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June 7, 1972

Hon. Arthur W. Murphy, Chairman
Atomic Safety and Licensing Board
Columbia University School of Law
Box 38, 435 West 116th Street
New York, N.Y. 10027

Re: In the Matter of Consumers Power Company
Midland Plant, Units 1 and 2
Docket Nos. 50-329 and 50-330

Dear Professor Murphy:

This letter summarizes several telephone conversations I have had with Mr. Kartalia concerning the areas of cross-examination which Mapleton Intervenors wish to pursue on June 12 and June 13, 1972. The categories of cross-examination are the need for the Midland units, the economics of the project (including the cost of capital construction, operation and decommissioning), the alternatives, AEC's decommissioning experience, cost-benefit analysis, and synergism.

More specifically, the cross-examination will inquire into the following points:

Need For Plant

1. Accuracy of population projections and per capita use of energy
2. The validity of forecast of peak load, available capacity, needed additional capacity and needed percentage reserve margin
3. Adequacy of Staff's evaluation of applicant's and FPC projections

Alternatives

1. Staff's comparative evaluation of the environmental and economic costs of:
 - a) A single purpose nuclear plant at Midland versus a single purpose nuclear plant at an alternate location

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- b) A dual purpose nuclear plant at Midland versus a dual purpose nuclear plant at an alternate location
- c) A single purpose nuclear plant at Midland versus a single purpose fossil fuel plant at Midland
- d) A dual purpose nuclear plant at Midland versus a dual purpose fossil fuel plant at Midland
- e) A single purpose nuclear plant at Midland versus a single purpose fossil fuel plant at an alternate location
- f) A dual purpose nuclear plant at Midland versus a dual purpose fossil fuel plant at an alternate location
- g) No project at Midland versus relocation of one nuclear unit to Palisades site
- h) An alternate mix of generating facilities (including purchase of power) not including any plant at Midland

2. Any other alternate means open to applicant of meeting power needs of its service area if Midland project is not licensed.

3. Extent to which purpose of Midland project is intended to enable applicant to sell process steam to Dow and put applicant in a position to sell surplus power to other areas rather than meeting the specific power needs of its service area.

Economics

1. Factors influencing cost of construction and operation of nuclear power plants and cost of nuclear fuel as compared to fossil fuel plants and fossil fuel.

2. Difficulties of making accurate comparisons of long-range cost projections.

3. Assumptions upon which cost projections are made.

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4. Extent to which AEC charges for various services and administrative regulations and policies influence the price of nuclear fuel.
5. Substantiation of projections of increased prices for coal, oil and gas and declining prices of nuclear fuel.
6. Items not included in Staff's projections of cost of construction and operation of nuclear plants and cost of nuclear fuel.
7. Cost of decommissioning of nuclear plants.
8. Possible increases in cost of construction and operation of nuclear power plant due to anticipated revisions in ECCS criteria.

Decommissioning

1. The Bechtel witnesses who testified on the subject of decommissioning had no special training or experience which qualified them to discuss this subject in depth. Their testimony was largely based upon literature which they had read. Intervenors wish to cross-examine Staff on the AEC's experience with decommissioning nuclear reactors. We wish to pursue the same lines as questions that we asked of the Bechtel witnesses and in addition, the following:
 - a) What reactors have been decommissioned, their location, size and type
 - b) The procedure followed in decommissioning
 - c) The cost of such decommissioning and of subsequent surveillance and maintaining such decommissioned reactors in a radiation-safe condition
 - d) The validity of extrapolating such experience to reactors of the size of Midland
 - e) The alternative methods of decommissioning the proposed Midland units and the problems which may be anticipated with respect to each of such alternatives

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- f) The estimated cost of each of such alternatives
- g) How such cost of decommissioning will be funded
- h) What will be done with the decommissioned components, the nature and quantity of the inventory of radioactivity anticipated at the time of the decommissioning, and the disposal or management of such radioactivity
- i) The respective responsibility of applicant and government with respect to the decommissioning and subsequent maintenance, surveillance, and disposal of radioactive components.
- j) Who will pay for decommissioning and post decommissioning procedures.

Cost-Benefit

1. Staff's definition of cost-benefit
2. Staff's standards or criteria, if any, for making cost-benefit analysis.
3. Whether or not the Staff included in its cost-benefit analysis the various costs as to which applicant was questioned and answered in the negative. For example, did the Staff include in its cost-benefit analysis the environmental effect of heat dissipated to the environment by Dow and attributed to the process steam purchases from applicant? Did Staff include in its cost-benefit analysis the probability of automobile accident and injury or loss of human life due to dangerous conditions caused by cooling pond induced fogging and icing of roads? Did Staff include in its cost-benefit analysis the following:
 - a) The possibility that radioactivity may enter the process steam used by Dow in its production processes and contaminate its product
 - b) The failure of either Dow or applicant to perform their contract obligations with each other, i.e. the

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failure of applicant to supply Dow with the agreed upon quantity of process steam, or the failure of Dow to purchase the agreed amount of process steam, or the failure of Dow to supply the agreed amount of cooling water to applicant.

- c) The possible synergistic interaction of chemical effluent from the Dow plants and radiation released either routinely or due to accident from the Midland units; and the further synergistic interaction that might be associated with the addition of thermal discharges from applicant and Dow to the atmosphere and cooling pond induced fog.
- d) A dollar cost assigned to the risk of accident in the operation of the Midland plant or in the transportation of spent fuel from such plant.

I have suggested to Mr. Kartalia that it may be possible to save time on cross-examination in the cost-benefit area if he would admit that no cost-benefit analysis was done by the Staff as to certain items which were not factored into a cost-benefit analysis by applicant.

Synergism

Transcript pages 7555-7571 contain the testimony of Dr. N.A. Frigerio on the question of synergism. The witness testified:

"It is a biological generality that any two toxins can either add, subtract or add synergistically. That is to say, the final effect can either be the sum of the separate ones, one can actually depress the toxic effect of the other, or some can be larger than A plus B. This is well documented in the literature. In the case of radiation a number of such synergistic effects have been studied, not an enormous number but perhaps a hundred or something of that order. In the case of radiation two or three of these conditions have been observed. So far as possibility is concerned, of course the possibility is there."

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Dr. Frigerio testified that he was familiar with and had seen the list of Dow effluents (Tr 7555, 7557). He testified that the output of Dow's plant will generally be reductive and that one would expect a diminution of radiation effect (Tr 7560); but he also testified:

"However, that is not the only basis which is applicable. In addition to the oxidant and reductant effects there are certain specific cellular effects, and many of the substances in the effluent could in fact have a synergistic effect and might be expected to. As a consequence it is difficult to estimate a priori whether the net effect will be positive, negative or zero."

We wish to cross-examine Dr. Frigerio, using the list of Dow effluents, to ascertain his opinion as to which of the chemical effluents would be reductive and which would have a synergistic effect when interacting or being added to the radioactivity to be discharged by the Midland units routinely or as the result of accident.

Mr. Kartalia has informed us that Dr. Frigerio can be available to testify on June 14, 1972 if the Board permits his cross-examination.

Mapleton's Affirmative Case

Mapleton Intervenors intend to offer in evidence the scientific testimony previously served and, in addition, intend to offer as additional evidence the testimony of the following witnesses:

1. Dr. Larry C. Holcomb

Dr. Holcomb's testimony will cover the following points:

- a) Inadequacies of the ecology survey by the consultants to Consumers Power and by the Michigan Water Resources Commission will be discussed. Without an adequate survey, the plant and animal life affected by operation of the proposed plant, cannot be assessed. Furthermore,

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population estimates have not been made. Thus, a complete cost-benefit analysis is impossible. Examples will be given of losses of wildlife from the site of the plant and cooling pond. Hypothetical costs will be assessed for some species of wildlife to give examples of the true cost to the environment. Lists of species of birds and mammals will be prepared with a comment on their relative occurrence.

- b) Costs assigned to Phytoplankton should also be assessed for Zooplankton, Benthic Organisms, Rooted aquatic plants, amphibians and fish. The current method of assessing costs for phytoplankton is completely insufficient. Effects of the intake structure on all forms of life should be included in an analysis of costs to the environment. Fish population estimates should be made on the basis of a clean river and costs using values at least as high as those prepared by the Pollution Committee of the Southern Division of the American Fisheries Society should be utilized.

2. Dr. Ernest J. Sternglass

Dr. Sternglass will testify that:

- a) The increase of fog, chemical effluent, particulates, or smog raises measureable amounts of natural levels of radioactivity.
- b) In areas of high dust concentration, of whatever chemical composition, the effect of dust is to increase the ability of radioactive material to produce carcinogenic effects.

Dr. Sternglass will cite in support of these points data appearing in the scientific literature, results of animal experiments and statistical data.

We have forwarded to Dr. Sternglass the testimony of Dr. Frigerio and Dr. Sternglass has informed us that he will be prepared to testify in rebuttal thereto.

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3. Dr. Edward S. Epstein

We have forwarded to Dr. Epstein the Bechtel Report of April 28, 1972, the testimony of the Bechtel witnesses and the testimony of Dr. Carson. Dr. Epstein has promised to review such testimony and will testify as to his evaluation thereof.

We are also endeavoring to update each of our scientific witnesses as to the additional environmental materials that have been received or testified to since the submission of their testimony so that they may be in a position to evaluate such additional data.

There is a possibility that we will present a further witness on the synergism question and a rebuttal witness on the question of the need for the plant, alternatives and economics, but arrangements have not been finalized. If so, we will give as much advance notice as possible.

Scheduling

Our scientific witnesses have informed us that they can appear on the following dates:

June 14	Sternglass, Epstein, Meierotto
June 15	Holcomb, Loucks, Eckert

There may be last minute scheduling changes as to which we will attempt to give as much advance notice as possible.

Respectfully submitted
REILLY, LIKE & SCHNEIDER

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copy to:
ASLB members
Secretary
All counsel of record