

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
PACIFIC GAS AND ELECTRIC COMPANY)	Docket No. 50-275-OL
)	Docket No. 50-323-OL
Units 1 and 2)	
)	
Diablo Canyon Site)	
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RESPONSES OF PACIFIC GAS AND ELECTRIC COMPANY
TO CERTAIN OF THE INTERROGATORIES PROPOUNDED
BY INTERVENORS REGARDING GEOLOGY, SEISMICITY
QUALIFICATION

DATED: MAY 18, 1977

6/2

April 19, 1977
1310

Interrogatory No. 5

Do you contend that the Hosgri fault is not linked to the San Gregorio fault to form one fault system? If so, please state each and every fact upon which you base this contention.

Response

We contend that all available evidence indicates that the Hosgri, San Simeon, offshore Pfeiffer Point, Sur, and San Gregorio, as well as many lesser, unnamed faults and many folds and flexures are parts of a flexure system of sub-regional extent that defines the boundary separating the mostly onshore uplift of the Southern Coast Ranges of California from a series of offshore basins along the central part of the California continental margin. This structural "system" or boundary zone therefore includes the named Hosgri and San Gregorio faults, but the deformation that it represents is only partly accomplished through faulting. Several lines of geologic and geophysical evidence demonstrate that the principal individual fault breaks within the boundary zone are not throughgoing or "linked" with one another. The main elements of evidence pertaining to this question that were available through 1975 are cited in the documents Appendices 2.5D and 2.5E to the Final Safety Analysis Report (FSAR) for Units 1 and 2, Diablo Canyon Site. The evidence cited in those documents includes not only the mapping done to develop necessary documentation and responses to further queries for the DCNGS licensing, but also two independently prepared maps of parts of the boundary zone fault pattern (Hoskins and Griffiths, 1971, and Wagner, 1974), which have been used as basic data for the Fault Map of California compiled by Jennings (1975). An important additional element of geophysical evidence about the structure of the coastal boundary zone is contained in the U. S. Geological Open-File Report 77-79, "Maps showing residual magnetic intensity along the California Coast, Lat. $37^{\circ}30'N$ to $34^{\circ}30'N$ " by D. S. McColloch and R. H. Chapman, which was released in April 1977. These maps reveal a striking correspondence between the pattern of magnetic intensity and the pattern of faulting developed independently from seismic reflection and gravity data, as shown on

Plates IN and IIN of Appendix 2.5E to the DCNGS FSAR. The pattern shown by both sets of data is one of a series of en-echelon faults, which typically turn toward more westerly orientations at their northerly ends. Pronounced linear magnetic gradients, indicating structurally intact blocks, extend across areas where any significant links between the Hosgri and San Simeon, and the San Simeon and Sur faults would have to be located.

April 26, 1977

1310

Interrogatory No. 6

Do you contend that the Hosgri fault is not linked to the San Simeon fault to form one fault system? If so, please state each and every fact upon which you base this contention.

Response

We contend that the Hosgri fault is in fact not "linked" to the San Simeon fault to form one "fault system". Evidence upon which this contention is based is presented in the response to NRC Question 2.19 (from the NRC letter dated February 12, 1975), entitled "The geology of the northern reaches of the Hosgri fault zone and the relationship of the Hosgri fault to the San Simeon fault". That response includes discussion, maps, seismic reflection profiles, and references. The evidence cited there shows that significant linkage between the Hosgri and San Simeon faults is precluded by the location and continuity of geologic contacts and the distribution of "acoustic units" corresponding to geologic formations, extending through the area between Estero Bay and San Simeon where any such "linkage" would have to be located, and by the pattern of branching of the two faults. The indicated pattern is that the Hosgri and San Simeon faults are subparallel and are en echelon to one another, but are not joined. This pattern is shown in the two other published maps of offshore geology in the vicinity of the two faults, by H. C. Wagner (1974) and Hoskins and Griffiths (1971).

Subsequent to the filing of the data and interpretation noted above, important new data consisting of maps showing residual magnetic intensity along the California Coast, Lat. $37^{\circ}30'$ N to $34^{\circ}30'$ N, have been released as the USGS open-file report 77-79. These data are especially significant because of the clear expression in the pattern of residual magnetic intensity of the structure in the area of closest approach between the Hosgri and the San Simeon faults. In this area, a well defined linear magnetic gradient exists along the northeast margin of the Hosgri fault zone, while a linear trough in the magnetic intensity field accompanies the San Simeon fault from north of Breaker Point to south of Point San Simeon. The gradient and the trough are subparallel, and

there are no features in the magnetic intensity pattern that suggest the existence of a connecting cross fault or structure.

April 26, 1977
1310

Interrogatory No. 7

Where do you contend is the location of the southeasternmost or downcoast end of the Hosgri fault? Please state each and every fact upon which you base this contention.

Response

We contend that the southeasternmost end of the Hosgri fault is at a point located about 5 miles south of the latitude of Point Sal, and about 5 miles west of the coastline between Point Sal and Purisima Point. A probable branch or splay of the Hosgri, referred to as the West Hosgri, extends about 2 miles farther southeast. The bases for this contention are presented and documented in the report "The geology of the region of intersection and merging of the offshore Santa Maria Basin and Hosgri fault trends with the Transverse Ranges trends" in Appendix E to the Units 1 and 2 Diablo Canyon site FSAR.

Interrogatory No. 8

What amount of strike-slip movement do you contend has occurred on the Hosgri fault since the Miocene geologic time period? Please state each and every fact upon which you base this contention.

Response

We contend that the maximum amount of strike-slip movement that could have occurred on the Hosgri fault since Miocene time is in the range of 10 to 20 km. This is based on evidence described in the paper "Hosgri fault zone; structure, amount of displacement, and relationship to structures of the Western Transverse Ranges", by D. H. Hamilton and C. R. Willingham, presented as part of the symposium "San Gregorio - Hosgri fault system - Implications for the tectonic development of the central California continental margin" at the 1977 Cordilleran Section meeting of the Geological Society of America (abstract attached). The major elements of evidence leading to this conclusion are as follows:

1. The line of relatively continuous rupture of Miocene and younger rocks along the Hosgri fault zone dies out 5 miles south of Point Sal, and faulting becomes diffuse and discontinuous along the zone a few miles north of Point Estero. This indicates that the amount of lateral slip (strike slip) that can have occurred along the fault since Miocene time is limited to the amount of differential movement that can be distributed by folding and thrust faulting in the rocks near the end points of the fault. This could possibly be as much as 10 to 20 km, especially in the area of folding from Point Sal south, but not significantly more.

2. The stratigraphic section penetrated by the Oceano well, located on the west side of the Hosgri fault, most nearly corresponds to the stratigraphic section in the adjacent onshore region, directly across the Hosgri fault. The uncertainties inherent in correlation based on lateral projection of geologic units are such, however, that 10 to as much as about 20 km of lateral offset of the Oceano well section, relative to the onshore section, could have occurred. Also, the Oceano well section is clearly unlike

the section that is characteristic of the Western Transverse Ranges and Santa Barbara Channel, where 5000 to 10,000 or more feet of lower Tertiary strata are present that do not appear in the Oceano well section.

HOSGRI FAULT ZONE; STRUCTURE, AMOUNT OF DISPLACEMENT, AND
RELATIONSHIP TO STRUCTURES OF THE WESTERN TRANSVERSE RANGES

HAMILTON, Douglas H., and WILLINGHAM, C. Richard, Earth Sciences
Associates, Inc., 701 Welch Road, Palo Alto, California 94304

The geology of the offshore region along the continental margin of south central California has been mapped using geophysical and stratigraphic data derived from power plant licensing studies and petroleum exploration. Within this area, the near shore Hosgri, San Simeon, and Sur faults form the principal boundaries between the onshore uplift of the southern Coast Ranges and the offshore basins. The main part of the Hosgri fault, the most southerly of this series, defines a linear zone that strikes N25W and extends over a 135 km distance between the vicinities of Point Sal and Cape San Martin. Although the Hosgri fault zone served as a boundary structure with predominantly vertical displacements during middle Tertiary time, several lines of evidence indicate that late Tertiary movements along the central reach of this fault have been characterized, at least in part, by right oblique slip. Stratigraphic evidence based on comparison of the section penetrated by the "Oceano No. 1" well, located west of the fault, with sections east of the fault, indicates a maximum of about 10 to 20 km of right lateral slip along the Hosgri zone since Miocene time. The lateral slip is accommodated in folds and reverse slip splays at the north and south ends of the fault zone. Splay faults at the south end of the Hosgri, and both faults and folds in the ground farther south, bend toward and mutually interfere with faults and folds extending seaward from the Transverse Ranges province to the east. A pattern of interference, rather than truncation of one system by the other, apparently results from mutual accommodation between the right lateral movements of the Hosgri system and the left lateral movements of the Transverse Ranges system.

Interrogatory No. 9

Do you contend that the strong (7.3M) earthquake recorded near the central California coast on November 4, 1927 did not take place on the Hosgri fault? If so, please identify the fault on which you contend this earthquake did take place and state each and every fact upon which you base this contention.

Response

We contend that the combination of seismologic and geologic evidence regarding the November 4, 1927 M 7.3 earthquake indicates a conclusion that the earthquake did not take place on the Hosgri fault. The fault that we believe is indicated by geologic evidence to be the most likely source of that earthquake is referred to in Appendix 2.5E to the Units 1 and 2, Diablo Canyon site FSAR as the offshore Lompoc fault. The seismologic and geologic bases for this contention are given in the Response "Location and source of the 1927 Lompoc earthquake" to NRC request for additional information 2.20, as presented in Appendix 2.5E to the Units 1 and 2, Diablo Canyon site's FSAR.

Interrogatory No. 10

Has P.G.&E. conducted geologic mapping of the Piedras-Blancas region? If so, please state:

- (a) The identity of the person or persons who actually conducted such mapping;
- (b) The professional qualifications and experience of such person or persons;
- (c) A detailed description of the results of such mapping.

Response

The Pacific Gas and Electric Company's geologic consultant, Earth Sciences Associates, Inc., has conducted geologic mapping of the onshore region extending from the vicinity of San Simeon north to the vicinity of Ragged Point, and also geologic mapping of the adjacent offshore region, all of which may be considered to represent the "Piedras Blancas region". This mapping was accomplished in accordance with the following:

(a) Geologic field mapping of the onshore region was done by T. D. Hunt and L. K. Lubetkin, staff geologists with Earth Sciences Associates, Inc. Photogeologic study of the region was performed by R. H. Wright, senior geologist, and D. H. Hamilton, principal geologist, with Earth Sciences Associates. Mapping of the adjacent offshore region was done by C. R. Willingham, geologist/geophysicist with Earth Sciences Associates. All mapping work was reviewed by D. H. Hamilton.

(b) Resumes of the five geologists named in (a) above are attached.

(c) The results of the mapping are shown on the geologic maps, Plate II(N) and III(N) accompanying the response "The geology of the northern reaches of the Hosgri fault zone and the relationship of the Hosgri fault to the San Simeon fault", to NRC request for additional information 2.19 (from the NRC letter dated February 12, 1975), and in parts of the discussion in that response, presented in Appendix 2.5E to the Units 1 and 2, Diablo Canyon site FSAR. A previous discussion of the San Simeon fault is given on pages III-14 to III-16 of the report "Geology of the southern Coast Ranges and the adjoining offshore continental margin of California, with special reference to the geology in the vicinity of the San Luis Range and Estero Bay", Appendix 2.5D to the Units 1 and 2, Diablo Canyon site FSAR.

DOUGLAS H. HAMILTON

Vice President and Principal Engineering Geologist
Earth Sciences Associates

Mr. Hamilton is experienced in engineering geology, economic geology and ground water geology, and has specialized in investigations for nuclear power plant siting, dams and other large engineering projects, land use and environmental geology studies, mineral resources studies, and regional ground water investigations.

He has served as consultant and expert witness in dealings between utility companies and regulatory agencies, especially in regard to questions of geologic safety and environmental impact. He is a member of the American Nuclear Society Subcommittee on Surface Faulting, and he has given testimony in court as an expert witness in litigation regarding ground water and other geotechnical questions. Additionally, he has carried out basic studies relating to fault movement and land subsidence, localization and mechanics of large rockfalls, and regional geology and landform development. He is a specialist in photogeologic interpretation, and in the evaluation of mineral resources.

Mr. Hamilton recently directed regional geologic and geophysical studies conducted along the California coast line extending from Monterey Bay south to Point Conception. Extensive onshore and offshore studies were made to determine geologic and tectonic conditions throughout this area. He has also directed studies of geotechnical conditions pertaining to water resources and power plant development in several portions of the greater Bay Area, including San Mateo and Santa Cruz Counties.

Education

B.S., Geology, Stanford University, 1956.
M.S., Geology, Stanford University, 1962.
Candidate for Ph.D., Geology, Stanford University.

Professional
Affiliations

Registered Geologist No. 56, State of California, with
Certification as Engineering Geologist No. 31.
Association of Engineering Geologists.
Society of Mining Engineers of the American Institute of
Mining, Metallurgical, and Petroleum Engineers.
American Geophysical Union.
Geological Society of America.
Society of Economic Geologists.
Sigma Xi (honorary scientific fraternity).
American Association for the Advancement of Science.

Publications

"Continuing Surface Displacements Along the Casa Loma and San Jacinto Faults in San Jacinto Valley, Riverside County, California".
Engineering Geology, Jan. 1966.

"Ground Rupture in the Baldwin Hills", Science, Vol. 172 No. 3981
April 1971.

Interrogatory No. 11

Do you possess or are you aware of any studies, reports, data or other information which relates in any way to the age of the non-marine rocks in the Pedras-Blancas range? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

We are aware of three reports in which probable or inferred ages are assigned to various of the geologic units exposed in the "Piedras-Blancas range". These are, in order of issuance,

1) Geologic map of the coastal area near Piedras Blancas Point, San Luis Obispo County, California, Plate III(N), accompanying the report "The geology of the northern reaches of the Hosgri fault zone and the relationship of the Hosgri fault to the San Simeon fault", in Appendix 2.5E to Units 1 and 2, Diablo Canyon site, FSAR.

This map identifies intrusive volcanic rock (Tv) and mafic sedimentary breccia (mb) units as being of "Probable Tertiary" age. The assignment of probable age was based on the superposition of these units unconformably over igneous mafic and ultramafic basement rocks, and on their partial resemblance, suggesting possible stratigraphic equivalence, to the Lospe Formation, of presumed Oligocene age.

The mapping was done as described in our response to Interrogatory No. 10, during the time interval between July 9 and September 2, 1974.

2) Report "San Simeon - Hosgri fault system, Coastal California : Economic

and Environmental Implications, Science, vol. 190, no. 4221, p. 1291-1294 (1975), by C. A. Hall, Jr.

This article identifies the same rocks as those mapped as the "mafic[✓] sedimentary breccia" unit on the map described in (1) above as Lospe Formation, and suggests that this unit is of stratigraphic and age equivalence to the Lospe Formation, of presumed Oligocene age, in the Point Sal area. No specific age dating is indicated in the report. We presume that this report was based on field work done by C. A. Hall, Jr. Dr. Hall visited the San Simeon - Piedras Blancas region in the company of D. H. Hamilton of Earth Sciences Associates, Inc. in the fall of 1974, prior to undertaking his field research, and his results were first released as a U.S.G.A.[✓] open file report in the fall of 1975. We therefore believe that Dr. Hall's field work was done during the summer of 1975.

We do not have specific knowledge of Dr. Hall's professional qualifications. He is Professor of Geology at the University of California at Los Angeles, and has published several reports on various aspects of geology in the Southern Coast Ranges region.

3) USGS Miscellaneous Field Studies Map MF-784 "Geologic Map of the San Simeon - Piedras Blancas Region, San Luis Obispo County, California," by Clarence A. Hall, 1976.

This map includes a "Description of Map Units" section in which the Unit identified as Lospe Formation is classified as Oligocene. No basis for this age assignment is given. Other units are assigned geologic ages on the basis of presumed stratigraphic equivalence with units exposed in other areas.

We do not possess and are not aware of any other information relating to the age of the "non-marine rocks in the Piedras - Blancas range".

Interrogatory No. 12

Do you possess or are you aware of any studies, reports, data or other information which relates in any way to the age of any materials in Standard Oil Company's Oceana well, including without limitation the age of the sediments in such well? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

Our information relating to the Standard Oil Company Oceana No. 1 well consists of a Schlumberger induction electrical log of the well, on which typed annotations as to geologic age, formation, lithology, tests for hydrocarbons, and foraminiferal age facies appear. This log was released by the U. S. Geological Survey, but we believe that the data are from Standard. The indicated geologic ages appear to be only from micro-paleontologic analysis of samples from the well cuttings or cores. No radiometric age determinations are available to us from this well.

As indicated in our response to your Interrogatory No. 6, we believe that the data now available to us from the Oceano Well indicate a correlation of the stratigraphic section penetrated by the well, with the stratigraphic section in the region of the Santa Maria Valley, and that these data preclude a correlation between the well section and the stratigraphic section in the Western Transverse Ranges and Santa Barbara Channel region 50 to 100 km to the south. This in turn indicates that large strike-slip movement, which would of necessity have resulted in moving a section from an original position many miles south of the Oceano well site to the present site of the well, cannot have occurred along the Hosgri fault.

Interrogatory No. 13

Do you possess or are you aware of any trace element studies or data relating in any way to the non-marine red beds near Breaker Point? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

No.

Interrogatory No. 14

Do you possess or are you aware of any studies, reports, data or other information relating in any way to the age of the volcanic rocks in the Lospe formation south of Point Sal and/or in the Lospe formation north of San Simeon? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

The volcanic rocks in the Lospe Formation south of Point Sal are described in USGS Professional Paper 222, "Geology and Paleontology, Santa Maria District, California", by Woodring and Bramlette. The Lospe Formation is assigned a questioned age of Miocene() by them, on the basis of its presumed equivalence with the Sespe Formation of the Santa Ynez Mountains and its stratigraphic position between "igneous rocks of the Franciscan Formation" and the Miocene Point Sal Formation. Woodring and Bramlette describe the associated hard white tuff as forming "beds" and "lenses", implying a sedimentary mode of deposition of these rocks and therefore a contemporaneous age with the Lospe Formation.

Field checking by D. H. Hamilton of Earth Sciences Associates, Inc. has shown that geologic relationships between the tuff and the enclosing Lospe sandstone are indicative of a shallow intrusive mode of emplacement of the tuff, rather than a depositional one. This opens the possibility that the tuff is somewhat younger than the Lospe sandstone. However, no actual age for either the Lospe Formation or the associated tuff is known to us.

Interrogatory No. 15

Do you possess or are you aware of any studies, reports, data or other information relating in any way to the age of the tertiary shale beds (Monterrey rocks and younger) both north of San Simeon and south of Point Sal? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

Our sources of information regarding the age of the "tertiary shale beds (Monterrey rocks and younger)" north of San Simeon and south of Point Sal consist of the following:

1) San Simeon area: Data regarding the age of the presumed Monterey Formation equivalent rocks in this region are contained in the same three sources referenced in our response to your Interrogatory No. 11. The Earth Sciences Associates, Inc. and apparently also the Hall, maps and reports, base the assignment of a Miocene age to the rocks on their presumed correlation, based on distinctive lithologic character, with the Monterey Formation.

2) Point Sal area: Data regarding the age of the lower, middle, and upper members of the Monterey Formation in the vicinity of Point Sal are given in USGS Professional Paper 111, "Geology and Paleontology, Santa Maria District, California", by Woodring and Bramlette. On the basis of paleontological data, Woodring and Bramlette make the following age assignments for the Monterey Formation:

- lower member; Luisian and upper Relizian stage (Middle Miocene).
- middle member; lower Mohnian (early late Miocene) (from the eastern

Purisima Hills).

- upper member; upper Mohnian (middle late Miocene), (from the eastern Purisima Hills).

a) W. P. Woodring and M. N. Bramlette were geologists with the U. S. Geological Survey.

b) Field work upon which USGS Professional Paper 222 was based was done in the time interval of 1938-1940.

c) The part of their study that led to age assignments consisted of paleontological and micropaleontological determinations on fossils obtained from rock samples.

d) The results developed by Woodring and Bramlette are consistent with age determinations of the Monterey Formation and equivalent geologic units located throughout much of the length of the California coastal region, both offshore and onshore. Thus, it is possible to demonstrate that rocks of the Monterey Formation from both nearby, and also widely separated points, are of the same general age. This is a fundamental principle of stratigraphic correlation, and it seldom has any direct implications regarding possible fault dislocation of rocks in one area from those in another area, especially in the case of a rock unit as widely distributed as the Monterey Formation.

Interrogatory No. 16

Do you possess or are you aware of any studies, reports, data or other information relating in any way to the Lospe formation at Brown Road in the Point Sal area? If so, for each such report, study, piece of data, or other item of information, please state the following:

- (a) The identity and professional qualifications of the persons who conducted the study and/or gathered the data;
- (b) The dates during which the study was conducted and/or the data was gathered;
- (c) The type of data that supports the study and/or the type of data itself (e.g., radiometric dating, rock samples, etc.);
- (d) A detailed explanation of the findings of the study and/or the age determinations such data supports.

Response

Exposures of Lospe Formation conglomerate, sandstone, and siltstone from the Corralitas Canyon area, through which Brown Road passes, are described in U.S.G.S. Professional Paper 222, by Woodring and Bramlette. Other parts of this Interrogatory are answered in our response to your Interrogatory No. 14.

Interrogatory No. 17

Have you compared the lithologies in the Brown Road Lospe formation with similar rocks near Breaker Point in San Luis County? If so, please furnish a detailed explanation of the results of such comparison.

Response

Our geologic consultant has not collected samples from the Lospe Formation exposures north of Point Sal Ridge, including those along Brown Road. From the description of Lospe Formation rocks given in U.S.G.S. Professional Paper 222, together with reconnaissance visual observations, it is our consultant's opinion that the Lospe of the Brown Road area, in common with the Lospe exposed along and near the coast in the vicinity of Lions Head, only locally and superficially resembles the sedimentary breccia exposed near Breaker Point. The main elements of similarity are the included clasts of locally derived rock types, especially the iron-rich, reddish weathering ophiolite-derived clasts, and the locally coarse bouldery character of both the Lospe and the Breaker Point area breccia. Notable differences include the absence of the sandstone-siltstone member that makes up the greater part of the Point Sal area Lospe at the Breaker Point locale, and the character of the matrix fraction of the conglomerates and breccias. The matrix of the Point Sal Lospe has been observed to consist of grayish sand, while that of the Breaker Point area breccias is mostly a microbreccia, with angularity and lithology that is similar to the coarser fraction.

I declare, under penalty of perjury, that the foregoing answers to Interrogatories 5 through 17 are true and correct to the best of my knowledge, information, and belief.

Dated May 17, 1977,


Douglas H. Hamilton

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)

PACIFIC GAS AND ELECTRIC COMPANY)

Units 1 and 2)

Diablo Canyon Site)
_____)

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

CERTIFICATE OF SERVICE

The foregoing document(s) of Pacific Gas and Electric Company has (have) been served today on the following by deposit in the United States mail, properly stamped and addressed:

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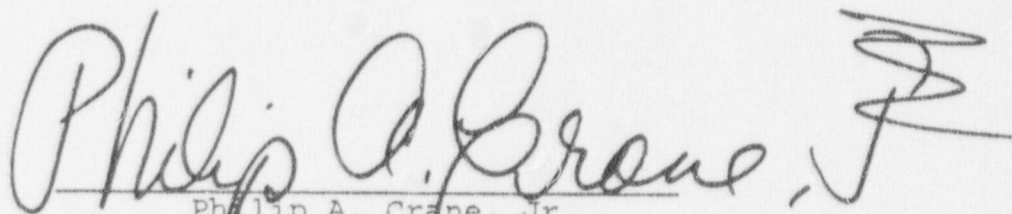
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Dated: May 18, 1977