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19 October 1976

Mr. James Tourtellotte Mr. Dow Davis Office of the Executive Legal Director **BETH 042** U. S. Nuclear Regulatory Commission Washington, D.C. 20555

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Gentlemen:

We write to set out on paper our document request communicated to you by telephone last Friday, October 15. Our request consists of several categories of subjects relating to both the nuclear economics and low level plant As we mentioned in the telephone conversation, emissions. we will be fully satisfied with references to any documents that are available in major university libraries that also serve as repositories for government documents. However, we ask that you provide us copies of any documents that are uniquely in the Commission's possession or that are available only at specialized libraries such as Oak Ridge. Because any government documents, including NRC documents, published in the last six months have not yet reached university libraries, we also request that you send copies of those documents to us rather than merely providing references to them.

We request all documents of which you or your expert consultants are aware relating to the following subjects:

> Subjects relevant to nuclear fuel shortages. 1.

U308 deposits in the United States by Α. type, range and grade (parts per million) including deposits with a forward cost greater than \$30.

> U308 ore drilling and discovery data. Β.

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19 October 1976

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C. Additions to and removal from U.S. proven uranium reserves in the past 10 years.

D. Definitions and examples of ERDA's "probable", "possible", and "speculative" uranium reserve categories.

E. Costs and techniques pertaining to the mining of Chattanooga shale.

F. Technical improvements in uranium resource recovery made over the past ten years and feasible for introduction over the next 20 years.

G. Projections of U.S. uranium recycling and breeder reactor capacity.

H. Tails assay in uranium porcessing over the last 10 years and any predictions of future tails assay.

I. Actual discharge nuclear fuel burn-ups and enrichment levels for all reactors for both the initial core cycle and for mature reactors.

J. Projected nuclear fuel burn-ups and enrichment levels for both initial core cycles and mature reactors.

K. Technical reasons for fuel failures and low fuel burn-up and technical remedies for such failures and low burn-ups.

2. Plant availability and capacity factor.

A. Underlying data relevant to and methods of calculating plant capacity factor of Westinghouse reactors, including relevant data from Westinghouse reactors operating on foreign soil.

B. Predictions of and technical reasons for expecting improvement in the capacity factor of Westinghouse nuclear power plants.

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Mr. James Tourtellotte Mr. Dow Davis

3. Radionuclide emissions from normal plant operations.

A. Radiological dose models and source terms used to update the NRC's mandate to be "more realistic in dose evaluations," which accounted for the differences in the Appendix I dose levels and the FES dose levels.

B. Evidence of how radiological dose to humans takes bioaccumulation factors into account, if such eivdence is anything other than Reg. Guide 1.109.

C. Recognized references for bioaccumulation factor values other than the Oakridge Laboratory's report <u>Bioaccumulation Factors for</u> Radionuclides in Freshwater Biota. (ORNL-5002)

D. Page reference for " 10^{-4} effect per rem" risk assumption given in the BEIR report.

E. June 4, 1976 Transmittal letter to NRC and accompanying report showing compliance with 10 CFR 50, Appendix I; sent by PG&E to NRC.

F. Analysis performed by the staff using methodology provided in Reg Guide 1.111 regarding the dispersion of radionuclides in and the disposition of radionuclides in the atmosphere for the DCNGS.

G. Predictions of fish and meat consumption and of time spent on the beach in the vicinity of DCNGS for the population within a fifty mile radius of the DCNGS.

H. U.S. AEC Concluding Statement of Position of the Regulatory Staff (and its Attachment) Public Rulemaking Hearing on: Numerical Guides for Design Objectives and Limiting Conditions for Operation to meet the Criteria "As Low As Practicable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactors, Docket No. RM-50-2, Washington, D.C., February 20, 1974.

I. Regulatory Guides 8.8 and 8.10, which have to do with maintaining occupational radiation exposure as low as reasonably achievable.

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Mr. James Tourtellotte Mr. Dow Davis

19 October 1976

J. Actual radionuclide emissions data from Westinghouse nuclear generating plants, including Westinghouse plants operating in foreign countries.

K. "Environmental Survey of the Reprocessing and Waste Management Portions of the LWR fuel cycle", Nuclear Regulatory Commission, Office of Nuclear Materials, Safety, and Safeguards, Nureg. 0116, October, 1976.

While we realize this discovery request comes rather late in the proceedings, it is based in part on the advice of Intervenors' recently obtained technical experts and therefore could not have been formulated earlier. As I am sure you are aware, Intervenors' recent retention of experts makes late discovery helpful to all parties in their preparation for the environmental hearings. We trust you will cooperate with this request just as we have and will continue to cooperate with your reasonable requests, both informal and formal, to provide you discovery of Intervenors' rapidly evolving case on the environmental issues.

Yours sincerely,

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James Geocaris Attorney for Several Intervenors

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Board members Parties ۰. ۲

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BOARD OF TRUSTEES

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Dr. William E. Martin Atomic Safety & Licensing Board Senior Ecologist Battelle Memorial Institute Columbus, Ohio 43201

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2) Docket Nos. 50-275 O.L., 50-323 O.L.

Dear Members of the Board:

Last Friday, October 15, 1976, we received in our office the Board's "Order Relative to Schedule, the Location of New Hearings and New Contentions from Intervenors." We take strong exception to that portion of the order denying Intervenors' motion to add new contentions because we believe that portion of the order violates past precedents of the Commission's Licensing and Appeals Boards and central sections of the National Environmental Policy Act. Consequently, we will move the Board to reconsider that portion of its order.

In order to demonstrate more clearly to the Board the merits of our grounds for asking that these new contentions on seismic hazards and alternatives to the operation of the plant be admitted into the environmental portion of these proceedings,

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we will need to gather several affidavits from qualified scientists who desire to bring relevant technical evidence to the attention of this Board. On the subject of seismically induced radiation emissions, we plan to offer the Board affidavits by three nuclear plant engineers, Dale Bridenbaugh, Gregory. Minor and Richard Hubbard on the likelihood that a major earthquake could cause several kinds of serious nuclear reactor accidents and affidavits by radiobiologists Dr. Roland Finston, Dr. John Gofman and Professor J. Martin Brown regarding the adverse environmental impacts of radionuclide . releases resulting from such accidents. On the subject of need for power, energy conservation and alternative sources of energy to the Diablo Canyon plant, we plan to offer affidavits by energy demand and conservation experts Robert Clear, James Harding and Dr. Ronald Doctor, solar energy experts Dr. Otto Smith, Alden Bryant and Barbara Green and an economist familiar with the costs and technology of the generation of electricity by coal, Steven Moody.

Preparation of these numerous affidavits by these technical experts will take several weeks. Therefore, we will have the motion completed and in the mail to all parties by November 12, 1976.

We also seek a clarification of the portion of the Board's order relating to contention 2 which covers the Diablo Canyon fuel cycle. We understand and accept the Board's intention to treat the back end of the fuel cycle, fuel reprocessing and waste disposal, through generic rule-making now being conducted by the full commission. However, because this rule-making will not cover the front end of the plant's fuel cycle, transportation of fuel to and from and storage of fuel at the Diablo Canyon plant site, we are uncertain as to the Board's ruling regarding the portion of proposed contention 2 that deals with environmental impacts relating to the front end of the fuel cycle. We would like to know whether the Board proposes to deal with environmental problems relating to the front end of the fuel cycle and, if so, how.

Yours sincerely,

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James Geocaris Attorney for Several Intervenors

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UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	Docket Nos.	50-275 0	0.L.
PACIFIC GAS AND ELECTRIC COMPANY))		50-323 0.	L.
(Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2)	· ; ;			

INTERROGATORIES PROPOUNDED TO

: PACIFIC GAS & ELECTRIC COMPANY

BY SEVERAL INTERVENORS

Interrogatory No. 1

1. Nuclear Fuel Shortages

A. What percentage of fuel needs of the Diablo Canyon nuclear plant for which years does P.G.&E. presently have covered by existing executed contracts with nuclear fuel suppliers?

B. Do you expect to be able to secure sufficient nuclear fuel to operate both Diablo Canyon nuclear plants without interruption at an 85% annual capacity factor during its full expected life, 30 years from its start-up date? If so, state the basis for your expectation of adequate fuel supply.

C. If the answer to the above interrogatory is affirmative, list the evidence within your possession which indicates that there will be no nuclear fuel shortage affecting the Diablo Canyon plant during its anticipated operating life.

D. Do you expect to obtain nuclear fuel from foreign

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J M suppliers? If so, in what year or years of the plant's anticipated operating life do you expect to rely on foreign fuel suppliers?

E. State the names, addresses and qualifications of any witnesses you plan to present at the environmental hearing on the subject of availability of nuclear fuel. Give a short summary of the testimony of each such witness.

F. List all documents, reports, texts and other writings upon which you will rely at the hearing to support your position.

Interrogatory No. 2

2. Plant Reliability

A. Specify the plant capacity factor P.G.&E. expects the Diablo Canyon nuclear power plant to achieve in each and every year of its 30 years of anticipated operation beginning with the first year of anticipated operation.

B. Do you know of any commercial Westinghouse reactor that has achieved a plant capacity factor equal to or greater than 80% in any of its years of operation? If the answer is yes, please identify each reactor that achieved such a capacity factor, specify the capacity factor achieved, and identify the year in which that capacity factor was achieved

C. If P.G.&E. predicts that the Diablo Canyon nuclear plants will operate at a capacity factor greater than the current average capacity factor for actual operations of Westinghouse reactors of less than 65%, state with particularity the technical and/or operational improvements that will enable the Diablo Canyon reactors to operate at a capacity factor greater than 65%.

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D. State with particularity the scheduled downtime P.G.&E. now plans for the Diablo Canyon nuclear power plant, during its anticipated operating life, giving both the number of days, weeks or months out of every year P.G.&E. anticipates the Diablo Canyon plant to undergo scheduled downtime and the reasons for each day, week or month of anticipated scheduled downtime.

E. List the names, addresses and credentials of all witnesses you plan to present on plant reliability at the environmental hearings in these proceedings. Give a summary of the testimony each such witness plans to present at the hearings.

F. List all reports, documents, texts or other writings upon which P.G.&E. will rely at the hearings to support its position regarding plant reliability.

Interrogatory No. 3

3. Food Chain

A. List <u>all</u> possible food chain pathways which you expect any low level radiological emissions from the DCNGS to enter. For all such pathways, please identify the links in the pathway and the type(s) of radionuclides you expect to enter such pathway(s).

-B. For those pathways listed in (A), above, do you contend that the low level radiological emissions from the Diablo Canyon Nuclear Generating Station (DCNGS) fall below the levels required by Appendix I to 10 CFR, Part 50?

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C. If the answer to the above interrogatory is in the affirmative, list the reasons in support of your contention. In so listing, please include an analysis of how you reached the conclusion that the actual levels fall below the Appendix I levels, together with references relied upon in performing that analysis.

D. Reference Diablo FSAR 16.4-68 paragraph 3 (Amen. #5, March 1974) ". . . under unusual operating conditions which may temporarily result in releases higher than such small fractions, . . . " and your contention that there are operating conditions which might result in releases higher than the normal small fraction of NRC limits (Answer to Interrogatory #23, Responses of P.G.&E. to Interrogatories Filed by San Luis Obispo Mothers for Peace, October 4, 1974) indicate the basis for your contention that these unusual releases will still be within NRC limits.

E. State the names, addresses and qualifications of any witnesses you plan to present at the environmental hearing on the subject of the effect of low level radiological emissions from the DCNGS on the food chain. Give a short summary of the testimony of each such witness.

F. List all reports, documents, texts or other writings upon which P.G.&E. will rely at the upcoming environmental hearings to support its position with respect to the effect of low level radiological emissions on the food chain.

Interrogatory No. 4

4. Health and Genetic Effects on Population Within 50 miles of DCNGS.

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A. What do you contend is the background radiation rate per year in the area within a 50 mile radius of the DCNGS? Please indicate the source of this figure and/or the analysis used in computing it.

B. Do you contend that the increase in cancer deaths annually due to the low level radiological emissions from the DCNGS is insignificant?

C. If the answer to the above interrogatory is in the affirmative, indicate your reasons for reaching that conclusion. Indicate the source of your reasons and/or the analysis used in reaching your conclusion.

D. Do you contend that radiation absorbed. at low levels (i.e. millirem per day) is less damaging than radiation which is absorbed at rem per day levels?

E. If the answer to the above interrogatory is in the affirmative, indicate your reasons for reaching that conclusion. Indicate the source of your reasons and/or the analysis used in reaching your conclusion.

F. Please indicate what you will contend are the total body population doses from gaseous and liquid discharges from the DCNGS for a population of 260,000 located within 50 miles of the plant. Please indicate the source of these figures and/or the analysis you performed in arriving at them.

G. Do you contend that the effect of low level radiological emissions on the gene pool within 50 miles of the DCNGS is insignificant?

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H. If the answer to the above interrogatory is in the affirmative, indicate your reasons for reaching that conclusion, together with your analysis and sources you used to support your reasons.

I. Reference your response to Interrogatory No. 19,
"Responses of P.G.&E. Company to Interrogatories Filed by Gordon
A. Silver, Presumably on Behalf of John J. Forster" dated June
27, 1975, in which you stated:

"....B. Radiation exposure from this [maximum radiation dose when the maximum allowed amount of spent fuel assembles are stored on site] source to people at the boundary of the exclusion area is insignificant, even if an individual is assumed to be continuously located there. The annual radiation dose to such an individual from this source is estimated to be 1×10^{-6} millirem to the whole body and 1×10^{-5} millirem to the most significant single organ, the thyroid gland.

C. Radiation exposure from this source to people on the seaward (west) side of the plant is insignificant, even if an individual is assumed to be continuously located there. The annual radiation dose to such an individual from this source is estimated to be 5 x 10^{-6} millirem to the whole body and 5 x 10^{-5} millirem to the most significant single organ, the thyroid gland."

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Please indicate the analysis used to arrive at those figures and/or what references were used in reaching your conclusions.

J. List the names, addresses and credentials of all witnesses you plan to present on the health and genetic effects of low level radiological emissions at the DCNGS on a population living within 50 miles of the plant at the upcoming environmental hearings. Give a short summary of the testimony each such witness plans to present at these hearings.

K. List all reports, documents, texts or other writings upon which P.G.&E. will rely at the hearings to support its position regarding the effect of low level emissions on the population living within 50 miles of the plant.

Interrogatory No. 5

5. Health and Genetic Effects on Plant Personnel, Including Inadvertent Ingestion of Radioactive Materials.

A. What is your estimate of the occupational exposure of radioactivity to plant employees, in man rem per year per unit, at the DCNGS? Please indicate the source of that figure, and/or the analysis used in calculating it.

B. What is your estimate of the number of genetic risk "effects" per generation at equilibrium due to the occupational dose to plant workers during the operational life of the DCNGS? Please indicate the source of that estimate, or the analysis used in calculating it.

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C. What is your estimate of the number of spontaneous genetic effects as the normal incidence in the population per million live births? Please indicate the source of that estimate and/or the analysis used in calculating it.

D. Do you contend that the increased genetic effects due to the occupational exposure to radiological emissions at the DCNGS will be insignificant? If so, please indicate your reasons for that contention and your analysis used in reaching that conclusion.

E. Do you contend that the increased health effects due to the occupational exposure to radiological emissions at the DCNGS will be insignificant? If so, please indicate your reasons for that contention and/or your analysis used in reaching that conclusion.

F. Reference your response to Interrogatory No. 19, "Responses of P.G.&E. Company to Interrogatories Filed by Gordon A. Silver, Presumably on Behalf of John J. Forster," dated June 27, 1975, in which you stated:

". . . A. The maximum radiation dose rate [when the maximum allowed amount of spent fuel assemblies are stored on site] would occur at the surface of the spent fuel storage pool and is estimated to be 2.1 millirem per hour. The dose rate to on-site personnel in normally occupied areas from this source would be less than 1 millirem per hour. See also Chapter 12 of the Final Safety Analysis Report. . ."

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Please indicate how you arrived at those figures and what references were used in reaching your conclusions.

G. List the names, addresses, and credentials of all witnesses you plan to present on the health and genetic effects of low level radiological emissions at the DCNGS on the plant workers (including inadvertent ingestion of radioactive materials) at the upcoming environmental hearings. Give a short summary of the testimony each such witness plans to present at these hearings.

H. List all reports, documents, texts or other writings upon P.G.&E. will rely at the hearings to support its position regarding the health and genetic effects of radiological emissions on plant personnel.

Interrogatory No. 6

6. Marine Biota

A. List the names, qualifications and addresses of all witnesses you plan to present at the environmental hearing to support your contention with regards to the environmental contentions relating to marine biota, contentions 1.C.-J.

B. Give a brief summary of the testimony of each witness you plan to present in support of your position on environmental contentions l.C.-J.

Respectfully submitted,

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James A. Geocaris Attorney for Several Intervenors

Dated at Los Angeles, California this 19th day of October, 1976

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CERTIFICATE OF SERVICE BY MAIL

The foregoing documents entitled INTERVENORS' LETTER REQUESTING DOCUMENTS TO MESSRS. TOURTELLOTTE AND DAVIS OF THE NRC STAFF, INTERVENORS' LETTER TO THE BOARD REGARDING THE BOARD'S DENIAL OF THREE NEW INTERVENORS' CONTENTIONS and INTERROGATORIES PROPOUNDED TO P.G.&E COMPANY BY SEVERAL INTERVENORS have been served today, October 19, 1976, by deposit in the United States

mail, properly stamped and addressed: Mrs. Elizabeth E. Apfelberg Mi 1415 Cazadero C, San Luis Obispo, CA 93401 50

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Dated: October 19, 1976

Joan M. Waller



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