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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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Docket Nos: 50-329 OM,OL
and 50-330 OM,OL

MEMORANDUM FOR: R. Ballard, Chief, Environmental Engineering Branch
G. Burdick, Chief, Reactor Risk Branch
L. Hulman, Chief, Accident Evaluation Branch
K. Kniel, Chief, Generic Issues Branch
G. Lear, Chief, Hydrologic and Geotechnical Engineering Branch
S. Pawlicki, Chief, Materials Engineering Branch
Z. Rosztoczy, Chief, Equipment Qualifications Branch
A. Toalston, Chief, Antitrust and Economic Analysis Branch
A. Thadani, Chief, Reliability and Risk Assessment Branch
[redacted]

FROM: Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

SUBJECT: MIDLAND INTERROGATORIES

Enclosure 1 is additional Midland interrogatories submitted by intervenors Mary Sinclair and Barbara Stamiris for the Midland OL hearing. The contentions referred to in the interrogatories have all been accepted by the Board for hearing purposes in the August 12 - 13, 1982, Prehearing Conference (Enclosure 2). Also enclosed as Enclosure 3 is a list of reviewers assigned for staff response. Reviewers are requested to forward responses for all interrogatories other than the interrogatory dealing with Stamiris contention 6 to Melanie Miller (X24259) by October 25. Responses to interrogatories dealing with Stamiris contention 6 should be submitted by October 6 because this contention will be discussed at the October 26-29 soils hearing.

If there are any questions about the assignments contact Melanie Miller, X24259 promptly so that reassignments may be made if necessary.

Elinor G. Adensam
Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosures:
As stated

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Enclosure 1

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of:	)	
CONSUMERS POWER COMPANY,	)	Doc. Nos. 50-329 50-330
(Midland Plant, Units 1 and 2)	)	Operating License

DISCOVERY QUESTIONS TO THE NUCLEAR REGULATORY COMMISSION ON NEW CONTENTIONS ACCEPTED BY BOARD ORDER, AUGUST 14, 1982

I

Paton / Hodgdon
Wilcove / Chandler
Rutberg
FF

Sinclair

August 25, 1982

These interrogatories are filed in accordance with the Board Order of August 14, 1982, following the pre-hearing conference of August 12-13, 1982.

Reply due Sept. ~~10~~, 1982

Terms are defined as follows:

"Staff"--means any consultants or expert witnesses retained by the Nuclear Regulatory Commission (NRC) for any issue discussed as well as the regular NRC staff.

"Documents"--shall include reports, studies, notes, worksheets, meeting reports and summaries, correspondence, telecons or other communications.

I. Contention 3 questions the adequacy of the methodology in the DES for determining the possibility of severe accidents at the Midland nuclear plants, and recommends NUREG/CR/2497, as a better basis.

Questions:

1. The FES includes an extensive discussion of the uncertainties associated with the numerical estimates of the likelihood, as well as the consequences, of severe reactor accidents that the DES did not carry. For example, the FES states that it is the judgment of the staff that "the uncertainty bounds could be well over a factor of 10, but not likely to be so large as a factor of 100' (5-48). NUREG/CR/2497 estimates that the Rasmussen study (relied upon in DES 5-46-66) underestimates the risk by a factor of 20. To what extent did the new uncertainty bounds in FES depend on

NUREG/CR/2497 for their new uncertainty estimates?

2. Provide copies of any studies (including NUREG/CR/2497) which address risk assessment of accidents subsequent to the Rasmussen study.

3. What other studies were done after the DES was issued to prompt this new evaluation of uncertainties in the FES?

4. Provide correspondence, memos and any other appropriate documents that deal with this new evaluation of uncertainties identified in the FES (5-48) in the following areas: 1) oversimplified analysis of the magnitude and timing of the fission product releases; 2) uncertainties in calculated energy release; 3) radionuclide transport from the core to the receptor; 4) lack of precise dosimetry; 5) statistical variations of health effects.

5. The study, NUREG/CR/2497, bases the probabilities of severe accidents on the basis of actual accident consequences and significant events. Using this methodology:

a. What percentage of accidents were initiated by operator error? List them.

b. What percentage were initiated by non-safety systems that failed and impacted on safety systems? List them.

c. What percentage were due to disbelief of actual instrument readings which were not safety grade equipment? List them.

d. What percentage were due to instruments actually giving a false reading to operators? List them.

e. What percentage were due to maintenance during plant operation that disrupted the safety systems? List them.

f. What percentage were due to minor mishaps that disrupted larger systems? List them.

g. What percentage of accidents were due to failure of safety systems? List them.

h. What percentage were due to poor QA procedures during operation?

i. What percentage took place when the plant was at less than full power?

j. How many of the accidents studied took place at the Applicant's Palisades and Big Rock plants? Describe them.

6. Based on the new information in the FES of the probability of accidents that has increased by a factor of 100, what is the worst case probability of accidents at the Midland reactors and the U.S.?

7. What is this new probability of risk of accidents calculated for Unit I that has

the bad weld?

II. Contention 5 deals with questions about the adequacy of the basis of the data in the Monthly Cooling Pond Performance Tables on the cooling pond provided in the DES (4-7, 4-8) and the extent of the fogging and icing.

Questions:

1. What was the source of the data relied upon for these Tables in DES (4-7, 4-8)? Give the basis of data for each factor in the Table and FES (4-24, 4-25).

2. Explain in detail the effect on the efficiency and safety of the n-plant's operation when blowdown will have to be withheld when the conditions listed in FES (4-8) (last paragraph of 4.2.6.2) occur.

a. What percentage of annual time or days per year will Dow Chemical's plant discharge utilize the entire TDS capacity of the river and thus require withholding of blowdown?

b. What percentage of annual time or days per year will ambient river temperatures be equal to or greater than the monthly maximum allowable specified in the NPDES permit?

c. What percentage of annual time or days per year can makeup not compensate for pond water losses caused by evaporation or seepage?

3. What will be the effect on the efficiency of plant operation when more than one of the conditions listed above occur? (As are listed in the last paragraph of 4.2.6.2 of FES) (4-8).

4. What will be the effect on plant efficiency when all of these conditions occur at the same time?

5. What will be the effect on safety of plant operations when more than one of these conditions occur (as are listed in the last paragraph of 4.2.6.2 of FES) (4-8)?

6. What will be the effect on the safety of the plant when all of these conditions occur at the same time?

7. James Carson, meteorologist from Argonne National Laboratory, met with the Midland County Road Commissioner and City Planners on September 8, 1978, and said the Dresden pond model was more applicable to the Midwest than the Bechtel cooling pond model of 1973 which was based on data from a Southwest cooling pond.

a. Was the Dresden pond data used for calculating either the thermal efficiency or the fogging and icing at Midland in the DES and FES?

b. If it was, provide the base line data and methodology used to reach the conclusions in the DES and FES.

c. If the Dresden pond was not used for either (thermal efficiency or fogging and icing), explain why not.

8. Has this cooling pond model as given in the DES been applied anywhere that is comparable to Midland? If so, where?

9. If so, provide the data to show that projections in the model are consistent with actual operating experience.

10. If it has not been tried, how can you be sure it will be an effective cooling pond for the Midland plants?

11. What studies have been made to determine the effect of the fogging on the people in the area and the Bullock Creek elementary school? (Dr. Edward Epstein, the meteorologist from the University of Michigan who was our expert witness on fogging, discussed this at a seminar of the nuclear engineering department in October, 1972, and said, "I don't know how those people are going to live.")

Contention 7 deals with the issue of synergism between chemicals and radiation as it affects insulation in nuclear plants.

Questions:

1. Please provide NUREG/CR/2156, June, 1982.

2. On what basis was the environmental qualification and durability of the insulation of electrical equipment that is now in place, determined for the lifetime of the plant?

3. How are the results of the Sandia study (NUREG/CR/2156) interpreted as to their effect on the performance of the cable insulation during the lifetime of these reactors?

4. To what extent is the cable insulation that will be affected not subject to inspection at this time?

5. What percentage of the cable insulation will not be available for inspection once the plants begin operations?

Respectfully submitted,

Mary P. Sinclair

cc:
Secretary, U.S. Nuclear Regulatory Commission
Michael I. Miller, Esq.
William Paton, Esq.
Mr. Wendell Marshall
Ms. Barbara Stamiris
James E Brunner

P.S. Discovery questions for Contentions 6, 8 and 16 will be submitted at a later date.

U. S. Nuclear Regulatory Commission

In the Matter of
CPC Midland Plant
Units 1 & 2

Docket Nos.
329-OL
330-OL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

STAMIRIS INTERROGATORIES AND DOCUMENT REQUESTS

TO CONSUMERS POWER COMPANY

8/30/82

(Documents are meant to include studies, models, notes reports, working papers, or other written records of communication of CPC/Bechtel or other plant employees, or outside consultants, experts, agencies, or companies contacted on the subject. Provide names and address of authors or sources for documents provided.)

COST/BENEFIT: CONTENTION 1b and 1 c

1. Explain in detail the "prompt removal/dismantlement decommissioning plan for Midland. Describe any special procedures or equipment which will be used to protect the workers and the environment from radiation. Include estimates of length of time to complete the job and the condition of the plant site upon completion.

2. Provide documents which form the basis for the decommissioning plan described in 1 above.

3. To what extent if any will Midland's decommissioning be affected by soils remedial measures such as underpinning supports, dewatering equipment, or others?

4. Explain in detail how the $235 million (1984 dollars) decommissioning estimate was derived for Midland. Include breakdown of costs for the component steps described.

5. What does CPC calculate Midland decommissioning costs to be as a % of its projected lifetime production cost savings? Explain this calculation.

6. To what extent is the Midland decommissioning financing, and collection plan based upon the Big Rock and Palisades models? Explain any differences if they exist.

7. Explain in detail the method CPC proposes to finance and collect Midland decommissioning costs until the year 2000. Include explanations of inflation allowances, interim use of money collected by CPC, liquidity of these assets, and method of guaranteeing availability of money when needed for decommissioning.

8. Provide documents which form the basis for the financing and collection plan described in q. 7.

9. If Big Rock and Palisades' combined $111 million decommissioning cost in 1980 dollars (MP 6/81-50M, 62-51912 CPC decommissioning pamphlet) results in the collection of $526 million (exhibit A/S-1, MPSC case 6150) by the year 2000, what amount is estimated to be collected for Midland by the year 2000 according to your plan? Explain these calculations.

10. Does the $235 million estimate represent the full amount to be collected according to your decommissioning plan described in the last part of your pamphlet cited above, if not, explain why it shouldn't.

11. a) According to current laws, explain the federal income tax rate and manner by which CPC will be taxed for decommissioning money collected early. b) What are these tax amounts projected to total through the year 2000 on the decommissioning amounts projected in q. 9? c) Will money be collected from ratepayers above and beyond amounts estimated in q. 9 to support these CPC tax expenditures? If so explain and estimate these added ratepayer contributions.

12. What was the projected life expectancy for Midland units 1 & 2 respectively.

13. Explain in detail how the 66% lifetime capacity factor is derived for Midland. Does this estimate take into account any expected differences between Unit 1 & Unit 2 operating capacity, pressure, or temperature limitations due to the defective beltline weld in Unit I? Explain these differences if they exist.

14. Explain in detail the apparant discrepancy in the EFPY estimates for Unit I operation appearing on pages 5-19 and C-10 of the SER?

15. What is the EFPY estimate you are currently using for Unit I? Explain any differences between this estimate and those submitted for the SER.

16. Explain in detail the apparant discrepencies between flux properties on SER p. 5-19 and FSAR section 5.3.1.6.1.3 for surveillance samples and actual beltline material samples. Provide the calculations and other documents which form the basis of this explanation.

17. Provide documents relating to reduced operating capacity or life expectancy of Unit I.

18. Explain any contingency economic plans for shorter life expectancy of Unit I in terms of electrical production and related costs to ratepayers, and in terms of inability to produce steam for Dow according to contractual obligations. what will happen if Unit I must shut down after 10 years?

19. Has CPC considered performing preventative rather than remedial thermal annealing or other corrective measures for defective reactor welds prior to plant operation to avoid the safety and economic costs associated with post operative radiation? If yes, explain. If not why not.

20. Explain in detail the method of performance and frequency of inspections planned by the B & W Owners Group Surveillance program for monitoring reactor weld

fracture toughness and other weld conditions? How does this program protect against the possiblity of sudden failure?

21. Provide documentation for B & W program above.

22. Explain in detail when and how CPC first became aware of the defective weld material--or the questionable quality of weld material in their reactors.

23. Provide all documents and correspondence sent and received regarding the reactor vessel weld properties prior to the installation of the reactors at Midland.

24. When were the Unit I and Unit II reactors installed (give month and year)?

25. Were Unit I and Unit II reactors ever switched from their originally planned containments? If yes, explain why.

26. Did any confusion in identification of Unit I and Unit II reactors ever occur. If so explain when and how this occurred, what occurred and how it was resolved.

QUALITY ASSURANCE: SINCLAIR CONTENTION 6

1. If a plant worker has a safety concern, what is the chain of reporting open to him? Describe the workings of this internal reporting system.

2. In reporting a safety concern to the NRC would a plant employee be free to provide the NRC with back up site work documentation without the permission of Bechtel or CPC superiors?

3. If the answer to q. 2 is no, how does this affect the necessary free flow of information to the NRC?

4. Does CPC, Bechtel or any subcontractor encourage workers with safety related complaints to keep the problems "in house" as opposed to going to the NRC? Explain.

5. If a plant worker has pursued the internal QA reporting system, and gone to the NRC, but still feels his safety concerns have not been properly addressed, is he free to go to the public with those concerns as an employee of CPC, or Bechtel--as an ex-employee of CPC or Bechtel? If not, explain why.

6. What records are kept of worker safety related complaints, reports of violations of QA procedures allegations, or use of internal reporting system described in q. 1 above? (I am interested in the incidence of reporting, not the reports themselves.)

7. Provide a list of former plant employee names and forwarding addresses who left in 1981 or 1982 and had reported a complaint about improper QA/QC procedures, made use of the internal reporting system described in q. 1, or filed an allegation.

8. How long has the MPQAD internal allegation form been in existance? Is this form made available to all plant workers--how? Please provide a copy.

EFFECTS OF DEWATERING: CONTENTION 3

1. Explain in detail the prolonged (40 year) effect of permanent dewatering upon the various subsoil layers and underlying groundwater.

   In answering this question:

   a. Include explanations of the potential 40 year effects of removal of fines from soil layers, and how this is monitored.

   b. Discuss the interrelated effects of one soil layer upon another.

   c. Explain the potential 40 year effects of groundwater movement from lower to upper levels during dewatering.

   d. Discuss the possible weakening of the "essentially impervious" intermediate clay layer separating the perched ground water from the underly. confined aquifiers, under artesian pressure. In so doing consider all possible combined effects of a 40 year dewatering system.

e. Discuss the possible after-effects of 40 year dewatering on groundwater movement between upper and lower levels and upon interrelated soil layers, possibly weakened or changed by dewatering.

2. What studies or other data exist concerning prolonged (40 year) effects of dewatering upon subsoils and groundwater relationships?

3. Provide documents upon which answers to q. 1 are based.

4. Did the assurances provided to the NRC for the FES analysis regarding the effects of possible radioactive release to groundwater following a core-melt accident take into account the effects of prolonged dewatering on subsoil and groundwater conditions? If yes, explain. If not, why not.

INDEPENDENT DESIGN AUDIT: CONTENTION 4

1. How much time, money, and effort is involved in the Bechtel Audit of Bechtel construction and design announced at the 5/20/82 ACRS meeting? What is the purpose and justification for this self-audit? Who will pay for it?

2. What plans have been made toward an independent design and construction audit at Midland?

3. What contacts have been established thus far with various firms concerning the design and construction audit?

4. Provide names and addresses of all firms considered for performing the independent design and construction audit.

5. What criteria are being used to select the firm for the independent design and construction audit--what are the job requirements.

6. Explain in detail the job description, scope of the audit, and other descriptions of what exactly is to be done during this audit.

7. Provide all documents and correspondence exchanged thus far between CPC and prospective companies or individuals regarding the design and construction audit.

8. Explain to what extent the audit scope, depth, or methodology will be controlled by CPC.

9. Explain CPC's proposed plan of action for responding to audit findings.

10. When does CPC expect the selection of this audit firm to be decided?

11. When does CPC expect the audit to begin? To be concluded?

12. How is it possible for an outside auditor to independently assess the structural adequacy of the containment structures and other structures (due to the missing reinforcing bars) without relying upon CPC's statements and analysis of internal wall conditions?

ADDITIONAL QA INTERROGATORIES

9. The Midland Daily News (8/26/82) reported a Suit against Bechtel by Ronald Carto charging job loss due to QA reporting. Why were coreholes being drilled into structures--name all structures into which coreholes were drilled? Provide documents related to QA procedures for this drilling and to the Carto allegations.

Respectfully Submitted,

Barbara Stamiris

Barbara Stamiris

cc. ASLB members
W. Paton, NRC
NRC Secretary

Enclosure 2

Sinclair Contentions 3, 5 8-12-82

Sensitivity of Risk Parameters to Human Errors in Reactor Safety Studies for a PWR (Brookhaven Laboratory, Jan., 1981) Nevertheless, the staff SER implements the TMI Action Plan by requiring emergency operating procedures necessary to cope with accidents analyzed in the FSAR and SER. (SER at 13-34) Those accidents, described at §15 of the SER, assume "no operator action for at least 15 minutes", and eventual long term proper operator action. (SER at 15-3) Thus, the SER is deficient in the implementation of the TMI Action Plan as it fails to analyze the consequences of operator error as described in NUREG/CR/1679.

3. The assessment of the likelihood and severity of "severe accidents" (or class 9 accidents) in the DES is inadequate in that it relies for methodology and probability of occurrence of severe accidents on the Rasmussen Report (WASH-1400) DES 5-45-66. However, a new NRC report reveals that the Rasmussen methodology, at least as it pertains to more severe accidents (total meltdown), significantly understates the risk of such accidents by a factor of 20. Precursors to Potential Severe Core Damage Accidents: 1969-1979, a Status Report, NUREG/CR/2497 (June 1982). This report shows that probabilities of severe accidents should be derived on the basis of actual accident sequences and significant events, rather than the Rasmussen methodology. The failure of the DES to incorporate this analysis cripples the entire Class 9 analysis of the DES.

4. Experience at Davis-Besse-1 (NRC Response to Interrogatory 15) has shown that maintenance of critical safety related components can disrupt those systems, or result in accidents. Nevertheless, the SER does not place any limitation on the type of maintenance that can be performed during plant operation, thereby threatening public safety. (SER, at 13-33, 34).

5. The staff DEIS is deficient in that it continues to base its analysis of the cooling pond's effectiveness in controlling thermal discharges (DEIS at 4-6) and ice and fog generation (DEIS at 5-9) on a study based on cooling pond performance in a substantially different climatic region. Instead, the DEIS should analyze information from the Dresden, Illinois nuclear facility (or other data from a comparably sized and situated facility) for both purposes, and present the baseline data from that facility to allow the agency and the public to reach an informed decision on the adverse effects of the cooling pond.

Sinclair Contention 7 8-12-82

6. Albert T. Howard, formerly of the Zack Company, has provided a signed affidavit to the NRC staff stating that substandard materials have been used in the heating and ventilating system of the Midland nuclear plant that will not be able to withstand the temperatures and the radioactive and chemical environments that are part of the operating conditions for the Midland nuclear plant. Since these materials that went into the ductwork are built-in all through the plant, including all safety related structures, no assurance can be given for the safe operation of this plant as far as the workers or surrounding population is concerned.

7. The issue of synergism between chemicals and radiation (Contention 61, (old 55) Contentions of Mary Sinclair, 1978) must be re-opened based on a new study. Scientists at Sandia National Laboratory, Albuquerque, New Mexico, have conducted tests sponsored by the NRC on polymer cable insulation and jacketing used in nuclear power containment buildings. (Industrial Research and Development, June, 1982) They have found that long-term low doses of gamma radiation degrades many polymers more than do equal doses administered at higher rates in shorter testing times. Besides the dose rate effect, the researchers have also found that synergistic effects can occur when polymers are exposed to radiation and mildly elevated temperatures. Dr. Roger Clough, of Sandia National Laboratory, has stated that the present testing method underestimates the long-term effects and synergisms that display themselves only in longer tests. This stuoy indicates that the useful life of the plant will be shortened considerably because of this problem.

8. The Zack Company of Chicago which has been the contractor responsible for the heating, cooling and ventilating system of the Midland nuclear plant has filed a non-compliance report with the NRC on or about August 4, 1982, indicating