 1980. These responses are primarily concerned with buried piping and were prepared by A. J. Cappucci with technical assistance from ETEC. Drafts of these responses were provided to Darl Hood of your staff to assist him in meeting the deadlines set by the ASLB.

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

Enclosure: As stated

cc w/o encl: R. Vollmer
W. Patton

cc w/encl: R. Bosnak
H. Brammer
F. Cherny
D. Hood
H. Levin
L. Auge, ETEC
F. Rinaldi
J. Kane
R. Gonzales
D. Gupta

~~8103060433~~ 700.

Responses to Consumers'
First Set of Interrogatories

1. Not applicable.

2. The 50.54(f) questions 17 thru 20 were directed to acceptance criteria. The portions of these questions so directed are:

   (a) 50.54(f) question 17 - A portion of this question concerning the assurance of code allowable conditions and proper remedial action.

   (b) 50.54(f) question 18 - All of this question related to acceptance criteria.

   (c) 50.54(f) question 19 - A portion of this question requires defining acceptance criteria for excesssive deformations.

   (d) 50.54(f) question 20 - All of this question related to acceptance criteria.

3. The acceptance criteria coupled with the details of the remedial action is necessary to evaluate the technical adequacy and proper implementation of the proposed action. The acceptance criteria from ASME Section III, AWWA or some other defined acceptance criteria is required to determine whether or not the piping in question will perform its intended function. That is to maintain its pressure boundary integrity and allow unrestricted design flow. If the piping does not meet its defined acceptance criteria, then remedial action must take place, this could mean further analysis or repair such as rebedding the piping. The staff must have confidence that the remedial action will either demonstrate that the piping can perform its intended function or return the piping to a physical state where its performance is assured. Therefore, the staff must evaluate the proposed actions.

4. In the responses to the 50.54(f) questions (17 thru 19) acceptance criteria and the basis for this criteria was either non-existant or weakly presented. Sp cifically:

   (a) There was no commitment to use the 3.0S$_h$ limit of NC-3652.3 of ASME Section III, Division 1. However, in table 17-2 of the responses to the 50.54(f) questions there is an indication that the code calculations were used.

   (b) In terms of seismic category I piping between structures references are made to applicable codes, however, there was no indication as to which codes or what specific acceptance criteria the piping would meet.

   (c) There was no basis for selection criteria for determining which piping would be profiled.

5. Up and until December 6, 1979, each item the staff requested with reguard to acceptance criteria with reference to seismic category I piping is listed below.

   (a) In 50.54(f) question 17 the staff requested acceptance criteria for meeting code allowables.

(b) Again, in 50.54(f) question 18 the staff requested acceptance criteria concerning compliance with the code allowables.

(c) In 50.54(f) question 19 acceptance criteria was requested defining excessive deformation.

(d) In 50.54(f) question 20 acceptance criteria was required to define acceptable loads on components and supports produced by pipe deformations due to settlement.

6. -5a(a) 50.54(f) question 17
(b) yes
(c) response to 50.54(f) question 17, revision 2, 7/79
(d) no
(e) 1/
(f) There was not commitment to use 3.0S criteria of the ASME Code, only an indication that it was compared with the actual stresses due to settlement for illustrative purposes.
(g) R. Stephens/A. Cappucci ➔ MEB/NRR

-5b(a) 50.54(f) question 18
(b) yes
(c) responses to 50.54(f) questions 18, revision 2, 7/79
(d) no
(e) 1/
(f) There was no detailed description of the acceptance criteria; provided only that they would comply with the applicable codes. More details as to the stress limits used would be required.
(g) R. Stephens/A. Cappucci ➔ MEB/NRR

-5c(a) 50.54(f) question 19
(b) yes
(c) response to 50.54(f) question 19, revision 2, 7/79
(d) not determined prior to 12-6-79
(f) The adequacy of the acceptance criteria for determining the acceptable deformation limits was under review pending the results of the surcharge program.
(g) R. Stephens/A. Cappucci ➔ MEB/NRR
(e) 1/

-5d(a) 50.54(f) question 20
(b) yes
(c) responses to 50.54(f) question 20, revision 2, 7/79
(d) no
(e) 1/
(f) No acceptance criteria was defined, only a statement that there was an indication that the loads on components were within the allowables.
(g) R. Stephens/A. Cappucci ➔ MEB/NRR

7. Each item of acceptance criteria the staff requested after December 6, 1979 is listed below. This information was requested by ETEC and subsequently transmitted by the staff after review.

(a) The criteria which addresses pipe buckling.

(b) The criteria for the selection of piping to be profiled.

(c) The criteria for the change in piping curvature.

1/ Enclosure 3 to "Summary of January 16, 1980 Meeting on Supplemental Requests Regarding Plant Fill," dated February 4, 1980.

8. 7a(a) Document given at a meeting between Consumers' Power and NRC on January 16, 1980
   (b) yes
   (c) in response to questions 17 & 34, revision 5
   (d) no
   (e) conference call on 9/8/80
   (f) The criteria does not consider the local buckling or crippling stresses due to high bending stresses in the large diameter thin walled piping.
   The buckling stresses due to earth loads, vehicular and railroad traffic, etc. are based on uniform soil properties. From the pipe profiles it is apparent that this is not the case.
   (g) A. Cappucci, MEB/J. Brammer, ETEC

   7b(a) see 7a(a) above
   (b) yes
   (c) response to 50.54(f) question 17, revision 5
   (d) no
   (e) conference call on 9/8/80
   (f) There was not sufficient information as to the total piping involved, the proximity of the non-profiled to the profiled piping, the percentage of piping profiled, soil characteristics in the area of concern, etc. Due to changes in slope of some of the profiled piping. it would then appear that the soil characteristics vary.
   (g) A. Cappucci, MEB/J. Brammer, ETEC

   7c(a) see 7a(a) above
   (b) no
   (c) none
   (d) not applicable
   (e) not applicable
   (f) The rate of change on the slope or the radius of curvature of the piping determines the bending stress more than the overall deflection. This request was made on that basis. If a satisfactory allowable stress and strain criteria is presented with an acceptable stress analysis, the criteria for the change in piping curvature would not be required.
   (g) A. Cappucci, MEB/J. Brammer, ETEC

   It should also be noted that ETEC had concerns about the small piping associated with the Diesel Generators. The diesel fuel lines in particular. ETEC requested acceptance criteria for compliance with the Code for these lines. A. J. Cappucci determined that Consumer's original discussion of these lines was acceptable.

9. (a) That all the Seismic Category I piping be profiled.
   (b) That remedial action be specified if stresses due to settlement approached or were beyond the code allowables.
   (c) That details as to the calculational schemes and assumptions for determining stresses due to settlement and other combined loads be submitted and reviewed.
   (d) That the results of the analysis of nozzle loads be submitted.
   (e) That a monitoring program be established over the life time of the plant to monitor future settlements.
   (f) That future settlements be included in the presented analysis.

10. 9a(a) yes
(b) 50.54(f) question 17
(c) response to 50.54(f) question 17, revision 2
(d) no
(e) unknown
(f) The criteria for selection of the piping to be profiled appears to be based on the soil in the same proximity as being homogeneous. There is no evidence that this is the case.
(g) R. Stephens/A. Cappucci ⇒ MEB/NRR

9b(a) yes
(b) 50.54(f) question 17
(c) response to 50.54(f) question 17, revision 2
(d) no
(e) unknown
(f) The response to 50.54(f) question 17 stated that the stresses due to settlement would be well below the code allowables as indicated in table 17-2. Therefore, it was indicated that remedial action was not planned. This was not responsive because (1) all piping was not profiled (2) future settlements had not been predicted and (3) the results of the surcharge program had not been established.
(g) R. Stephens/A. Cappucci ⇒ MEB/NRR

9c(a) no
(b), (c), (d) and (f) - not applicable
(g) R. Stephens/A. Cappucci ⇒ MEB/NRR

9d(a) no
(b), (c), (d) and (f) - not applicable
(g) R. Stephens/A. Cappucci ⇒ MEB/NRR

9e(a) yes
(b) 50.54(f) question 18
(c) response to 50.54(f) question 18, revision 2
(d) no
(e) unknown
(f) The response to the above question (9e(c)) indicated no plans for a monitoring program if the settlements remain within the predicted range. I was not clear as to the time frame and methods for verifying the predicted ranges.
(g) R. Stephens/A. Cappucci ⇒ MEB/NRR

9f(a) yes
(b) 50.54(f(questions 17, 18 and 19
(c) responses to 50.54(f) questions 17, 18 and 19 revision 2
(d) no
(e) unknown
(f) response to 50.54(f) 17 - no information as to the settlements over the lifetime of the plant/response to 50.54(f) 18 - adequate/response to 50.54(f) 19 - no information as to the predicted deformations

11. The following is a list of information the staff will require to conclude that the safety issues associated with remedial action to be taken to correct soil deficiencies with requard to underground piping will be resolved. This list does not include responses to interrogatory 7.

(a) A final stress ysis of the Seismic Category I piping.

(b) An explanatio. r the relatively rapid changes in some of the piping pro es and the magnitude of the loads which cause these changes.

(c) The actual and predicted clearances after 40 years of Seismic Category I piping at building penetrations.

(d) The loads and stresses on the piping at their termination points (anchors, equipment, larger pipe, etc.).

(e) From the January 20, 1981 meeting provide method and basis for normalizing the profile data prior to performing the stress analysis and used of 3" inch future settlement data. If a non-linear analysis is to be performed provide the analysis methodology with a summary of the results. Include a presentation of the margin to the ~~Code~~ allowable for settlement only and the same for the margin to failure considering all primary and secondary stresses.

deleted Knight letter to Tedesco Apr. 13, 1981

12. 11a(a) yes
(b) letter from Robert L. Tedesco to Mr. J. W. Cook dated October 20, 1980.
(c) letter from J. W. Cook to R. L. Tedesco dated November 14, 1980 including a document entitled, "Summary of Settlement Stress Calculations for Buried Piping".
(d) no
(e) conference call on January 14, 1981
(f) The Bechtel Stress Analysis appeared to be unconservative and did not give a true representation of the actual stresses in the piping. There were questions as to which profiles were used and the justification for the boundary conditions assumed. An ETEC stress analysis demonstrated much higher stresses than the Bechtel report. It should also be noted that at the January 20, 1981 meeting Bechtel stated that subsequent analysis had shown much higher stresses for certain lines.
(g) A. Cappucci, MEB/J. Brammer, ETEC

11b,c&d(a) yes
(b) meeting of January 20, 1981
(c)
(d) Consumers' has not responded to these requests
(e)
(f)
(g) A. Cappucci, MEB/J. Brammer, ETEC

11e(a) No. After the January 20, 1981 meeting a preliminary response to Consumers' presentation and questions was drafted and sent to the Project Manager (D. Hood).
(b), (c), (d), (e), (f) - Not applicable.
(g) A. Cappucci, MEB/ J. Brammer, ETEC

13) Consumers' Power Company has submitted the following acceptance criteria concerning the stresses and deflection of the buried piping due to ground settlement.

1) The stresses will meet the ASME Section III, Division I, Subsection NC, Equation 10a Code requirement (3Sc).

2) AWWA criteria concerning the allowable radial deflections of buried piping.

14. Consumers' has submitted sufficient information on the criteria identified in the response to interrogatory 13 to justify each acceptance criteria if in fact they meet it.

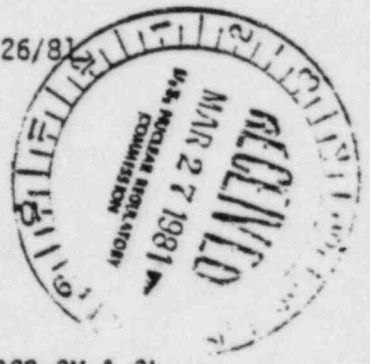
15. Other than the criteria listed ir reponse to interrogatory 13, neither ETEC or the MEB has knowledge of any other criteria which Consumers' has supplied concerning buried piping.

16. See the response to interrogatory 15.

17. Not applicable.

NRC Motion to Compel CPCo to Answer SEB Interrogatories
(Attached is CPCo Response after being compelled to answer)

J. Kane
Rec'd 3/30/81



3/26/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF MOTION TO COMPEL
ANSWERS TO INTERROGATORIES

Pursuant to 10 C.F.R. § 2.740(f) of the Commission's regulations, the Staff of the Nuclear Regulatory Commission (Staff) hereby respectfully moves the Atomic Safety and Licensing Board (Licensing Board) in the above-captioned proceeding for an Order compelling answers to certain interrogatories on the ground that Consumers Power Company (Applicant) has failed to answer interrogatories which are within the scope of discovery in this proceeding.

I. BACKGROUND

On November 26, 1980, the Staff propounded 9 interrogatories, each having a number of subparts, and served them on the Applicant. On March 11, 1981, answers to some of these interrogatories were served upon the Staff. However, Applicant either gave incomplete answers to certain interrogatories or failed to answer them completely, thus necessitating the filing of this motion.

D507
S
1/1

~~8103270579~~
24pp.

G

II. ARGUMENT

A. Applicant has improperly failed to answer Interrogatories 1(a), 2(b), 2(c), 2(h) through 2(s), 3(a) through 3(e), 5(a), 5(c), and 9(c).

Interrogatory 1(a) asks the Applicant whether a structural re-analysis has been performed to verify and evaluate any changes in the design safety margins for any Category I structures. In its answer Applicant merely states that, with regard to the diesel generator building, a structural re-analysis has been completed. Applicant further states that with regard to the service water pump structure, the auxiliary building, and the borated water storage tanks seismic/structural analyses are in progress. Applicant makes no reference to changes in design safety margins at all. The answer does not state whether any such changes were either verified or evaluated.

The Commission's rules of practice specifically provide that, for the purposes of motions to compel answers to interrogatories, an evasive or incomplete response shall be treated as a failure to answer or respond. 10 C.F.R § 2.740(f)(1). Applicant's answer to interrogatory 1(a) is incomplete in that no reference is made to changes in the design safety margins available for each Category I structure. Applicant should be required to give a complete answer to interrogatory 1(a).

Interrogatory 2(b) asks whether Applicant had previously considered using a stable solid foundation support of the cantilevered portion of the service water pump structure down to the glacial till, rather than the concentrated support design originally chosen by the Applicant as a

remedial action. The response given is that both the present proposal (wall footings) and the previous piles proposal would give a stable foundation to the structure. This does not answer the interrogatory posed by the Staff. The Staff merely asked whether the stable footing idea was considered at the time the piles design was chosen. Therefore, Applicant has given at best an incomplete answer to this interrogatory. Applicant should be compelled to give a straightforward answer.

In interrogatory 2(c) the Staff requested information as to what structural analyses the Applicant performed for each of the alternative remedial actions it had considered. The Applicant in interrogatory 2(a) identified four such alternatives. Interrogatory 2(c) only mentions two of those alternatives. Therefore, the answer to this interrogatory is incomplete and should be required to be supplemented.

Applicant's objection to interrogatories 2(h) through 2(p) is invalid and the answers to interrogatories 2(q) through 2(s) are incomplete. In interrogatories 2(h) through 2(s), the Staff requests details concerning the design advocated as a remedial action until very recently. The Applicant's response is that, since this design is no longer proposed, its details are not relevant to this proceeding. This objection ignores both the scope of discovery and the scope of this proceeding. This proceeding is not limited to the adequacy of proposed remedies at the Midland Plant. One of the primary issues is whether the unresolved safety issues as of December 6, 1979 were such as to warrant the issuance of the December 6, 1979 Order Modifying Construction Permits. The status of the proposed remedy at the service water structure prior to December 6, 1979 is directly relevant to that issue.

The scope of discovery is defined in 10 C.F.R. § 2.740(b)(1) of the Commission's regulations. According to this regulation:

> "Parties may obtain discovery regarding any matter, not privileged, which is relevant to the subject matter involved in the proceeding..."

In addition, discovery may be had of any information reasonably calculated to lead to the discovery of admissible evidence. Id. Interrogatories designed to gain information about the situation as it existed as of December 6, 1979, are relevant to matters in controversy in this proceeding, and might lead to the discovery of admissible evidence concerning these matters. This applies to information concerning both the problem at the Midland facility, and the action proposed by the Applicant to remedy that problem. Therefore, interrogatories 2(h) through 2(p) fall both within the scope of discovery and the scope of this proceeding. Applicant should be compelled to answer them.

In interrogatories 2(q) through 2(s), the Staff inquires concerning various analyses relating to the pile design. Applicant's answer is that it is engaged in analyses of the new design and will provide them when they are completed. This does not answer the interrogatories posed by the Staff. Since the Staff's concern with the pile design is within the scope of discovery as set forth in 10 C.F.R. § 2.740(b)(1), Applicant should be compelled to answer these interrogatories.

Interrogatories 3(a) through 3(e) also refer to the design no longer proposed by the Applicant. Applicant's answers refer back to interrogatory 2(h) through 2(p) where an objection is made to those interrogatories as

irrelevant. For the same reasons as stated above, these interrogatories are within the scope of discovery and of the proceeding. Applicant should be compelled to respond to these interrogatories.

Interrogatory 5(a) asks whether Applicant has performed analyses which provide tension field data under design load combinations at any crack locations for each of the Category I structures at the Midland facility. Applicant's answer is unclear, in that it is difficult for the Staff to identify which structures have received such analyses and which structures have not. For example, the diesel generator building is not mentioned at all in response to this interrogatory. Other structures are mentioned only to say that certain cracking is not a problem with regard to them. There is no indication of whether this conclusion was reached by means of analysis which would provide tension field data or not. Therefore, the answer to interrogatory 5(a) is incomplete and Applicant should be required to supplement the answer.

Interrogatory 5(c) requests the reasons why analyses which provide tension field data were not performed, if in response to interrogatory 5(a) Applicant answered that such analyses were not performed. Applicant merely refers the Staff back to its response to interrogatory 5(a). As pointed out above, the answer to interrogatory 5(a) is unclear. The Staff is unable to determine whether or not the analyses in interrogatory 5(a) were performed for each seismic Category I structure. Therefore, reference back to interrogatory 5(a) does not allow the Staff to ascertain the reasons why such analyses were not performed. Applicant should be required to supplement its answer to interrogatory 5(c).

Interrogatory 9(c) requests information concerning what changes, if any, occurred in the rattle space for the piping of the Category I valve pit adjacent to the diesel generator building. The response provided seems to give such information for the rattle space within the diesel generator building penetrations. This was not the information requested. Therefore, Applicant's answer to interrogatory 9(c) is incomplete, and Applicant should be required to supplement that answer.

B. Applicant has either inadequately answered or completely failed to answer Interrogatories 1(b), 1(f), 5(b), 6(b), 6(f), and 8, all of which request documentation of previously illicited responses.

Interrogatory 1(b) requests the Applicant to provide the Staff with documentation of its response to interrogatory 1(a). The Applicant in its response states that such information will be provided with regard to the diesel generator building "in the near future." No specific time is given when such documents will be provided. In interrogatories 5(b), 6(b), 6(f), and 8, Applicant states that the documentation of its responses in those areas will be provided "along with the structural re-analysis package." The Staff is aware that an audit is to be conducted at Bechtel beginning on April 20, 1981. From the answers given by Applicant it is unclear whether these documents will be provided at this particular audit or at some unspecified date in the future. Therefore, the answers to these interrogatories are incomplete, and Applicant should be compelled to supplement them with some definite time

period within which the Staff can expect to be permitted to inspect the requested documents.[1/]

Applicant has objected to providing any documents relating to the seismic analysis of any total design margins in excess of those stated in the PSAR, on the ground that the subject of whether certain seismological input data was considered by the Applicant goes beyond the scope of this proceeding as set forth in the order dated December 6, 1979.[2/] The Applicant in interrogatory 1(f) agrees to provide only those documents which relate to analyses performed for the service water pump structure and the borated water storage tank and the auxiliary building. Applicant objects to providing documents relating to the total design margins for the diesel generator building and the analysis discussed in the October 14, 1979 letter from Robert Tedesco.

Applicant's objection is not valid. The scope of discovery is defined by 10 C.F.R. § 2.740(b)(1) of the Commission's regulations. Discovery is permissible with regard to all matters in controversy in the proceeding, and of matters which might lead to admissible evidence. Id. It is the Staff's position that the interrogatory about seismic design is properly within the scope of this proceeding. On March 18, 1981

1/ While these requests for documents were not made in a separate request for the production of documents, requests with regard to them should nevertheless be considered by this Board since the requests refer to the immediately preceding interrogatory, and represent a method of document discovery chosen for the convenience of the parties. See 4A Moore's Federal Practice, ¶33.22.

2/ This objection is first set forth in the response to interrogatory 1(e). However, Applicant goes on to give an adequate answer to interrogatory 1(e). Amended and Additional Responses to Certain NRC Staff Interrogatories Dated 11/26/80 (March 20, 1981).

Applicant filed a Motion to Defer Consideration of Seismic Issues Until the Operating License Proceeding. It is the Staff's position that these seismic interrogatories are relevant to matters in controversy in this proceeding and might lead to admissible evidence in this proceeding. Therefore, the documents requested in 1(f) fall within the scope of discovery and Applicant should be required to provide them. The Staff suggests the Board's ruling on this question be made at the same time as its ruling on Applicant's March 18, 1981 Motion.

III. CONCLUSION

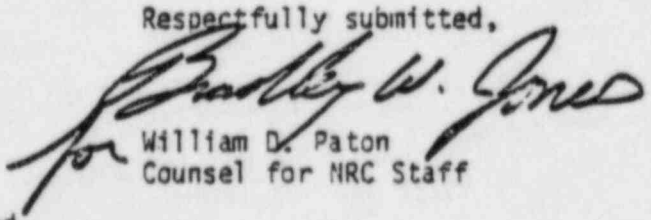
For the reasons set forth above, the Staff concludes that:

1) Applicant should be compelled to give responses to interrogatories 1(a), 2(b), 2(h) through 2(s), 3(a) through 3(e), 5(a), 5(c) and 9(c);

2) Appplicant should also be compelled to provide the documents requested in interrogatory 1(f); and

3) Applicant should be compelled to give a date certain by which the Staff will be able to inspect the documents requested in Interrogatories 1(b), 5(b), 6(b), 6(f) and 8.

Respectfully submitted,



William D. Paton
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 26th day of March, 1981.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

I hereby certify that copies of NRC STAFF MOTION TO COMPEL ANSWERS TO INTERROGATORIES in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 26th day of March, 1981.

*Charles Bechhoefer, Esq.
Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge Ralph S. Decker
Route #4, Box 190D
Cambridge, MD 21613

Dr. Frederick P. Cowan
6152 N. Verde Trail
Apt. B-125
Boca Raton, Florida 33433

Frank J. Kelley
Attorney General of the State
of Michigan
Steward H. Freeman
Assistant Attorney General
Gregory T. Taylor
Assistant Attorney General
Environmental Protection Division
720 Law Building
Lansing, Michigan 48913

Myron M. Cherry, Esq.
1 IBM Plaza
Chicago, Illinois 606I1

Ms. Mary Sinclair
5711 Summerset Street
Midland, Michigan 48640

Philip P. Steptoe, Esq.
Michael I. Miller, Esq.
Ronald G. Zamarin, Esq.
Alan S. Farnell, Esq.
Isham, Lincoln & Beale
One First National Plaza
42nd Floor
Chicago, Illinois 60603

*Atomic Safety and Licensing
Board Panel
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Atomic Safety and Licensing
Appeal Board Panel
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Docketing and Service Section
Office of the Secretary
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

James E. Brunner, Esq.
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Ms. Barbara Stamiris
5795 N. River
Freeland, Michigan 48623

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

Wendell H. Marshall, Vice President
Midwest Environmental Protection
Associates
RFD 10
Midland, Michigan 48640

James R. Kates
203 S. Washington Avenue
Saginaw, Michigan 48605

Jeann Linsley
Bay City Times
311 Fifth Street
Bay City, Michigan 48706

Bradley W. Jones for W. Baan Paton

William D. Paton
Counsel for NRC Staff

7 →

J. Kane
Rec'd 3/17/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

I
Paton / Jones
Olmstead
FF
Reply Due April 1, 1981

CONSUMERS POWER COMPANY
MOTION TO COMPEL NRC STAFF
TO ANSWER INTERROGATORIES 13 THROUGH 16

Pursuant to 10 CFR §2.740(f) Consumers Power Company ("Consumers Power"), by its attorneys, moves for an order compelling the Nuclear Regulatory Commission Staff ("NRC Staff") to answer Interrogatories 13 through 16.

1. Background

On November 12, 1980, Consumers Power filed its first and only set of interrogatories. During the Prehearing Conference the NRC agreed to answer the interrogatories by February 25th. Part of the Staff's "answer" was to object to interrogatories 13 through 16.

2. The Interrogatories Objected To

The NRC Staff objected to the following interrogatories:

13. State with particularity each acceptance criteria which Consumers Power Company had up until December 6, 1979 provided to the Staff.

PSAR + Amend
FSAR + Amend

~~8103230693~~

14. As of December 6, 1979 with regard to each criteria identified in your answer to interrogatory 13 state whether Consumers had submitted sufficient information to justify each acceptance criteria. If Consumers had not submitted sufficient information, state with particularity which information Consumers had failed to supply.

15. Excluding the acceptance criteria identified in response to interrogatory 13, state with particularity each acceptance criteria which Consumers has to date provided to the Staff.

16. With regard to each criteria identified in your answer to interrogatory 15 state whether Consumers has submitted sufficient information to justify each acceptance criteria. If Consumers has not submitted sufficient information, state with particularity which information Consumers has failed to supply.

These interrogatories call for the NRC compilation of acceptance criteria submitted by Consumers Power and the NRC Staff's position and analysis of whether these criteria were sufficiently justified.

3. The NRC Staff's Objections to the Interrogatories

With its usual clarity the Staff has set forth its "reasons" for its objections. As best as we can decipher the grounds are:

A. The NRC Staff never "tabulated" any acceptance criteria found in Consumers Power's submittals.

B. If the NRC Staff was "forced" to "sort through voluminous documents provided by Consumers Power for the purpose of tabulating any acceptance criteria that may be found therein..." it would be "an inappropriate burden on the Staff."

C. NRC Staff answers to other interrogatories contain the information requested by the objected to interrogatories.

4. Consumers Power's Arguments in Support of its Motion To Compel

A. Background

One of the grounds on which the December 6, 1979 Order ("Order") was based was that Consumers Power, prior to December 6, 1979, had failed to provide the Staff with acceptance criteria. The Order stated that:

> Several of the Staff's requests were directed to the determination and justification of acceptance criteria to be applied to various remedial measures taken and proposed by the licensee.... The information provided by the licensee fails to provide such criteria.

The issue of acceptance criteria, their determination and justification, is therefore crucial to the hearing and to Consumers Power's defense.

B. Contrary to its Stated Position The NRC Staff Must Have "Tabulated" Consumers Power's Acceptance Criteria

The Order on its face appears to place the burden on Consumers Power to have submitted acceptance criteria to the NRC. The NRC Staff's response to Interrogatory 1 states "the standards [acceptance criteria] to be used by the licensee to make its judgment or decision that proposed remedial measures are acceptable was sought by the NRC for its review." This makes it clear that the NRC expected Consumers Power to submit acceptance criteria and then the Staff would review the acceptance criteria and the information submitted with it for purposes of "determination and justification" of the acceptance criteria.

Therefore, the Order is really stating that either no acceptance criteria were submitted or that if such criteria were submitted they were determined not to be sufficiently justified. Hence if the Order is in fact based on the grounds set forth in the order then the NRC Staff must have tabulated any acceptance criteria provided by Consumers Power.[1/] Therefore, the information responsive to interrogatories 13 and 14 must have been in existence as of December 6, 1979.

As to interrogatories 15 and 16, dealing with December 10, 1979 to date, the NRC Staff apparently is taking the position that Consumers Power has still not provided all the acceptance criteria required or not justified them to the NRC Staff's satisfaction. The NRC Staff must also have compiled the requested information and data in order to support that position.

C. If the NRC Staff has not "tabulated" Consumers Power's Acceptance Criteria then it has an Obligation to do So Now

As demonstrated in the previous section the NRC Staff should have done such a compilation in order to support the statements found in the Order. If it has not yet done so then it should do so now because such a compilation is needed in order for it to answer a portion of interrogatories 14 and 16, i.e. to determine "if Consumers had submitted

---

1/ If the NRC feels that Consumers Power has not provided any acceptance criteria it should so state.

sufficient information to justify each acceptance criteria." It is obvious that a compilation of the acceptance criteria is necessary in order to make such a determination.

D. The Information Requested in Interrogatories 13 Through 16 has not been Provided by Answers to other Consumers Power Interrogatories

A review of the NRC Staff's answers to Consumers Power's interrogatories demonstrates that the requested information has not been provided in response to other interrogatories. Indeed the NRC does not cite any portion of any interrogatory answer in support of its apparent position that the information has been provided.

The NRC Staff's apparent position that the information has already been provided in answers to other interrogatories is extremely interesting. In the first place it seems a bit inconsistent to state on one hand that no compilation of acceptance criteria has been done and then state that information which is based on such a compilation has already been provided to Consumers Power. If a compilation has not been done, then it follows that the information which is based on it is not in existence.

Conclusion

The foregoing demonstrates that the motion compelling the NRC Staff to answer interrogatories 13 through 16 should

be granted.

Respectfully submitted

Alan S. Farnell

Alan S. Farnell
Attorney for Consumers Power Company

ISHAM, LINCOLN & BEALE
One First National Plaza
Suite 4200
Chicago, Illinois 60603
312/558-7500

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

CERTIFICATE OF SERVICE

I, Alan S. Farnell, hereby certify that a copy of Consumers Power Company's Motion to Compel NRC Staff to Answer Interrogatories 13 Through 16 was served upon all persons shown in the attached service list by deposit in the United States mail, first class, this 12th day of March, 1981.

Alan S. Farnell

SERVICE LIST

Frank J. Kelley, Esq.
Attorney General of the
State of Michigan
Stewart H. Freeman, Esq.
Assistant Attorney General
Gregory T. Taylor, Esq.
Assistant Attorney General
Environmental Protection Div.
720 Law Building
Lansing, Michigan 48913

Myron M. Cherry, Esq.
One IBM Plaza
Suite 4501
Chicago, Illinois 60611

Mr. Wendell H. Marshall
RFD 10
Midland, Michigan 48640

Charles Bechhoefer, Esq.
Atomic Safety & Licensing Bd. Pnl.
U.S. Nuclear Regulatory Com.
Washington, D.C. 20555

Dr. Frederick P. Cowan
6152 N. Verde Trail
Apt. B-125
Boca Raton, Florida 33433

Administrative Judge Ralph S. Decker
Route No. 4, box 190D
Cambridge, Maryland 21613

Carroll E. Mahaney
Babcock & Wilcox
P. O. Box 1260
Lynchburg, Virginia 24505

James E. Brunner, Esq.
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Steve Galdler, Esq.
2120 Carter Avenue
St. Paul, Minnesota 55108

Atomic Safety & Licensing Appeal Pnl
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. C. R. Stephens
Chief, Docketing & Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Ms. Mary Sinclair
5711 Summerset Street
Midland, Michigan 48640

William D. Paton, Esq.
Counsel for the NRC Staff
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Atomic Safety & Licensing Bd. Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Barbara Stamiris
5795 North River Road
Route 3
Freeland, Michigan 48623

Rec'd 6/12/81

J Kane

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
50-329-OL
50-330-OL

Paton / Jones
Brown / Olmstead
FF

APPLICANT'S SUPPLEMENTAL RESPONSES
TO NRC STAFF INTERROGATORIES DATED 11/26/80

Question 1(a)

The analyses referred to in our initial response described or will describe the extent of design safety margins.

Question 2(b)

(The question posed here was so vague that Applicant was unable to determine what time period was referenced. Further, the question and the Staff Motion to Compel argumentatively assumes that the driven pile design would not provide a stable footing, which is not true.)

With respect to whether or not a wall footing design was given consideration prior to the decision to utilize driven piles, to the best of Applicant's present recollection, the answer is no.

Question 2(c)

The only structural analyses performed are those mentioned in our initial response to this Interrogatory.

~~8106170223~~

Question 5(a)

The initial response to Question 5(a) referred to an analysis which predicts future rebar stresses due to differential settlement. That analysis was performed for the diesel generator building. This may not be a "tension field analysis," as the term is being used by the NRC Staff. No such analysis has been performed for the auxiliary building or the service water pump structure, since neither building has demonstrated nor is expected to demonstrate appreciable differential settlement after the implementation of remedial action. In the final design of the underpinning schemes for these structures long-term movement of the underpinning elements will be considered.

With respect to the borated water storage tank ring foundation, preliminary finite element analyses using soils springs and a 3-dimensional finite element model of the structure and the soil were performed. The latest such analysis predicted high element stresses in the vicinity of an observed crack in the ring foundation and formed the basis for the conclusion that remedial action is necessary. Because of the necessity of deciding upon remedial steps and undertaking further analysis based upon such steps, a final structural analysis has not been completed.

Other than the above, no analysis taking into account increased rebar stresses due to differential settlement or predicting future crack size has been performed.

(Note: Applicant invites discussion with the NRC Staff on this matter in the event the Staff has follow-up or concerns.)

Question 5(a)

The analysis for the diesel generator building, which predicts element stresses due to predicted differential settlement, provides information which is believed to be similar to that provided by a tension field analysis of an homogenous structure. (See the response to 5(a))

With respect to the other structures, the reason for not performing an analysis of the type described with respect to Question 5(a) above for the diesel generator building were given in Applicant's initial response.

Question 9(c)

Apparently, Applicant misinterpreted the question. The information with respect to rattlespace for the valve pits is provided below:

The initial readings were taken on November 13, 1978 for the rattlespaces for piping entering the service water valve pits. The final readings were taken on May 2, 1980 after removal of the surcharge.

VALVE PIT PEN. #	LINE #	VERTICAL MOVEMENT	VERTICAL MIN. GAP	HORIZONTAL MOVEMENT	HORIZONTAL MIN. GAP
SWVP #1					
A	26"-1JBD-2	- 1/2	1 1/4	- 1/4	2
B	26"-OHBC-54	0	1	- 1/4	1 7/8
C	26"-1JBD-1	- 1/8	1 3/4	- 1/8	1 1/4
D	26"-OHBC-53	+ 1/8	1 3/8	- 1/8	1 7/8
SWVP #2					
A	26"-2JBD-2	-	-	-	-
B	26"-OHBC-56	- 1/8	1 3/4	1/4	1
C	26"-2JBD-1	0	1	+ 1/8	7/8
D	26"-OHBC-55	-	1 3/4	- 1/8	1 7/8

Directions: Vertical + pipe moves up relative to penetration

- pipe moves down relative to penetration

Horizontal + pipe moves east relative to penetration

- pipe moves west relative to penetration

Question 1(b)

Based upon the statements made by the NRC Staff during their recent structural audit, the documents requested in the Interrogatory were provided during the structural audit, excepting certain documents with respect to the service water pump structure which Applicant has committed to sending to the NRC Staff.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF NEAL SWANBERG

Neal Swanberg, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Assistant Project Engineer; that he is responsible for providing supplemental responses to NRC Staff Interrogatories dated 11/26/80, No. 9(c), and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Neal Swanberg

Neal Swanberg

Subscribed and sworn to before me this 27 day of April 1981.

Emily A Bass
Notary Public, Washtenaw County,
Michigan

My Commission Expires:

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF BIMAL DHAR

Bimal Dhar, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Engineering Supervisor; that he is responsible for providing Supplemental Responses to NRC Staff Interrogatories dated 11/26/80, Nos. 1(a), 2(b), 2(c), 5(a), and 5(c), and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

B Dhar
Bimal Dhar

Subscribed and sworn to before me this 6 day of May 1981.

Beverly A Bees
Notary Public, Washtenaw County, Michigan

My Commission Expires November 30, 1982

BEVERLY A. BEES
NOTARY PUBLIC, WASHTENAW CO., MICH
MY COMMISSION EXPIRES NOV. 30, 1982

Ms. Stamiris Interrogatones

J. Kane
Rec'd 4/20/81

U.S. NUCLEAR REGULATORY COMMISSION

In the matter of
C.P.Co. Midland Plant
Units 1 and 2

Docket Nos. 50-329 OM,OL
50-330 OM,OL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

3/6/81 INTERVENOR ANSWER
OPPOSING APPLICANTS MOTION TO DEFER CONSIDERATION
OF SEISMIC ISSUES UNTIL THE OPERATING LICENSE PROCEEDING

This seismic motion begins with the statement that at the second prehearing conference " the NRC Staff reneging on an agreement previously worked out with applicant, proposed that the scope of this soil settlement hearing be expanded to include seismic issues."

Whether or not the NRC Staff was reneging on an informal agreement is irrelevant. The scope of this soil settlement proceeding already included seismic issues as set forth in my contentions 1b, 4c, and 4d; in the many references to seismic issues contained in part II of the December 6, 1980 Order (50-5[illegible]f questions, acceptance criteria, and unresolved safety issues regarding remedial actions); and in Mr. Linenburger's statement at the last prehearing conference that "this board will absolutely not ignore seismic in arriving at its decision about the adequacy of proposed remedial actions."

For these reasons alone, it seems clear that the motion cannot be granted. But an examination of this motion and its supporting arguments is important for many other reasons.

~~8104140544~~

(1pp.)

G

DS03
S0/1

I. EXAMINATION OF APPLICANTS ARGUMENTS AS PRESENTED

Having made irrelevant arguments about the Staff position, the Applicant accuses the Staff of a misreading of the Dairyland cases. The Applicant points out that Midland is not an operating reactor like Dairyland and "thus for Midland unlike Dairyland, deferral of consideration of seismic issues until the O.L. proceeding will not have any adverse effect on the public health and safety."p.4 Applicant draws the conclusion that Midland's seismic deferral does not pose a health and safety threat simply because it is not an operating reactor. In so doing, he concedes that a facility that operates without seismic updates does represent a threat to public health and safety. What he actually is saying then is that because Midland is not presently an operating reactor, it does not presently represent a threat to public health and safety.

Applicants second argument is that "definitive safety findings can be deferred in the NRC licensing process until operation is actually licensed." They can if in so doing public health and safety is not jeopardized. For according to the Atomic Energy Act "public safety (is) a paramount issue at every stage in processing applications for commercial use of nuclear power." (1)

Applicant further differentiates Midland from Dairyland saying, "because a design basis earthquake has been formally established for the Midland site, a change in this design basis would be a 'backfit' decision which pursuant to 10 CFR 50-109would require that there be a finding that

(1) C.P.Co. Midland Plant Units 1 & 2, ALAB 315,1975, p.103

such action will provide 'substantial additional protection which is required for the public health and safety or the common defense and security" p.5 Such a 'backfit' finding seems almost a given. For if at Dairy land the adoption of the most recent and conservative seismic standard was deemed necessary for safety, then the update of seismic standards for Midland would be necessary for the same reasons.

Applicant concludes his arguments by declaring that "uncertainty concerning possible backfits required by a redefined SSE" is a "financial risk" p.6 and he makes numerous legal citations supporting the statement that "the licensee always builds at its own risk." These statements, true in themselves, do not mean that it is a financial risk only. Here and in James Cook's attached affidavit, the Applicant infers that the seismic uncertainty rpresents a financial risk as opposed to a health and safety risk and does so in the absence of any supporting arguments.

In reality the basis for each of these arguments is the same : that neither public health and safety intrests, nor the NRC regulations intended to safeguard these intrests will be violated by the granting of this motion to defer seismic issues to the O.L. proceeding. It is this one basic argument that I intend to refute.

II. EXAMINATION OF APPLICANT'S ARGUMENTS IN THEIR FULL IMPLICATIONS

There are certain inconsistencies if not contradictions involved in the statements in this motion which must be examined. By the title of the motion and the statements therein, Applicant says clearly he is willing to

defer prior NRC approval or agreement on final seismic standards to proceed at his own financial risk (the risk being whether or not he will meet NRC seismic standards in the end). But whether he intends to meet NRC standards so deferred is not stated.

Applicant is willing to give up the "reduction in risk" gained from preliminary seismic design reconsideration with the NRC, because "it means lengthy delays in this proceeding and in the start up of the Midland units." p.6,7. So stated, the Applicant is willing to risk the ultimate disapproval of his actions because he cannot afford the concomitant delay to plant start-up in waiting to be sure of his actions. It must follow then, that neither can he afford disapproval in the end, for that too would mean delay to plant start up.

By his own account of financial inflexibility, he can't afford to fall short of the final seismic standards, yet he " strongly urges this board to defer until the O.L. proceeding the issue of whether the seismic design bases established at the c.p. stage for the Midland plant (by which he seeks to proceed) is adequate"p.9. Applicant has incorporated what he deems "a reasonable" margin over FSAR seismic criteria, but only to remedial work, excluding the structures affected by such work, (p.7 Thiruvengadam affidavit). Nevertheless he believes that " all outstanding seismic questions can be successfully resolved." p.3,4

But If ultimate NRC seismic standards are not incorporated now, they never can be, for the Applicant can't afford correction to completed structures at the O.L. stage any more than he can afford delay now. Then the effect of this motion becomes one not merely of deferral of seismic considerations, but one of compromise to NRC seismic standards, particularly if compromise is the only way to save what by then will be a completed

$3 to $4 billion dollar facility.

In financial straits as difficult as these (and portrayed in James Cook's attached affidavit) it would seem that Consumers Power Company would have begun pushing the NRC to get some agreement on seismic standards in 1978 when they first "learned that the NRC Staff had any concern about the magnitude of the design basis earthquake approved at the c.p. stage." p. 7 For Consumers has certainly not been reluctant to criticize NRC slowness or resource allocation decisions in the past* when they did not meet their own ends..

Despite numerous NRC attempts to obtain adequate resolution of seismic issues (in FSAR questions 361.2,.4,.7,.9; in 50-54f requests regarding acceptance criteria for soil settlement remediation; and in many meetings involving these issues since 1978), acceptable seismic input parameters still have not been established. The October 14, 1980 Tedesco letter went so far as to suggest two acceptable seismic approaches to C.P.Co. But now, when progress was just beginning with the site-specific approach, Consumers says that this analysis is too late and too time consuming. Furthermore, Consumers says although they are pursuing this site-specific approach with the NRC, they "have not conceded that the design basis of the Midland plant approved at the c.p. stage is inappropriate, or that the Michigan basin is not a separate tectonic province." (p.4, Thiruvengadam affidavit)

I believe that Applicants arguments 'as examined in their full implications' are very revealing if not self defeating. Yet more important issues must be explored regarding the 'proceed at own risk' requests in this motion.

*_Selby letters of 12/10/80, 1/16/81 to NRC ; 6/13/80 & 8/25/80 meetings C.P.-NRC

III. PROCEED AT OWN FINANCIAL RISK BECOMES A PUBLIC HEALTH & SAFETY RISK

I will now return to my original intention to refute the Applicant's basic argument that he should be allowed to defer seismic considerations because this represents a financial risk to the Applicant as opposed to a health and safety risk to the public. Applicant by this motion seeks to proceed at his own financial risk in seismic matters just as he did in soil settlement matters in 1978. I do not deny Applicants claims that allowing the licensee to build at its own financial risk is the established NRC policy, but I will hereby show how this accepted practice is at variance with the ultimate and overriding responsibility of the NRC as mandated by the Atomic Energy Act " that public safety is the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility." (2)

Both construction permit and operators license decisions are involved in this motion. The original C.P. decision is questioned because of significant design changes which led to the Order Modifying Construction Permits (according to 10 CFR 50-100), and O.L. decisions are involved because this is a consolidated proceeding.

NRC <u>practice</u> allows 'proceed at own risk' arrangements, yet NRC <u>regulations</u> mandate prevention of health and safety risks. I submit that this paradoxical situation amounts to what is almost an impossible charge to the NRC. Financial considerations effect safety, just as safety considerations effect finances. The two cannot for all practical purposes be separated. But if such separation is attempted as in the case of 'proceed at own risk'

(2) ALAB 315, p. 103

agreements, the ultimate risk of disapproval undertaken by the applicant at one point, cannot later be denied, no matter what the consequences. For ultimate compromise negates the element of risk involved, and regulation gives way to license.

Yet weighing of practical financial considerations against safety considerations becomes almost unavoidable as a result of these 'own risk' policies. The costly and difficult consequences of such policies can be illustrated by the case in point of the Diesel Generator Building (DGB) at Midland. I will briefly review the history of this one aspect of the soil settlement matters to show how public health and safety is at stake in any 'at own risk' arrangement like the one sought in this motion.

The settlement of the DGB was first noted when the building was in its initial stages in 1978. Since then its construction has proceeded 'at C.P.Cos. own risk' concurrent with its remediation. The adoption of the Preload Option and the resumption of work on the DGB took place within only a few months of its initial settlement discovery, before root causes had been thoroughly analyzed, and before the full implications of soil settlement problems and their effects were understood by either C.P.Co. or the NRC (the potential for liquefaction for example).

When asked by the NRC in 1979 to defend their choice of the Preload Option over the Removal and Replacement Option for fill (10CFR 50-54f q.21) Consumers replied, (part d(5))"Preloading was the least costly feasible alternative for corrective action. Also, construction of the structure can continue while the surcharge load is being applied. Thus, this alternative will minimize the impact on the construction schedule."

By taking the actions that they did, when they did, C.P.Co. chose not to thoroughly consider the most conservative Removal and Replacement Option. But now as a result of their choice to proceed, full and fair consideration of the removal and replacement of fill by the NRC has been progressively negated. Few individuals within the NRC, or C.P.Co. I dare to say, would frankly deny that statement. In fact NRC personnel have themselves expressed concern over the realities of these policies at Midland. (see attached Chilk memo on possible ex-parte contact)

Yet the fact remains that the DCP now stands virtually complete, despite serious questions regarding its subsoils and its settlement effects. Removal and replacement of its faulty fill is no longer a viable option for C.P.Co. in light of financial statements made in this motion. (Ironically, the Removal and Replacement Option was rejected in 1978 on the basis of cost, despite the fact that it afforded the most conservative solution, and now it appears that 'removal and replacement' in 1978 might have been the most viable financial option precisely because it was the most conservative.*

Full and fair evaluation of safety questions by the NRC at the end of 'own risk' proceedings becomes extremely difficult if not impossible when structures or actions are completed. Yet that is precisely what the Applicant seeks once again in this seismic motion to proceed.

As a result of 'at own risk' policies, NRC safety decisions are elevated to 'make-us-or-break-us' financial decisions and held up as such to the NRC and now to this very Atomic Safety and Licensing Board, as in James Cook's attached affidavit to this motion.

The Applicant almost challanges the NRC and the ASLB on their literal interpretation of 'at own risk' agreements. Can the NRC carry through on its implicit power to demand removal and replacement of subsoils, or seismic update, or any other safety decision if it carries with it the certain doom of the whole plant? The tremendous burden of such weighty and unsavory decisions makes them almost impossible, and in looking for ways to help a utility out of such predicaments, public health and safety is compromised.

It must be remembered that C.P.Co. not only could have been more careful and less hurried about proceeding in soil settlement matters, they should have been more careful and less hurried in soil settlement matters, for "a construction permit carries with it no concomitant right to operate the completed facility. Rather, to obtain an operating license, the (Atomic Energy) Act requires the utility to shoulder once again the burden of proving to the Commission (at a public hearing if need be) that it has, inter alia, constructed the plant in conformity with its application, the Act, and the Commissions rules and regulations. And even at this late stage the Act permits the Commission to withhold the license for good cause.

It was not happenstance that Congress structured Atomic Energy Act proceedures in this manner. Rather, it was intentionally done to make certain that public safety was a paramount issue at every stage in processing applications for commercial use of nuclear power." (3)

(3) ALAB 315, p. 103

Therefore, when I ask this Board, by denying this motion, to begin to change what has become accepted NRC practice of allowing 'proceed at own risk' policies, I am not seeking to change the rules of the game as it may at first appear. What I do seek is the change of what has become accepted practice, in order that the rules of the game are upheld.

Proceed at own risk policies force all parties involved into an unrealistic world of extremes. The NRC, committed "to conduct independent analysis and reach independent conclusions on whether reasonable assurance of plant safety exist(s)" (4) must make such independent safety decisions totally aside from financial realities that may spell certain doom to the Applicant. The Applicant is forced to challenge that ultimate authority if in the end it is his only hope of saving his plant. So in response, I too must challange the NRC and this Board on their ultimate authority.

Since the Applicant has said in effect 'you can't make your decisions apart from these financial realities' , I am forced to say, 'you must make your decisions apart from these financial realities.' All safety questions in this soil settlement proceeding, including seismic ones, must be based on purely scientific and technical grounds, rather than based even in part on practical financial considerations.

I ask you to presume, for instance, that the DGB were still in its initial stages, as when its settlement was first discovered in 1978.

(4) NRC STAFF'S ANSWER TO INTERROGATORIES FILED BY C.P.CO.; 50-329 OM-OL, 50-330 OM-OL; In the matter of Midland Plant, Units 1 & 2; Interrogatory Answer 1, p.2,3 referring to S.R.P. sections 2.5.4 and 2.5.5; Feb.25,1981

Knowing what is known now, and for the greatest part could have been known prior to its remediation, would the safety related decisions for the DCB be any easier? Even more importantly would the decisions themselves be any different under these circumstances? These rhetorical questions are relevant to the present motion: For this is a motion that compells the siesmic udates either now or never, just as the removal and replacement of faulty fill was a now or never decision in 1978.

The salient question must finally be asked, Who is really taking the risk in a 'proceed at your own risk' arrangement? The answer is the public 'first, last, and always'. For whether speaking of financial costs or safety costs, it is not the Applicant who bears the ultimate risk, It is we the public who will pay the price for the Midland nuclear plant.

This motion cannot be granted without seriously endangering the health and safety of a public totally dependent not only on the basic tenants of the NRC regulations, but also on the actual practices and policies as carried out by the NRC.

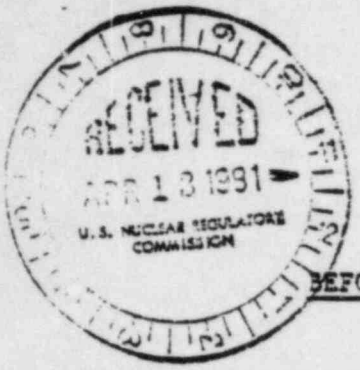
For this reason, a thorough and complete analysis of ultimate seismic standards must occur now, as an integral part of remedial soil settlement fixes and the structures affected by them. If such analysis entails delay to this soil settlement proceeding, then that is unfortunate, but not nearly so unfortunate as the implications of not doing such an analysis. For nuclear safety transgressions pose "at least as serious a threat to public health and safety" as the Federal Safety Acts in which "Congress (has) deemed the safety considerations at stake more important than any financial detriment to the party involved." (5)

(5) ALAB 315, p. 109

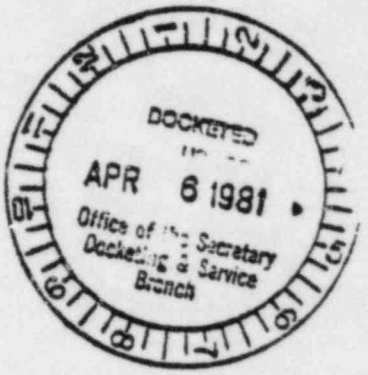
Respectfully Submitted,

Barbara Stamiris

J. Kane
Rec'd 4/20/81



~~RELATED~~ CORRESPONDENCE



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
50-329-OL
50-330-OL

Board 81

RESPONSES TO STAMIRIS' INTERROGATORIES 2 AND 3

(The response to these questions is provided pursuant to the agreement reached between the parties, as commemorated in the attached letter from Consumers Counsel James E. Brunner to Ms. Barbara Stamiris.)

Except as specifically noted below, there were no differences of opinion, suggestions, or comments; recommendations not followed; or changed recommendations with respect to the following items:

"Duct banks" -

From our review of the records, we could find no differences of opinion, recommendations, or suggestions on this matter. Discussions pertaining to this subject occurred in the early meetings, and in a letter dated 17 November 1978, Dr. Hendron specifically recommended that the duct banks be cut, as they were probably holding up the diesel generator building. This recommendation was followed, and the duct banks were cut prior to preloading.

"Turbine building" -

Early discussions concerning the turbine building referred to the problem of supporting the turbine building walls. (Note: The turbine

8104140396 (9pp.)

DS03
S01

building is not a Category I Structure. While answering this question, Applicant specifically reserves any and all relevancy objections possibly pertaining to it.) Suggestions for protecting the walls of the turbine building included bracing, tie-backs, and use of counterfold walls. There were no apparent differences of opinion, suggestions, or recommendations. Applicant ended up using all of these methods.

"Removal of preload" -

This subject was discussed in Tabs 7, 15, 66 and 70 of the Index to Consultant Communications. Nearly all of the early discussions made passing reference to the fact that the preload could be removed when settlements reached reasonable levels. Other language used included "when sufficient consolidation has occurred." On June 27, 1979 the Consultants predicted that the preload could be removed in approximately 8 weeks from that date. In Tab 70 (July 2, 1979) the Consultants jointly stated that the preload removal could begin in August, roughly corresponding to the 8-week period.

Actual removal began 7 weeks from June 27, 1979, but memory and file documents indicate that both Consultants Hendron and Peck gave approval prior to the beginning of surcharge removal.

The decision as to when the preload could be removed was made by a special task group consisting of appointed Bechtel/Consumers personnel. This task group made most of the early decisions on remedial activities, subject to management review and based on consultant advice along with the engineering judgment of appointees to the task group.

"Use of gratings" -

The term "gratings" was used to refer to a structural slab connecting the diesel generator pedestals with the building. The thinking was that the gratings could replace backfill in the region above foundation level, and this would reduce the dead load imposed above the foundation elevation. A consultant suggested rather early in the meeting process (November 7, 1978) that the feasibility of gratings could be considered. Gratings were considered by the task group, which decided against them. While gratings would reduce the dead loads, the absence of fill above foundation level if gratings were used would also reduce the calculated factor of safety against a bearing capacity failure. Because of that trade off, it was determined that gratings would not provide any appreciable advantage, and hence gratings were not used.

There were no apparent differences in the opinions, suggestions, or comments made by consultants on this issue.

"Grouting of gaps" -

On November 17, 1978, Dr. Hendron recommended that grouting be carried out before cutting the duct tanks and after surcharging. The task group felt that grouting prior to cutting the duct banks could prevent the relieving of structural stresses caused by the support of duct banks. The grouting was eventually carried out after preloading. We could find no differences in opinion or suggestions made by the consultants on this issue.

"The mudmat foundation" -

At a meeting dated November 7, 1978, (Tab 12) a suggestion to breakup the mudmat prior to preloading was attributed to the Consultants, while Consultant Peck later indicated that it need not be broken up. Applicant cannot determine and cannot recall whether there was, in fact, a difference of opinion on this point or whether the Peck statement was made after further consideration. The task group determined not to break up the mudmat, based upon the final recommendation of Dr. Peck that it was not important to the success of the preload operation.

"Other actions concerning the effects of the preload" -

Applicant is not aware of any differences of opinion or suggestions, changed recommendations, or recommendations not followed on this subject.

"Other remedial actions" -

Applicant is not aware of any differences of opinion or suggestions between and among the consultants on the other remedial fixes. The same is true with respect to changed recommendations or recommendations not followed. Applicant notes that the proposed remedial fix for the service water pump structure has been changed, but this change can be attributed to a need for larger seismic margins due to the NRC Staff's October 14, 1980 letter, rather than any changes in consultant recommendations.

"Timing of the cooling pond filling in relation to the placement of the preload"

There were no differences of opinion or suggestions, changes in recommendations, or recommendations which were not followed on this matter. Our review of the documents and memory determined that both consultants suggested that the cooling pond elevation be raised to maximum level while the preload was being applied.

"Cutting of condensate line" -

The problem of the condensate line possibly holding up settlement was discussed at the early meetings. There may have been a consultant suggestion respecting this matter, but we are unable to confirm that possibility. The line was cut at the turbine building, and settlement marker on the condensate line were monitored to determine whether or not the line was interfering with settlement. From those settlement readings it was determined that the lines were not interfering with settlement, so that further cutting was deemed unnecessary. We could find no differences of opinion or suggestions of consultants on this feature.

"Borings in cooling pond area" -

There were no differences of opinion or suggestions, changed recommendations, or recommendations not followed on this subject, except as described below. Applicant notes that despite consultant suggestions to the contrary, Applicant has decided to take borings in the cooling pond dike. The reason for not following consultant

advice on this feature is the insistence of the NRC Staff that such borings be taken.

In some rather early meetings the subject of dike borings was discussed, and the only consultant recommendations were that such borings would be unnecessary.

With respect to the items in Tab 8 of Volume 4 of the 10 CFR 50.54f Responses to Questions Regarding Plant Fill, Applicant could discern no differences of opinion, recommendations, suggestions, changed recommendations, or recommendations not followed with respect to the following items: 1, 2, 3, 4, 8 and 9.

With respect to "Item 5", this suggestion was not carried out because exact records of all fill truckloads were not kept, and reconstruction of the filling process would have been impossible. The task group also did not feel that carrying out this suggestion was necessary for making the preload solution work.

"Item 6" is the same as the "gratings" issue, discussed above.

With respect to "Item 7", see the Response to Stamiris' Interrogatory Number 4, indicating when attempts were made to contact the NRC during the early meeting stage. (Applicant did contact Mr. Heller on November 8, 1978 with an invitation to visit the site. Mr. Heller indicated at that time that he could

not visit the site until the scheduled December site inspection.) In Applicant's opinion, the thrust of the suggestion was met, since Mr. Heller did either see some excavations or saw photographs taken at his request.

In answering the above questions, Applicant limited its review to file documents relating to the above specific issues. Applicant can also state that it knows of no other specific differences of opinion, suggestions, recommendations, changed recommendations, or recommendations not followed.

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	DOCKET NOS.	50-329-OM
CONSUMERS POWER COMPANY		50-330-OM
		50-329-OL
(Midland, Units 1 and 2		50-329-OL

AFFIDAVIT OF NEAL SWANBERG

Neal Swanberg, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Assistant Project Engineer; that he is jointly responsible with Sherif Afifi for providing answers to Interrogatories 2 and 3 of Barbra Stamiris Discovery Request, dated December 4, 1980, to Consumers Power Company; and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Neal Swanberg
Neal Swanberg

Subscribed and sworn to before me this 30 day of March, 1981

Notary Public, Washtenaw
County, Michigan

My Commission Expires: [illegible]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

RELATED CORRESPONDENCE

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of CONSUMERS POWER COMPANY (Midland, Units 1 and 2)	DOCKET NOS.	50-329-OM 50-330-OM 50-329-OL 50-329-OL

AFFIDAVIT OF SHERIF AFIFI

Sherif Afifi, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Engineering Supervisor; that he is jointly responsible with Neal Swanberg for providing answers to Interrogatories 2 and 3 of Barbra Stamiris Discovery Request, dated December 4, 1980, to Consumers Power Company; and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Sherif Afifi

Subscribed and sworn to before me this 2nd day of April, 1981

Notary Public, Washtenaw County, Michigan

My Commission Expires: January 25, 19

J. Kane
Rec'd 4/20/81

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

4/6/81

CONSUMERS POWER COMPANYS' RESPONSE TO

INTERVENOR REQUESTS 1/14/81

Discovery Request 1

NRC Inspection Report 50-329/330 78-12 notes "Other Activities to be Planned (1) Possible core borings in cooling pond dike area to verify integrity of dikes." Provide documents as a basis for this statement and relating to the decision on this matter as it was first considered.

Response

Since this statement was made by the NRC in an inspection report, it is impossible for Applicant to determine which, if any, documents were relied upon in making it. However, with respect to the cooling pond dike, some consideration was given to borings in early meetings (See Tab 12, Volume 4, 50.54f Responses), during which it was decided that the dikes would not present a problem and that borings need not be taken. Since that time, the NRC Staff has submitted a request that borings be taken in the dike, which Applicant has acceded to. Applicant is now in the process of taking borings in the dike.

Discovery Request 2

Were any audits conducted covering soil settlement matters (including QA QC aspects) which have not been presented to the NRC? If so, provide these findings.

Response

The documents requested are produced at the Midland Service Center.

~~8104140372~~
8pp.

G

D503
S0/1

Discovery Request 3

How much time is allotted in the most recent completion schedule for remediation of soil settlement matters and for responses to NRC testing and boring requests?

Response

The time allotted for the various soil settlement remedial measures is shown on the document "SOILS SETTLEMENT - STUDY" provided as an attachment to these responses. That document includes a study of the schedule pertaining to the response to the NRC's boring request. It should be noted that the provided schedule is preliminary in nature and is subject to change or revision at any time.

Discovery Request 4

When was the Administration Building begun? What was the means of recording settlement for the Administration Building and when was that means established?

Response

The civil and structural construction of administration building was started during June 1977.

The means of recording settlement is and was to periodically survey the settlement markers that are installed on the building from a known benchmark. The survey data thus obtained is transcribed onto a drawing. The settlement, if any, of each marker, is then deduced from the survey data for each period and plotted on a time scale graph to observe its trend. Settlement monitoring for Administration Building began on September 16, 1978. (The grade beam failure was discovered prior to the settlement monitoring program.)

Discovery Request 5

Provide the Bechtel reports as to the cause of the Administration Building settlement and whether it was an isolated problem, or any other reports recommending procedural changes stemming from this event.

Response

Produced at Midland Service Center.

Discovery Request 6

Describe the Established Foundation Data Survey Program for the diesel generator building. When was it established, and by whom?

Response

The foundation data survey program was and is implemented by installing surveying markers on the walls, floors or pedestals, and by conducting periodic surveys using standard surveying techniques. These survey results are reviewed, and the settlement for each marker is calculated for each surveying period. The settlement values thus obtained are tabulated on design drawings, which are issued periodically, and then reviewed by the design and the geotechnical engineering groups.

After review, the settlement of each marker is plotted on a time scale graph to observe its trend. Settlement values are then compared against predicted settlements. These settlement data are reported in the final safety analysis report or in updates of other licensing reports.

The first settlement reading from the program was taken during July of 1978, based on markers installed in May of the same year. This monitoring program was established by Bechtel Associates Professional Corporation by means of issuing a specification and drawings during 1977.

Discovery Request 7

Were any settlements noted formally or informally prior to July 1978 to the diesel generator building?

If so provide these observations.

Response

No.

Discovery Request 8

When was Dr. Peck or any other soil settlement consultant first told of the settlement of the Administration Building? Provide any documents recording discussion of the Administration Building with soil settlement consultants.

Response

Applicant objects to this question, on the ground that it is irrelevant and immaterial. Subject to that objection, Applicant answers as follows:

Drs. Peck and Hendron were not directly involved with the Administration Building settlement matter. Dr. Hendron recalls that he was made aware of the previous problem with the Administration Building in one of the earliest meetings he attended regarding the diesel generator building matter. Upon inquiry, Dr. Peck did not recall having heard of the Administration Building problem.

There are no documents recording the above discussions, to the best of Applicant's knowledge.

Discovery Request 9

When was the NRC first informed of the settlement of the Administration Building?

Relate the circumstances of this initial disclosure.

Response

The NRC was first informed of the settlement of the Administration Building during the site investigation by Mr. Gallagher, (Region III, I.E.) which took place October 24 - 27, 1978.

Discovery Request 10

Amendment 3 to the FSAR eliminated the original site dewatering plan. Provide documents relevant to this decision.

Response

Applicant objects to this request on the ground that it calls for information which is irrelevant to these proceedings.

Discovery Request 11

At the July 29, 1980 Caseload Forecast Panel Meeting in Midland, mention was made of C.P.Co. loans to Bechtel and other subcontractors in the interest of staying on schedule. Describe the extent of these loans and the circumstances surrounding them.

Response

The only loans mentioned at the July 29, 1980 case load panel meeting concerned the loaning of Consumers engineering or technical personnel to Bechtel.

Discovery Request 12

Were there any established requirements regarding groundwater elevations and their effects on plant foundations and structures in 1978? If so, provide these documents.

Response

In 1978, the normal high water table was assumed to be at El. 627', and during the probable maximum flood the water surface elevation at the site, including the effect of wave runup, would be El. 635.5'. Plant foundations and structures have been designed for the effects of water at these elevations as discussed in the Midland FSAR section 3.8.6.

Discovery Request 13

What work has been done since April 1980 on the diesel generator building and what percent complete is the building?

Response

Installation of mechanical and electrical equipment has been and is continuing as an ongoing activity. Since April, 1980 minor concrete placements such as curbs, equipment pads, and grade slabs have been completed. As of December 31, 1980, the total facility was 74 percent complete, and the concrete work was 99 percent complete.

Discovery Request 14

What procedure or system is followed to record or correct poor employee performance by Bechtel or C.P.Co? Have any employees with jobs relating to soil settlement matters been fired or received some type of warning related to job performance? If so provide these records.

Response

Employees of both Bechtel and Consumers are given periodic performance appraisals.

The answer to the question posed in the second sentance is "no".

Discovery Request 15

On page 26 of NRC Inspection Report 50-329/330 78-20, mention is made of the QC inspector who was primarily responsible for the plant fill work who is no longer employed by Bechtel. Provide the name of this individual, his position, and the date of his employment, and forwarding address.

Response

The name of the QC inspector referenced is Daryle Osborn. His position was Quality Control Engineer/Assistant Lead Civil Quality Control Engineer. He was employed at the site from September 8, 1975, through July 21, 1978. His last known forwarding address is 13025 S.W. 107th Terrace, Miami, Florida, 33186.

Discovery Request 16

Provide the names and addresses of any other QA or QC personnel with jobs relating to soil settlement from 1975-1980 who are no longer employed by Bechtel or C.P.Co.

Response

Applicant objects to this question on the grounds that it is irrelevant, immaterial, and burdensome.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

RELATED CORRESPONDENCE

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

County of Washtenaw)
)ss
State of Michigan)

AFFIDAVIT OF ALAN BOOS

Alan Boos, being duly sworn, deposes and says that he is the Assistant Project Manager, Midland Project, Bechtel Power Corporation; that he is primarily responsible for providing an answer to Barbara Stamiris' Interrogatory Nos. 7 and 14 to Consumers Power Company; and that to the best of his knowledge and belief the above information and the answer to the above interrogatory is true and correct.

Alan Boos

Subscribed and sworn to before me this 30 day of March 1981.

Notary Public, Washtenaw County, Michigan

My Commission Expires: November 30, 1982

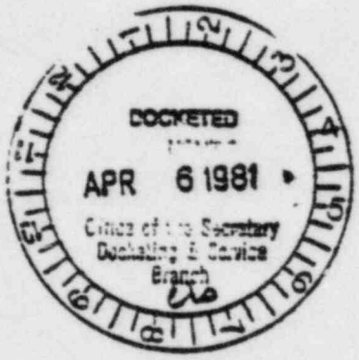
BEVERLY A. [illegible]
NOTARY PUBLIC, WASHTENAW CO., MICH
MY COMMISSION EXPIRES NOV. 30, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

RELATED CORRESPONDENCE

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	



County of Washtenaw)
)ss
State of Michigan)

AFFIDAVIT OF NEAL SWANBERG

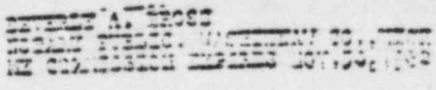
Neal Swanberg, being duly sworn, deposes and says that he is the Assistant Project Engineer, Midland Project, Bechtel Associates Professional Corporation; that he is primarily responsible for providing an answer to Barbara Stamiris' Interrogatories 3, 4, 6, 8, 12, 13, and 15 to Consumers Power Company; and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Neal Swanberg
Neal Swanberg

Subscribed and sworn to before me this 30 day of March 1981.

Beverly A. Boos
Notary Public, Washtenaw County, Michigan

My Commission Expires: November 30 1982



STAMIRIS INTERROGATORIES

DOCKET NUMBER
PROD. & UTIL. FAC. 50-329, 330-OM, OL

3-11-81

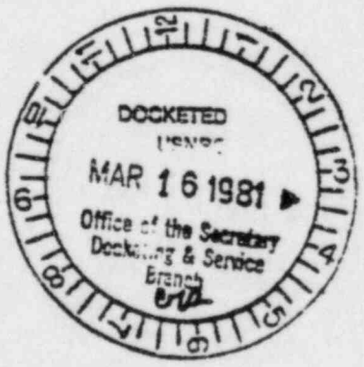
Dear Sir,

I am remiss in not having sent you this 1/26/81 document sooner.

The other parties were served at the 1/28/81 prehearing conference.

Sincerely,

Barbara Stamiris



DS03
S
1/1

~~8108200563~~
7pp. G

RELATED CORRESPONDENCE

U.S. NUCLEAR REGULATORY COMMISSION

In the matter of
C.P.Co. Midland Plant
Units 1 & 2

Docket Nos. 50-329 OM OL
50-330 OM OL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

INTERVENOR RESPONSE TO C.P.CO. 1/19/81 DISCOVERY REPLY
FOR NOTICE OF THE BOARD
1/26/81

In the intrest of moving forward with substantive issues, I will hereby set forth my objections to Consumer's reply informally. I have also included clarifying and follow up questions to my 12/4/80 request.

(Instructions and definitions as stated in 12/4/80 request)

PERTAINING TO DOCUMENT REQUESTS

1. Response is satisfactory.

2. Response is incomplete.

a) What are the most recent estimates for total soil settlement costs (including various completion schedule paths) assuming current remediation proposals are acceptable?

b) Please explain these estimates, breaking them down into their component parts.

c) What are the most recent estimates for total soil settlement costs if Removal and Replacement after Preloading (Option 3) (50-54f#21) were now necessary?

d) Will any portion of these soil settlement costs be included in requests before the Michigan Public Service Commission as a part of construction costs or costs to be ultimately included in the ratebase?

e) If the answer to d) is yes, please describe and explain such anticipated requests.

3. Response is incomplete and documents provided do not respond to the intent of the request.

I requested documentation of "all discussions concerning and leading up to C. P. Co.'s decision to appeal the NRC requests for additional borings," not of the appeal itself, once the final decision had been made.

The meeting summaries and notes provided did not cover these preliminary analysis as requested.

I would consider any meeting notes or other communications on the subject of additional borings during July and August 1980 to be relevant to my request and discoverable(according to the parenthetical discussion at the end of item 2 page 6 of the October 24,1980 Prehearing Conference Order). and in support of my reshaped contention 2e

I would ask that any objections to producing such documents be specifically stated and explained.

4. Response is incomplete.

I requested documentation of "any discussions or considerations of possible lawsuits involving soil settlement matters".

One document was provided. Please state and explain the privelege or objection by which further document requests are here refused.

5. Response is satisfactory that no such documents exist.

I requested documentation of "all options ever considered (whether formal or informal, tentative or complete) for correction of the Administration Building settlement".

a) Why are there no records or documents concerning correction of Administration Building settlement (including the chosen option)?

b) On what basis was the decision to remove and replace the faulty fill under the Administration Building made?

c) Who made this (5b) decision?

d) When was this (5b) decision made?

e) Describe and explain any alternative corrective actions ever considered and rejected for the Administration Building, if such considerations were made.

PERTAINING TO INTERROGATORIES

I am acting on the und erstanding that responses to discovery requests are to be researched with the intent of finding answers, if they exist to questions posed. I do not consider to be adequate an individual response made "to the best of our present knowledge, recollection and belief" which makes no attempt to review the period in question, or include the responses of persons involved.

1. Response to 1a is satisfactory.
Request 1b asks "Who makes the final decisions on which actions are taken or will be taken? In sentence 2 define the phrase "depending on its importance" more precisely. Similarly define the phrase "in the case of decisions of lesser importance" in the last sentence. What criteria define "importance" warranting management review in each instance?
c) Were any decisions of the Bechtel Project Engineer on soil settlement matters later modified by Bechtel or Consumer's Project Management Review? Please describe and explain any such decisions and modifications.

2. Response is incomplete and does not respond to the question asked.
Request 2a asks "Did your consultants ever differ in their recommendations on soil settlement matters (including tentative stages)?
I am particularly intrested in differing opinions of consultants Peck and Hendron in tentative stages or "miner differences of opinion" to use your words.

a) Did you communicate with consultants Peck Hendren or Gould asking their input in response to this question as your answer implies?
Please provide documentation of any such requests, giving the date of the request.

b) What is the working relationship of consultants Peck, Hendren, and Gould?

c) Did consultants Peck and Hendren ever differ in recommendations or approaches to actions concerning the Electrical Ducts, Turbine Building, removal of preload, use of gratings, grouting of gaps, the mud mat foundation, or any other actions concerning the effects of the preload or other remedial actions?

d) If the previous answer is yes, what were these differences, and how were they resolved? (Original request 2a)

3. Response is incomplete and does not respond to the parenthetical qualifications of the request.

Request 3a asks "What, if any, original recommendations of consultants (whether formal or informal, tentative or complete) were later changed or not followed?

a) In responding, please address, but do not limit your response to, the following items: 1) Timing of cooling pond filling in relation to placement of preload
2) Breaking up of mud mat
3) Grouting of gaps between footings and mud mat (D.G. Building)
4) Use of gratings (D.G. Building)
5) Cutting of condensate line
6) Turbine Building stresses
7) Borings in cooling pond dike area

b) (as in original request) Explain the reason for such changes or departures (excepting change from grouting to permanent dewatering).

c) (as in original request) What was thedecision making process for each of such changes or departures?

d) Did you communicate with your consultants, asking their input in response to this question as your answer implies?

Please provide documentation and dates of any such requests.

4. Response is evasive, ignoring the words "prior to ", and therefore unresponsive. Request 4a asks, "Was NRC geotechnical staff input sought in any way prior to the decision to preload stated in the Nov. 7 1978 meeting (#682) regarding soil settlement matters?

The decision to use the Preload Option (formally set forth at the Nov. 7, 1978 meeting and noted in NRC Investigation 78-12 taking place on Oct. 24-27, 1978) seems to have been made without any NRC geotechnical consultation.

a) Please explain and describe the timing and extent of NRC geotechnical consultation prior to the decision to select the Preload Option.

b) (formerly 4d) Was such input (4a) ever suggested by anyone? If so by whom, was it made, when was it made, and how was it responded to?

c) In responding to these questions, please include but do not limit yourself to statements made by A.J. Hendren in file B3.0.3 serial CSC-3674 notes of the Nov.7 1978 meeting recording disappointment regarding NRC not having seen the test pits.

Respectfully Submitted,

Barbara Stamiris

Barbara Stamiris

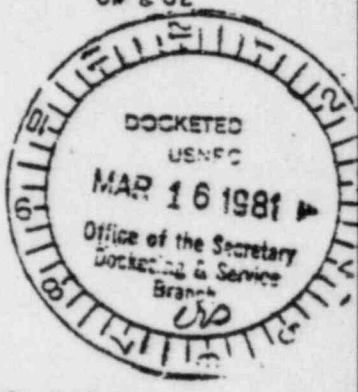
Copies to:
ASLB Chairman Bechhoeffer
NRC Counsel Wm. Paten
CCP.Co. Counsel Alan Farnell
Secretary NRC

RELATED CORRESPONDENCE

U.S. NUCLEAR REGULATORY COMMISSION

In the matter of
C.P.Co. Midland Plant
Units 1 & 2

Docket Nos. 50-329
50-330
OM & OL



BEFORE THE ATOMIC SAFETY & LICENSING BOARD

INTERVENOR
RSQUEST FOR EXTENSION OF TIME TO FILE MOTION TO
COMPELL DISCOVERY FROM APPLICANT 3/11/81

Consumers 2/27/81 Response to my 1~~2~~/26/80 interrogatories failed to satisfy me regarding questions 2 and 3 among others. Following their objection to questions 2 and 3, applicant stated "Applicant is willing to discuss its objections to these questions with the Intervener in an attempt to arrive at a compromise if she wishes."

Upon attempting to contact ~~to contact~~ Mr. Brunner and Mr. Farnell on March 10, 1981, I was informed they were out of town for the week. By the time Mr. Brunner returns my call, the ten day limit will have passed for my response.

I now see, in rechecking the reference to the ten day limit stated in the 2/27/81 Prehearing Conference Memorandum, that it is "within ten days of serving" I was to respond not ten days from the day I received the document, (3/2/81) as I had thought. I hope that I will be afforded some flexibility on these dates if no satisfactory compromise can be reached when I discuss these matters with the applicant next week.

I would propose that I be allowed four days following my conversation with Mr. Brunner in which to file a motion to compell discovery, if necessary.

Barbara Stamiris

Barbara Stamiris

~~8103200570~~

7.

2-27-81

Feb 27, 1981
Kane
II
Rec'd 3/16/81
Paton/Jones
Olmstead
ff

Copies sent to DARL Hood v Joe Kane about 3-6-81

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of

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

CONSUMERS POWER COMPANY
RESPONSE TO INTERVENOR (BARBARA STAMIRIS)
DISCOVERY REQUEST OR "RESPONSE" OF JANUARY 26, 1981

Consumers Power Company (hereafter referred to as "Applicant") hereby responds to a document submitted by Ms. Stamiris and entitled "Intervenor Response to Consumers Power Company's January, 1980 Discovery Reply for Notice of the Board," dated January 26, 1981. The aforementioned document is styled in the form of a reply to Applicant's December 19, 1980 Response to Ms. Stamiris' Initial Discovery Request, and contains comments on Applicant's response, as well as additional questions.

The history of these requests and responses can thus be summarized as follows:

12/4/80	Stamiris' "Intervenor Requests of Consumers Power Company" (hereinafter referred to as "Stamiris' Initial Request")
1/19/81	Consumers Power Company's Response to Intervenor Requests ("Consumers Power Company's Initial Response")
1/26/81	Stamiris' "Intervenor Response to Consumers Power Company's 12/19/80 Discovery Reply" ("Stamiris' Reply")
2/27/81	Consumers' "Response to 1/26/81 Stamiris Submission and Supplemental Answers to 12/4/80 Request (Consumers Power Company Response No. 2")

~~8103130491~~

15pp.

Ms. Stamiris' reply indicates that Consumers Power Company's Response No. 1 is "incomplete" with respect to this document request. The request called for certain documents concerning "cost and schedule impact data" of "soil settlement matters", but contained no interrogatories on that subject matter. The reply has no objection to the document production, but does include certain interrogatories on the subject addressed in the initial document request. Therefore, Applicant concludes that the Intervenor, by using the term "incomplete", did not intend to object to Applicant's Response to her initial request. Rather, we interpret the use of that term to indicate that the Intervenor has follow-up questions on this subject matter. These questions are addressed below.

All of the documents within document Request No. 2 of the 12/4/80 Discovery Request have been produced at the Midland Service Center of Consumers Power Company. Since the filing of Consumers Power Company's Response No. 1, Bechtel has initiated development of additional cost and schedule projections. Documents relevant to this effort will be supplied when the projections are completed.

ANSWERS TO INTERROGATORIES PERTAINING TO DOCUMENT REQUEST NO. 2

2(a) Question

What are the most recent estimates for total soil settlement costs (including various completion schedule paths) assuming current remediation proposals are acceptable?

Answer

The estimates provided reflect the most recent estimates for total soil settlement costs which have been communicated by Bechtel and reviewed by Consumers Power Company personnel. These estimates assume the accomplishment of remedial actions within the current project schedule milestone requirements. The total for all of these estimates is $16,920,000.

2(b) Question

Please explain these estimates, breaking them down into their component parts.

Answer

The estimate worksheets and computer printouts provided indicate the component costs. Typically, the costs are identified with the following components:

1. Direct Field Costs

   The total cost of all materials and improvements forming a permanent part of the finished project and of all Bechtel and subcontract labor engaged in installing or erecting such materials or performing such improvements.

2. Distributable Field Costs

   Bechtel material and labor costs which cannot be identified with specific direct operations in the construction of a plant and either (1) are supporting services by nature or (2) apply to several direct operations such that a logical allocation to each separate operation cannot readily be made.

3. Engineering Costs

   The total cost of all technical engineering and design activities including technical consultants and services performed by Bechtel in connection with a given project.

4. Other Home Office Costs

   The total cost of all management, service and clerical activities performed by Bechtel in connection with a given project. Since

these costs are either supporting services or overhead costs by nature and not readily identified to a separate operation, they are usually allocated to a given project based on the amount of Bechtel technical engineering services.

On the computer printouts, a series of numbers appear in sequences of two lines. The first line constitutes direct costs; the second line constitutes the distributable costs.

The column headings include:
(starting under "total field costs) material, subcontracts, manual labor, non manual labor, engineering and home office.

2(c) Question

What are the most recent estimates for total soil settlement costs if Removal and Replacement after Preloading (Option 3) (50-54f#21) were now necessary?

Answer

The most recent estimates on this matter are contained in the Answer to 10 CFR 50.54 f, Question 21.

2(d) Question

Will any portion of these soil settlement costs be included in requests before the Michigan Public Service Commission as a part of construction costs or costs to be ultimately included in the rate base?

Answer

Applicant objects to this question on the ground that it is irrelevant.

2(e) Question

If the answer to (d) is yes, please describe and explain such anticipated requests.

Answer

See part (d) of the response to this question.

Document Request No. 3

The initial document request dated December 4, 1980 from Ms. Stamiris encompassed discussions "concerning and leading up to" the decision to appeal the NRC's boring request.

Applicant interpreted the request as calling for minutes of meetings concerning the appeal within the NRC Staff, as well as other documents regarding discussions which occurred prior to that time. The fact that some documents beyond the "intent" of the request were produced is not a ground for objecting to the response, providing all of those documents within the scope of the request were supplied. While Intervenor's Response does clarify somewhat the "intent" of the request, Applicant believes that it has now presented all documents within the scope of the request as amended or clarified in the Stamiris Reply of 1/26/81, except for the following: (1) All nonprivileged documents within the scope of the request but in the sole possession of Bechtel's consultants have not yet been produced, but will be produced within the next four weeks; (2) applicant claims the attorney-client privilege with respect to one document, which contains a rendition of information and opinions given to counsel at a meeting between Consumers Project Management and a Company lawyer.

Document Request No. 4

Applicant has supplied the one unprivileged document within the scope of this request. The attorney-client and work-product privilege is claimed with respect to one other document, production of which is also objected to on the ground that it is irrelevant to this proceeding. The document in question is a memorandum between Lawyers and their clients concerning a technical legal

question in connection with possible lawsuits. (The attorney-client privileges protects communications between a lawyer and his client. According to 4 Moore's Federal Practice, Paragraph 26.60(2), "Ordinarily, communications between a client and his attorney are privileged and may not be inquired into in discovery proceedings any more than at the trial." The work product privilege protects the mental efforts of attorneys in anticipation of litigation. Since the document in question is both an attorney-client communication and a rendition of the mental impressions of counsel, it is privileged under either theory).

Document Request No. 5

Applicant interpreted the initial request as calling for documents other than the chosen option.

While Applicant objects to producing documents "concerning the chosen option," all such documents fall within the scope of Item 5 of Stamiris' 1/14/81 Request. The documents requested in Item 5 (of the 1/14/81 Request) are now producable at the Midland Service Center.

ANSWERS TO INTERROGATORIES PERTAINING TO DOCUMENT REQUEST NO. 5

5(a) Question

Why are there no records or documents concerning correction of Administration Building settlement (including the chosen option)?

Answer

See the above Reponse under Document Request No. 5.

5(b) Question

On what basis was the decision to remove and replace the faulty fill under the Administration Building made?

Answer

Applicant objects to this question on the ground that it is irrelevant to this case.

5(c) Question

Who made this (5b) decision?

Answer

See the answer to 5(b)

5(d) Question

When was this (5b) decision made?

Answer

See the answer to 5(b)

5(e) Question

Describe and explain any alternative corrective actions ever considered and rejected for the Administration Building, if such considerations were made.

Answer

See the answer to 5(b).

INTERROGATORIES

Additions to Question 1

Response

With reference to Bechtel, the phrase "depending on its importance" refers to the degree of cost, schedule, licensing, or quality impact of a particular decision on the project. The Project Engineer and the Project Manager for Bechtel maintain open lines of communication, which enables them to assess the relative importance of a particular decision with respect to the above criteria. They are assisted in the procedure by other Bechtel members of the Midland Project Staff who have detailed knowledge of individual issues.

Regarding Consumers Power Company, the phrase "in the case of decisions of lesser importance "defines those decisions having little or no effects on cost, schedule, licensing, or quality. Any decision which would involve a commitment

of resources beyond that previously approved by the project manager would require approval by the Project Manager or by higher authorities within the Company.

Additional Response to Interrogatories 2 and 3

Applicant objects to the questions set forth in the "Reply" document of 1/26/81, as well as the questions set forth in the Initial Request as interpreted in the broad sense of the "Reply" document, on the following grounds:

(1) The questions are vague and unintelligible.

(2) The questions are burdensome.

(3) The questions ask for information which is equally available to the intervenor through documents which are on the public record.

As we pointed out in our initial response, the interrogatories in question cover a period of over two years during which numerous meetings, conversations, consultations, phone calls, or other oral or written communications were exchanged or held. The questions attempt to approach matters which involved complex and detailed technical analysis at the earliest possible stage of discussion. The questions are unlimited as to scope, detail, issue, time, place or person. Further, it is impossible to precisely determine what is meant by the parenthetical expressions contained in the questions, which seem to contradict the language used elsewhere in the Interrogatories.

Applicant is willing to discuss its objections to these questions with the Intervenor in an attempt to arrive at a compromise if she wishes.

Additions to Question 4

Response

The matter of planned activities was discussed with Gene Gallagher, the geotechnical inspector from Region III, during an inspection of October 24-27, 1978. Other than that communication, Applicant is not presently aware of any communication with the NRC geotechnical staff prior to November 7, 1978 concerning the preload proposal.

During the above conversation, Gallagher was advised of Applicant's tentative plans to preload the diesel building.

4(b) Question

(Formerly 4d) Was such input (4a) ever suggested by anyone? If so by whom, was it made, when was it made, and how was it responded to?

Response

No.

4(c) Question

In responding to these questions, please include, but do not limit yourself, to statements made by A.J. Hendron in file B3.0.3 serial CSC-3674 notes of the November 7, 1978 meeting recording disappointment regarding NRC not having seen the test pits.

Response

During the November 7, 1978 meeting, Dr. Hendron indicated that it would be desirable for Dr. Heller to see the test pits. At that time Applicant was concerned, and it is believed Dr. Hendron was concerned, that Heller would not be able to observe subsurface conditions first-

hand prior to pre-loading, since any excavation would be filled by the pre-load itself. Heller did observe subsurface conditions during his December, 1978 site visit. However, as can be readily ascertained from the above, Hendron's comment was limited to the test pit issue and did not concern the decision to pre-load the diesel generator building, so that it is not an example of a suggestion under question 4b (formerly 4d).

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of Response to Interrogatory (Barbara Stamiris) Discovery Request dated January 26, 1981, were served upon the following persons by depositing copies thereof in the United States Mail, first class postage on this 27th day of February, 1981.

Frank J. Kelley, Esq.
Attorney General of the
State of Michigan
Stewart H. Freeman, Esq.
Assistant Attorney General
Gregory T. Taylor, Esq.
Assistant Attorney General
720 Law Building
Lansing, Michigan 48913

Myron M. Cherry, Esq.
One IBM Plaza
Suite 4501
Chicago, Illinois 60611

Mr. Wendell H. Marshall
RFD 10
Midland, Michigan 48640

Charles Bechhoefer, Esq.
Atomic Safety & Licensing Board Panel
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Gustave Linenberger
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Dr. Frederick P. Cowan
6152 N. Verde Trail
Apt. B-125
Boca Raton, Florida 33433

Michael Miller, Esq.
Isham, Lincoln & Beale
One First National Plaza
Suite 4200
Chicago, Illinois 60603

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

D. F. Judd, Sr. Project Manager
Babcock &Wilcox
P. O. Box 1260
Lynchburg, Virginia 24505

Atomic Safety & Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. C. R. Stephens, Chief
Docketing & Service Section
Office of the Secretary
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Ms. Mary Sinclair
5711 Summerset Street
Midland, Michigan 48640

William D. Paton, Esq.
Counsel for the NRC Staff
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Atomic Safety & Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Barbara Stamiris
5795 North River Road
Route 3
Freeland, Michigan 48623

Lester Kornblith, Jr.
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Sharon K. Warren
636 Hillcrest
Midland, Michigan 48640

James E. Brunner

James E. Brunner

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

AFFIDAVIT OF WILLIAM JONES

William Jones, being duly sworn, deposes and says that he is employed by Bechtel Power Corporation, as the Project Cost/Schedule Supervisor for the Midland Project; that he is responsible for providing answers to supplemental questions pertaining to document request Number 2 (contained in the January 26, 1981 Stamiris "Response"); and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

William Jones

Subscribed and sworn to before me this 18th day of February, 1981

Wendy L Hambaugh (Taylor)
Notary Public, Washtenaw County, Michigan

My Commission Expires: 7/21/81

WENDY L. TAYLOR
Notary Public, Washtenaw Co., Mi
Commission Expires 7-21-81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

AFFIDAVIT OF ALAN BOOS

Alan Boos, being duly sworn, deposes and says that he is the Assistant Project Manager, Midland Project, Bechtel Power Corporation; that he is jointly responsible along with Gilbert S. Keeley for the Responses to Additional Questions pertaining to Stamiris Interrogatory No. 1 contained in the "Intervenor Response" D cument dated January 26, 1981; and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Alan Boos

Subscribed and sworn to before me this 18th day of February, 1981

Notary Public, Washtenaw County, Michigan

My Commission Expires: BEVERLY A. BROSS
NOTARY PUBLIC, WASHTENAW CO., MICH
MY COMMISSION EXPIRES NOV.30, 1982

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of CONSUMERS POWER COMPANY (Midland, Units 1 and 2)	)	DOCKET NOS. 50-329-OM 50-330-OM 50-329-OL 50-330-OL

STATE OF MICHIGAN)
)ss
COUNTY OF JACKSON)

AFFIDAVIT OF GILBERT KEELEY

Gilbert Keeley, being duly sworn, deposes and says that he is employed by Consumers Power Company as Project Manager, Midland Project; that he is jointly responsible with Al Boos for providing a response to additional questions respecting Stamiris' Interrogatory No. 1; that he is primarily responsible for providing responses to additional questions respecting Stamiris' Interrogatory No. 4; and that to the best of his knowledge and belief the above information and tha answers to the above Interrogatories are true and correct.

Gilbert Keeley

Gilbert Keeley

Subscribed and sworn to before me this 27th day of February, 1981.

Cecilia Marie Warfield

Notary Public, Jackson Co. Michigan

My Commission Expires

CECILIA MARIE WARFIELD
NOTARY PUBLIC, HILLSDALE CO., MICH
MY COMMISSION EXPIRES JUL.03,1983
Acting in Jackson County

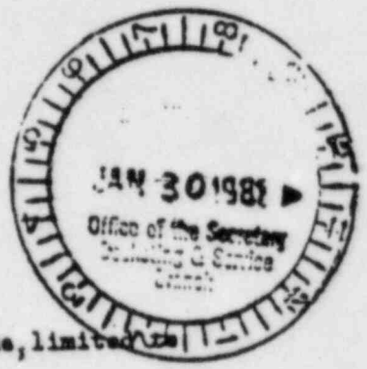
J. Kane
Rec'd 2/17/81

RELATED CORRESPONDENCE

U. S. NUCLEAR REGULATORY COMMISSION

In the matter of
C.P. Co. Midland Plant
Units 1&2

Docket Nos. 50-329 OM OL
50-330 OM OL



BEFORE THE ATOMIC SAFETY & LICENSING BOARD
1/22/81

MOTION TO EXTEND TIME FOR RELEVANT DISCOVERY

I would like to request an extension of discovery time, limited to questions which may arise related to documents in this proceeding to which I have not had access.

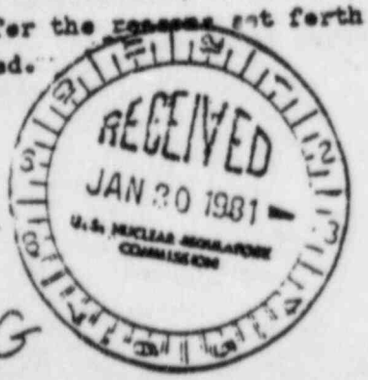
Since the ruling prohibitting provision of transcripts to intervenors, none of these documents have been available at the Midland Public Documents Room.

C.P.Co. and NRC responses to my 12/4/80 and 12/18/80 requests have been late and incomplete making follow up questions impossible by the close of discovery Jan. 23rd.

I have informally agreed with C.P.Co. attorney Alan Farnell(Dec. 31 1980 phone conversation) not to object to these delays as long as I be permitted similar flexibility in submitting further questions (12/14/81 requests) and follow up questions.

I would extend the same request to the NRC regarding questions related to document requests.

I would ask that the board allow me to ask questions on the testimony I have not seen. I would also like to discuss at the prehearing conference whether I might be permitted to check out these transcripts from the Public Documents Room for the reasons set forth in my 12/22/80 request, if that request cannot be granted.



D503
S 0/1

Respectfully Submitted
Barbara Stamiris

~~8102050366~~
8102050366
8pp G

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of
Consumers Power Co.
Midland Plant Units 1 & 2

Docket Nos. 50-329 OM
50-330 OM
50-329 OL
50-330 OL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

INTERVENOR REQUESTS OF CONSUMERS POWER COMPANY 1/14/81

In accordance with 10 CFR 2.740b and 2.741, Intervener Barbara Stamiris serves on Consumers Power Co. the following interrogatories and document requests:

(Instructions and definitions as stated in 12/4/80 request)

1. NRC Inspection Report 50-329/330 78-12 notes "Other Activities to be Planned (1) Possible core borings in cooling pond dike area to verify integrity of dikes." Provide documents as a basis for this statement and relating to the decision on this matter as it was first considered.

2. Were any audits conducted covering soil settlement matters (including QA QC aspects) which have not been presented to the NRC? If so, provide these findings.

3. How much time is alloted in the most recent completion schedule for remediation of soil settlement matters and for responses to NRC testing and boring requests?

4. When was the Administration Building begun? What was the means of recording settlement for the Administration Building and when was that means established?

8104030369

5. Provide the Bechtel reports as to the cause of the Administration Building settlement and whether it was an isolated problem, or any other reports recommending procedural changes stemming from this event.

6. Describe the Established Foundation Data Survey Program for the Diesel Generator Building. When was it established, and by whom?

7. Were any settlements noted formally or informally prior to July 1978 for the diesel generator building? If so provide these observations.

8. When was Dr. Peck or any other soil settlement consultant first told of the settlement of the Administration Building? Provide any documents recording discussion of the Administration Building with soil settlement consultants.

9. When was the NRC first informed of the settlement of the Administration Building? Relate the circumstances of this initial disclosure.

10. Ammendment 3 to the FSAR eliminated the original site dewatering plan Provide documents relevant to this decision.

11. At the July 29, 1980 Caseload Forecast Panel Meeting in Midland, mention was made of C.P.Co. loans to Bechtel and other subcontractors in the intrest of staying on schedule. Describe the extent of these loans and the circumstances surrounding them.

12. Were there any established requirements regarding groundwater elevations and their effects on plant foundations and structures in 1978? If so provide these documents.

13. What work has been done since April 1980 on the Diesel Generater Building? What percent complete is the building now?

14. What procedure or system is followed to record or correct poor employee performance by Bechtel or C.P.Co.? Have any employees with jobs relating to soil settlement matters been fired or received some type of warning relted to job performance? If so provide these records.

15. On page 26 of NRC Inspection Report 50-329/330 78-20, mention is made of the QC inspector who was primarily responsible for the plant fill work who is no longer employed by Bechtel. Provide the name of this individual, his position, and the date of his employment, and forwarding address.

16. Provide the names and addresses of any other QA or QC personnel with jobs relating to soil settlement from 1975-1980 who are no longer employed by Bechtel or C.P. Co.

Barbara Stamiris

cc. Alan Farnell, C.P. Co. Counsel
Wm. Paton, NRC. Counsel
Chairman Bechhoffer, ASLB.

RELATED CORRESPONDENCE

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • (517) 788-0550

January 23, 1981

Ms Barbara Stamiris
5795 North River Road
Route 3
Freeland, MI 48263

Dear Ms Stamiris:

Attached is a copy of an Affidavit of Sherif Afifi, which, due to mailing delays, was not included with the interrogatory answer previously submitted.

Very truly yours,

James E Brunner

James E Brunner

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of CONSUMERS POWER COMPANY	DOCKET NOS.	50-329-OM 50-330-OM 50-329-OL 50-329-OL
(Midland, Units 1 and 2)	—	

AFFIDAVIT OF SHERIF AFIFI

Sherif Afifi, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Engineering Supervisor; that he is jointly responsible with Neal Swanburg for providing answers to Barbara Stamiris' Interrogatories to Consumers Power Company Number 2-3; and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Sherif Afifi

Subscribed and sworn to before me this 11 day of [illegible], 1981.

Notary Public, Washtenaw Co. Michigan

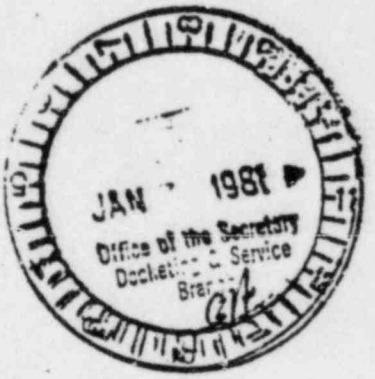
My Commission Expires: [illegible], 1982

CERTIFICATE OF SERVICE

James E Brunner hereby certifies that he served a copy of the Affidavit of Sherif Afifi pertaining to answers submitted to Barbara Stamiris Interrogatories, by placing a copy of same in the mail, first class postage prepaid, addressed to the following:

Atomic Safety & Licensing Appeal Board
US Nuclear Regulatory Commission
Washington, DC 20555

Atomic Safety & Licensing Board Panel
US Nuclear Regulatory Commission
Washington, DC 20555



Charles Bechhoefer, Esq
Atomic Safety & Licensing Board Panel
US Nuclear Regulatory Commission
Washington, DC 20555

Myron M Cherry, Esq
One IBM Plaza, Suite 4501
Chicago, IL 60611

Dr Frederick P Cowan
6152 N Verde Trail, Apt B-125
Boca Raton, FL 33433

Mr Steve Gadler
2120 Carter Avenue
St Paul, MN 55108

D F Judd, Sr, Project Manager
Babcock & Wilcox
PO Box 1260
Lynchburg, VA 24505

Frank J Kelley, Esq
Attorney General of the State of Michigan
Stewart H Freeman, Esq
Assistant Attorney General
Gregory T Taylor, Esq
Assistant Attorney General
Environmental Protection Division
720 Law Building
Lansing, MI 48913

Gustave Linenberger
Atomic Safety & Licensing Board Panel
US Nuclear Regulatory Commission
Washington, DC 20555

Mr Wendell H Marshall
RFD 10
Midland, MI 48640

Michael Miller, Esq
Isham, Lincoln & Beale
One First National Plaza, Suite 4200
Chicago, IL 60603

William D Paton, Esq
Counsel for the NRC Staff
US Nuclear Regulatory Commission
Washington, DC 20555

Ms Mary Sinclair
5711 Summerset Street
Midland, MI 48640

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

Mr C R Stephens
Chief, Docketing & Service Section
Office of the Secretary
US Nuclear Regulatory Commission
Washington, DC 20555

Sharon K Warren
636 Hillcrest
Midland, MI 48640

Dated: January 23, 1981

James E Brunner

CPCo Response to NRC Interrogatories J Kane Rec'd 4/20/81

RELATED CORRESPONDENCE

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
50-329-OL
50-330-OL

CONSUMERS POWER COMPANY'S ANSWER TO NRC STAFF INTERROGATORIES

(Dated 1/2/81)

Interrogatory 1

Your response to Question 17 in "Responses to NRC Requests Regarding Plant Fill" regarding piping founded in the plant area fill, states: "When two pipelines were parallel and in the same proximity, only one was profiled."

1(a) Define "same proximity" as used in the above quotation.

Response

As stated in the response to Question 17 of Responses to NRC Requests Regarding Plant Fill, pipelines in the "same proximity" are defined as parallel pipelines a few feet apart placed at the same elevation. The typical distance between lines ranges from 2' to 6' with the maximum being 18.5'.

1(b) In view of the random nature and varying properties of the fill, what assurance exists that the settlement of the profiled pipelines is similar to pipelines not profiled?

1(c) What assurance exists that future settlement of the profiled pipelines will be similar to pipelines not profiled?

9503 S0/1

~~8104140596~~ G 26 pp.

Response

Applicant is still evaluating available information on the matter. When such evaluations are completed, Applicant will provide responses to these questions.

Interrogatory 2

Your response to Question 17 in "Responses to NRC Requests Regarding Plant Fill" includes a Figure 17-1 showing the locations of some, but not all, of the piping listed in Table 17-1 of that response. Do you have sketches like that of Figure 17-1 identifying the location of the remaining piping listed in Table 17-1? If yes, please provide copies.

Response

Figures 17-1 and 19-1 of Responses to NRC Requests Regarding Plant Fill were intended to show only the location of pipes to be profiled. Figure 1 (attached shows the location of all buried Seismic Catagory I piping in the yard.

Interrogatory 3

The legend for Figure 17-1 of your response to Question 17 in "Response to NRC Requests Regarding Plant Fill" makes reference to a Note #1 and a Note #2. Neither note is shown. State the contents of these two notes, if they exist.

Response

Notes 1 and 2 were inadvertantly left off Figure 17-1 of Responses to NRC Requests Regarding Plant Fill. Notes I and 2 read as follows:

1. Profile measurements of the pipe inverts shown as a heavy line on this drawing shall be performed in accordance with Specification 7220-C-82(Q), Section 8.0
2. Profile measurements of the pipes shown as heavy lines shall be performed by optical methods (standard transit and level).

Interrogatory 4

Figure 17-2 of your response to Question 17 in "Responses to NRC Requests Regarding Plant Fill" regarding piping founded in the plant area fill shows some differences between profiles of a given pipe taken on different dates. Specifically, the profiles for pipeline 20" - 1HCD-169 between stations 3+00 and 4+30 show a decrease in slope changes (i.e., a smoothing out) and relocation of certain peaks when the March/April 1979 profile is compared to the July 1979 profile. How do you explain the difference of these two profiles?

Response

The accuracy of the pipe profile readings taken by Goldberg, Zoino, Dunnicliff and Associates (GZD) has been stated as being ±0.02 feet. This accuracy would account for minor differences in profile elevations.

There were also some differences in elevations in excess of .02 feet. These are explained as follows:

1. After reviewing relevant data used in plotting the profiles for pipeline 20' - 1HCD - 169 and contacting GZD, it was discovered that a typographical error had been made in producing the April, 1979 data tables at stations 3+20 and 3+30 for pipeline 20' - 1HCD - 169. The corrected April 1979 profile shows a close correlation with the July , 1979 profile at these locations.
2. The peak in the April, 1979 profile at station 3+90 appears to be the result of a bad reading at an elbow. With the method of pulling the pipe profile gage through the pipe, it was

possible for the profile gage to be pulled up the side of the pipe at bends or obstructions. The small diameter (20 inches) and geometry of the pipe prohibited having a person in the pipe to verify that the profile gage was on the invert. The closer spacing of readings for the July, 1979 profile shows a very smooth elevation transition around this elbow. It is highly unlikely that the pipe and elbow have experienced the extreme movements suggested by the profiles in the short time span from April to July. Therefore, it has been concluded that the elevation recorded in the April, 1979 profile for the elbow at station 3+90 is approximately 4 inches too high.

Interrogatory 5

Figure 19-1 of your response to Question 19 in "Responses to NRC Requests Regarding Plant Fill" regarding piping founded in the plant area fill shows some differences between profiles of a given pipe taken on difference dates. Specifically, the profile for pipeline 10" - OHBC-27 taken September 1979 is at a higher elevation than the profile of that same line taken in January 1979. How do you reconcile these differences.

Response

Relevant data used in plotting the profiles for pipeline 10"-OHBC-27 have been reviewed. After contacting GZD it was discovered that an incorrect reference elevation had been used in computing the September 1979 profile elevations for pipeline 10"-OHBC-27. To correct the September 1979 readings, 0.15 foot should be subtracted from all elevations except the readout point elevation. The corrected elevations still show a slight upward movement of the

pipeline. However, the movement is within the ±0.02 foot accuracy of the pipe profile gage. Drawings indicating the correct readings, along with other corrected profiles, are provided with these responses.

Interrogatory 6

Figure 19-1 of your response to Question 19 in "Responses to NRC Requests Regarding Plant Fill" regarding piping founded in the plant area fill shows some differences between profiles of a given pipe as taken on different dates. Specifically, the profile for pipeline 8" H1HBC-81 measured in September 1979 is at a deeper elevation than the profile of this pipeline taken in January 1979 and the change in slope for the September 1979 profile is not as great as for the January 1979 profile. How do you reconcile this behavior?

Response

According to Note 1 on Figure 19-1 of the response to Question 19 in Responses to NRC Requests Regarding Plant Fill, it was concluded that the readout point elevation was disturbed and moved approximately 5 inches between the time GZD profiled the line (January, 1979) and the time the reference point elevation was established by Bechtel survey. The slight change in slope along the line in the September profile can be accounted for by settlement due to the diesel generator building preload.

Interrogatory 7

Have any underground pipelines other than those for which the profiled results are reported in your responses to Questions 17 and 19 of "Responses to NRC Requests Regarding Plant Fill", and which are not provided in response to Interrogatory 2 herein, been measured for profile? As to any affirmative reply, please describe the results and any sketches of profile results.

Response

There are no underground pipelines, other than those listed in the response to Question 17 and 19 of the 10 CFR 50.54 f Request Regarding Plant Fill, which have been measured for profile in their normal operating condition. The term normal operating condition is used to refer to pipes which have been embedded and fully backfilled.

The following four pipes were surveyed optically with all overburden removed, (i.e. no backfill).

8" - 1HBC-81 (Also profiled by GZD)

8" - 1HBC-82

10" - 0HBC-28

4" - 0JBV-739 (Non-Q pipeline)

All of the above pipes were rebedded in the same trench following the preload.

Since it is impossible to determine if there was movement in the above pipe while the overburden was being removed, these profiles are not regarded as reliable indications of pipe movement during differential settlement, and were not included in the profile summary in Table 17-1.

Interrogatory 8

State the principal architectural and engineering criteria provided pursuant to 10 CFR § 50.35 to which each of the following structures and components were designed (or were to have been designed) with respect to soil properties foundation support and performance during severe natural phenomena:

(1) Diesel Generator Building

(2) Auxiliary Building

(3) Service Water Intake Structure and integral retaining walls

(4) Feedwater Isolation Valve Pits

(5) Underground seismic Category I piping and conducts

(6) Underground piping other than seismic Category I piping, located beneath or near seismic Category I structures and components

(7) Borated water storage tanks and ring support

(8) Underground diesel fuel oil storage tanks and fuel oil lines

(9) Cooling pond dikes

Response

The principal engineering and architectural criteria provided pursuant to 10 CFR 50.35 are contained in the Midland Plant preliminary safety analyses report (PSAR), which is hereby incorporated by reference in this answer.

While the PSAR contains such criteria, not all design information in the PSAR is regarded as "principal criteria." The regulation in question, 10 CFR 50.35, indicates that the principal criteria must be "included" in the PSAR, but does not exclude the addition of supplemental information to further delineate or describe design details.

The Midland plant PSAR has a summary of principal criteria in section 1.4 and appendix 1C. As stated in section 1.4, "the specific architectural and engineering criteria and design features are detailed in later sections of the PSAR."

Interrogatory 9

Identify all principal architectural and engineering criteria identified in your answer to Interrogatory 8 which will not be met unless the remedial actions proposed or completed for the soils placed and compacted at the Midland site are implemented.

Response

Applicant objects to this question on the ground that it is irrelevant to these proceedings.

The question calls for an identification of those principle criteria which would not be met without remedial action. To respond to the question, Applicant would be required to undertake a technical analysis to determine the ability of a non-applicable design to meet the principle criteria. Such an exercise would be a waste of resources from an engineering standpoint, and would produce a result which is not relevant to these proceedings, which are considering a new design based on remedial fixes.

Interrogatory 10

Midland PSAR Section 2.8.4.1, as last amended on May 28, 1969, states the following design criteria for fill and backfill: "All fill and backfill materials are adequately compacted to insure stability of the fill and to provide adequate support for structures founded on this fill without excessive settlements."

10(a) With respect to this criterion, define "excessive settlements".

Response

The term "excessive settlements" refers to settlements in structures which would produce structural stresses such that the structure's behavior is unacceptable in either normal operating or accident conditions.

10(b) With respect to this criterion, define "adequately compacted".

Response

The term "adequately compacted" refers to a state of compaction such that excessive settlements do not occur and adequate stability characteristics are achieved, and that there is reasonable assurance of such results for the future. The PSAR contains a recommended method for meeting the adequately compacted criteria, which is set out in the so-called Dames & Moore Report of March 15, 1969, as follows.

	RECOMMENDED MINIMUM COMPACTION CRITERIA	
	ON-SITE SAND SOILS	ON-SITE CLAY SOILS
PURPOSE OF FILL	PERCENT RELATIVE DENSITY*	PERCENT OF MAXIMUM DENSITY**
Support of Structures	85	100
Adjacent to Structures	75	95
Area Fill (Not supporting or adjacent to structures)	70	90

* Maximum and Minimum density of sand soils should be determined in accordance with A.S.T.M. Test Designation D-2049-64T

** Maximum dry density and optimum moisture content should be determined in accordance with A.S.T.M. Test Designation D-698, modified to require 20,000 foot-pounds of compactive energy per cubic foot of soil.

10(c) Was this design criterion met for the fills and backfills as originally placed and compacted (i.e., prior to the surcharge program) beneath or adjacent to the Diesel Generator Building?

Response

No.

10(d) Has this design criterion been met for the fills and backfills which were subjected to the Diesel Generator Building surcharge program?

Response

Yes.

10(e) Was this design criterion met for the fills and backfills as originally placed and compacted beneath or adjacent to the Auxiliary Building?

Response

No.

10(f) Will this design criterion be met once the proposed remedial action for the Auxiliary Building has been completed?

Response

With respect to portions of the structure which will be founded upon plant fill once remedial actions are taken, the answer is yes. With respect to other parts of the structure, no credit for the support provided by the fill will be taken in the foundation design, even though the fill underlying or adjacent to sections of the structure which will be underpinned does provide some support.

10(g) If the answer to Interrogatory 10(f) is no, what design criterion will be met?

Response

Not applicable

10(h) Was the design criterion quoted above met for the fills and backfills as originally placed and compacted beneath or adjacent to the Service Water Intake Structures?

Response

No.

10(i) Will the design criterion quoted above be met once the proposed remedial action for the service water intake structure has been completed?

Response

No credit for any vertical support provided by the fill underlying or adjacent to the underpinned portion of the structure will be taken in the foundation design, even though such fill will provide some vertical support. The fill adjacent to the service water pump structure will provide an adequate contribution to the lateral support of the structure for normal operating and accident conditions.

10(j) If the answer to Interrogatory 10(i) is no, what design criterion will be met?

Response

See the Response to 10(j).

10(k) Did the original fill and backfills placed inside and beneath the ring supports of the Borated Water Storage Tanks meet the quoted design criterion?

Response

No.

10(l) Do the existing fills and backfills placed inside and beneath the ring supports of the Borated Water Storage Tanks meet the quoted design criterion?

Response

No.

10(m) If the answer to Interrogatory 10(l) is no, what design criterion is met?

Response

Applicant is presently evaluating remedial action for this structure. When such evaluations are completed, Applicant will provide a response to this interrogatory.

10(n) Was the quoted design criterion met for the fills and backfills placed and compacted in the vicinity of the Diesel Fuel Oil Storage Tanks?

Response

Yes.

10(o) Was all of the fill for the Diesel Fuel Oil Storage Tanks placed originally to the requirements of Zone 2 materials?

Response

Yes.

10(p) If the answer to 10(o) is no, what areas were not placed to Zone 2 requirements; on what basis was this material accepted?

Response

Not applicable.

10(q) Was the design criterion quoted above met for the fills and backfills as originally placed and compacted beneath and adjacent to the Feedwater Isolation Valve Pits?

Response

No.

10(r) Will the design criterion quoted above be met once the proposed remedial action for the Feedwater Isolation Valve Pits has been completed?

Response

The above criterion no longer applies, and will not apply to the Feedwater Isolation Valve Pits once remedial activities respecting those structures are completed.

10(s) If the answer to Interrogatory 10(r) is no, what design criterion will be met?

Response

Once remedial activities are implemented, all of the plant fill directly beneath these structures will be replaced by concrete. No credit will be taken for any suuport of fills adjacent to these structures in the foundation design for normal operating or accident conditions.

10(t) Has the design criterion quoted above been met for the cooling pond dikes? If yes, state how this was determined. If no, what design criterion was met?

Response

Applicant objects on the ground that the cooling pond dike is not related to the safety of the plant and, hence, the design criteria applicable to it are not relevant to these proceedings. (See the response to Interrogatory 13) Subject to that objection, Applicant answers as follows: Yes; see the document entitled "Discussion of Applicant's Position on the Need for Additional Borings", dated September 14, 1980.

Interrogatory 11

For all structures and components listed in Interrogatory 8, list all design bases (as design basis is defined in 10 CFR 50.2(u) of significance to safety which depend upon adequate foundation support or soil related properties and which would not be met unless remedial actions are implemented.

Response

Applicant objects, for the reasons set forth in the Response to Interrogatory 9.

Interrogatory 12

When, if ever, was your intent to include lean concrete as a Zone 2 material first conveyed to the NRC? To whom and by what means of communication was this intent conveyed to NRC?

Response

The definition of Zone 2 material as "any material free of humus, organic or other deletorious material" was provided in the Midland Plant FSAR (July 29, 1977).
If there was any doubt concerning the use of lean concrete as a Zone 2 material after the FSAR was submitted, Applicant has no record of any communication specifically dealing with the use of concrete prior to Mr. Gallagher's October 24 - 27, 1978 inspection, at which time he determined that lean concrete had been used as a part of the random fill material.

Interrogatory 13

Have you performed, or do you know of the existence of, any studies of the consequences of failure for the Midland cooling pond dike? If yes, provide copies of or a reference to these studies. If no, what is the justification for not performing such studies?

Response

Applicant objects to this question, on the following grounds: Applicant has contended, and still contends, that the cooling pond dike is not related to the safe shutdown of the plant, and, hence, is not "safety-related" as that term is used in the December 6, 1979 Order. Hence, Applicant believes the dike is outside the scope of this hearing. In the first pre-hearing conference order (dated 10/24/80), the Board indicated that the dike could not be deemed non-safety-related as a matter of law. This interrogatory apparently deals with the

environmental, as opposed to safety, aspects of the dike. In that respect, the Board made passing reference to the dike, but indicated that the issue to be considered was the "settlement" of the dike. From the limited ruling of the Board in the first pre-hearing conference, Applicant is unable to determine whether this request falls within the scope of the present hearing and reserves its response until issues concerning the dikes are clarified. Also, this question is not relevant to the only admitted contention concerning the dike, Stamiris' Contention 4B, which relates to "slope stability" of dike slopes.

Interrogatory 14

Have you performed, or do you know of the existence of, any studies of the probability of failure of the Midland cooling pond dike? If yes, provide copies of or references to these studies. If no, what is the justification for not performing such studies?

Response

See Response to Interrogatory 13.

Interrogatory 15

In your responses to NRC requests 24b and 51 concerning permanent dewatering you used a specific yield coefficient of 14 percent for determining the volume of ground water to be removed from storage within the plant dikes. In determining average permeability, you used a value of 30 percent for effective porosity. Under water table conditions such as exist at Midland, "specific yield" means the same as "effective porosity". Provide justification for using two different percentages.

Response

The 14 percent specific yield used to determine the volume of ground water to be removed from storage is a weighted average based on the proportion of saturated natural and backfill materials between elevation 595 (permanent dewatering system operating level) and elevation 625 (average ground water level prior to dewatering). It was calculated that 58 percent of the materials consist of clay or silty clay, 37 percent is sand, and 5 percent is occupied by structures. Using the corresponding specific yield values given by Davis and De Wiest, 1966, (5 percent for clay and silty clay, and 30 percent sands) results in an average specific yield of 14 percent for the saturated materials between elevation 595 and elevation 625. If the materials between elevation 595 and 625 consisted only of sand, then the specific yield would be 30 percent.

In determining the apparent permeability, the flow was assumed to occur only through the sand. Thus, an effective porosity of 30 percent for sand was used in the equation to determine the apparent permeability along the flow path, as a result of pond filling. The effective porosity for the sand in this case is the same as the specific yield for sand.

Therefore, there is no conflict between the values used, since an average specific yield of 14% was used for all saturated materials between elevation 595 and 625, and an effective porosity of 30% was used for sand in determining the apparent permeability.

REFERENCE

Davis, S., R. J. M. De Wiest, Hydrology, John Wiley and Sons, Inc., - New York, 1966.

INTERROGATORY 16

In your response to Request 24 concerning permanent dewatering, you used an error function equation to define water level rise. This equation is as follows: 021642.

$$h = H \left[1 - \operatorname{erf} \frac{x}{\sqrt{\frac{4\bar{K}\bar{h}t}{a_e}}} \right]$$

In applying this equation, you used 0.1 foot for h, 1.6 feet for H and 20 feet for $\bar{h}$.

In Request 49, we asked for additional information on why 20 feet had been used for $\bar{h}$ when $\bar{h}$ is defined as the average depth of water. Your response to Request 49 was that the values of h and H are much smaller because they represent the changes in head above the original potentiometric surface while the value of $\bar{h}$ is the thickness of natural sands through which the seepage from the cooling pond is assumed to flow.

The equation that you used to model groundwater flow, from Bear, 1972, assumes a horizontal impervious bottom as a datum from which the terms h, H and $\bar{h}$ are measured. It is not clear why you are using one datum, i.e., the original potentiometric surface (approximately 622 feet) to measure h and H and another lower datum (approximately elevation 607 to measure $\bar{h}$.

Have you performed any studies or do you know of the existence of any studies done using a single datum from which to measure h, H and $\bar{h}$? If yes,

(a) identify these studies,
(b) do these studies justify your use of two different datums, and
(c) if the answer to (b) is affirmative, please state the justification provided in these studies.

Provide your justification for using two different datums and show that your resultant groundwater rebound time is at least as conservative as the rebound time would be if computed using a single datum as in Bear, 1972.

RESPONSE

A single reference plane from which to measure h, H and $\bar{h}$ is discussed in Bear, 1972. The justification of the use of the two reference planes is presented below. This is followed by a discussion explaining the choice of the natural sand thickness to represent the average depth of flow.

The latter discussion is based on physical considerations on the actual flow system which had not been explicitly included with the numerical application.

Two reference planes were used in the equation given in response to NRC Question 24 to provide a more simplified description of the actual physical conditions. It can be shown that this formulation is equivalent to the one obtained using the approach taken by Bear 1972, in Paragraph 8.4.1, Example 1.

Bear 1972 considers the linearized partial differential equation for flow in the (xz) direction with no accretion and an impervious, horizontal bottom:

$$\frac{\partial^2 h}{\partial x^2} = \frac{S_e \partial h}{T \partial t}$$ Bear 1972, Equation 8.4.5

together with the boundary and initial conditions:

$h = H_o$ (or $\eta = o$), $x > o$, $t \leq o$

$h = D$ (or $\eta = H_o - D$), $x = o$, $t > o$

where the terms are defined in Figure 8.4.1 of Bear 1972.

For the case where the cooling pond is raised, the following boundary conditions apply:

$h = H_o$ (or $\eta = o$), $x = o$ $t > o$

$h = D$ (or $\eta = H_o - D$), $x > o$, $t \leq o$

A solution to this equation which satisfies the above boundary conditions is:

$$\eta(x, t) = (H_o - D) \operatorname{erf} \alpha . \qquad (1)$$

It can be seen from Figure 8.4.1, Bear 1972, that:

$$h = H_o - \eta(x, t).$$

Thus,

$$h = H_o - (H_o - D) \operatorname{erf} \alpha . \qquad (2)$$

For the sake of clarity, let the subscript '1' designate the variables used in the equation discussed in Interrogatory 16,

namely,

h_1 = Change in head at x,

H_1 = Change in head at x = o.

The above variables are shown on Exhibit I, while the variables h, H, H_o, and D refer to Figure 8.4.1 of Bear, 1972.

We then have the relationships:

$h = h_1 + D$,

$H_o = H_1 + D$, and

$H_1 = H$.

Substitution into Equation (2) yields:

$$h_1 + D = H_1 + D - (H_1 + D - D) \operatorname{erf} \alpha$$

or

$$h_1 = H_1 (1 - \operatorname{erf} \alpha). \qquad (3)$$

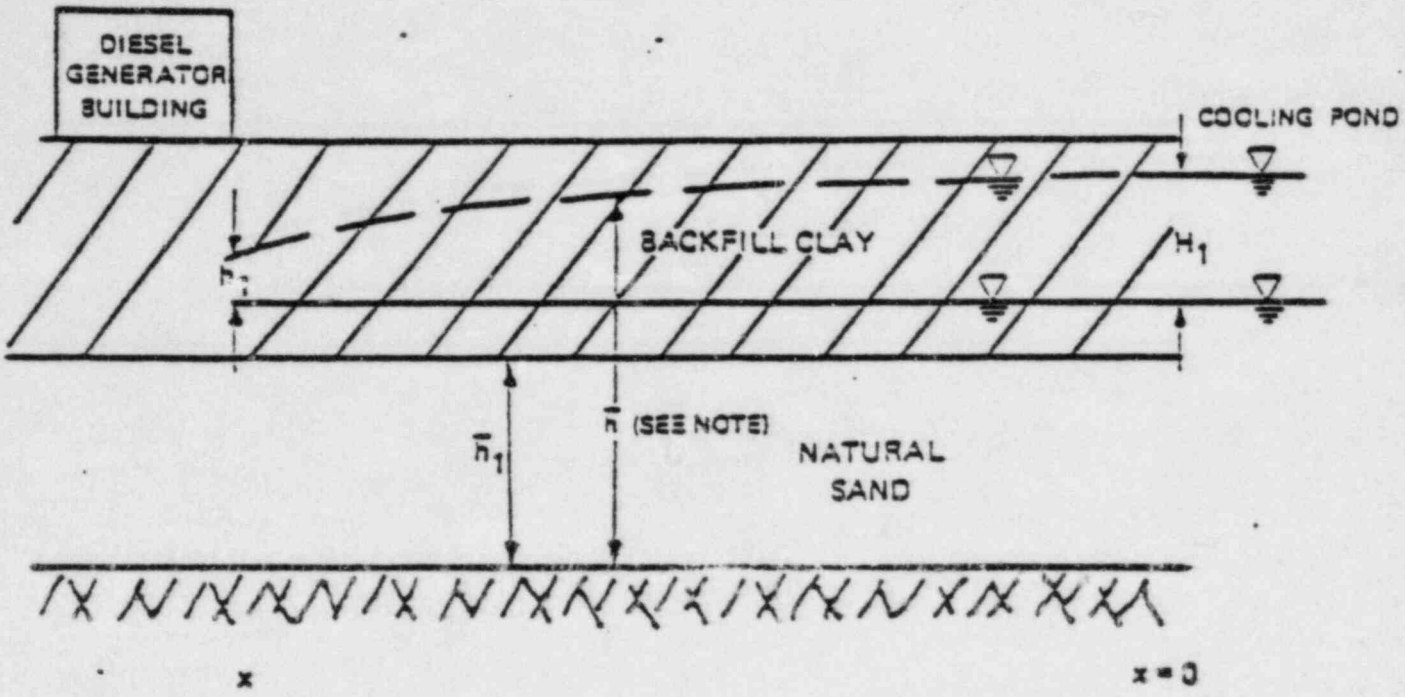
Thus, Equation (3) which assumes two reference planes, is equivalent to Equation (2). The results obtained with both equations will then be identical.

The approach used in the numerical application differs from that derived from Bear 1972, in the use of $\bar{h}$, the average depth of flow. In our response, $\bar{h}$ was redefined to represent the thickness through which flow occurs, $\bar{h}_1$, as shown on Exhibit 1. Because of the large difference in permeabilities between the backfill clay (see Figure 24-5, in response to NRC Question 24) and the natural sands, effectively no flow would take place through the backfill clays.

REFERENCE

Bear, Jacob, Dynamics of Fluids in Porous Media, American Elsevier Publishing Company, Inc., New York, 1972.

021642



NOTE:
For the definition of $\bar{h}$ see Bear, 1972, Section 8.4.1, paragraphs 1 and 3.

BECHTEL ANN ARBOR		
MIDLAND POWER PLANT		
DEFINITION OF PARAMETERS INTERROGATORY 16		
JOB NO.	DRAWING NO.	REV
7220	EXHIBIT 1	0

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	
	)	

COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF NEAL SWANBERG

Neal Swanberg, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Assistant Project Engineer· that he is responsible for providing answers to NRC Staff Interrogatories to Consumers Power Company Numbers 1 through 7 and 10 chat to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Neal Swanberg
Neal Swanberg

Subscribed and sworn to before me this 26 day of March 1981.

Notary Public, Washtenaw County Michigan

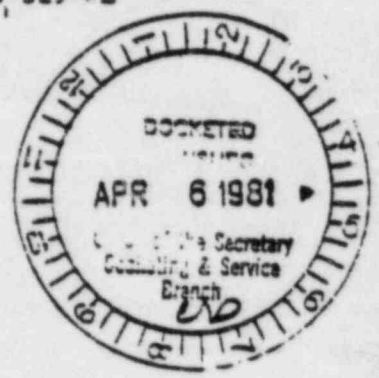
My Commission Expires: December 30, 1982

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	DOCKET NOS. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland, Units 1 and 2)	)	50-329-OL
	)	



COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF DONALD F. LEWIS

Donald F. Lewis, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Assistant Project Engineer (acting): that he is responsible for providing answers to NRC Staff Interrogatories to Consumers Power Company Number 8 and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

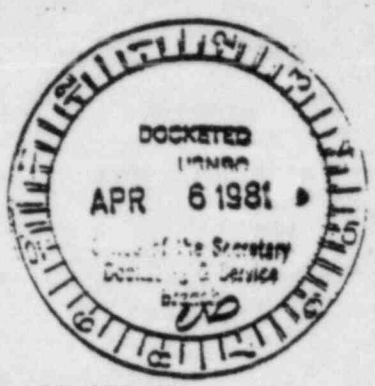
Donald F. Lewis

Subscribed and sworn to before me this 26 day of March 1981.

Notary Public, Washtenaw County, Michigan

My Commission Expires: November 30, 1982

RELATED CORRESPONDENCE



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

I hereby certify that copies of Responses to Stamiris' 1/14/81 Discovery Request, Responses to the NRC Staff Interrogatories dated 1/2/81, and Responses to Questions 3 and 4 of Stamiris' 12/4/80 Discovery Request with attached affidavits were served upon the following persons by depositing copies thereof in the United States Mail, first class postage on this _____day of April, 1981. (Including drawings "SK - C - 745, Rev. A, SK - C - 675, Rev. C., and SK - C - 650, Rev D., with Paton copy only)

Frank J. Kelley, Esq.
Attorney General of the
State of Michigan
Stewart H. Freeman, Esq.
Assistant Attorney General
Gregory T. Taylor
Assistant Attorney General
720 Law Building
Lansing, Michigan 48913

Myron M. Cherry, Esq.
One IBM Plaza
Suite 4501
Chicago, Illinois 60611

Mr. Wendell H. Marshall
RFD 10
Midland, Michigan 48640

Charles Bechhoefer, Esq.
Atomic Safety & Licensing Board Panel
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Dr. Frederick P. Cowan
6152 N. Verde Trail
Apt. B-125
Boca Raton, Florida 33433

Michael Miller, Esq.
Isham, Lincoln & Beale
One First National Plaza
Suite 4200
Chicago, Illinois 60603

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

D. F. Judd, Sr. Project Manager
Babcock & Wilcox
P. O. Box 1260
Lynchburg, Virginia 24505

Atomic Safety & Licensing Board Pan
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. C. R. Stephens, Chief
Docketing & Service Section
Office of the Secretary
U. S. Nuclear Regulatory Comm
Washington, D. C. 20555

Lester Kornblith, Jr.
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Ralph S. [illegible]cker, Esq.
Route 4, Box 1900
Cambridge, Maryland 21613

Ms. Mary Sinclair
5711 Summerset Street
Midland, Michigan 48640

William D. Paton, Esq.
Counsel for the NRC Staff
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Atomic Safety & Licensing Board Panel
U. S. Nuclear Regulatory Comm.
Washington, D. C. 20555

Barbara Stamiris
5795 North River Road
Route 3
Freeland, Michigan 48623

James E. Brunner

James E. Brunner
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

CPCo seeking clarification to NRC response to Interrogatories

Patton/Jones/Brown
PF J. Kane
Rec'd 3/25/81

ISHAM, LINCOLN & BEALE
COUNSELORS AT LAW

ONE FIRST NATIONAL PLAZA FORTY-SECOND FLOOR
CHICAGO, ILLINOIS 60603
TELEPHONE 312-558-7500 TELEX 2-5288

WASHINGTON OFFICE
1120 CONNECTICUT AVENUE, N.W.
SUITE 325
WASHINGTON, D.C. 20036
202-833-9710

March 20, 1981

William D. Paton, Esq.
Counsel for the NRC Staff
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Bill:

We have reviewed the NRC Staff's Answers to Interrogatories filed by Consumers Power Company. As you know, we have filed a motion to compel regarding the interrogatories the NRC Staff has refused to answer. We understand that the Staff is preparing a response to that motion and that the response will be filed April 1st, the day before the prehearing conference.

Our review of the Staff's answers reveals several answers that require clarification and/or additional response from the Staff. Rather than filing a motion or follow-up interrogatories with regard to those items, we have herewith set forth our concerns and request that you give us your response prior to the April 2nd prehearing conference.

Our first concern is the use of the word "primarily" at page 9, and "essentially" at pages 35, 38 and 42 of your answer. These words qualify the answers so as to not make them fully responsive to our interrogatories. We request an explanation of the degree of qualification and revision of the answers so that they are in fact responsive.

We note that the answer to interrogatory 11 states that because the Staff has not completed its review of information submitted by Consumers Power that it cannot answer the interrogatory. We request an answer to the interrogatory as soon as the review is completed, in any event, within a reasonable time prior to May 18th.

We also note that Table 8-1 contains responses for 50.54(f) requests 39-53 that state that the Staff's consideration of response adequacy is under review and that the necessity for Staff follow-up requests or communications to Consumers

~~8104060530~~ 2pp

Power has not been determined yet. We request that Table 8-1 and the other portions of the answer to interrogatory 8 be updated as soon as the review is completed, in any event, within a reasonable time prior to May 18th. We also request that you provide us with the same information with regard to our answers to your interrogatories.

Please call me if you have any questions. Otherwise, I shall expect your timely response.

Sincerely,

Alan S. Farnell

ASF:jp
cc: Midland OM/OL Service List

Jo Kane

Recd 3/25/81

CPCo Response to NRC Interrogatories

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-OL
50-329-OL
50-330-OL

AMENDED AND ADDITIONAL RESPONSES TO
CERTAIN NRC STAFF INTERROGATORIES DATED 11/26/80

Interrogatory 4

In the response to Question 15 of the NRC request, regarding plant fill, it is stated that, "differential settlement primarily induces additional strain, which is a self-limiting effect and does not affect the ultimate strength of the structural members." Additional clarification of this statement is needed.

4(a) Why do you classify the resulting strains as self-limiting in nature?

Response

The term "self-limiting" is a shorthand expression for the behavior of a structure under strain-induced loads such as settlement in the absence of a bearing capacity failure.

Based on the characteristics of supporting soils and the imposed load from a structure, the predicted settlement of the structure can be calculated over its its lifetime. To evaluate the effect of settlement on the structure, the settlement can be divided into the following:

(1) Uniform settlement (rigid body translation)

(2) Differential settlement

(a) Tilting (rigid body rotation)

(b) Curvature

8104060674

13 pp.

Rigid body motion of the structure, both translation and rotation, does not cause any strain in the structure. Therefore, it is of no concern in the evaluation of structural adequacy. In contrast, curvature in the structure due to settlement will cause additional strain in the structure. Therefore, the effects of curvature induced due to settlement need to be investigated.

Curvature and Stress

When a structural element is subjected to curvature (Ø), tensile strain is induced in the convex side and compressive strain in the concave side of the element (Figure 1). For a concrete structural element, the theoretical relationship between curvature and moment can be established based on the stress-strain relationship of concrete and reinforcing steel.

An idealized moment-curvature plot of an under-reinforced concrete section similar to those used in the Midland Diesel Generator Building is shown in Figure 2. As can be seen from Figure 2, the curvature increases linearly as the moment is increased, up to the moment My, corresponding to the point of yielding for the tensile steel. Beyond that point, any increase in curvature would not increase the moment in the structural element. The maximum curvature that can be induced in the element is Øu, corresponding to an ultimate concrete strain of .003.

Behavior of Structures Subjected to Loads

The loads applied on a structure can be divided into two categories:

(1) Externally applied forces

(2) Externally applied strains

When structures are subjected to externally applied forces, internal forces and moments must be induced in the structure to restore static equilibrium between external and internal forces. An increase in curvature beyond $\emptyset y^*$ is not useful in resisting such external forces, as no additional internal moment is mobilized due to the additional curvature.

When an externally applied strain due to settlement is applied to a structure, the structure must be capable of accommodating additional strain imposed on it without failure. Since no net external forces are applied by that process, the induced strain need not cause internal forces in the structure. Therefore, even if a structure has already reached $\emptyset y$ due to an externally applied force, the structure can still resist externally applied strain so long as the resultant curvature is less than $\emptyset u$. Moreover, the behavior of the structure would be the same regardless of which influence — the settlement strain or the external force — is applied first.

For example, let "M_A" be the moment induced in the structure due to external forces and $\Delta\emptyset$ be the additional curvature induced due to settlement. In the elastic range, let ΔM be the increase in moment due to $\Delta\emptyset$. If $(M_A + \Delta M)$ is less than My, the additional curvature due to settlement will cause the additional moment corresponding to the curvature $(\Delta\emptyset)$. (Figure 3)

On the other hand if $(M + \Delta M)$ is greater than My as in (Figure 4), the structure will see a moment equal to My with an increase in curvature equal to $\Delta\emptyset$. The increase in moment due to curvature in this instance (i.e.

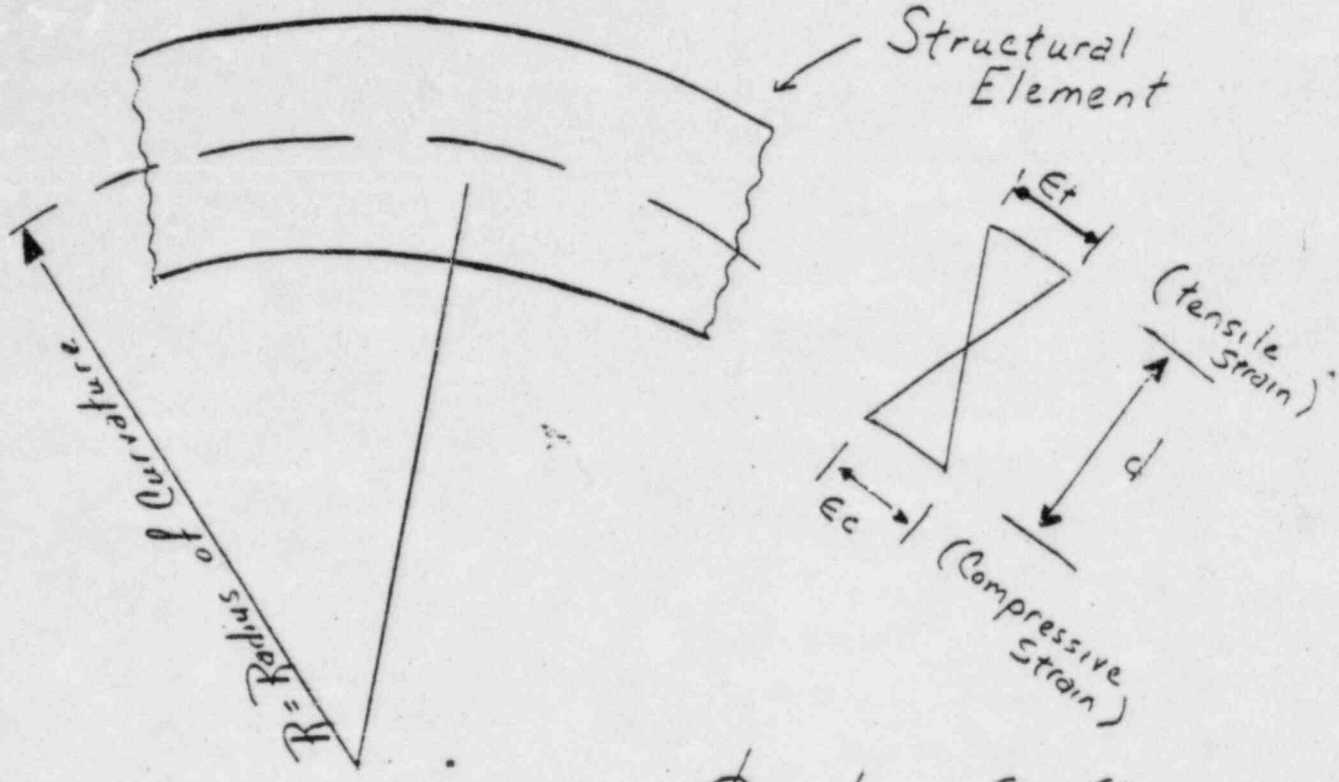
*See attached figure 2

Figure 4) is less than it would be were the yield moment high enough such that $M + \Delta M < My$. If $M = My$, there is no increase in moment. Since ΔM is not required to restore static balance, the structure will be stable even if $\Delta M = 0$, as long as the additional curvature $\Delta \emptyset$ does not result in a curvature of the structure greater than $\emptyset u$.

Conclusion

The stress induced in a structure due to settlement can vary from zero to a maximum of a proportionality constant* multiplied by the induced curvature. The actual stress is assigned by the structure itself depending on its capacity to resist stress after allowing for any stress requirements due to external forces.

* i.e. $(\Delta M / \Delta \emptyset)_{elastic}$



$$\phi = \frac{1}{R} = \frac{\varepsilon_c + \varepsilon_t}{d}$$

Figure 1

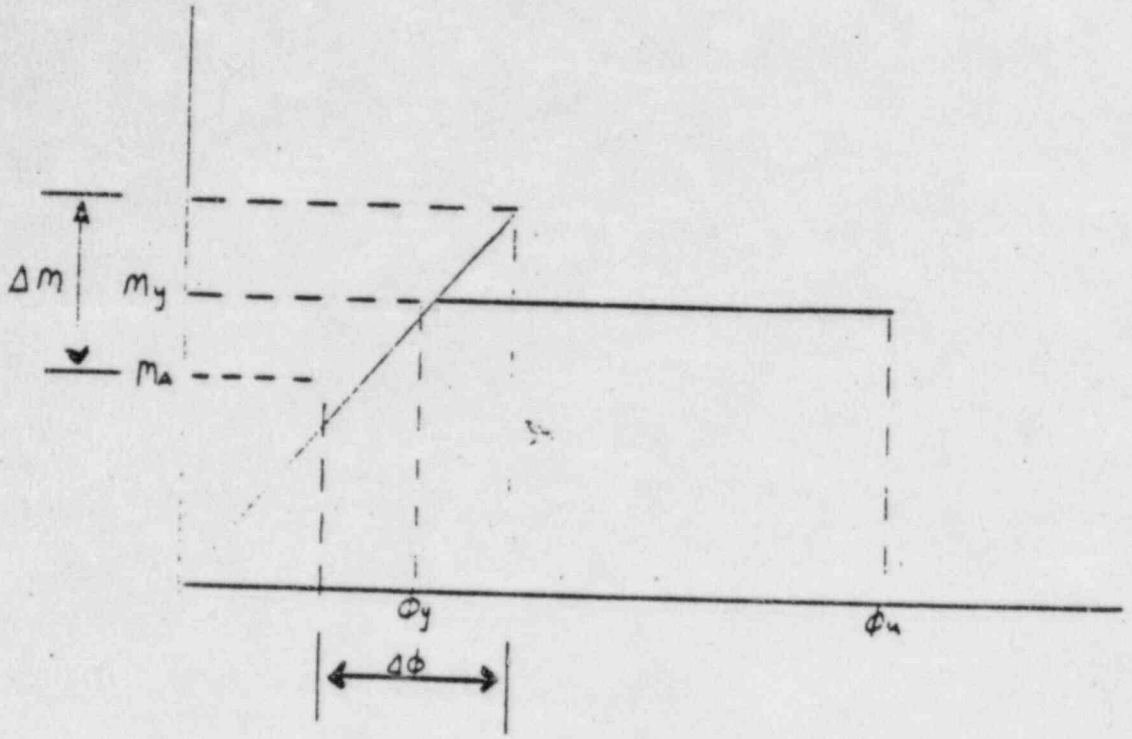


Figure 4

4(b) How do you reconcile your statement quoted above with your statement concerning the Service Water Pump Structure in the Management Corrective Action Report No. 24, Interim Report 6, issued September 7, 1978 that the total design loads cannot be supported by the main structure.

Response

For purposes of the underpinning design of the foundations of the service water pump structure, no credit was taken for any bearing capacity in the fill material. Under these circumstances the self-limiting analysis described in the Response to Interrogatory 4(a) does not apply, since the mechanism for producing possible strains in the structure is not limited to settlement.

Interrogatory 1(e) and 1(f) (Amended Responses)

1(e) Have you factored into any re-analysis information contained in, or resulting from, a letter from Robert Tedesco to Vice President J. Cook dated October 14, 1980, concerning seismological input data acceptable to the Staff?

Response

Applicant objects on the ground that this question goes beyond the limited jurisdiction conferred by the December 6, 1979 Order, that the seismic re-analysis requested by Mr. Tedesco in the October 14, 1980 letter should be reserved for the operating license hearing, and, hence, that it is irrevelant to these proceedings. Subject to that objection, Applicant answers as follows: The pending seismic re-analysis requested in the October 14, 1980 Tedesco letter has been considered in arriving at the following approach towards designing and analyzing the remedial fixes for the auxiliary building electrical penetration area, the service water pump structure, and the borated water storage tank ring foundation: Seismic forces obtained by application of FSAR input criteria (i.e. modified Housner spectra and maximum acceleration anchored at .12 g) will be increased by a reasonable margin. Forces thus determined will be combined with other loads in accordance with applicable load combinations in arriving at design parameters for the remedial measures. In addition, with respect to the Diesel Generator Building, Bechtel is attempting to evaluate the total margin which actually exists in excess of FSAR seismic design criteria.

When discussions with the NRC Staff respecting possible redefinition of seismic criteria applicable to the entire Midland site are completed, Applicant will evaluate the necessity for seismic re-analyses of any or all Category I Structures, including those founded partly or entirely on plant fill.

1(f) If the answer (e) is yes, please provide copies of all documents relating to that re-analysis.

Response

The documents pertaining to the design analyses of the remedial fixes for the service water pump structure, the auxiliary building and the borated water storage tank ring foundation (using the approach spelled out in the response to 1(e)) will be provided, as stated in the response to question (b). Applicant objects to providing documents relating to the analysis of total margin in excess of FSAR seismic design criteria for the Diesel Generator Building, for the reasons stated in the first sentence of Applicant's response to question 1(e). For the same reason, Applicant objects to providing in this proceeding future seismic re-analyses of Midland structures as requested by the October 14, 1980 Tedesco letter.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF BIMAL DHAR

Bimal Dhar, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Engineering Supervisor; that he is responsible for providing an answer to Consumers Power Company's Answer to NRC Staff Interrogatory No. 4 dated 11/26/80, and that to the best of his knowledge and belief the above information and the answer to the above Interrogatory is true and correct.

Bimal Dhar

Subscribed and sworn to before me this 13 day of March, 1981.

Notary Public, Washtenaw County, Michigan

My Commission Expires: [illegible]

BEVERLY A. [illegible]
NOTARY PUBLIC, WASHTENAW CO., MICH.
MY COMMISSION EXPIRES NOV. 30, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of CONSUMERS POWER COMPANY (Midland, Units 1 and 2)	)	DOCKET NOS. 50-329-OM, 50-330-OM, 50-329-OL, 50-329-OL

COUNTY OF WASHTENAW)
)ss
STATE OF MICHIGAN)

AFFIDAVIT OF NEAL SWANBERG

Neal Swanberg, being duly sworn, deposes and says that he is employed by Bechtel Associates Professional Corporation, as an Assistant Project Engineer; that he is responsible for providing amended responses to NRC Staff Interrogatories to Consumers Power Company Numbers 1(e) and (f) and that to the best of his knowledge and belief the above information and the answers to the above interrogatories are true and correct.

Neal Swanberg
Neal Swanberg

Subscribed and sworn to before me this 18 day of [illegible] 1981.

[illegible]
Notary Public, Washtenaw County, Michigan

My Commission Expires: [illegible]

[illegible]
NY COMMISSION [illegible]

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of Amended and Additional Responses to Certain NRC Staff Interrogatories Dated 11/26/80, with attached affidavits, were served upon the following persons by depositing copies thereof in the United States Mail, first class postage on this 20th day of March, 1981.

Frank J. Kelley, Esq.
Attorney General of the
State of Michigan
Stewart H. Freeman, Esq.
Assistant Attorney General
Gregory T. Taylor, Esq.
Assistant Attorney General
720 Law Building
Lansing, Michigan 48913

Myron M. Cherry, Esq.
One IBM Plaza
Suite 4501
Chicago, Illinois 60611

Mr. Wendell H. Marshall
RFD 10
Midland, Michigan 48640

Charles Bechhoefer, Esq.
Atomic Safety & Licensing Board Panel
U.S. Nuclear Regulatory Comm.

Dr. Frederick P. Cowan
6152 N. Verde Trail
Apt. B-125
Boca Raton, Florida 33433

Michael Miller, Esq.
Isham, Lincoln & Beale
One First National Plaza
Suite 4200
Chicago, Illinois 60603

Mr. Steve Gadler
2120 Carter Avenue
St. Paul, Minnesota 55108

D. F. Judd, Sr. Project Manager
Babcock & Wilcox
P. O. Box 1260
Lynchburg, Virginia 24505

Atomic Safety & Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. C. R. Stephens, Chief
Docketing & Service Section
Office of the Secretary
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Lester Kornblith, Jr.
Atomic Safety & Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Ralph S. Decker, Esq.
Route 4, Box 1900
Cambridge, Maryland 21613

Ms. Mary Sinclair
5711 Summerset Street
Midland, Michigan 48640

William D. Paton, Esq.
Counsel for the NRC Staff
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Atomic Safety & Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Barbara Stamiris
5795 North River Road
Route 3
Freeland, Michigan 48623

James E. Brunner

James E. Brunner
Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

G. Lear

Kane

Consumers Power Company

General Offices: 212 West Michigan Avenue, Jackson, MI 49201 • (517) 788-0550

March 9, 1981

Paton / Jones
Olmstead
FF

William D. Paton
Counsel for the NRC Staff
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Paton:

Attached hereto are Responses to NRC Staff Interrogatories dated November 26, 1980. The Applicant will file Responses to the Third Set of NRC Staff Interrogatories prior to the prehearing conference presently scheduled for April 2, 1981.

Kane

Very truly yours,

James E Brunner

James E. Brunner

Enclosure

Check your original to see if these 2 pages were omitted

8103240161 1p

Interrogatory 4

In the response to Question 15 of the NRC request, regarding plant fill, it is stated that, "differential settlement primarily induces additional strain, which is a self-limiting effect and does not affect the ultimate strength of the structural members." Additional clarification of this statement is needed.

4(a) Why do you classify the resulting strains as self-limiting in nature?

4(b) How do you reconcile your statement quoted above with your statement concerning the Service Water Pump Structure in the Management Corrective Action Report No. 24, Interim Report 6, issued September 7, 1978 that the total design loads cannot be supported by the main structure.

Response

Applicant will provide a response to this Interrogatory prior to the prehearing conference scheduled April 2, 1981.

Interrogatory 5

Your response to Questions 14, 28 and 29 of the NRC request regarding the causes of cracks due to settlement, the significance of the extent of cracks, and the consequences of cracking, addressed only the existing condition of the Category I structures.

5(a) Have you performed analyses which provide tension field data under design load combinations at any crack locations for each Category I structure.

Response

There is a possibility that future differential settlement could cause larger rebar stresses and new or larger cracks. In such an instance, the larger cracks may be indicative of increased rebar stresses. However, since the design analysis of the structure assumes zero tensile strength for concrete, the existence of any crack would not be significant except as an indicator of rebar stresses (and except for corrosion effects).

To account for the possibility of increased rebar stresses due to future differential settlement, Applicant has conservatively analyzed maximum rebar stresses which would be produced by future differential settlement. The method directly predicts future rebar stresses without predicting future crack sizes.

With regard to the auxiliary building and the service water pump structure, since neither building is expected to undergo appreciable differential settlement in the future, the problem of "crack propagation", which evidences rebar stresses produced by such settlement, does not exist.

With respect to the borated water storage tank, Applicant will determine the necessity of further crack evaluation following its decision on remedial actions to be undertaken.