September 25, 1973

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
WISCONSIN PUBLIC SERVICE CORPORATION	)	
	)	
WISCONSIN POWER AND LIGHT COMPANY	)	
	)	
and	)	Docket No. 50-305
	)	
MADISON GAS AND ELECTRIC COMPANY	)	
	)	
(Kewaunee Nuclear Power Plant)	)	

APPLICANTS' INTERROGATORIES TO INTERVENORS AND REQUEST FOR PRODUCTION OF DOCUMENTS

Pursuant to Section 2.740b of the Commission's Rules of Practice, Applicants hereby request that Intervenors answer separately and fully in writing, under oath and in accordance with the provisions of Section 2.740b, the following written interrogatories set forth in Section I below. Applicants also request that Intervenors provide the documents identified in Section II below in accordance with Section 2.741 of the Commission's Rules of Practice.

I. INTERROGATORIES

A. General Interrogatories

The following General Interrogatories Nos. A.1 through A.6 represent a list of general interrogatories, all of which are asked with respect to each of Intervenors'

hearing

contentions in this proceeding. Following the list of general interrogatories are specific interrogatories which Applicants request Intervenors to answer with respect to each of the contentions.

1. Is the contention based upon or supported by calculations? If so:
   a. Describe each calculation and identify the author, title, date, and person currently having custody of each document setting forth such calculation.
   b. Identify by name, address, institutional affiliation, and position the persons who performed each calculation.
   c. State the date on which each calculation was performed.
   d. Describe each parameter used in each such calculation and each value assigned to the parameter, and identify and describe the source of your data.
   e. Describe in detail the results of each such calculation.
   f. Explain in detail how each such calculation provides a basis for the contention.
   g. Explain in detail how each such calculation is relevant to the Kewaunee facility.

2. Is the contention based upon or supported by any study, analysis, or research investigation? If so:

   a. Describe the nature of each such study, analysis, or research investigation and identify the author, title, date and person having custody of each document that discusses or describes each study, analysis, or research investigation.

   b. Identify by name, address, institutional affiliation, and title the persons who performed each study, analysis, or research investigation.

   c. State the date and place where each study, analysis, or research investigation was performed.

   d. Describe in detail the information that was studied, analyzed, or researched.

   e. Identify and describe the source of the information studied, analyzed, or researched.

   f. Describe in detail the results of each such study, analysis, or research investigation.

   g. Explain how each study, analysis, or

research investigation provides a basis for the contention.

h. Explain in detail how each study, analysis, or research investigation is relevant to the Kewaunee facility.

3. Identify the authors, titles, dates and persons having custody of all documentary materials (in addition to those identified in your answers to Interrogatories Nos. 1 and 2 above) which support or provide a basis for each contention or which have otherwise been relied upon, or will be relied upon, in support of each contention.

a. Identify by volume and page numbers the information in each document which supports or provides a basis for, or is otherwise relevant to, each contention.

b. Explain how such information provides a basis for or supports each contention.

c. Explain in detail how such information is relevant to the Kewaunee facility.

4. Is the contention based upon or supported by conversations, consultations, correspondence or any other type of communications with one or more individuals? If so:

a. Identify the name, address, current

institutional affiliation and position of each such individual.

b. Describe the nature of each communication with such individual and the date and place where it occurred, and identify by name all other persons who participated in such communication.

c. Describe the information received from such individuals and explain how it provides a basis for or support of each contention.

d. Identify by author, title, date, and person having custody, each letter, memorandum, tape, note or other record related to each conversation, consultation, correspondence, or other communication with each such individual.

5. Explain in detail how each contention specifically relates to the Kewaunee facility.

6. Identify the name, address, current institutional affiliation and position of each individual who you intend to call as a witness. State the educational and professional background of each such individual, including occupation and institutional affiliations.

Identify by title, date and person having custody, all documents prepared in whole or in part by each such individual which relate to the matters on which he will testify.

B. Specific Interrogatories Relating to Each Contention

1. With respect to Contention 3.12.2:

a. Describe in detail all of the facts, assumptions, and calculations which support or form the basis for your allegation that the correct net free volume of the Kewaunee containment is "on the order of 1,000,000 cubic feet" rather than the minimum volume of 1,320,000 cubic feet stated by the Regulatory Staff.

b. State the source of the facts, assumptions, and calculations which support or form the basis for the allegation stated above.

c. Describe in detail how you calculated the net free volume of the containment and how your calculation differs from the calculations used by the Applicants or the Regulatory Staff.

d. Describe in detail all of the facts in your possession which support or form the

basis of Mr. Comey's allegation at Tr. 521 that Applicants have "purposely left out equipment which occupies significant volumes." State the source of such facts.

e. Identify each item of equipment which you believe to have been left out of the Applicants' or of the Regulatory Staff's calculations of net free volume, and state the volume occupied by each such item and the basis for calculating that volume.

f. Answer General Interrogatories A.1 through A.6.

2. With respect to Contention 3.12.3:

a. Specifically identify each reactor coolant system compartment in which you believe areas are "undersized."

b. State in detail all of the facts, assumptions, and calculations which form the basis of or otherwise support your allegation that the pressure differentials which will follow the rupture of a reactor coolant pipe inside reactor coolant system compartments will exceed the design limits of the compartments.

c. State the maximum pressure differential

which you believe would occur in each compartment identified in a. above in the event of a reactor coolant pipe rupture inside such compartment and describe in detail the facts, assumptions, and calculations from which such differential pressure was derived.

d. State the time following the reactor coolant pipe rupture at which you believe the maximum pressure differential identified in c. above would occur and describe in detail the facts, assumptions, and calculations from which such time was derived.

e. Describe in detail all facts which form the basis for or otherwise support your conclusion that the pressure differentials following a pipe rupture will result in "an outward explosion of the concrete walls of the compartment."

f. Do you believe such a pipe rupture will cause a pressure differential which will exceed the as-built structural capability of the compartments? If so, state in detail all of the facts, assumptions, and

calculations which form the basis of such belief.

g. Specifically identify each compartment which "provide[s] the basic support for equipment weighing many tons" and specifically identify each piece of equipment which is so supported.

h. State in detail all facts which form the basis for your allegation that the compartments identified in h. above "provide the basic support for equipment weighing many tons, such as the steam generator."

i. Specifically identify those parts of each compartment identified in h. above which provides such "basic support" and describe in detail all facts, assumptions, and calculations which form the basis for your answer.

j. Answer General Interrogatories A.1 through A.6.

3. With respect to Contention 3.12.4:

a. Describe in detail the facts, assumptions, and calculations on which you base your conclusion that "a best estimate of heat generated by accumulated fission products

during the first 1000 seconds following a loss-of-coolant accident would be approximately 30 percent in excess of ANS-5.1."

b. Answer General Interrogatories A.1 through A.6.

4. With respect to Contention 3.12.4.1:

a. Describe in detail all facts, assumptions, and calculations on which you base your assertion that there is "great indeterminacy of present assumptions for calculating stored thermal energy in a reactor core."

b. Describe in detail all facts, assumptions, and calculations upon which you base your assertion that it would be prudent to use the value of 81 watts per centimeter rather than 97 watts per centimeter for the integral of UO_2 conductivity from 32°F to 3632°F.

c. Have you determined the extent to which Applicants' alleged assumption of diametral gap closure between the fuel pellets and the cladding understates the calculation of the containment pressure transient? If so, describe in detail all the facts,

assumptions, and calculations used in making that determination.

d. In your judgment, would an assumption of instant densification at the time of fuel loading conservatively offset any effects of diametral gap closure in the Applicants' or the Regulatory Staff's containment pressure transient analysis? If your answer is not "yes," explain your answer in detail and describe all facts, assumptions, and calculations which support or form the basis for your answer.

e. Explain in detail how, and to what extent, fuel cracking and asymmetries in pellet stack geometry will increase the calculated stored thermal energy in the fuel rods. Describe in detail the facts, assumptions, and calculations which support or form the basis for your answer.

f. State the steady-state gap h value which you allege was used in Applicants' analysis.

g. State the steady-state gap h value which you contend should have been used and describe in detail the facts, assumptions and calculations on which you answer is based.

h. Answer General Interrogatories A.1 through A.6.

5. With respect to Contention 3.12.4.2.1:

a. State the increase in containment pressure which you believe would result from the "additional energy source" specified in this contention, and the resultant total peak containment pressure. Describe in detail the facts, assumptions, and calculations upon which your answer is based.

b. Answer General Interrogatories A.1 through A.6.

6. With respect to Contention 3.12.5:

a. Describe in detail the facts, assumptions, and calculations which support or form the basis of your allegation that a break in the main steam line inside of the containment upstream of the flow meter will result in a peak pressure within the containment greater than 50 psig if the break occurs at full power.

b. State the peak containment pressure which you believe would result from such a break if the break occurs at full power. Describe in detail the facts, assumptions, and calculations on which your answer is based.

c. Describe in detail the facts, assumptions, and calculations which support or form the basis of your allegation that such a break in the main steam line while the plant is in hot standby will result in a peak pressure "considerably higher than the design limit of the containment vessel."

d. State the peak containment pressure which would result from such a break in the main steam line if the break occurs while the plant is in hot standby. Describe in detail the facts, assumptions, and calculations on which you answer is based.

e. Answer General Interrogatories A.1 through A.6.

7. With respect to Contention 3.13.2.1:

a. Specifically identify each instance in which reactor protection system circuitry and safeguards system cable trays in the Auxiliary Building are located close to a main steam line and do not fulfill the requirements set forth in GDC 22 (1971) and GDC 20 (1967).

b. Explain in detail how each situation identified in your answer to a. above

fails to meet the requirements of GDC 22 (1971) and GDC 20 (1967).

c. Specifically identify each location, if any, in the Auxiliary Building in which you believe that a rupture of the main steam line would disable the protection system and prevent safe shutdown of the plant, and specifically identify the elements of the protection system which you believe would be disabled.

d. Describe in detail the facts, assumptions, and calculations which support your answers to a. through c. above.

e. Describe in detail the facts, assumptions, and calculations which support or form the basis for your assertion that a rupture of the main steam line that passes through the Auxiliary Building would produce jet impingement forces of up to 1 psi as far as 60 feet from the break location.

f. Describe in detail the facts, assumptions, and calculations which support or form the basis for your assertion that the cable trays cannot withstand an overall differential pressure in excess of 0.5 psi.

g. Answer General Interrogatories A.1 through A.6.

8. With respect to Contention 3.14.2.1:

a. Describe in detail the facts, assumptions, and calculations which support or form the basis for an assertion that the maximum load on the emergency diesel generator sets for the first 30 minutes (i) is greater than 2737 KW and (ii) should more realistically be estimated at 2904 KW.

b. Answer General Interrogatories A.1 through A.6.

9. With respect to Contention 3.16.2:

a. Describe in detail the facts, assumptions, and calculations which support or form the basis for your assertion that a "steam line break in the 30 inch OD main steam line within the Auxiliary Building would result in the loss of all electrical and mechanical equipment in the Auxiliary Building" and prevent safe shutdown of the reactor. Include in your answer the identification of the specific locations of the steam line breaks which you have postulated and an explanation of the

mechanism by which your alleged results would be realized.

b. Do you assert that Applicants have failed to comply with AEC criteria or other requirements with respect to steam line ruptures inside the Auxiliary Building? If so, specifically identify such criteria or other requirements, explain in detail how such criteria or other requirements have not been met, and describe in detail the facts, assumptions, and calculations which support or form the basis for your answers to this Interrogatory b.

c. Do you assert that the AEC criteria for installation of high energy piping set forth in AEC letter to Applicants dated December 15, 1972, are inadequate to protect against any credible steam line break in the 30 inch OD main steam line within the Auxiliary Building? If so, specifically identify the respects in which such criteria are inadequate and the facts, assumptions, and calculations which support or form the basis for your answer to this Interrogatory c.

d. Answer General Interrogatories A.1 through A.6.

10. With respect to Contention 3.16.3:

a. Describe in detail the extent and nature of the jet impingement which you assert will result from a break in the main steam line in the area of the control room.

b. Describe in detail the nature and extent of the damage which you assert will result to the control room walls and ceiling from the postulated jet impingement.

c. Do you assert that Applicants have failed to comply with AEC criteria or other requirements with respect to "pipe whip" related to steam line ruptures inside the Auxiliary Building? If so, specifically identify such criteria or other requirements, explain in detail how such criteria or other requirements have not been met, and describe in detail the facts, assumptions, and calculations which support or form the basis for your answers to this Interrogatory c. Do you assert that the Kewaunee high energy lines do not comply with the AEC criteria for high energy lines set forth in Interrogatory d. below?

If so, specifically identify how and the extent to which the Kewaunee high energy lines fail to comply with said criteria.

d. Do you assert that the AEC criteria for high energy lines set forth in AEC letter to Applicants dated December 15, 1972, are inadequate to protect against credible "pipe whip"? If so, specifically identify the respects in which such criteria are inadequate and the facts, assumptions, and calculations which support or form the basis for your answer to this Interrogatory d.

e. Describe in detail the facts, assumptions, and calculations which support or form the basis for (i) your answers to the foregoing Interrogatories a. through d., (ii) your assertion that the "control room walls are not strong enough to withstand the pressure of the jet impingement from a main steam line break in this area of the Auxiliary Building," (iii) your assertion that "there are no pipe restraints that would prevent massive pipe whip which

could also contribute to heavy damage to the control room," (iv) your implied assertion that the effects of such a steam line break could "kill the control room operators instantaneously," (v) your assertion that the effects of such a steam line break "would render all the control room equipment ineffective," thereby preventing shutdown of the reactor from the control room, and (vi) your assertion that, in the event "a shutdown of the reactor would be impossible . . . the reactor might exceed limits in such a fashion as to result in a core meltdown."

f. Answer General Interrogatories A.1 through A.6.

11. With respect to Contention 3.17.1:

a. With respect to your allegation that "Applicant and the Staff do not have enough information on fuel densification to justify licensing the Kewaunee plant at present," is it your contention that the required information bears on features unique to the Kewaunee plant,

as distinguished from other pressurized water reactors for which operating licenses have been issued? If so, identify such features and the type of information missing.

b. Identify all areas where you believe necessary information is missing, identify the types of missing information, and describe in detail all facts, opinions, and calculations which support or provide a basis for your answer to this Interrogatory.

c. In view of the assumptions and analytical techniques used in Applicants' and the Regulatory Staff's analyses and reports of the effects of fuel densification (WCAP-8092; Staff Safety Evaluation, Supp. 2, §43, 5/10/73), explain in detail (i) the extent to which you believe "parametric studies . . . to determine the rate and extent of densification for the Kewaunee fuel, including a sensitivity analysis with respect to creep-collapse time and differential pressure, cladding temperature, cladding thickness,

fission gas production, initial flux, internal void volume changes, and the solubility of the gases used to pre-pressurize the fuel," have not been conducted, and (ii) the reasons why the analyses are deficient or incomplete without such studies, i.e., the reasons why such studies are necessary to support the analyses. Describe in detail the facts, opinions, and calculations which support or provide a basis for your answer to this Interrogatory.

d. Do you contend that the analyses of Applicants and the Regulatory Staff for fuel densification are incorrect or inadequate in any material or significant respect? If so, state precisely each instance where the analyses are incorrect and state in detail the facts, calculations, and opinions which support or provide the basis for your allegations of error or inadequacy.

e. Identify in detail (i) all "secondary effects" of fuel densification which you contend will have adverse safety

considerations and (ii) the situations adverse to safety which will occur from such "secondary effects." To the extent that you believe Applicants and the Regulatory Staff have not adequately taken such "secondary effects" into consideration in their safety analyses, explain in detail the facts, opinions and calculations which support or provide a basis for your answer to this Interrogatory, including your assertions, if any, that such "secondary effects" will significantly and adversely effect the health and safety of the public.

f. Answer General Interrogatories A.1 through A.6.

II. REQUEST FOR PRODUCTION OF DOCUMENTS

Applicants request that Intervenors provide for Applicants' use, or produce and permit Applicants to inspect and copy, all of the documents, including documents containing calculations, or in the nature of studies, research, analyses, memoranda, notes,

correspondence and tapes, identified or referenced in response to the interrogatories in Section I above.

Respectfully submitted,

SHAW, PITTMAN, POTTS &
TROWBRIDGE

By _____
Bruce W. Churchill
Counsel for Applicants

Dated: September 25, 1973

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	)	
(Kewaunee Nuclear Power Plant)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of Applicants' Interrogatories to Intervenors and Request for Production of Documents were served by deposit in the United States mail this 25th day of September, 1973, upon those parties on the attached Service List.

SHAW, PITTMAN, POTTS &
TROWBRIDGE

By Ernest L. Blake, Jr.

Dated: September 25, 1973

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