

7-18-75  
UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 )  
PACIFIC GAS AND ELECTRIC COMPANY )  
 )  
Units 1 and 2 )  
 )  
Diablo Canyon Site )  
\_\_\_\_\_ )

Docket Nos. 50-275-OL  
50-323-OL

RESPONSES OF PACIFIC GAS AND ELECTRIC COMPANY  
TO INTERROGATORIES AND DISCOVERY REQUESTS FILED  
BY SAN LUIS OBISPO MOTHERS FOR PEACE  
DATED JUNE 19, 1975

1. Identify by title, author, investigator, agency, beginning date, and completion date, all studies, reports, memoranda, correspondence, investigations, and other documents pertaining to the geology and seismological environment of the Diablo Canyon Power Plant Units 1 and 2, of which you are aware, that are
  - A. Completed
  - B. In Progress
  - C. Projected for the future
2. Please answer interrogatory 1 A,B,C but pertaining to establishment of structural engineering design criteria of seismic Category 1 and Category II systems, components, structures, and buildings which exist in the neighborhood of where it is anticipated fresh fuel assemblies will be received, unloaded, unpacked, transferred, stored, inspected, and repaired.
3. Will the PG&E facilities in the "Five Cities" area of Pismo Beach, Calif. be used in connection with the fresh fuel cycle? If yes, please describe nature of use.
4. Reference FSAR, "Reporting of Security Incidents." p. 13.7-7. Line six is vague because the words "facts" and "substantiated" are not quantitated. Please explain.
5. For Unit 1 please provide currently anticipated dates for
  - A. Shipping of first fresh fuel assembly from Columbia, S.C.
  - B. Arrival on site of first assembly
  - C. Arrival on site of last assembly
  - D. Beginning of fuel loading
  - E. Completion of fuel loading
  - F. Criticality
  - G. Synced and on line

H-4  
6/60

6. With respect to initial fuel assembly shipments, identify with as much precision as possible, the route to be followed by trucks within San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties. If you do not know these routes, please contact Westinghouse and/or the trucking firm and get the routes from them.
7. With respect to the seismic qualification of Category I and Category II systems, components, and equipment which are in the neighborhood of those areas where the fresh fuel assemblies will be unloaded, repaired, and stored, please identify those which have been determined by PG&E to be capable of retaining their physical integrity and function in the presence of an earthquake of extended period which would produce a ground acceleration of
  - A. 0.40g
  - B. 0.45g
  - C. 0.50g
  - D. 0.55g
  - E. 0.60g
  - F. More than 60g
8. Please answer interrogatory no. 7 with respect to NRC staff qualification.
9. Please indicate which of those items identified in interrogatory no. 7 have not been qualified by NRC Staff at the level of
  - A. 0.40g
  - B. 0.50g

Response

These interrogatories are either identical or substantially similar to Interrogatories 2, 3, 6, 10, 13, 15, 20 and 21 propounded by the San Luis Obispo Mothers For Peace dated June 19, 1975. Accordingly, PG&E hereby incorporates by reference its responses to these interrogatories dated June 27, 1975 and previously served upon the Board members and all parties.

21. If it is necessary to have the fresh fuel assemblies (FFA) on site, in storage racks, a certain number of days prior to fuel loading of Unit 1 please indicate
  - A. The precise number of days required
  - B. The specific inspections, operations, etc., that necessitate this number of days.

Response

- A. It will be necessary to have new fuel assemblies on site prior to the scheduled date for beginning of fuel loading. A realistic estimate of the minimum time prior to fuel loading required to perform inspections and tests on new fuel assemblies, allowing for the contingency that some fuel may need to be reworked at the fuel fabricator's plant, is twelve weeks. This does not take into account the fact that because of the work load on the plant staff

in connection with preparing for fuel loading it is desirable to complete the inspection work well in advance of the fuel loading date so that the plant staff will be available for its other duties.

- B. Inspection and testing of the new fuel will require two to three weeks after the date when the last fuel assemblies are delivered to the site. In the course of inspecting and testing the fuel minor discrepancies may be found that would necessitate returning some of the fuel assemblies to the fabricator to correct. The time to ship the fuel back to the fabricator, perform the work, and return the fuel to the plant site would be 8 to 10 weeks.
22. Please provide statistics on all Westinghouse 15 x 15 FFA delivered to all U.S. reactors, that indicate the nature, degree, and frequency of defects serious enough to require repairs. Indicate time required for each repair.

Response

To the best of our knowledge out of approximately 2,350 Westinghouse 15 x 15 fuel assemblies shipped, one assembly was returned to the fabricator for repair. This repair was required because of a defective grid. Less than one percent of these fuel assemblies have required on-site repair of minor defects. Detailed statistics are not available in PGandE's files for these on-site repairs.

23. If question 22 is not answered in its entirety please set forth basis for objection.

Response

Not applicable.

24. Production of Documents: MFP requests PG&E to send them, or make available for inspection and/or photocopying at San Luis Obispo, Calif., copies of all contracts and amendments thereto, between PG&E and Westinghouse relevant [sic] to purchase or lease of fresh fuel assemblies. Please also identify specific location(s) of penalty clauses occasioned [sic] by late acceptance of fresh fuel assemblies due to any cause whatsoever.

Response

PGandE objects to this interrogatory on the grounds it calls for information not relevant to this proceeding.

25. Please identify by title, author, affiliation of author, and date, all manuals, procedures handbooks, documents, or communications, pertaining to FFA receipt, unloading, inspection, repair, criticality precautions, and storage, which are to be used at Diablo.



## Response

The principal procedures that will be used in fresh fuel assembly receipt, unloading, inspection, criticality precautions, and storage activities are given below. Procedures for the repair of fuel assemblies, if required, would be Westinghouse procedures.

### Procedures by PGandE Station Construction Department

Startup test procedure 34.1:Fuel Transfer System Functional Test - rev 1, 4/1/75

Startup test procedure 34.2:Fuel Handling Tools and Fixtures - Rev 2, 6/3/75

Startup test procedure 34.3:Fuel Receival - Rev 1, 6/2/75

### Procedures by PGandE Diablo Canyon Power Plant Staff

Administrative procedure No. D-350 (draft): Control of Special Nuclear Material, 8/21/74

Operating procedure B-8A (draft): Handling and Storage of New Fuel Assemblies, 7/1/74

Operating procedure B-8B (draft): Handling and Storage of New Rod Cluster Control Assemblies, 7/1/74

Operating procedure B-8C (draft): Nuclear Fuel Inspection, 3/5/75

Identification of all manuals, procedures, handbooks, documents and communications relating to these activities as requested by this interrogatory would involve a great deal of work and a large number of documents. The material listed above is responsive to the Interrogatory, and providing the additional material would be extremely burdensome and serve no useful purpose.

26. Production of Documents: Please provide Intervenor with copies of all documents, cited in question 25, for inspection and/or photocopying, at your San Luis Obispo office.

## Response

Copies of the above documents can be made available for inspection at PGandE's San Luis Obispo Office at a mutually convenient time. Please telephone Mr. P. A. Crane, Jr. to make the necessary arrangements. His telephone number is (415) 781-4211, extension 2768.

27. Are unit 2 FFA the same as unit 1 FFA in the sense that they can be interchanged?
- A. If yes, is there any reason why they can't be used for unit 1? Indicate reason, if any.
  - B. If no, set forth differences.

Response

- A. The fuel for Unit 2 is not scheduled to be manufactured until well after the fuel loading date for Unit 1, and thus it would not be available for use in Unit 1.
  - B. The Unit 1 and Unit 2 fuel assemblies are not completely interchangeable for reasons which are immaterial in view of the response to Part A. of this Interrogatory.
28. Please indicate with specificity the inconvenience, if any, to PG&E, occasioned by PG&E receipt of initial FFA at a date after June 16, 1975.

Response

Under a temporary arrangement worked out with Westinghouse and Portland General Electric Company, Portland GE has agreed to receive its fuel for Unit 1 at its Trojan Power Plant ahead of schedule, thereby releasing the storage space it is now occupying for use of PGandE fuel. PGandE has agreed to reimburse Portland for the additional expenses incurred by it arising out of this arrangement, which, it is presently estimated, will amount to approximately \$11,000. In addition, for storage of its fuel PGandE must pay Westinghouse a lump sum payment of \$95,060 plus \$65 per month per fuel assembly. For a full core of 193 assemblies this monthly charge amounts to \$12,545. Further, Westinghouse has advised that it must commence shipment of PGandE's fuel no later than October 15, 1975, when the space occupied by PGandE fuel will be needed to store fuel for other reactors, and that all PGandE fuel must be shipped from the Westinghouse facility by December 15, 1975. If the delay in receipt of fuel extends long enough to affect the fuel loading date, then the consequences discussed in the answer to Interrogatory 29 would ensue.

29. If the ASLB were to grant the MFP Motion dated April 10, 1975 please indicate in detail the inconvenience which would be realized by PG&E. Please try to be accurate and complete.

Response

If PGandE were not permitted to receive fuel at the site until the operating license is issued, the fuel loading date would be delayed. As outlined in H. R. Perry's affidavit dated June 20, 1975, which was filed as a part of PGandE's response to the motion pertaining to titanium tubing, for each month a Diablo Canyon unit is delayed beyond the scheduled fuel loading date PGandE would incur excess fuel costs of about \$12 million. The amount of the delay would, of course, depend upon when the operating license is issued. However, it appears that the minimum amount of time between issuance of the operating license and meaningful production of power is four months. In addition, there is the problem of what to do with the PGandE fuel now being manufactured and stored at the Westinghouse fuel fabrication facility. Alternate storage facilities would have to be established commencing October 15, 1975 at further significant expense. If such

facilities cannot be found, and we have no present knowledge of such facilities, the fuel would have to be disassembled for storage as rods. In addition to costing several million dollars, this procedure would involve a substantial risk of damage to the rods which, in turn, would mean large expenditures to correct. Further, this would delay startup at least 15 months due to the crowded condition of the Westinghouse production schedule. In addition, PGandE would have to absorb substantial carrying charges on its investment in the idle plant. When Unit 1 is completed, this investment is expected to amount to about \$550 million. Carrying charges on this investment would be about \$3,700,000 per month.

30. Please identify by name and address the trucking company which is scheduled to bring FFA here from the fabricator.

Response

The trucking company has not yet been selected.

31. In accordance with existing contracts, when does PG&E acquire the FFA, e.g., at the Westinghouse shipping dock; on being unloaded at the Diablo site? Please be specific.

Response

The fuel is purchased f.o.b. the Westinghouse facility with freight allowed to the Diablo Canyon site.

32. How many FFA will be loaded into each shipment container?

Response

Two.

33. How many shipment containers will be carried by each truck?

Response

It is anticipated that six containers will be carried on each truck. However, the number varies depending upon the size of the truck.

34. How long will it take to bring a single truckload of FFA to the site from Columbia, South Carolina?

Response

Three to five days.



35. Please cite by name and identify by function, all pipes, tubing, hoses, conduits, containers, pools, tanks, in and around the Fuel Handling Building which, prior to startup, are designed to carry or hold
- A. Fresh water
  - B. Sea water
  - C. Borated water (give concentration in ppm)
  - D. Steam
  - E. Gas other than steam (identify)
  - F. Nothing

Response

A. - E. Information responsive to this Interrogatory will be set forth in PGandE's answer to the letter it received from Mr. L. C. Rouse of the NRC dated June 17, 1975. Copies of this response will be served upon all parties.

F. PGandE has not knowingly designed any pipes, etc., to carry or hold nothing.

36. Is Mr. Barton W. Shackelford, Registered Civil Engineer No. 7306 in the State of California, responsible for the design and construction of the facilities at Diablo Canyon Units 1 and 2, which were or are being constructed based on building permits issued by San Luis Obispo County?
- A. If yes, provide his address
  - B. If no, identify by name and address the responsible Registered Civil Engineer.

Response

Barton W. Shackelford was PGandE's Chief Civil Engineer and responsible for the design of such facilities until he became Vice-President - Planning and Research on April 1, 1971. At that time R. V. Bettinger became Chief Civil Engineer and assumed this responsibility.

The individual responsible for construction is

C. H. Sedam  
Vice-President - General Construction  
PGandE  
77 Beale Street  
San Francisco, California 94106

37. Name the person or persons responsible for the review of the "Seismic Evaluation of the Diablo Canyon Site" prepared by Hugo Benioff and transmitted to Mr. Gordon V. Richards under dates of January 9, 1967, and May 28, 1968.

Response

This document was submitted in connection with PGandE's applications for construction permits for the two Diablo Units. It was reviewed by PGandE personnel, AEC Staff personnel, the Advisory Committee on Reactor Safeguards, the Atomic Safety and Licensing Boards, and various consultants to each. PGandE is unable to name specific individuals responsible for this review.

38. State the nature and extent of the review which was made, including the number of man hours spent by each person or persons involved in the review referred to in question no. 37.

Response

PGandE does not have records of the time spent by its personnel in reviewing reports of its consultants and obviously does not have that information for members of other organizations.

39. Name the person or persons responsible for the review of the "Recommended Earthquake Design Criteria for the Nuclear Power Plant -- Unit 2, Diablo Canyon Site" transmitted to Mr. Gordon Richards from John Blume and Associates, Engineers, under date of June 24, 1968. Said report is dated June 1968.

Response

See response to Interrogatory 37.

40. State the nature and extent of the review which was made, including the number of man hours spent by each person or persons involved in the review referred to in question no. 39.

Response

See response to Interrogatory 38.

41. On or about December 27, 1974, PG&E submitted to the Atomic Energy Commission Staff a report which purportedly reviewed the capacity of the Diablo Canyon facilities' ability to resist Design Earthquakes with maximum accelerations in excess of the 0.2G for the Design Earthquake (DE) and in excess of 0.40G for the Double Design Earthquake (DDE). Furnish a copy of that report and in addition, furnish a copy of the response of AEC Staff to the report.

Response

Copies of the PGandE report were distributed to all parties. However, in the interests of time an additional copy is attached. Presumably, the response of the NRC Staff to the report will be set forth in a supplement to the Staff Safety Evaluation Report.



42. Furnish a complete set of Construction Drawings, Specifications, and Design Calculations for Diablo Canyon Units 1 and 2 from which the following were constructed:
- A. The Fuel Handling Building which houses the Spent Fuel Pool.
  - B. The Design Class I Tanks which store water and are adjacent to the Fuel Handling Building.
  - C. The overhead crane in the Fuel Handling Building, including any auxiliary equipment used in the handling of fuel assemblies.
  - D. All piping and equipment which carries water in or around the Fuel Handling Building.
  - E. All piping control equipment including valves for the piping which carries water in or about the Fuel Handling Building.
  - F. All instrumentation and electrical equipment which control the water piped in or around the Fuel Handling Building.
  - G. The New Fuel Storage Racks. Refer to FSAR Section 9.1
  - H. The Fuel Handling System. Refer to FSAR Section 9.1
  - I. The Fuel Rods and Fuel Assembly. Refer to FSAR Section 4.2

Response

Literal compliance with this interrogatory would require the production of thousands of documents, far too many to be of any value to any party to this proceeding. If the Mothers For Peace wish to take the time to examine all these documents please contact Mr. P. A. Crane, Jr., who will attempt to work something out. Otherwise, PGandE believes that there is adequate information in the FSAR concerning the portions of the plant listed in this interrogatory.

43. Identify by name and current address, the engineer (a) who designed the fresh and spent fuel racks and (b) who reviewed the design.

Response

This design and review of this design was accomplished under the supervision of R. V. Bettinger, PGandE's Chief Civil Engineer.

44. With respect to the fresh and spent fuel rack design, please set forth the nature and extent of review (in hours) by
- A. PG&E engineers
  - B. Westinghouse engineers
  - C. County of San Luis Obispo (or their consultant - please identify)
  - D. AEC/NRC Staff
  - E. Others

Response

PGandE does not have the information necessary to answer this interrogatory. See response to Interrogatory 38.

45. Please identify by model number, manufacturer, manufacturer's address, and specific function, all instruments used to detect, record, process signals due to strong ground motion at the Diablo site.

Response

Kinematics SMA-3 Seismic Sensing and Recording System to record the time history of seismic acceleration.

Kinematics SMP-1 Magnetic Tape Playback System to process data from the above SMA-3.

Manufacturer - Kinematics Inc.  
336 Agostino Road  
San Gabriel, California 91776

Engdahl Model 1200 Peak Shock Recorder to record the maximum displacement of single degree of freedom sensors at selected natural frequencies.

Manufacturer - Engdahl Enterprises  
2850 Monterey Avenue  
Costa Mesa, California 92626

Teledyne Geotech Model PRA-103 Peak Recording Accelerographs to record the peak seismic acceleration.

Manufacturer - Teledyne Geotech  
3401 Shiloh Road  
Garland, Texas

46. Reference FSAR p. 1.5-37 (Amend. 22) last line of page. Please indicate source, date, and method of cited verification of the adequacy of the 17 X 17 fuel assembly.

Response

WCAP 8362.

47. Please identify seismic design class of the four large water tanks immediately adjacent but external to Fuel Handling Building. If any are founded on fill, please indicate depth of fill for each tank. DISCOVERY REQUEST: Please provide intervenor with Reference 1, FSAR, p. 3.7-29.

Response

Table 3.2-4 of the Final Safety Analysis Report contains information concerning the design class of these tanks. These tanks are founded on engineered fill with a varying depth from 5 to 20 feet. A copy of Reference 1, FSAR, p. 3.7-29 is attached.

48. Reference FSAR p. 4.2-24, 2nd par. Please give precise weight and beam stiffness coefficients of referenced 15 X 15 fuel assembly and 17 X 17 assembly.

Response

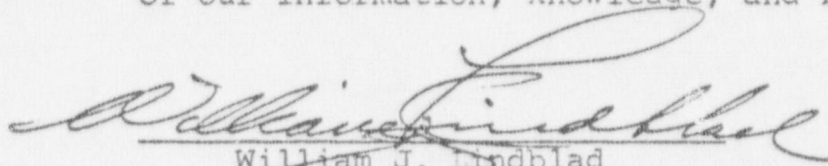
A Westinghouse 15 X 15 fuel assembly weighs approximately 1467 lbs., and a Westinghouse 17 X 17 fuel assembly weighs approximately 1440 lbs. The stiffness of a fuel assembly is not a single coefficient but is load dependent.

49. For two 17 X 17 fresh fuel assemblies of 3.5% enrichment, without control rods or burnable poison rods, fully emmersed [sic] in cold clean water, with longitudinal axes parallel, and in most reactive geometry, i.e., contacting each other lengthwise, provide the value of effective K.

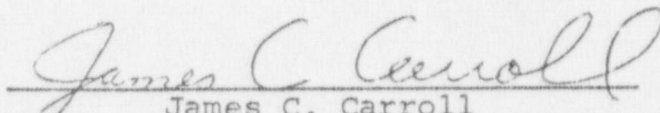
Response

The value of  $K_{eff}$  for the specified conditions is greater than 1.0.

We declare under penalty of perjury that the foregoing Responses To Interrogatories are true and correct to the best of our information, knowledge, and belief.

  
William J. Lindblad  
Project Engineer

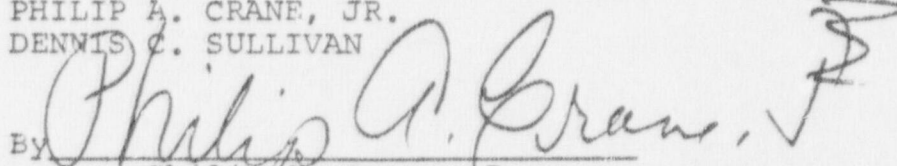
Units 1 and 2  
Diablo Canyon Site

  
James C. Carroll

Supervising Steam Generation  
Engineer  
Pacific Gas and Electric Company

Respectfully submitted,

JOHN C. MORRISSE'  
PHILIP A. CRANE, JR.  
DENNIS C. SULLIVAN

  
By Philip A. Crane, Jr.

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Dated: July 18, 1975