UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	Docket No. 50-275
	)	Docket No. 50-323
PACIFIC GAS AND ELECTRIC COMPANY	)	
	)	(Reopened Hearing --
Diablo Canyon Nuclear Power Plant Units Nos. 1 and 2	)	Design Quality Assurance)
	)	

RESPONSE OF GOVERNOR DEUKMEJIAN TO FIRST SET OF INTERROGATORIES PROPOUNDED BY APPLICANT PACIFIC GAS AND ELECTRIC COMPANY

PRELIMINARY STATEMENT:

These answers are limited to the information presently in the possession of the current administration. No information pertaining to the period before January 3, 1983, is included except as that information may have been available in the papers received from the previous administration or its counsel.

Instruction number 6 of the Interrogatories states that they are "continuing," and are intended to require supplemental answers up to the time of hearings as additional information may be acquired. The Governor objects to this instruction insofar as it exceeds the requirements for supplemental response as set out in the commission's regulations governing discovery (10 CFR 2.740(e)). The Governor will provide all such supplemental responses as are required by 10 CFR 2.740(e).

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INTERROGATORY NO. 1:

As to each person employed by PG&E, Bechtel, the PG&E/Bechtel "Project," or any of those entities' subcontractors working on Diablo Canyon that you have had communication with since November 21, 1981, regarding Diablo Canyon, state:

(a) The name of each employee or representative with whom you have communicated. (This interrogatory is not intended to cover any administrative communications regarding announced meetings between the NRC Staff and/or the IDVP and/or PG&E).

(b) The name of each person involved on your behalf in each communication.

(c) The date of each such communication.

(d) How the communication was made, i.e., whether by telephone, written instrument, personal meeting, or otherwise.

(e) Who initiated each such communication.

(f) The substance of information exchanged during each such communication.

ANSWER TO INTERROGATORY NO. 1:

As confirmed by the June 22, 1983, letter signed by Mr. Norton, PG&E has withdrawn this interrogatory.

INTERROGATORY NO. 2:

Identify each and every person you intend to call as a witness during these proceedings. As to each such witness, state:

(a) Name, occupation, occupational address and telephone number.

(b) Whether the witness will render expert testimony.

(c) If the witness will render expert testimony, please list each specific subject matter about which the witness will be expected to testify.

(d) If the witness will be called to give expert testimony, please list the specific qualifications of the witness that you contend would qualify the witness to give opinion testimony on <u>each</u> specific subject matter about which the witness will testify.

(e) List each and every professional article, book, or the like, if any, the witness has authored or co-authored concerning each specific subject matter set forth in your answer to 2(c).

(f) Identify each and every document the witness will rely on to reach any opinion testimony and corollate each such document to each specific subject matter on which the witness will render an opinion.

(g) As to each specific subject matter identified in your answer to 2(c), identify by docket number and case name each Nuclear Regulatory Commission licensing proceeding where the witness has previously given expert testimony concerning each specific subject matter.

(h) As to each proceeding identified in your answer to 2(g), please state:

(i) The date(s) the expert testimony was given.

(ii) Whether you have a copy of the testimony given.

(iii) Whether you have a copy of the transcript covering any or all of the witness' examination and/or cross-examination for each such proceeding.

(iv) Whether you have a copy of the notes which the witness made in preparation for, or utililized during, the witness' examination or cross-examination in each such proceeding.

(i) As to each specific subject matter identified in your answer to 2(c), identify by docket number and court name each legal proceeding where the witness has previously given expert testimony concerning each specific subject matter.

(j) As to each proceeding identified in your answer to 2(i), please state:

(i) The date(s) the expert testimony was given.

(ii) Whether you have a copy of the transcript covering any or all of the witness' examination and/or cross-examination for each such proceeding.

(iii) Whether you have a copy of the notes which the witness made in preparation for, or utilized during, the witness' examination or cross-examination in each such proceeding.

(k) As to each specific subject matter identified in your answer to 2(c), identify committees and organizations where the witness has previously given testimony concerning each specific subject matter.

(l) As to each committee or organization identified in 2(k), please state:

(i) The date(s) the testimony was given.

(ii) Whether you have a copy of the testimony given.

(iii) Whether you have a copy of the transcript covering any or all of the witness' examination and/or cross-examination for each such proceeding.

(iv) Whether you have a copy of the notes which the witness made in preparation for, or utilized during, the witness' testimony and/or examination and/or cross-examination in each such proceeding.

ANSWER TO INTERROGATORY NO. 2:

At this time, it has not yet been decided what witnesses will be called. At the appropriate time, the Governor will be prepared to exchange lists of witnesses, together with their qualifications, with the applicant and all other parties.

INTERROGATORY NO. 3:

Identify all examinations, reviews, studies, analyses, or the like, conducted, initiated, or anticipated to be conducted by or for you since September 1981 relating in whole or part to design quality assurance or design activities at Diablo Canyon. As to each such study, analysis, or the like, state:

(a) The date of preparation or anticipated preparation.

(b) The name of each and every person who has or will contribute to the effort.

(c) The contribution of each person identified in your answer to 3(b).

ANSWER TO INTERROGATORY NO. 3:

The Governor objects to this interrogatory insofar as it requests materials prepared in preparation for litigation, without making the showing required by 10 CFR 2.740(b)(2). This objection does not necessarily imply the existence of any such material.

Excluding any possible examinations, reviews, studies, or analyses prepared for litigation, no such materials have been prepared, except such reviews of PG&E's quality assurance program as are described in the affidavits filed by the Governor in this case, during his period of participation in this case. No future reviews are presently planned except for possible reviews for litigation purposes.

INTERROGATORY NO. 4:

As to the terms "important-to-safety" and "safety-related", please:

(a) Give your definition for each term for the following periods:

(i) January 1, 1968 to November 20, 1981

(ii) November 21, 1981 to present

(b) State the bases for each definition given in your answers to 4(a)(i) and 4(a)(ii).

ANSWER TO INTERROGATORY NO. 4:

(a) Since adoption by the NRC of Appendix A, the term "important to safety" has had the meaning given to it in the first paragraph of the Introduction to Appendix A, namely:

> " . . . structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public."

Since the adoption by the NRC of Appendix A to Part 100, the term "safety-related" has had the meaning given to it in 10 CFR 100, Appendix A, sections III(c), VI(a)1, and VI(6)3, namely those structures, systems and components necessary to assure the following:

1) The integrity of the reactor coolant pressure boundary.

2) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

3) The capability to prevent or mitigate the consequences of acidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR, Part 100.

(b) This response is based on the provisions of 10 CFR, Part 50 and 100, as cited in the response to (a), above. Further bases for this response are: 1) The November 20, 1981 memorandum from Harold Denton, Director of the Office of Nuclear Reaction Regulation, to all Nuclear Reaction Regulation personnel, 2) the January 6, 1983 NRC revision to CFR, section 50.49 and the statement of consideration and determination

under the Regulatory Flexibility Act accompanying that promulgation; and 3) the decision in Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), ALAB-729 (1983).

INTERROGATORY NO. 5:

Identify each and every structure at Diablo Canyon that you believe to be "important-to-safety", but which is not classified as design Class I. As to each such structure identified, state:

(a) The bases for your opinion that the structure should be considered "important-to-safety".

(b) Each regulation which, in your opinion, requires each such structure to be classified as "important-to-safety".

(c) The date upon which each such regulation required each such structure to be so classified.

ANSWER TO INTERROGATORY NO. 5:

No answer can presently be given to this interrogatory at this time. Section 3.2 of the Final Safety Analysis Report (FSAR) is now being reviewed, but each and every structure that is important to safety cannot be determined because of the lack of identification in the FSAR of each and every component and system meeting NRC regulatory criteria for classification as important to safety. This response will be seasonably supplemented at such time, if any, as such a determination can be made.

In an attempt to be fully responsive to this interrogatory, the following, which will be considered in

making the review described above, are identified:

(a) The FSAR;

(b) Relevant NRC regulations, guidelines, and regulatory guidance documents;

(c) The NRC Standard Review Plan;

(d) The Diablo Canyon plant technical specifications;

(e) The Diablo Canyon emergency operating procedures;

(f) The preliminary EG&G report entitled "Identification and Ranking of Nuclear Plant Structures, Systems, and Components, and Graded Quality Assurance Guidelines -- Draft" prepared for the NRC, and bearing the number EGG-EA-6109;

(g) Information supplied by PG&E in response to interrogatories and requests to produce documents.

INTERROGATORY NO. 6:

Identify specifically each and every system at Diablo Canyon that you believe to be "important-to-safety", but which is not classified as design Class I. As to each such system identified, state:

(a) The bases for your opinion that each such system should be considered "important-to-safety".

(b) Each regulation which, in your opinion, requires each such system to be classified as "important-to-safety".

(c) The date upon which each such regulation required each such system to be so classified.

ANSWER TO INTERROGATORY NO. 6:

This interrogatory cannot be answered at this time. Section 3.2 of the Final Safety Analysis Report (FSAR) is now being reviewed, but each and every system that is important to safety cannot yet be determined because of the lack of identification in the FSAR of each and every component and system meeting NRC regulatory criteria for classification as important to safety. This response will be seasonably supplemented at such time, if any, such a determination can be made.

In an attempt to be fully responsive to this interrogatory, the following, which will be considered in making the review described above, are identified:

(a) The FSAR;

(b) Relevant NRC regulations, guidelines, and regulatory guidance documents;

(c) The NRC Standard Review Plan;

(d) The Diablo Canyon plant technical specifications;

(e) The Diablo Canyon emergency operating procedures;

(f) The preliminary EG&G report entitled "Identification and Ranking of Nuclear Plant Structures, Systems, and Components, and Graded Quality Assurance Guidelines -- Draft" prepared for the NRC, and bearing the numbers EGG-EA-6109;

(g) Information supplied by PG&E in response to interrogatories and requests to produce documents.

INTERROGATORY NO. 7:

Identify specifically each and every component at Diablo Canyon that you believe to be "important-to-safety", but which is not classified as design Class I. As to each such component identified, state:

(a) The bases for your opinion that each such component should be considered "important-to-safety".

(b) Each regulation which, in your opinion, requires each such component to be classified as "important-to-safety".

(c) The date upon which each such regulation required each such component to be so classified.

ANSWER TO INTERROGATORY NO. 7:

This interrogatory cannot be answered at this time. Section 3.2 of the Final Safety Analysis Report (FSAR) is being reviewed, but each and every component that is important to safety cannot yet be determined because of the lack of identification in the FSAR of each and every component and system meeting NRC regulatory criteria for classification as important to safety. This response will be seasonably supplemented at such time, if any, such a determination can be made.

In an attempt to be fully responsive to this interrogatory, the following, which will be considered in making the review described above, are identified:

(a) The FSAR;

(b) Relevant NRC regulations, guidelines, and regulatory guidance documents;

(c) The NRC Standard Review Plan;

(d) The Diablo Canyon plant technical specifications;

(e) The Diablo Canyon emergency operating procedures;

(f) The preliminary EG&G report titled "Identification and Ranking of Nuclear Plant Structures, Systems, and Components, and Graded Quality Assurance Guidelines -- Draft" prepared for the NRC, and bearing the numbers EGG-EA-6109;

(g) Information supplied by PG&E in response to interrogatories and requests to produce documents.

INTERROGATORY NO. 8:

Identify the person(s) upon whom you rely for the answers given to 5, 6 and 7 above and for each such person(s), state:

(a) The person's name.

(b) The specific experience and qualifications of the person which qualify the person to make the analyses necessary to answer interrogatories 5 (structures), 6 (systems) and 7 (components).

ANSWER TO INTERROGATORY NO. 8:

Richard Hubbard, whose qualifications may be found in Exhibit A to this Response, was relied upon. Mr. Hubbard has had specific and particular experience in classification of nuclear plant structures, systems, and components, both during his employment at General Electric and as consultant to the government of Sweden, as described in Exhibit A.

INTERROGATORY NO. 9:

Identify each and every design quality assurance/control program you have written or been responsible for. As to each such quality assurance program, state:

(a) The date of initial preparation.

(b) The name of the company or entity who used or is using the program.

(c) Whether you wrote all or portions of the program and, if portions, which portions.

(d) Whether you were responsible for executing all or portions of the program and, if portions, which portions.

(e) Whether the program was ever audited, and, if so, when and by whom.

(f) The present location of all audits identified in your response to 9(e).

ANSWER TO INTERROGATORY NO. 9:

Insofar as this interrogatory asks for information concerning any design quality assurance program other than one for the design of a nuclear power plant, the Governor objects to the interrogatory as irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

Insofar as the interrogatory does relate to nuclear power, the answer is as follows:

Richard Hubbard, a consultant to counsel for the Governor, has been responsible for the development and implementation of a quality assurance program as described in Exhibit A to this response. Mr. Hubbard was responsible for

the preparation, development, and implementation of the Quality Assurance Manual for the General Electric Company's Nuclear Energy Control and Instrumentation Department, San Jose, California, during the period between November 1971 and February 1976. This program was designed to assure that products produced by that department met the quality requirements of 10 CFR Part 50, Appendix B, and the ASME Boiler and Pressure Vessel Code. This program was certified as stated in Exhibit A.

(a) Mr. Hubbard was responsible for the manual between November 1971 and February 1976.

(b) The manual was prepared for the General Electric Company.

(c) Mr. Hubbard was responsible for the preparation of the manual as a whole. The manual was authorized on a joint basis, with no one person sole author of any section.

(d) Mr. Hubbard was responsible for executing aspects of all portions of the manual.

(e) The program was audited by appoximately 70 utility representatives, architect-engineers, and nuclear plant constructors per year. It was audited by the ASME in 1972 and 1975, and on a continuing basis by the resident ASME code inspector. It was also audited by the NRC in 1974.

(f) Whatever audit reports that currently exist are in the possession of the General Electric Company, same for the NRC audit response, which is on file in the NRC's Public Documents room in Washington, D.C.

INTERROGATORY NO. 10:

Identify each and every other quality assurance/control program you have written or been responsible for. As to each such quality assurance program, state:

(a) The date of initial preparation.

(b) The name of the company or entity who used or is using the program.

(c) Whether you wrote all or portions of the program and, if portions, which portions.

(d) Whether you were responsible for executing all or portions of the program and, if portions, which portions.

(e) Whether the program was ever audited, and, if so, when and by whom.

(f) The present location of all audits identified in your answer to 10(e).

ANSWER TO INTERROGATORY NO. 10:

Please see the objection and the response to Interrogatory No. 9, which is imcorporated here by reference. The quality assurance program for which Mr. Hubbard was responsible was an integrated one, including both design quality assurance/control and quality assurance/control.

INTERROGATORY NO. 11:

Identify each and every design quality assurance/control procedure you have written or been responsible for. As to each such procedure, state:

(a) The date of initial preparation.

(b) The name of the company or entity who used or is using the procedure.

(c) Whether you wrote all or portions of the procedure and, if portions, which portions.

(d) Whether you were responsible for executing all or portions of the procedure and, if portions, which portions.

(e) Whether the procedure was ever audited, and, if so, when and by whom.

(f) The present location of all audits identified in your answer to 11(e).

ANSWER TO INTERROGATORY NO. 11:

Please see objection to Interrogatory No. 9, and response to Interrogatory No. 9(a), (b), (d), (e), and (f), which are incorporated here by reference. Insofar as the interrogatory does related to nuclear power, the answer is as follows:

(c) The proceudres were written by the organizational units in General Electric who were responsible for the appropriate design. Mr. Hubbard was responsible for reviewing the procedures for compliance with the overall program.

INTERROGATORY NO. 12:

Identify each and every other quality assurance/procedure/quality control procedure you have written or been responsible for. As to each such procedure, state:

(a) The date of initial preparation.

(b) The name of the company or entity who used or is using the procedure.

(c) Whether you wrote all or portions of the procedure and, if portions, which portions.

(d) Whether you were responsible for executing all or portions of the procedure and, if portions, which portions.

(e) Whether the procedure was ever audited, and, if so, when and by whom.

(f) The present location of all audits identified in your answer to 12(e).

ANSWER TO INTERROGATORY NO. 12:

Please see objection and response to Interrogatory No. 11, which are incorporated here by reference. The program was an integrated one, and Mr. Hubbard was responsible for both design and design quality assurance procedures.

INTERROGATORY NO. 13:

Mr. Hubbard, in his affidavits and/or his declaration uses the following terms:

(a) "safety-significance"

(b) "errors"

(c) "deficiencies"

(d) "safety implications"

(e) "design QA"

(f) "safety hazard"

(g) "quality control"

(h) "root cause"

(i) "basic cause"

(j) "QA breakdown"

(k) "extreme likelihood"

(l) "major errors"

(m) "rigorous and thorough design verification program"

(n) "design product"

(o) "minor QA breakdown"

(p) "QA finding"

(q) "QA observation"

As to each term, please"

(a) Give your definition of the term.

(b) Identify the regulation or other source upon which you base your definition.

(c) Give your explanation of the difference between "safety-significance" and the terms "important-to-safety" and "safety-related".

(d) Give your explanation of the difference between "major errors" and "errors".

(e) Give your explanation of the difference between "deficiencies" and "errors".

(f) Give your explanation of the difference between a "QA breakdown" and a "major QA breakdown".

(g) Give your explanation of the difference between a "QA breakdown" and a "QA finding".

(h) Give your explanation of the difference between a "QA breakdown" and a "QA observation".

ANSWER TO INTERROGATORY NO. 13:

In general the meaning of terms is consistent with standard usage in the English vocabulary, the usage in the NRC regulations, and the definitions of QA/QC terms provided in

ANSI N.45 2.10. In some cases, as noted in the Hubbard affidavits and declaration, a term is assigned a particular definition at the point of usage. Further, the context in which a term is utilized can provide insight into particular meaning. Since the interrogatory did not specify a particular page or paragraph where the cited terms were utilized, the following definitions are intended to provide the general meanings for each term. No attempt has been made to ascertain that all of the cited terms were included in the Hubbard affidavits and declaration.

(a)&(b)

(i) safety-significance: commensurate with the importance of the safety functions to be performed (see GDC-1 of Appendix A and also Criterion II of Appendix B to 10 CFR 50).

(ii) errors: a departure from or failure to achieve what should be done; i.e., synonymous with a deficiency in that the item does not conform to the criteria and bases stated in the regulations or in the safety analysis report (see 10 CFR 50.55(e). Also described as a QA breakdown in Dirck's November 19, 1981 testimony before the House Subcommittee on Energy and the Environment.

(iii) deficiencies: a defect which, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant (see 10 CFR 50.55(e) and Criterion XVI of Appendix B).

(iv) safety implications: same as "safety-significance."

(v) design QA: the administrative and technical quality related activities applied during the design phase which include the technical and management processes which commence with identification of design input and which lead to and include the issuance of design output documents (for "design" definition see N45.2.11 and WASH-1309; also see "Introduction" to Appendix B regarding the quality assurance program to be applied to the design and GDC-1 of Appendix A).

(vi) safety hazard: hazard having safety-significance.

(vii) quality control: see p. 7 of Hubbard affidavit of May 24, 1982 (also see, "Introduction" to Appendix B).

(viii) root cause: the underlying basis that precedes and usually induces an effect or result (see, NRC's November 19, 1981 order on Diablo Canyon. Also see NRC notice regarding its investigation of QA/QC matters on the South Texas Project).

(ix) basic cause: same as root cause.

(x) QA breakdown: a failure to conduct a portion of the QA program in accordance with the requirements of Appendix B (see 10 CFR 50.55(e)). For items important to safety, but not safety-related, a failure to conduct a portion of the QA program in accordance with the requirements of GDC-1 of Appendix A.

(xi) extreme likelihood: a strong, or high, probability (see Webster's Third International Dictionary).

(xii) major errors: errors with potential safety-significance (see, "errors" and "safety-significance") which is greater than the severity for a "deviation".

(xiii) rigorous and thorough design verification program: design control measures which provide for verifying or checking the adequacy of the design applied systematically in a strict and complete manner (see Criterion III of Appendix B).

(xiv) design product: synonymous with design output, the documents such as drawings and specifications defining technical requirements of structures, systems, and components (see ANSI/ASME NQA-1-1979).

(xv) minor QA breakdown: a "QA breakdown" of lesser significance.

(xvi) QA finding: similar to a "violation," a noncompliance with a code, standard, regulation, or other accepted practice which is a legally binding requirement. (See 10 CFR 2.201 and March 9, 1982 Federal Register notice.) Note: also see IDVP definition which differs from the proceeding.

(xvii) QA observation: similar to a "deviation," a failure to satisfy a commitment that has not been made a legally binding requirement (see March 9, 1982 Federal Register notice). Also see IDVP definition which differs from the preceding.

(c) The terms "important to safety" and "safety-related" are defined in the regulations in the Introduction to Appendix A and in 10 CFR 100, Appendix A respectively, as set forth in the Hubbard supplemental affidavit dated March 26, 1983. GDC-1 of Appendix A and Criterion II of Appendix B require that QA/QC controls are to be assigned commensurate with the importance of the safety

functions (or "safety significance") to be performed. Thus, the term "safety significance" recognizes the graded approach to applying QA/QC measures. The FSAR, Standard Review Plan, Plant Technical Specifications, and Emergency Operating Procedures document the "safety-significance" accorded specific structures, systems, and components.

(d) A graded approach with criteria for evaluating the safety significance between "errors" and "major errors" is described in 10 CFR 50.55(e) and the March 9, 1982 Federal Register notice.

(e) See preceding definitions in Responses 13(a) and (b). "Errors" and "deficiencies" are similar terms.

(f) A graded approach with criteria for evaluating the safety significance between a "QA breakdown" and a "major QA breakdown" is described in 10 CFR 50.55(e) and the March 9, 1982 Federal Register notice.

(g) See preceding definitions in Responses 13(a) and (b). A "QA breakdown" and a "QA finding" are similar terms.

(h) See preceding definitions in Responses 13(a) and (b). A "QA breakdown" is a non-compliance with a binding requirement, while a "QA observation" is a non-compliance with a commitment which has not been made a legally binding requirement.

INTERROGATORY NO. 14:

List each ITR, with revision number, that you have reviewed to date. As to each ITR, state specifically:

(a) Each fact stated therein with which you disagree.

(b) The specific page(s) of each ITR where the fact(s) set forth in your answer to 14(a) is located.

(c) Each conclusion or opinion stated therein with which you disagree.

(d) The specific page(s) of each ITR where the conclusion(s) or opinion(s) set forth in your answer to 14(c) is located.

(e) The specific bases for your disagreement with each such fact, conclusion or opinion.

ANSWER TO INTERROGATORY NO. 14:

Thusfar, ITR numbers 18 (Rev. 1), 20 (Rev. 2), 21 (Rev. 1), 22 (Rev. 1), 23 (Rev. 1), and 24 (Rev. 1) have been reviewed on a preliminary basis. This review is still continuing, and until it is completed, those statements, conclusions, or opinions in each ITR to which exception is taken cannot be identified.

INTERROGATORY NO. 15:

With respect to the PG&E Phase I Final Report, identify:

(a) Each fact stated therein with which you disagree.

(b) The specific page(s) of the Report where the fact(s) set forth in your answer to 15(a) is located.

(c) Each conclusion or opinion stated therein with which you disagree.

(d) The specific page(s) of the Report where the conclusion(s) or opinion(s) set forth in your answer to 15(c) is located.

(e) The specific bases for your disagreement with each such fact, conclusion or opinion.

ANSWER TO INTERROGATORY NO. 15:

The PG&E Phase I Final Report is still being reviewed, and until that review is completed, the statements, conclusions and opinions in that Report to which exception is taken cannot be identified.

INTERROGATORY NO. 16:

State specifically all direct personal knowledge that you have regarding:

(a) The design of Diablo Canyon.

(b) The design quality assurance programs for Diablo Canyon.

(c) How such direct personal knowledge was acquired.

ANSWER TO INTERROGATORY NO. 16:

The Governor's attorneys, consultants, and employees have varying degrees of personal knowledge of the design and quality assurance of the Diablo Canyon facility based on tours of the facility at which PG&E or Bechtel employees were present, and on review of documents, meetings, and testimony pertaining to such design and quality assurance. The degree of personal knowledge of any person depends upon the number and completeness of tours taken or meetings attended, and the volume of documents and testimony read by each person.

INTERROGATORY NO. 17:

Mr. Hubbard has alleged in an affidavit that Diablo Canyon design errors "reflected significant QA breakdowns", and

that "those breakdowns led the Commission to suspend the low power license".

(a) Explain how Mr. Hubbard arrived at this conclusion.

(b) Identify what acces Mr. Hubbard had to the Commission decision-making process.

(c) Identify specifically each and every document or communication you relied on that describes the reason the Commission reached its decision to suspend the low power license.

ANSWER TO INTERROGATORY NO. 17:

(a) Mr. Hubbard arrived at this conclusion by reading the Commission's November 21, 1981, order suspending PG&E's low power license, and by being present in those meetings immediately preceeding the issuance of that order that are described in paragraph 4 of Mr. Hubbard's May 24, 1982 affidavit on file in this case.

(b) See answer to subparagraph (a) above.

(c) The documents relied upon are as follows: the Commission's November 21, 1981 order, the transcripts of the meetings described in paragraph 4 of Mr. Hubbard's June 1982 affidavit on file in this case and each and every document named in those transcripts, the PG&E quality assurance manuals, and the Blume quality assurance manuals. The portions of these documents relied upon are set forth in Mr. Hubbard's May 24, 1982 affidavit.

INTERROGATORY NO. 18:

In paragraph 9 of the Hubbard affidavit attached to Joint Intervenors' Motion to Reopen of June 7, 1982, Mr. Hubbard lists categories of items that he reviewed. Identify specifically:

(a) The industry QA/QC standards prior to 1970 that Mr. Hubbard reviewed.

(b) The "regulatory developments" examined.

(c) All documents examined by Mr. Hubbard in his examination of the NRC's implementation of QA/QC regulations.

ANSWER TO INTERROGATORY NO. 18:

(a) The industry QA/QC standards reviewed by Mr. Hubbard included MIL-Q 98-58, General Electric Company's practices and procedures, the QA/QC requirements in bid requests to General Electric Company's Nuclear Energy Control and Instrumentation Department, relevant ANSI standards, numerous professional journals, and applicable NRC regulations.

(b) The regulatory requirements reviewed by Mr. Hubbard include the draft and final criteria of Appendix B, including all public comments regarding the draft Appendix submitted to the AEC, the draft and final criteria of Appendix A, and CDC-100 Appendix A including all public comments regarding the draft Appendix submitted to the AEC.

(c) All specific documents reviewed by Mr. Hubbard called for by this subpart are referred to in Mr. Hubbard's May 24, 1982 affidavit. Such review was supplemented by Mr. Hubbard's general familiarity with the subject matter.

INTERROGATORY NO. 19:

Identify specifically any and all PG&E, NRC, and/or ACRS documents that you allege stand for the proposition that PG&E and/or the NRC and/or the ACRS relied upon superior QA/QC at Diablo Canyon to compensate for reduced conservatism.

ANSWER TO INTERROGATORY NO. 19:

The Governor does not contend that the NRC relied upon superior compliance by the applicant with the requirements of Appendix B as a justification for reduced conservatism at Diablo Canyon. Rather, as explained in Richard Hubbard's May 24, 1982 affidavit on file in this case, page 12 at the footnote, the ACRS, the staff, and the Licensing Board relied on the extent of the reanalysis of the Diablo Canyon design, and on the extent of the staff's review of that reanalysis, in allowing some reduced conservatism in the criteria for the Diablo Canyon design. It was the extent of what was done by the applicant and not any supposed exceedance of Appendix B in its execution, together with the extent of the staff's review, that were relied upon by the NRC.

INTERROGATORY NO. 20:

Do you admit that superior QA/QC at Diablo Canyon would compensate for reduced conservatism?

_____ [sic.] Explain the bases for your answer to this interrogatory.

ANSWER TO INTERROGATORY NO. 20:

No. Each and every regulatory requirements for design and construction of a nuclear power plant must by law be met, and no degree of exceedance of one requirement can compensate for failure to meet any other requirement.

INTERROGATORY NO. 21:

In paragraph 12 of the Hubbard affidavit identified in Interrogatory No. 18, the term "basis for confidence" is used. Define the term and explain, in context, what constitutes a "basis for confidence".

ANSWER TO INTERROGATORY NO. 21:

This interrogatory cannot be answered. The quoted phrase does not appear in the paragraph cited. Since the interrogatory calls for an explanation of the term in the context in which it is used, the desired context must be known before the answer can be given.

INTERROGATORY NO. 22:

In paragraph 13 of the Hubbard affidavit identified in Interrogatory No. 18, Mr. Hubbard alleges a number of "errors and discrepancies" at Diablo Canyon and states that they involved a failure by PG&E to properly implement the QA requirements of Appendix B. Identify each such alleged error and discrepancy. As to each alleged error and discrepancy:

(a) State specifically the significance of each alleged error or discrepancy.

(b) State specifically how each alleged error or discrepancy was caused by PG&E's alleged failure to properly implement the QA requirements of Appendix B.

ANSWER TO INTERROGATORY NO. 22:

The phase "errors and discrepancies" is not utilized in paragraph 13 of the Hubbard affidavit. The terms "error" and "design construction discrepancies" are set forth. However, in an effort to be responsive, this response will address questions propounded by PG&E for the twenty-four errors set forth in paragraphs 14 to 36 of the Hubbard affidavit. The following information is preliminary since review of the matters described herein, as well as the IDVP and ITP reviews, is ongoing including the identification of the cause within the QA/QC program which allowed the errors and discrepancies to not be detected:

(i) Error 1 - Mirror image design orientation (paragraph 14)

(a) The diagram used to locate the Vertical Seismic Floor Response (VSFR) spectra for the containment annulus for Unit 2 was used for Unit 1 resulting in an incorrect orientation of VSFR spectra for the Unit 1 seismic design.

(b) Unverified and uncontrolled design data were provided to Blume contrary to Criteria 3, 4, and 5 regarding design control, procurement document control, and procedural control. Further, the document control and distribution measures did not assure as required by Criterion 6 that documents "are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed." In addition, Blume was

not contracturally obligated to a QA program until 1978, eight years after Appendix B was adopted and twelve years after Blume's first engineering services on Diablo Canyon contrary to the requirement of Criterion 2 that a QA program be established "at the earliest practicable time." Also, PG&E's qualification and evaluation of service contractors as required by Criterion 7 did not occur until after completion of the subject engineering. Finally, audits of suppliers, such as Blume, were not carried out in a timely fashion to verify compliance with the QA program requirements and to determine the effectiveness of the program as required by Criterion 18 and thus, the appropriate corrective action measures as set forth in Criterion 16 were not initiated by PG&E or its subcontractor.

(ii) Error 2 - Improper distribution of documents (paragraph 15)

(a) Latest revised spectra were not distributed to engineer responsible for electrical design.

(b) The development, distribution and use of design data as required by Criteria 3, 5 and 6 was not adequately controlled. The audits and corrective action measures required by Criteria 18 and 16 were inadequate.

(iii) Error 3 - Incorrect weights for annulus area (paragraphs 16 and 17)

(a) The vertical spectra for the annulus area was revised to properly account for the correct weight distribution data.

(b) See Response (i)(b).

(iv) Error 4 - Containment spray system pipe supports (paragraph 18)

(a) Deficiencies were identified in the design of the pipe supports for the containment spray system.

(b) See Response (i)(b).

(v) Error 5 - Wrong spectra for piping (paragraph 19)

(a) The original PG&E calculation used erroneous spectra and hence required reanalysis with the appropriate spectra.

(b) See Response (ii)(b).

(vi) Errors 6 to 10 - Additional design errors - piping (paragraphs 20 & 21)

(a) Design deficiencies identified for piping systems resulting in piping system modifications.

(vii) Error 11 - Incorrect vertical spectra for regenerative heat exchanger (paragraph 22)

(a) The engineer responsible for the subject equipment qualification used two-thirds of the filtered rather than the unfiltered spectra.

(b) See Response (ii)(b).

(viii) Error 12 - Misapplications of Hosgri spectra for conduit supports (paragraph 23)

(a) Raceway support seismic calculations were done with inapplicable spectra.

(b) See Response (ii)(b).

(ix) Error 13 - Spectra misapplication for HVAC (paragraph 24)

(a) Instances were identified in the HVAC analysis where the Hosgri spectra were misapplied.

(b) See Response (ii)(b).

(x) Error 14 - Differences between "as-built" and "as designed" conditions for conduit supports (paragraph 25)

(a) Differences were identified between plant "as built" conditions as compared to the models used by PG&E for seismic analyses.

(b) The inspection of the plant components conducted in accordance with Criterion 10 failed to assure that all relevant design documents were properly reviewed and updated in a timely manner to reflect the "as-built" configurations. Thus, the design/construction interface was not properly controlled in a closed loop manner, but rather the interface was allowed to operate in an open loop manner. Also, see Response (ii)(b).

(xi) Error 15 - Failure to use final seismic design spectra for the auxiliary building (paragraph 27)

(a) "Preliminary" rather than "final" seismic design spectra were utililized for the qualification of equipment and components.

(b) See Response (i)(b).

(xii) Error 16 - Incorrect vertical spectra for accumulators (paragraph 28)

(a) Filtered rather than unfiltered spectra were utilized for the seismic analyses.

(b) See Response (ii)(b).

(xiii) Error 17 - Annunciator cabinet modelled incorrectly (paragraph 29)

(a) Rigidity assumption in the original seismic analysis was incorrect.

(b) Contrary to Criterion 3, the design review was inadequated. Also, see Response (ii)(b).

(xiv) Error 18 - Improper digitization of Hosgri spectra for the auxiliary building (paragraph 30)

(a) The digitization of the Hosgri spectra contained an error.

(b) See Response (xiii)(b).

(xv) Error 19 - Rod hangers used as vertical seismic restraints for small bore pipes (paragraph 31)

(a) A single rod support was installed in locations requiring vertical seismic restraints, but since the single rod support does not restrain piping in an upward direction, it cannot qualify as a vertical seismic restraint.

(b) See Response (ii)(b).

(xvi) Error 20 - Difference between "as-built" and "as-designed" conditions for piping systems (paragraph 32)

(a) See Response (x)(a), but for pipe supports.

(b) See Response (x)(b).

(xvii) Error 21 - Containment spray line drawings for pipe support and valve orientation differ from field layouts (paragraph 33)

(a) See Response (x)(a), but for difference between piping isometric drawings and the field layouts.

(b) See Response (x)(b).

(xviii) Error 22 - Incorrect valve modelling in piping analyses (paragraph 34)

(a) Annulus area valves were modelled incorrectly, thus resulting in an inaccurate valve operator support load.

(b) See Response (xiii)(b).

(xix) Error 23 - Raceway supports differ from installation instructions (paragraph 35)

(a) Raceway supports in the field configuration differed from installation instructions.

(b) The inspections conducted in accordance with Criterion 10 failed to assure compliance with the design requirements.

(xx) Error 24 - Unconservative electrical seismic criteria (paragraph 36)

(a) The methodology utilized for qualifying electrical supports may result in unconservative seismic loads.

(b) See Response (xiii)(b).

INTERROGATORY NO. 23:

Identify specifically each document upon which you rely as support for your contentions or positions as stated in your answers to these interrogatories. As to each such document, identify the precise portion relied upon as to each such contention or position.

ANSWER TO INTERROGATORY NO. 23:

The documents and portions thereof relied on are specified in each answer.

INTERROGATORY NO. 24:

For each answer to these interrogatories, and all subparts thereto, identify each person who participated in the preparation of your answers pursuant to 10 C.F.R. § 2.740b(b).

ANSWER TO INTERROGATORY NO. 24:

The following persons prepared answers herein as indicated:

(a) All answers partially prepared by Michael J. Strumwasser, Special Counsel to the Attorney General, and Susan L. Durbin, Deputy Attorney General, 3580 Wilshire Boulevard, Los Angeles, CA 90010, telephones (213) 736-2101 and (213) 736-2105, respectively.

(b) Answers to 3 to 18, and 20 to 23 partially prepared by Richard Hubbard, MHB Technical Associates, 1723 Hamilton Avenue, Suite K, San Jose, CA 95125, telephone (408) 266-2716.

DATED: June 27, 1983

JOHN K. VAN DE KAMP, Attorney General
of the State of California
ANDREA SHERIDAN ORDIN, Chief
Assistant Attorney General
MICHAEL J. STRUMWASSER, Special
Counsel to the Attorney General
SUSAN L. DURBIN,
PETER H. KAUFMAN,
Deputy Attorneys General

By Susan L Durbin

SUSAN L. DURBIN

Attorneys for Governor
George Deukmejian

3580 Wilshire Boulevard
Suite 800
Los Angeles, California 90010
(213) 736-2105

PROFESSIONAL QUALIFICATIONS OF RICHARD B. HUBBARD

RICHARD B. HUBBARD
MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125
(408) 266-2716

EXPERIENCE:

9/76 - PRESENT

Vice-President - MHB Technical Associates, San Jose, California. Founder, and Vice-President of technical consulting firm. Specialists in independent energy assessments for government agencies, particularly technical and economic evaluation of nuclear power facilities. Consultant in this capacity to Oklahoma and Illinois Attorney Generals, Minnesota Pollution Control Agency, German Ministry for Research and Technology, Governor of Colorado, Swedish Energy Commission, Swedish Nuclear Inspectorate, and the U.S. Department of Energy. Also provided studies and testimony for various public interest groups including the Center for Law in the Public Interest, Los Angeles; Public Law Utility Group, Baton Rouge, Louisiana; Friends of the Earth (FOE), Italy; and the Union of Concerned Scientists, Cambridge, Massachusetts. Provided testimony to the U.S. Senate/House Joint Committee on Atomic Energy, the U.S. House Committee on Interior and Insular Affairs, the California Assembly, Land Use, and Energy Committee, the Advisory Committee on Reactor Safeguards, and the Atomic Safety and Licensing Board. Performed comprehensive risk analysis of the accident probabilities and consequences at the Barseback Nuclear Plant for the Swedish Energy Commission and edited, as well as contributed to, the Union of Concerned Scientist's technical review of the NRC's Reactor Safety Study (WASH-1400).

2/76 - 9/76

Consultant, Project Survival, Palo Alto, California. Volunteer work on Nuclear Safeguards Initiative campaigns in California, Oregon, Washington, Arizona, and Colorado. Numerous presentations on nuclear power and alternative energy options to civic, government, and college groups. Also resource person for public service presentations on radio and television.

Exhibit A

5/75 - 1/76

Manager - Quality Assurance Section, Nuclear Energy Control and Instrumentation Department, General Electric Company, San Jose, California.
Report to the Department General Manager. Develop and implement quality plans, programs, methods, and equipment which assure that products produced by the Department meet quality requirements as defined in NRC regulation 10 CFR 50, Appendix B, ASME Boiler and Pressure Vessel Code, customer contracts, and GE Corporate policies and procedures. Product areas include radiation sensors, reactor vessel internals, fuel handling and servicing tools, nuclear plant control and protection instrumentation systems, and nuclear steam supply and Balance of Plant control room panels. Responsible for approximately 45 exempt personnel, 22 non-exempt personnel, and 129 hourly personnel with an expense budget of nearly 4 million dollars and equipment investment budget of approximately 1.2 million dollars.

11/71 - 5/75

Manager - Quality Assurance Subsection, Manufacturing Section of Atomic Power Equipment Department, General Electric Company, San Jose, California.
Report to the Manager of Manufacturing. Same functional and product responsibilities as in Engagement #1, except at a lower organizational report level. Developed a quality system which received NRC certification in 1975. The system was also successfully surveyed for ASME "N" and "NPT" symbol authorization in 1972 and 1975, plus ASME "U" and "S" symbol authorizations in 1975. Responsible for from 23 to 39 exempt personnel, 7 to 14 non-exempt personnel, and 53 to 97 hourly personnel.

3/70 - 11/71

Manager - Application Engineering Subsection, Nuclear Instrumentation Department, General Electric Company, San Jose, California.
Responsible for the post order technical interface with architect engineers and power plant owners to define and schedule the instrumentation and control systems for the Nuclear Steam Supply and Balance of Plant portion of nuclear power generating stations. Responsibilities included preparation of the plant instrument list with approximate location, review of interface drawings to define functional design requirements, and release of functional requirements for detailed equipment designs. Personnel supervised included 17 engineers and 5 non-exempt personnel.

12/69 - 3/70

Chairman - Equipment Room Task Force, Nuclear Instrumentation Department, General Electric Company, San Jose, California.
Responsible for a special task force reporting to the Department General Manager to define methods to improve the quality and reduce the installation time and cost of nuclear power plant control rooms. Study resulted in the conception of a factory-fabricated control room consisting of signal conditioning and operator control panels mounted on modular floor sections which are completely assembled in the factory and thoroughly tested for proper operation of interacting devices. Personnel supervised included 10 exempt personnel.

12/65 - 12/69

Manager - Proposal Engineering Subsection, Nuclear Instrumentation Department, General Electric Company, San Jose, California.
Responsible for the application of instrumentation systems for nuclear power reactors during the proposal and pre-order period. Responsible for technical review of bid specifications, preparation of technical bid clarifications and exceptions, definition of material list for cost estimating, and the "as sold" review of contracts prior to turnover to Application Engineering. Personnel supervised varied from 2 to 9 engineers.

8/64 - 12/65

Sales Engineer, Nuclear Electronics Business Section of Atomic Power Equipment Department, General Electric Company, San Jose, California.
Responsible for the bid review, contract negotiation, and sale of instrumentation systems and components for nuclear power plants, test reactors, and radiation hot cells. Also responsible for industrial sales of radiation sensing systems for measurement of chemical properties, level, and density.

10/61 - 8/64

Application Engineer, Low Voltage Switchgear Department, General Electric Company, Philadelphia, Pennsylvania.
Responsible for the application and design of advanced diode and silicon-controlled rectifier constant voltage DC power systems and variable voltage DC power systems for industrial applications. Designed, followed manufacturing and personally tested an advanced SCR power supply for product introduction at the Iron and Steel Show. Project Engineer for a DC power system for an aluminum pot line sold to Anaconda beginning at the 161KV switchyard and encompassing all the equipment to convert the power to 700 volts DC at 160,000 amperes.

9/60 - 10/61

GE Rotational Training Program

Four 3-month assignments on the GE Rotational Training Program for college technical graduates as follows:

a. Installation and Service Eng. - Detroit, Michigan.
Installation and startup testing of the world's largest automated hot strip steel mill.

b. Tester - Industry Control - Roanoke, Virginia.
Factory testing of control panels for control of steel, paper, pulp, and utility mills and power plants.

c. Engineer - Light Military Electronics - Johnson City, New York.
Design of ground support equipment for testing the auto pilots on the F-105.

d. Sales Engineer - Morrison, Illinois.
Sale of appliance controls including range timers and refrigerator cold controls.

EDUCATION:

Bachelor of Science Electrical Engineering, University of Arizona, 1960.

Master of Business Administration, University of Santa Clara, 1969.

PROFESSIONAL AFFILIATION:

Registered Quality Engineer, License No. QU805, State of California.

Member of Subcommittee 8 of the Nuclear Power Engineering Committee of the IEEE Power Engineering Society responsible for the preparation and revision of the following 3 national Q.A. Standards:

a. IEEE 498 (ANSI N45.2.16): Requirements for the Calibration and Control of Measuring and Test Equipment used in the Construction and Maintenance of Nuclear Power Generating Stations.

PROFESSIONAL AFFILIATION: (Contd)

b. IEEE 336 (ANSI N45.2.4): Installation, Inspection, and Testing Requirements for Class 1E Instrumentation and Electric Equipment at Nuclear Power Generating Stations.

c. IEEE 467 : Quality Assurance Program Requirements for the Design and Manufacture of Class IE Instrumentation and lectric Equipment for Nuclear Power Generating Stations.

I am currently a member of the IEEE Ad Hoc Committee which recommended the issues to be addressed in the development of a standard relating to the selection and utilization of replacement parts for Class IE equipment during the construction and operation phase. I am also a member of the work group which will prepare this proposed standard.

PERSONAL DATA:

Birth Date: 7/08/37
Married; three children
Health: Excellent

PUBLICATIONS AND TESTIMONY:

1. In-Core System Provides Continuous Flux Map of Reactor Cores, R.B. Hubbard and C.E. Foreman, Power, November, 1967.

2. Quality Assurance: Providing It, Proving It, R.B. Hubbard, Power, May, 1972.

3. Testimony of R.B. Hubbard, D.G. Bridenbaugh, and G.C. Minor before the United States Congress, Joint Committee on Atomic Energy, February 18, 1976, Washington, DC. (Published by the Union of Concerned Scientists, Cambridge, Massachusetts.) Excerpts from testimony published in Quote Without Comment, Chemtech, May, 1976.

4. Testimony of R.B. Hubbard, D.G. Bridenbaugh, and G.C. Minor to the California State Assembly Committee on Resources, Land Use, and Energy, Sacramento, California, March 8, 1976.

5. Testimony of R. B. Hubbard and G.C. Minor before California State Senate Committee on Public Utilities, Transit, and Energy, Sacramento. California, March 23, 1976.

6. Testimony or R.B. Hubbard and G.C. Minor, Judicial Hearings Regarding Grafenrheinfeld Nuclear Plant, March 16 & 17, 1977, Wurzburg, Germany.

PUBLICATIONS AND TESTIMONY: (Contd)

7. Testimony of R.B. Hubbard to United States House of Representatives, Subcommittee on Energy and the Environment, June 30, 1977, Washington, DC, entitled, Effectiveness of NRC Regulations - Modifications to Diablo Canyon Nuclear Units.

8. Testimony of R.B. Hubbard to the Advisory Committee on Reactor Safeguards, August 12, 1977, Washington, DC, entitled, Risk Uncertainty Due to Deficiencies in Diablo Canyon Quality Assurance Program and Failure to Implement Current NRC Practices.

9. The Risks of Nuclear Power Reactors: A Review of the NRC Reactor Safety Study WASH-1400, Kendall, et al, edited by R.B. Hubbard and G.C. Minor for the Union of Concerned Scientists, August, 1977.

10. Swedish Reactor Safety Study: Barsebäck Risk Assessment, MHB Technical Associates, January 1978 (Published by Swedish Department of Industry as Document DSI 1978:1).

11. Testimony of R.B. Hubbard before the Energy Facility Siting Council, March 31, 1978, in the matter of Pebble Springs Nuclear Power Plant, Risk Assessment: Pebble Springs Nuclear Plant, Portland, Oregon.

12. Presentation by R.B. Hubbard before the Federal Ministry for Research and Technology (BMFT), August 31 and September 1, 1978, Meeting on Reactor Safety Research, Risk Analysis, Bonn, Germany.

13. Testimony by R.B. Hubbard, D.G. Bridenbaugh, and G.C. Minor before the Atomic Safety and Licensing Board, September 25, 1978, in the matter of the Black Fox Nuclear Power Station Construction Permit hearings, Tulsa, Oklahoma.

14. Testimony of R.B. Hubbard before the Atomic Safety and Licensing Board, November 17, 1978, in the matter of Diablo Canyon Nuclear Power Plant Operating License Hearings, Operating Basis Earthquake and Seismic Reanalysis of Structures, Systems, and Components, Avila Beach, California.

15. Testimony of R.B. Hubbard and D.G. Bridenbaugh before the Louisiana Public Service Commission, November 19, 1978, Nuclear Plant and Power Generation Costs, Baton Rouge, Louisiana.

16. Testimony of R.B. Hubbard before the California Legislature, Subcommittee on Energy, Los Angeles, April 12, 1979.

PUBLICATIONS AND TESTIMONY: (Contd)

17. Testimony of R.B. Hubbard and G.C. Minor before the Federal Trade Commission, on behalf of the Union of Concerned Scientists, Standards and Certification Proposed Rule 16 CFR Part 457, May 18, 1979.

18. ALO-62, Improving the Safety of LWR Power Plants, MHB Technical Associates, prepared for U.S. Department of Energy, Sandia National Laboratories, September, 1979, available from NTIS.

19. Testimony by R.B. Hubbard before the Arizona State Legislature, Special Interim House Committee on Atomic Energy, Overview of Nuclear Safety, Phoenix, AZ, September 20, 1979.

20. "The Role of the Technical Consultant," Practising Law Institute program on "Nuclear Litigation," New York City and Chicago, November, 1979. Available from PLI, New York City.

21. Uncertainty in Nuclear Risk Assessment Methodology, MHB Technical Associates, January, 1980, prepared for and available from the Swedish Nuclear Power Inspectorate, Stockholm, Sweden.

22. Italian Reactor Safety Study: Caorso Risk Assessment, MHB Technical Associates, March, 1980, prepared for and available from Friends of the Earth, Rome, Italy.

23. Development of Study Plans: Safety Assessment of Monticello and Prairie Island Nuclear Stations, MHB Technical Associates, August, 1980, prepared for and available from the Minnesota Pollution Control Agency.

24. Affidavit of Richard B. Hubbard and Gregory C. Minor before the Illinois Commerce Commission, In the Matter of an Investigation of the Plant Construction Program of the Commonwealth Edison Company, prepared for the League of Woman Voters of Rockford, Illinois, November 12, 1980, ICC Case No. 78-0646.

25. Systems Interaction and Single Failure Criterion, MHB Technical Associates, January, 1981, prepared for and available from the Swedish Nuclear Power Inspectorate, Stockholm, Sweden.

26. Summary of Emergency Response Planning Criteria for Regional and Local Authorities Near Nuclear Electric Generating Stations, MHB Technical Associates, June, 1981, prepared for and available from Friends of the Earth, Rome, Italy.

27. Economic Assessment: Ownership Interest In Palo Verde Nuclear Station, September 11, 1981, prepared for and available from the City of Riverside, California.

PUBLICATIONS AND TESTIMONY: (Contd)

28. Systems Interaction and Single Failure Criterion: Phase II Report, MHB Technical Associates, December, 1981, prepared for and available from the Swedish Nuclear Power Inspectorate, Stockholm, Sweden.

29. Testimony of Richard Hubbard and Gregory Minor on Emergency Response Planning, Diablo Canyon operating license hearings before ASLB, January 11, 1982.

30. Statement of Richard Hubbard before the U.S. House Subcommittee on Energy and Environment concerning QA program breakdowns, November 19, 1981.

31. Testimony of Richard Hubbard on Quality Assurance, South Texas operating license hearing before ASLB, prefiled June, 1981.

32. Testimony of R. B. Hubbard, G. C. Minor, M. W. Goldsmith, S. J. Harwood on behalf of Suffolk County, before the Atomic Safety and Licensing Board, in the matter of Long Island Lighting Company, Shoreham Nuclear Power Station, Unit 1, regarding Contention 7B, Systems Classification and Interaction, April 13, 1982.

33. Testimony of R. B. Hubbard and D. G. Bridenbaugh, in the matter of Jersey Central Power and Light Company For An Increase in Rates for Electrical Service, on behalf of New Jersey Department of the Public Advocate, Division of Rate Counsel, Three Mile Island Units 1 & 2, Cleanup and Modification Programs, May, 1982.

34. Testimony of R. B. Hubbard and G. C. Minor on behalf of Suffolk County, before the Atomic Safety and Licensing Board, in the matter of Long Island Lighting Company, Shoreham Nuclear Power Station, Unit 1, regarding Suffolk County Contention 27 and SOC Contention 3, Post-Accident Monitoring, May 25, 1982.

35. Testimony of R. B. Hubbard on behalf of Suffolk County, before the Atomic Safety and Licensing Board, in the matter of Long Island Lighting Company, Shoreham Nuclear Power Station, Unit 1, regarding Suffolk County Contentions 12, 13, 14, and 15, Quality Assurance/Quality Control, June 29, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

AFFIDAVIT OF RICHARD B. HUBBARD

FOR GOVERNOR GEORGE DEUKMEJIAN

RICHARD B. HUBBARD, being duly sworn, do say under oath that I, the undersigned have assisted in preparing and reviewing responses number 3 to 18, and 20 to 23 of Governor Deukmejian to Pacific Gas and Electric Company's First Set of Interrogatories, dated June 10, 1983. Said answers are true and correct to the best of my knowledge and belief.

Richard B. Hubbard
RICHARD B. HUBBARD

Subscribed and sworn to before
me this 24th day of June, 1983.

Carlo F. Caralli
NOTARY PUBLIC

My Commission expires: Oct. 5, 1984

OFFICIAL SEAL
CARLO F. CARALLI
Notary Public California
Principal Office In
Santa Clara County
My commission expires Oct. 5, 1984

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

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

CERTIFICATION

I, Susan L. Durbin, hereby certify:

1. I am one of the attorneys for Governor George Deukmejian in the above-entitled matter and, as such, am authorized to execute this certification.

2. I have read the foregoing Response of Governor Deukmejian to First Set of Interrogatories Propounded by Applicant Pacific Gas and Electric Company and know the contents thereof.

3. I am informed and believe the answers to said interrogatories to be true and correct.

I certify under penalty of perjury that the forgoing is true and correct.

Executed at Los Angeles, California, on June 27, 1983.

Susan L. Durbin

SUSAN L. DURBIN

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

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

CERTIFICATE OF SERVICE

I hereby certify that on this date I caused copies of the foregoing "Response of Governor Deukmejian to First Set of Interrogatories Propounded by Applicant Pacific Gas and Electric Company

served on the following by U.S. Mail, first class, postage prepaid.

Hon. Nunzio Palladino, Chairman
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Hon. Victor Gilinsky, Commissioner
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Hon. Thomas Roberts, Commissioner
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Hon. James Asselstine, Commissioner
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Hon. John Ahearne, Commissioner
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Hon. Thomas S. Moore, Chairman
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Hon. W. Reed Johnson
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Hon. John H. Buck
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Judge John F. Wolf, Chairman
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Judge Glenn O. Bright
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Judge Jerry R. Kline
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Harold Denton
Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Leonard Bickwit, Esq.
Office of the General Counsel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Lawrence Chandler, Esq.
Jack R. Goldberg, Esq.
Office of Executive Legal Director
BETH 042
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Docketing and Service Section

Mrs. Elizabeth Apfelberg
1415 Cozadero
San Luis Obispo, CA 93401

Janice E. Kerr, Esq.
Public Utilities Commission
5246 State Building
350 McAllister Street
San Francisco, CA 94102

Mrs. Raye Fleming
1920 Mattie Road
Shell Beach, CA 93449

Mr. Frederick Eissler
Scenic Shoreline Preservation
Conference, Inc.
4623 More Mesa Drive
Santa Barbara, CA 93105

Gordon Silver
Sandra A. Silver
1760 Alisal Street
San Luis Obispo, CA 93401

Joel R. Reynolds, Esq.
John Phillips, Esq.
Center for Law in the Public Interest
10951 West Pico Boulevard, Third Floor
Los Angeles, CA 90064

Bruce Norton, Esq.
Norton, Burke, Berry & Junck
2002 East Osborn
P.O. Box 10569
Phoenix, AZ 85064

Philip A. Crane, Jr., Esq.
Richard F. Locke, Esq.
Pacific Gas and Electric Company
P.O. Box 7442
San Francisco, CA 94120

David S. Fleischaker, Esq.
P. O. Box 1178
Oklahoma City, OK 73101

Arthur C. Gehr, Esq.
Snell & Wilmer
3100 Valley Bank Center
Phoenix, AZ 85073

Mr. Richard B. Hubbard
MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, CA 95125

Mr. Carl Neiberger
Telegram Tribune
P. O. Box 112
San Luis Obispo, CA 93402

Virginia and Gordon Bruno
Pecho Ranch
P.O. Box 6289
Los Osos, CA 93402

Nancy Culver
192 Luneta
San Luis Obispo, CA 93401

DATED: June 27, 1983

JOHN K. VAN DE KAMP, Attorney General
of the State of California
ANDREA SHERIDAN ORDIN, Chief
Assistant Attorney General
MICHAEL J. STRUMWASSER, Special
Counsel to the Attorney General
SUSAN L. DURBIN,
PETER H. KAUFMAN,
Deputy Attorneys General

By Susan L. Durbin.

SUSAN L. DURBIN

Attorneys for Governor
George Deukmejian

3580 Wilshire Boulevard
Suite 800
Los Angeles, California 90010
(213) 736-2102